

Flood Hazard Mitigation Plan

Interim Report



City of Conway, South Carolina

October 19, 1999

Flood Hazard Mitigation Plan

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This report was prepared by French & Associates, Ltd., Park Forest, Illinois. Policy and directions were set by the City's Mitigation Planning Committee:

- Bill Graham, chair, floodplain resident
- John Griggs, vice-chair, floodplain resident
- A. M. (Mack) Floyd, floodplain resident
- Russell Faulk, floodplain resident
- James Goldfinch, floodplain resident
- Vivian Chestnut, Council member and floodplain resident
- Alys Lawson, Council member and floodplain resident
- Linda Vereen, Asst. City Administrator, Public Information Officer, floodplain resident
- Jason Collins, Director of Planning
- Ralph Bussey, Building Official and floodplain resident
- Jerry Barnhill, Director of Public Works

1. Introduction

Background. In September 1999, Hurricane Floyd caused widespread wind and flood damage along South Carolina's coastal counties. Horry County was the hardest hit. The City of Conway escaped much of the wind damage, but was subject to three successive and different types of flooding. The County was declared a disaster area by the President.

On September 27, the Conway City Council passed a resolution that set four policies:

1. Keep the City in good standing in the National Flood Insurance Program to ensure that all residents can obtain financial assistance and flood insurance to protect their properties from flood damage;
2. Not allow any reconstruction or reoccupation of flooded buildings or homes until the City Building Official or his duly authorized representative has inspected the site and issued a building permit.
3. Carefully develop a mitigation plan for the affected area after a review of all options (including flood control, reconstruction, elevation, floodproofing and relocation) based on building conditions, the desires of the property owners, and funding sources that are available to assist the property owners; and
4. Assist residents with information on relocation and other flood protection measures and help them obtain financial assistance.

Purpose. This paper is the first part of the mitigation plan called for in item 3. It is an interim report with recommendations for short-term mitigation measures that can be incorporated into the recovery and reconstruction efforts following the flood.

It is important to define "mitigation." The Federal Emergency Management Agency (FEMA) defines mitigation as "sustained action taken to reduce or eliminate long-term risk to people and their property from hazards and their effects." Mitigation does not mean controlling or stopping flooding. It means doing all that can be done to minimize the impacts of flooding.

There are a variety of mitigation strategies and measures. Some will work while others won't, depending on the hazard and the resources available to implement the measures. Determining what mitigation strategies and measures are best for an area is done through a planning process. During this process, the various hazards are inventoried, the full range of possible measures are reviewed, and the most appropriate and affordable ones are recommended for implementation.

The time following a flood offers a special opportunity for mitigation planning. Certain measures, such as floodproofing, can be incorporated into buildings while they are being repaired. In some cases, buildings are so badly damaged that it makes economic sense to remove them from the path of flooding. A complete plan will be provided later that will include both these short-term recommendations and more long-term recommendations.

Mitigation Planning Committee. The September 27 Resolution created a Mitigation Planning Committee. It also authorized an application for a mitigation planning grant from the state Department of Natural Resources and a planning contract with French & Associates, Ltd.

The Committee was charged to:

1. Collect data on building conditions, the desires of the property owners, and funding sources for reconstruction and redevelopment in the flooded area;
2. Recommend reconstruction and redevelopment policies and procedures to be followed by the City;
3. Identify particularly hard hit areas that could be designated as target areas appropriate for acquisition, clearance and conversion to open space;
4. Prepare a post-flood hazard mitigation plan for the City that designates target areas and recommends mitigation measures appropriate for the flood hazard facing the City; and
5. Keep the public informed of its deliberations and recommendations.

Most of the Committee members had flooded homes, but they took time out from their own recovery efforts to work on the plan. Meetings were held on October 4, 14 and 17. Committee members also attended the public meetings on October 5 and 16. A subcommittee on the ordinance revisions met on October 7.

Mitigation planning process. The Planning Committee set the directions and policies for this planning effort. City staff, particularly the Building Department, the Public Information Officer and the Grants/Special Projects Coordinator, implemented those policies and inspected the flooded properties. The team of French & Associates did the legwork of data collection, research, analysis and draft findings. This team also drafted public information materials, handouts and this report.

This initial planning effort focused on the short-term concerns of reconstruction and redevelopment of the flooded area. Four factors guided this effort:

- The flood hazard
- The condition of the flooded properties
- The desires of the property owners
- Funding sources that can assist the property owners

These four factors comprise the next four chapters.

