MISSISSIPPI

Mississippi Emergency Management Agency

Floodplain Management Bureau

A Citizen's Guide: Flood Protection Measures

Produced in conjunction with your local community.

Hinds County, Mississippi

FOR MORE INFORMATION CONTACT YOUR LOCAL FLOODPLAIN ADMINISTRATOR

MEMA: 1-866-519-MEMA (6362)
MEMA Website: www.msema.org

Table of Contents

Acknowledgments:

IAFSM

Illinois Association for Floodplain and Stormwater Management

Originally developed by the IAFSM.

Section A. Flooding in Mississippi

Mississippi can flood in any season. Floods are generally caused by localized storms and rain over several days on saturated ground or by storm surge. Over the last decades, a significant flood has occurred somewhere in the state each year, often associated with a hurricane. Many of these events received a state or federal disaster declaration.

Overbank flooding: The most common and most damaging floods occur along the state's rivers and streams. This is referred to as overbank flooding. Most floods are caused by too much precipitation in the watershed. Large rivers respond more slowly to rain and runoff than do the small streams. When floods do occur on the large rivers, they can last for days or weeks.

Impact of flooding: Most of the flooding within the state is slow moving and shallow. However, this does not mean that floodwaters are safe. A car will float in less than two feet of moving water and will be swept downstream into deeper waters. Six inches of fast-moving water will knock a person off his feet.Electrocution is a cause of flood deaths, claiming lives in flooded areas that carry a live current created when electrical components short out. Floods also can damage gas lines, floors, and stairs, creating secondary hazards such as gas leaks, unsafe structures, and fires.

Health: Floodwaters carry whatever was on the ground that the upstream runoff picked up, including dirt, oil, animal waste, and lawn, farm and industrial chemicals. Pastures and areas where cattle and hogs are kept can contribute polluted waters to the receiving streams. Overloaded sewer lines can back up into low lying areas and some homes. Even though diluted by flood waters, raw sewage can be a breeding ground for bacteria, e-coli, hepatitis, and other disease causing agents.

Another type of health problem comes after the water is gone. Stagnant pools become breeding grounds for mosquitoes, and wet areas of a building that have not been cleaned breed mold and mildew. A building that is not thoroughly and properly cleaned becomes a health hazard, especially for small children and the elderly. Another health hazard occurs when heating ducts in a forced-air system are not properly cleaned after inundation. When the furnace or air conditioner is turned on, the sediments left in the ducts are circulated throughout the building and breathed in by the occupants.

Other Types of Flooding:

Flash flooding: Occurs where impervious surfaces, gutters and storm sewers increase rain to the receiving stream. Flash floods also can be caused by dam failure or the collapse of a debris dam.

Drainage problems: Flooding can also occur in streets when rainwater cannot flow away from the house or when the sewers or culverts are blocked. These problems are usually caused by heavy local rains and are often not related to overbank flooding or floodplain locations.

Buildings: Due to the relatively low velocities and shallow flood depths in some areas, the most common type of building damage inflicted by a flood is caused by soaking. When soaked, many materials change their composition or shape. Wet wood will swell and, if dried too quickly, will crack, split or warp. Plywood can come apart. Gypsum wallboard will fall apart if it is bumped before drying out. The longer these materials are wet, the more moisture, sediment, and pollutants they will absorb.

Soaking can cause extensive damage to household goods. Wooden furniture may become so badly warped that it cannot be used. Other furnishings such as upholstery, carpeting, mattresses, and books usually are not worth drying out and restoring. Electrical appliances and gasoline engines will not work safely until they are professionally dried and cleaned.

In short, while a building may look sound and unharmed after a flood, the waters can cause a lot of damage. To properly clean a flooded building, the walls and floors should be stripped, cleaned, and allowed to dry before being recovered. Several feet of drywall and insulation must also be removed. This can take days or weeks and is expensive. It is better to be prepared and prevent flood damage.