2. The Flood Hazard

Conway's drainage. The City of Conway lies on relatively flat terrain. Because of this, stormwater tends to collect and drain away slowly. Ditches and storm sewers are needed to convey stormwater away from built up areas.

Two main waterways collect this stormwater runoff. The larger is the Waccamaw River which flows from the northeast and follows the City's southeastern corporate limits. Drainage from the north is collected by Crabtree Swamp which flows from the west across the northern portion of the city. It turns south at the eastern City limits, flows through two lakes and joins the Waccamaw.

Crabtree Swamp was originally a swamp. A canal was cut to improve its ability to drain the northern part of Conway. While this worked, adjacent lands are still low and subject to flooding from smaller storms.

Hurricane Floyd. On September 16, 1999, Hurricane Floyd made initial landfall across the South Carolina border into North Carolina. The category 4 hurricane was 600 miles wide and packed winds averaging 85 mile per hour. Hardest hit areas received as much as 20 inches of rain. The Conway area received over 13 inches of rainfall.

Hurricane Floyd brought three different floods to Conway. During the storm, the intense rainfall could not drain away faster than it collected, flooding yards, parks, intersections, parking lots, building entrances and low lying areas. This water drained away as the rainfall intensity decrease.

The second flooding event occurred the following day as the Crabtree Swamp watershed responded to the large rainfall. Because this is a relatively small watershed, the runoff from Floyd's rain caused water to rise quickly. Since the Waccamaw was still low, Crabtree Swamp drained quickly. Homes along the Swamp in the north part of the City were only flooded for a few hours.

The third flooding event started a few days after the storm when the runoff from the Waccamaw River watershed caused the river to rise out of its banks. Because the Waccamaw's watershed is so large and flat, it took days for the stormwater runoff to collect and flow into the river. It took days for the flood crest to travel downstream to Conway. The River backed up Kingston Lake and Crabtree Swamp, again flooding neighborhoods that were initially flooded the day after the Floyd storm.

Gage stage and elevation. Several Federal agencies have installed gages on the Waccamaw River. Crabtree Swamp is too small to warrant a gage. Each gage has its own datum. A datum is a reference level for measuring height. A gage's datum is the starting point for measuring the river's height or stage at that location. A river stage or flood stage of 15 feet on one gage is not related to stages on other gages.

The gage used by the National Weather Service for the Waccamaw River at Conway is located at the Conway Marina at the end of Elm Street. The Waccamaw River crested on September 26 at river stage 13.2, lower than originally predicted.

There is a national datum tied to mean sea level, the National Geodetic Vertical Datum or NGVD. The City’s Flood Insurance Study and Flood Insurance Rate Map use NGVD. The Conway gage’s datum is 0.65 feet below mean sea level or 0 NGVD. This relationship can be seen in the table below. The gage stage of 13.2 feet is 12.55 feet above sea level (NGVD).

Past Flood Data			
Waccamaw River at Conway			
<u>Date of Crest</u>	<u>Estimated Peak Discharge</u>	<u>Stage</u>	<u>Elevation (NGVD)</u>
October 1924	15,400	11.10	10.45
September 1928	22,000	13.40	12.75
September 1945	15,500	11.20	10.55
March 1959	8,800	8.40	7.75
July 1961	9,600	8.70	8.05
February 1973	9,900	9.00	8.35
December 1994	8,630	8.65	8.00
September 1996	12,000	9.80	9.15
February 1998	–	10.25	9.60
Base Flood	22,310	11.75	11.10
September 1999	22,400	13.20	12.55

Source: *Flood Plain Information City of Conway South Carolina*, U.S. Army Corps of Engineers, 1973 and U.S. Geological Survey

This table also shows the peak discharge, which is the amount of water in cubic feet per second that flows past the gage during the crest. It is important to note two things from this table:

1. Conway has a history of flooding. While the 1999 flood was bad, the 1928 flood was slightly higher.
2. At their peaks, the 1929 and 1999 floods carried practically the same amount of water as the base flood.

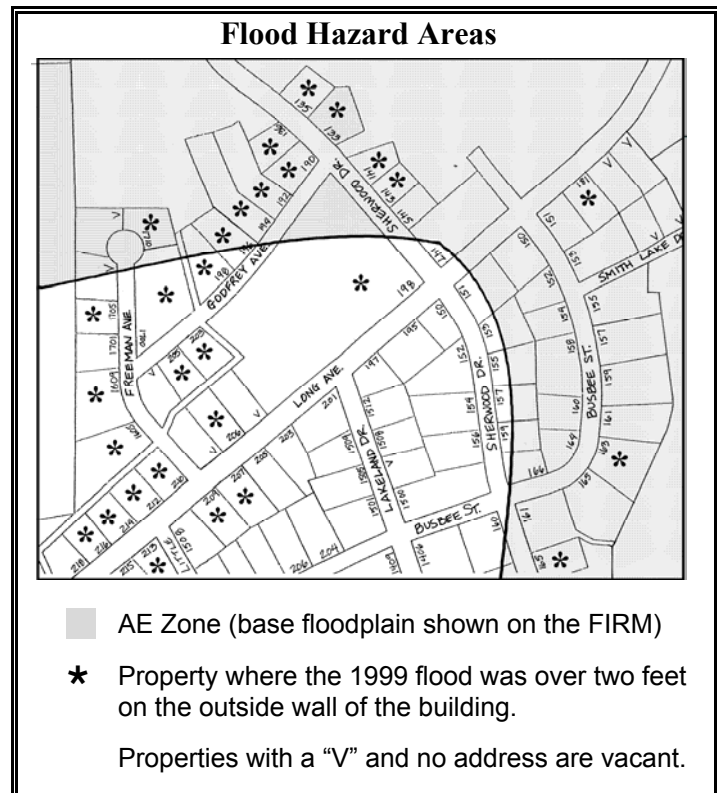
The Flood Insurance Rate Map. This second finding is important. The base or “100-year” flood is the basis for FEMA’s National Flood Insurance Program regulations. While the discharge is similar to the 1928 and 1999 floods, the base flood elevation is 1.5 feet lower. The flood elevation used for regulating floodplain construction appears too low. It underestimates the hazard. There are other shortcomings in the base flood study conducted by FEMA that will be discussed in the final mitigation plan.

The Flood Insurance Rate Map (commonly called the “FIRM”) is FEMA’s map that shows the area affected by the base flood. This area is called the “AE Zone.” All properties in the AE Zone are subject to floodplain regulations. All new buildings in the AE Zone are required to be protected from the base flood. Whenever a person receives federal financial assistance or a mortgage, home improvement loan, etc., for a building in the AE Zone, that person must purchase a flood insurance policy.

Another problem with the FIRM is that it inaccurately showed the boundaries of the AE Zone. Properties with buildings that received two or more feet of water in 1999 were plotted on the map shown on the right. There were many properties in the AE Zone that did not receive two feet of water and there were many outside the AE Zone that did.

Conclusions

1. The base flood elevation underestimates the true hazard presented by the base flood.
2. The FIRM inaccurately shows the properties affected by the base flood.
3. Many property owners were unaware of the true hazard.
4. Many property owners were not told to purchase flood insurance.
5. Buildings constructed according to the minimum FEMA standard would not be protected from the 1928 or 1999 floods.



Recommendations

1. The City should use the elevation of the 1999 flood as the basis for protecting new construction and redevelopment from flood damage.
2. The City should not rely on the FIRM to determine the flood hazard or as the basis for floodplain regulations. All properties affected by the 1999 flood should be considered in the regulatory floodplain.

These recommendations are in the ordinance that went for first reading at the October 11 City Council meeting.

3. Building Conditions

Most of the damage caused by the 1999 floods was to buildings. Some roads were flooded and sewer lift stations had to be sandbagged to protect them. This caused some expense and inconvenience, but the real impact of the flooding was to homes and businesses.

Regulatory requirements. The City's floodplain regulations are based on the requirements FEMA establishes for participation in the National Flood Insurance Program. The City's regulations are codified in its Flood Damage Prevention Ordinance (Title 5 of the Code of Ordinances Chapter 2).

While the City is free to set more restrictive standards, most of the ordinance's provisions are required by FEMA. Failure to enforce them can result in the loss of flood insurance for all residents in the City and denial of federal financial assistance for insurable buildings located in the AE Zone (including disaster assistance, VA loans, and grants).

The ordinance requires that a substantially damaged building be treated as a new building. A substantially damaged house must be elevated one foot above the base flood elevation and a substantially damaged nonresidential building must be elevated or dry floodproofed.

"Substantially damaged" means that the cost to repair and replace the damaged items equals or exceeds 50% of the market value of the building. This can be a difficult determination and can degenerate into a numbers game based on different people's opinions. It was very important that a consistent and objective system be used. Accordingly, the City opted to use FEMA's Residential Substantial Damage Estimator software. An appeals procedure was clarified so all property owners could challenge a determination by presenting appropriate documentation.