Section B. Flood Protection

New development in floodprone areas, which include hurricane prone areas increases the amount of development exposed to damage and can aggravate flooding on neighboring properties.

Development outside a floodplain can also contribute to flooding problems. Stormwater runoff is increased when natural ground cover is replaced by urban development, such as large roofed areas and parking lots. Development in the watershed that drains to a river can aggravate downstream flooding, overload the drainage system, cause erosion, and impair water quality. Remember, we all live downstream. Accordingly, most communities have enacted several ordinances to protect people from activities that may cause flooding or drainage problems.

- **Before you build on, fill, alter, or re-grade** your property, always check with your building department. A permit is probably needed to ensure that such projects do not cause problems on other properties.

- **Do not dump or throw anything into the storm sewers, inlets, ditches, or basins.** Dumping in ditches, storage basins and wetlands is a violation of federal and state regulations and local codes.

- **Every piece of trash** can contribute to flooding. Even leaves, grass clippings and branches can accumulate, plug storm drain inlets and channels, or kill vegetation and contribute to erosion. If your property is next to a ditch or storage basin, do your part and keep the banks clear of brush and debris.

- **If you see dumping or debris** in the ditches or basins, filling or construction near property lot lines, or filling or construction in a mapped floodplain without a permit placard posted, contact your building department or community floodplain manager. The debris or project may cause flooding on your property.

In accordance with your community ordinance, new construction in the floodplain must be protected from flood damage. Local regulations require that the lowest floor (including basement) of new buildings must be elevated above the base flood elevation. There are additional restrictions on filling, grading, storage of materials or building in a mapped floodway.

Local codes also require that substantial improvements to a building be treated as new construction. A substantial improvement takes place when the value of an addition, alteration, repairs or reconstruction project equals or exceeds 50 percent of the value of the existing building. In the case of an addition, only the addition must be protected if it equates to less than a 50 percent improvement. In the case of an improvement of more than 50 percent to the original building, the entire building must be protected to or above the base flood elevation.

For example, a house in the floodplain is flooded, has a fire, is hit by a tornado, or is otherwise damaged. If the value of the repairs equal or exceeds 50 percent of the value of the building before the damage, then the house must be elevated to or above the base flood level depending on the local flood damage prevention ordinance. In some communities, improvements are cumulative, so small projects add up to 50 percent over time.

These regulations are designed to protect you and your neighbors. By keeping the drainage system clear and getting the proper permits before you build, you can help prevent flooding and other drainage problems for both you and your neighbors.

Section C. Flood Protection Checklist

1. Check with your local building, planning, engineering department or emergency management office on flooding in your area:

- ☐ Where does the water come from?
- ☐ Are you in the mapped Special Flood Hazard Area or floodway?
- ☐ How bad has it been in the past?
- ☐ How bad could it be? Remember, the next flood can be worse than the last one.
- ☐ What is an appropriate flood protection level? How high should you prepare for?

2. Check out your local drainage situation:

- ☐ Does water flow away from your house or does it tend to stand next to your walls?
- ☐ Is the ditch, stream or storm sewer that takes water away clear of debris or obstructions?
- ☐ Do the downspouts from your roof gutters direct water well away from your house?
- ☐ Do you have a sump pump? If so, does it direct water well away from your house?
- ☐ If you are in a city or town, ask your local public works office if your area is served by a combined or separate sewer system.

3. Prepare for flooding by doing the following:

- ☐ Know the flood safety guidance on page 17 of this guide.
- ☐ Mark your fuse or breaker box to show the circuits to the 'at risk' areas of your structure.
- ☐ Know how to shut off the electricity and gas when a flood comes.
- ☐ Make a list of emergency numbers and identify a location to evacuate your family.
- ☐ Make a household inventory that includes video or photographs.
- ☐ Put insurance policies, valuable papers, medicine, etc., in a safe place.
- ☐ Develop a disaster response plan – get a copy of the brochure **"Your Family Disaster Plan"** from your local Red Cross chapter or check out the Red Cross website for ideas.
- ☐ Put cleaning supplies, batteries, camera, waterproof boots, etc. in a safe place.