Building inspections. Initial estimates, based on the earlier Weather Service predictions, were that there were 165 flooded buildings in Conway. To properly administer the floodplain regulations, every one of them needed to be inspected and tagged before the owner begins repairs. The City Building Official called on the state association of building officials. Under a mutual aid arrangement, approximately a dozen cities and counties sent staff.

The building inspectors attended an all day training session conducted by FEMA on the Residential Substantial Damage Estimator program. The inspectors were then formed into two person teams which facilitated accurate inspections and made the process more objective.

In one week, 100 buildings were inspected, 88 of them residences, one public building and 11 businesses. The inspectors' reports were entered into the FEMA program and the results were scrutinized. The reports were scrutinized and a good number of the buildings were reinspected to verify items that did not look right. The entire process was monitored by FEMA's trainer.

Market value. Substantial damage determinations require the market value of each building. The best source for this is an appraisal prepared by a professional property appraiser experienced in the area. That, however, is too slow and too expensive for the post-disaster scene when many people need to know quickly the status of their homes.

One way to obtain this information on a large scale in a short period of time is to use property tax assessments. The FEMA trainer and the City Building Official reviewed the tax records, compared them to recent sales in the floodplain and talked with some appraisers. The County had just reassessed all properties in the City. It was concluded that the assessments were a relatively accurate measure of current fair market value.

Substantial damage reports. The FEMA program produces a four page report that lists each part of the building, its replacement cost and the percent damaged. These figures are totaled and compared to the building's value to produce a percent damaged for the property. These reports were given to the residents at the public meeting held on October 16.

Of the 100 properties, 19 were found to be substantially damaged. They are listed in the table on below.

Substantially Damaged Buildings

FIRM Zone	External Depth (to nearest 1/4 foot)	Internal Depth (to nearest 1/4 foot)	Percent Damaged	Flood Insurance	Flooded Before?	Want to Sell?
X	4.00	3.00	123.37%	n	y	y
X	3.50	1.75	120.45%	n	n	y
AE	3.50	2.50	118.48%	n	n	y
AE	3.75	3.75	98.06%	y	y	y
AE	4.00	0.25	93.03%	n	y	y
AE	1.50	0.75	92.30%	y	n	y
AE	5.75	1.25	90.96%	y	y	y
X	2.50	0.75	86.75%	n	n	y
AE	3.25	1.75	81.72%	n	y	y
AE	4.25	3.25	80.12%	y	y	y
AE	4.50	1.75	77.83%	y	n	y
AE	4.25	1.75	75.74%	y	y	y
X	4.00	2.00	70.12%			
X	3.50	0.50	66.39%	n	n	y
X	3.00	0.50	66.24%			
AE	4.25	2.00	65.23%			
X	2.00	2.00	59.55%	n	n	y
AE	3.50	0.75	51.44%	n	n	y
X	2.50	0.50	50.81%	n	n	y

Data for the first four columns are from the building inspection and Substantial Damage Estimator reports. The information in the last three columns came from the questionnaires distributed to the flooded property owners. Questionnaires were not returned for three of these properties. Percent damage can exceed 100% where the cost to replace items with new ones is worth more than the market value of an older house.

Here are some facts about the 19 substantially damaged buildings:

- All 19 substantially damaged buildings are single family homes.
- All but two are built on crawlspaces.
- 8 of the 19 properties, including the two most heavily damaged, are in the X Zone, outside the mapped floodplain.
- Most of the 19 buildings were obviously substantially damaged. Only two were close to the 50% threshold. Only one property was damaged between 40% and 50% (not shown).
- Only six were covered by flood insurance. None of the buildings outside the mapped floodplain had flood insurance.

Crawlspaces. The majority of the flooded buildings in Conway are houses on crawlspaces. Most of these had water under the flooring and were not substantially damaged. However, their heating, air conditioning and duct systems were often totaled by prolonged contact with the sediment laden water. Electrical circuits that were underwater were also in need of replacement.

These buildings were tagged by the building inspectors as either “limited entry” (yellow placard) or “inspected” (green placard). The owners were advised of the need to obtain a building permit before they can repair and reoccupy. They were also encouraged to consider relocation the damaged utilities to a higher level so future floods would not make the buildings uninhabitable.

If the buildings were elevated according to the floodplain regulations, they would still have suffered significant damage. Another flood to the same level would be 1½ feet over the finished floor (see illustration on the next page). Seven of the 19 substantially damaged buildings had less than one foot of floodwater over their lowest floors (see “internal depth” in the table on page []).

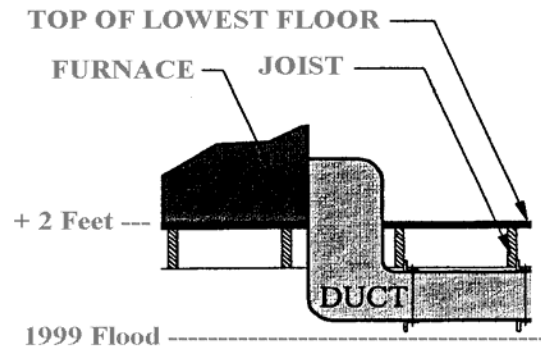
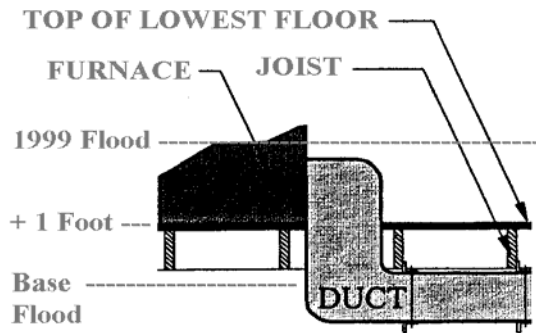
The potential for repetitive damage by similar floods in the future was the reason behind the Mitigation Planning Committee’s recommendation to amend the floodplain regulations. Instead of basing the flood protection requirement on one foot above the base flood, the Committee recommended using two feet above the 1999 flood (see illustration on the next page).

Conclusions

1. 100 buildings were flooded badly enough to warrant an inspection. 88 of these are single family homes.
2. Most of the flooded buildings were not substantially damaged.
3. 19 homes were substantially damaged.
4. Pre-flood regulatory standards would not protect new buildings from damage by a recurrence of another flood as high as the 1999 flood.

Comparison of Regulatory Standards

The pre-flood floodplain regulations required new buildings to be constructed one foot above the base flood elevation, i.e., 1½ feet below the 1999 flood.



The Mitigation Planning Committee recommended that all new construction (including repairs of substantially damaged buildings) be required to be two feet above the 1999 high water mark to better protect floors, joists and ducts.

Recommendations

1. The City Council should formally recognize FEMA's Residential Substantial Damage Estimator program as the City's policy for determining whether a building is substantially damaged.
2. The floodplain regulations should be amended to base the flood protection requirement on a minimum level of two feet above the high water mark of the 1999 flood.
3. The floodplain regulations should be amended to clarify the appeals procedures for those who are adversely affected by the regulatory standards.

These recommendations are in the ordinance that went for first reading at the October 11 City Council meeting.

4. Property Owner Interests

The second factor in the Planning Committee's deliberations was the desires of the owners of the flooded properties. Two methods were used to learn what they wanted: public meetings and a questionnaire.

Public meetings. Two public meetings were held. On Tuesday evening, October 5, the City Council chambers were packed with 100+ people. The Committee Chair and the consultant walked through the regulatory requirements and the planning process. Then questions were answered for approximately an hour more. After the meeting adjourned, individuals were able to talk one-on-one with the consultants and Committee members.

The second meeting was held on Saturday morning, October 16, at an auditorium where there was more room. More than 75 residents attended and learned about reconstruction requirements and the findings of the Committee. Again, a lot of time was devoted to questions and answers, both as a group and individually. After the public meeting, a separate session was held with the owners of the substantially damaged properties.

Several handouts were given to explain various aspects of the City's recovery and mitigation activities:

- *Repairing Flooded Buildings*
- *Advice to Flooded Property Owners*
- *Mitigation Financial Assistance*
- *Elevating and Relocating a House*

The public meetings and the handouts gave all the participants plenty of opportunities to learn about the floodplain regulations and the mitigation activities being considered by the Planning Committee. They also gave people a forum to state their concerns. At the October 16 meeting, there were no statements of opposition to the Committee's recommendations.

Questionnaire. To provide a more confidential and statistically based sense of the owners' interests, a questionnaire was distributed at the first public meeting. Copies were also left at public places, such as City Hall, and on the doors of those who did not respond by the October 8 deadline.

Sixty-three questionnaires were returned. Here are the major findings:

- 60 of the 63 respondents (95%) own houses, 3 own businesses.
- 21 (33%) had flood insurance.
- 56 (89%) had applied to FEMA to register for disaster assistance programs.

– Few of the respondents could be categorized as having low or moderate family income:

\$10,000-19,999	7
\$20,000-29,999	7
\$30,000-39,999	10
\$40,000 or more	<u>38</u>
	62

The last question was “The City Council is looking at six alternatives for a damaged structure. If financial assistance is available, which of the following alternatives would you consider for your residence/business?”

	Restore the structure to pre-flood condition - yes: 32	no: 8
Restore the structure with mitigation (examples: elevate utilities, weatherize) - yes: 29	no: 7	
	Rebuild and elevate the structure above flood level - yes: 18	no: 9
Replace the damaged structure with a new one, elevated above flood level - yes: 11	no: 13	
	Relocate the structure to another property - yes: 7	no: 18
Sell the property and buy a new property outside the floodplain - yes: 38	no: 6	

Conclusions

1. The questionnaire and the comments at the public meetings showed that the majority of the property owners were interested in mitigation measures, especially selling and moving out of the floodplain.
2. While everyone would like financial assistance, only a few of the residents would qualify for grant programs that are restricted to low and moderate income families.

Recommendations

1. There should be continuous communication between the residents and the Mitigation Planning Committee to ensure that the City’s efforts are supported by the majority of those affected.
2. Another public meeting should be held before the final mitigation plan is recommended to the City Council.

5. Funding

Six sources of financial assistance for owner-implemented mitigation measures have been identified. They are described in more detail in the City's handout, *Mitigation Financial Assistance*.

Small Business Administration (SBA) loans. In spite of its name, the SBA provides disaster loans to all types of private property. The agency will loan funds needed for projects that are required by the City's building code or floodplain ordinance, such as elevating a house. It can also fund relocation projects and refinance all or part of a prior mortgage.

SBA 20% Mitigation Loans. An SBA loan may be increased by up to 20% for flood mitigation activities since the damage was caused by a flood. There does not need to be a City code requirement.

FEMA's Temporary Housing. Temporary housing is available to an owner of a damaged home for up to three months. A renter receives two months of temporary housing. An owner/non occupant cannot receive temporary housing. The total time available for housing can be extended up to 18 months. For example, if the resident is not allowed to reoccupy a substantially damaged home and is waiting for funding for an acquisition project.

FEMA's Home Repair Program. This program is part of Temporary Housing. It aims to get people back in their homes quickly rather than pay for housing elsewhere. It covers items deemed necessary for "habitability" of a residence.

People who qualify can receive additional funds for mitigation items, such as

- relocating the main electrical panel to a higher floor
- elevating the furnace or water heater to 1 foot above the experienced flood elevation within the crawlspace or basement but not to another floor.

National Flood Insurance Program Increased Cost of Compliance (ICC). Normally a flood insurance claim will just pay for repairs to the flooded building. ICC provides an additional payment to help pay for the cost to comply with State or community floodplain management laws or ordinances after a flood event. The building must have been declared substantially damaged or repetitively damaged.

ICC will help pay up to a maximum benefit of \$15,000 for the cost to elevate, floodproof, demolish, or relocate the building. This is in addition to the building coverage for the repair of the actual flood damage covered by the standard flood insurance policy.

Private sources. The Southern Baptist, Jehovah Witnesses and other church groups have been active in the initial clean up phase in many homes. Occasionally, religious and other volunteer groups will also provide additional assistance including repairs and reconstruction. Caution must be used to make sure the best intentions are completed with the proper permits and incorporate mitigation opportunities.

Four other programs can help pay for short-term mitigation measures following a disaster. In these cases, the City is the applicant for the funds on behalf of the property owner.

Flood Mitigation Assistance (FMA). FMA is funded by the National Flood Insurance Program but is administered by the South Carolina Department of Natural Resources. Its current goal is to remove as many repetitive loss properties as possible from exposure to flood damage. FMA grants can cover up to 75% of the cost of an eligible activity.

Project grants for flood mitigation projects can be used for:

- Acquiring an insured building in the floodplain
- Relocating an insured building out of the floodplain
- Elevating an insured building above the base flood elevation
- Dry floodproofing an insured building (not if the project is a substantial improvement or repair of substantial damage to a residential building)
- Wet floodproofing (not if the project is a substantial improvement or repair of substantial damage)
- Establishing a program that provides technical or financial assistance for the eligible protection measures listed above

The community must have a flood mitigation plan to qualify for a project grant. The community must demonstrate that it has sufficient funding to cover the local share of the activity. It must be from a non-federal source such as municipal funds, Community Development Block Grant, or the property owner. Up to 12.5% of the total cost may be in in-kind services (i.e., the cost of City staff time and equipment spent on the project can be counted toward the non-federal share).

If a project is to protect a building:

- The project must be technically feasible and conform with floodplain regulations.
- The project must have a benefit/cost ratio of 1.0 or greater.
- The building must be covered by a flood insurance policy.
- FMA funds cannot duplicate disaster assistance, flood insurance claim payments or other similar federal financial assistance. Federal assistance must be deducted from the project grant amount.

FEMA's Hazard Mitigation Grant Program (HMGP). While FMA has a set annual appropriation, the level of federal funds available for HMGP is 15% of the estimated FEMA disaster assistance expenditures for a disaster. The Hurricane Floyd disaster will generate an estimated \$5 million for HMGP, which can be used anywhere in the state.

HMGP can be used to fund projects to protect either public or private property, such as elevation or floodproofing of structures and acquisition and relocation of structures from the floodplain

The 25% non-federal share of the project can be from the Community Development Block Grant or other local or private source, including in-kind services or materials and the benefiting property owner.

If a project is to protect a building:

- The project must be technically feasible and conform with floodplain regulations.
- The project must have a benefit/cost ratio of 1.0 or greater.
- FMA funds cannot duplicate disaster assistance, flood insurance claim payments or other similar federal financial assistance. Federal assistance must be deducted from the project grant amount.

The State's Interagency Coordinating Committee sets the priorities for HMGP. So far, it has been announced that priority should be given to Horry County, but the types of projects that will be given priority has not been decided.

FEMA's Section 406 Infrastructure Assistance. Section 406 is a funding source for cost-effective mitigation measures that would reduce or eliminate the threat of future flood damage to a public facility damaged during the disaster. The mitigation measures must apply only to the damaged elements of the facility. The hazard mitigation measures restore a facility beyond its predisaster condition.

A public assistance coordinator is assigned to each community. The Infrastructure Assistance is 75% federal and 25% non-federal of the project's cost. An additional 15% of project cost can be added to the project's cost to mitigate a damaged element of a facility.

Certain mitigation measures are cost-effective if they do not exceed 100% of project cost, are appropriate to the disaster damage, will prevent future damage, are directly related to the eligible damaged elements and do not increase risk elsewhere. These projects include:

- Replacement of damaged culverts and bridges that cause increased flooding upstream
- Wet or dry floodproofing of wastewater treatment plant buildings
- Dry floodproofing of damaged pump stations

Mitigation activities that are over 15% of the project cost but are not on the predetermined mitigation measures list, may be eligible. For these, the City must demonstrate through an acceptable benefit/cost analysis that the measures is cost-effective. There can be no duplication of funding between Section 406 and HMGP.

Community Development Block Grant (CDBG). The South Carolina Department of Commerce administer the Small Cities CDBG Program. The Small Cities Program gives maximum priority to activities which will benefit low and moderate income persons.

Each year the Department of Commerce establishes the programs that they will administer and funding is directed to those programs. Flood recovery and mitigation is not an identified program this year, although the Department can redirect funds. Sometimes special funding is made available following a disaster. CDBG funded building elevation projects after Hurricane Hugo. The funds can be used as the nonfederal share of a project match.

6. Short-term Mitigation Recommendations

The Mitigation Planning Committee has three overall recommendations to the City Council:

1. Voluntary floodproofing for non-substantially damaged properties. Residents and businesses should be encouraged to include floodproofing or retrofitting measures in their building repairs. These could include:

- Moving the electrical box to a level above the high water mark.
- Moving the furnace, air conditioner and ductwork to a higher level. If there's no more room in the crawlspace, the system could be replaced with one in the attic where it will be high and dry.
- Buildings on a slab foundation can be “dry floodproofed” to protect them from shallow (less than two feet deep) flooding. This involves putting a sealant on the walls and preparing shields to be put across the openings when the next flood comes.

Several of the financial assistance programs, including FEMA's Home Repair Program and SBA loans can help fund these measures.

2. Acquisition of substantially damaged buildings. The City should apply for funding to pay for 75% of the fair market value of the substantially damaged buildings and their lots. A budget for this recommendation is in the table on the next page. The figures represent approximately 20% of the funds available from the Flood Mitigation Assistance (FMA) and Hazard Mitigation Grant Programs (HMGP). The funding level represents a reasonable request from these programs.

If the funding is received, a property appraiser would prepare a formal appraisal of the pre-flood value of each lot and building. Those without flood insurance would be offered 75% of this appraised amount. For example: if a property is appraised at \$100,000, the owner would be offered \$75,000. The owner in effect absorbs the difference which is credited to the project as the non-federal share.

Those who did have flood insurance, will have the amount of the flood insurance claim payment subtracted from the property value. The offer would be 75% of the balance. For example: If the property is valued at \$100,000 and the owner received a claim payment for \$60,000, the offer would be 75% of \$40,000 or \$30,000. In the end, the owner would have received a total of \$90,000.

The property owners can decide if they need more than 75% of the appraised value. Whether they were insured or not, they can apply for an SBA loan. This can help pay the costs for a new property. For example: a property was appraised for \$100,000 and the owner receives \$75,000 for it. There is still a \$50,000 mortgage payment. The owner pays off the mortgage and uses the remaining \$25,000 plus a low interest SBA loan to purchase a new place. The loan can also help pay for new furniture, etc.

Acquisition Program Budget

Percent Damaged	Land & Bldg Assessed Value	NFIP: Percent Damaged X Value	FEMA Rep Loss	Balance Needed FMA	Balance Needed HMGP
123.37%	\$ 34,800	\$0		\$0	\$34,800
120.45%	\$ 79,000	\$0		\$0	\$79,000
118.48%	\$127,700	\$0		\$0	\$127,700
98.06%	\$140,300	\$116,941		\$0	\$23,359
93.03%	\$ 95,400	\$0		\$0	\$95,400
92.30%	\$101,800	\$79,867		\$0	\$21,933
90.96%	\$102,000	\$78,862	y	\$23,138	\$0
86.75%	\$144,200	\$0		\$0	\$144,200
81.72%	\$123,200	\$0		\$0	\$123,200
80.12%	\$106,900	\$72,801	y	\$34,099	\$0
77.83%	\$ 75,200	\$49,749		\$0	\$25,451
75.74%	\$ 97,000	\$62,448	y	\$34,552	\$0
70.12%	\$ 47,200	\$0		\$0	\$47,200
66.39%	\$ 90,400	\$0		\$0	\$90,400
66.24%	\$ 72,100	\$0		\$0	\$72,100
65.23%	\$ 95,600	\$0		\$0	\$95,600
59.55%	\$ 75,100	\$0		\$0	\$75,100
51.44%	\$108,200	\$0		\$0	\$108,200
50.81%	\$105,300	\$0		\$0	\$105,300
			Demolition	\$30,000	\$160,000
			Administrative costs	\$5,000	\$50,000
			Total funding	\$126,789	\$1,478,942
			Total grant request	\$95,092	\$1,109,207
			Total non-federal share	\$31,697	\$369,736

These figures are approximate and used for budget purposes only. Assessed values are from the Horry County Tax Assessor.

The Committee advised the property owners to carefully review their options. They have plenty of time to think about them while their houses dry out. It was underlined that the program is entirely voluntary. A property owner can opt out any time before an offer is accepted and a commitment to sell is signed.

3. Mitigation for flooded City facilities. The following City properties were flooded by Hurricane Floyd:

- Streets and bridges
- Treatment plant pump station
- 13 sewer lift stations
- City Shop Complex buildings

A preliminary review of the flooded streets and bridges concluded that to raise them above the flood level would create dams that would increase flood heights on other properties. While closed streets are a nuisance, they are preferred over aggravating flooding on others.

The pump and lift stations were protected from flooding by a tremendous sandbagging effort. Some were still flooded. They and the **City Shop Complex buildings** could be floodproofed. Such an effort may be eligible for funding under the FEMA's Section 406 Infrastructure Assistance.

City Council Action. Based on the recommendations from the previous sections and the overall recommendations in this section, the Mitigation Planning Committee recommends that the City Council take the following actions:

1. The ordinance amending the floodplain regulations and setting a new flood protection elevation should be passed. Not only will this provide better protection from future floods, it will send a message to the funding agencies that Conway is serious about reducing flood losses.
2. The City Administrator should be directed to submit applications for FMA and HMGP funds for the voluntary acquisition program.
3. The City Administrator should be directed to submit an application for Infrastructure Assistance funds to help finance floodproofing of the pump and lift stations and the **City Shop Complex buildings**.
4. The City Administrator should be directed to maintain continuous and open communications with the people affected by the flood, especially those who own substantially damaged properties.
5. The Building Official and the Public Information Officer should be directed to encourage all flooded property owners to include voluntary floodproofing measures in their flood repair and rebuilding plans.