4. Read the next section on construction and stream dumping regulations. Follow these rules, obtain permits for all of your work, and report violations to your building department.

5. Construct or install appropriate flood protection measures (see Section D. on Protecting Your Property).

6. Purchase flood insurance coverage. The entire state of Mississippi is a mapped flood zone. More than 25 percent of flood-related losses occur outside the high-risk areas that begin with the letter 'A' or 'V'.


Your
Family Disaster Plan

If your house is on a **crawlspace**:

Read the sections on elevation, barriers, and wet floodproofing.

If your house is on a **slab** foundation:

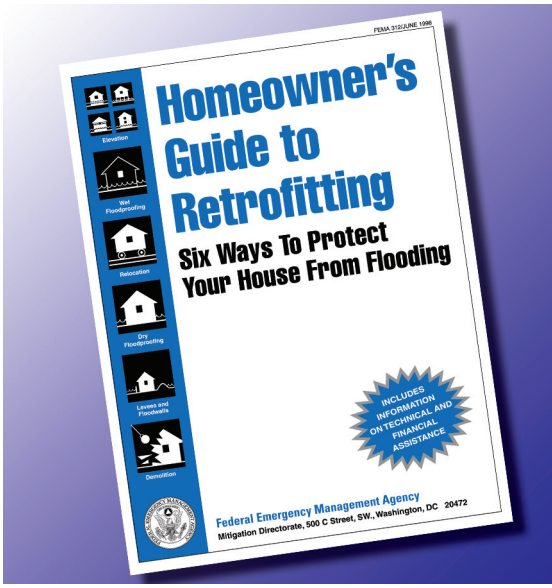
Read the sections on barriers and dry floodproofing.

If you have a **split level** or other:

Read the sections on barriers floor below ground level and wet floodproofing.

This home is elevated three feet above the BFE.

Because most flooding is shallow and slow moving, there are many ways you can protect your home, garage or other property from flood damage. Different techniques are appropriate for different types of buildings.



Additional information on flood protection is available from FEMA publications, including "**Homeowner's Guide to Retrofitting: Six Ways to Protect Your House from Flooding** and **Protecting Building Utilities from Flood Damage.**" There are also technical bulletins concerned with various topics. Both publications and technical bulletins can be viewed at the fema.gov website.

It is important to note that these protection measures are for existing / pre-FIRM buildings. There are different requirements for new / post-FIRM buildings. These measures will not relieve you from the need to buy flood insurance if your building is in a high hazard flood zone and begins with the letters 'A' or 'V'. A building is Pre-FIRM if it was built on or before December 31, 1974 or before the effective date of your community's first Flood Insurance Rate Map (FIRM). If it was built after December 31, 1974 or the effective date of the first FIRM (whichever is later), it is Post-FIRM. Improvements or repairs to a Pre-FIRM building may require permits.

Elevation

Short of removing it from the floodplain, the best way to protect a house from surface flooding is to raise it above the base flood elevation (BFE). The area below the BFE is left open to allow floodwaters to flow under the building, causing little or no damage. Regulations require elevation to be at or above the BFE whenever a new structure is constructed in the floodplain.

Barriers

This technique is for Pre-FIRM structures that have not been substantially damaged or improved. Barriers keep surface floodwaters from reaching a building. A barrier can be built of dirt or soil **"berm"** or concrete or steel **"floodwall."** The standard design for berms is three horizontal feet for each vertical foot (3:1 slope). As a result, you should plan on an area six feet wide (at a minimum) for each foot in height.

Depending on how porous your ground is, if floodwaters will stay up for more than an hour or two, your barrier will need to handle leaks, seepage of water underneath, and rainwater that falls inside the perimeter. You will need a sump and / or drain to collect the internal a groundwater and surface water. A pump and pipe is also needed to pump the internal drainage over the barrier.

Don't forget: a permit is needed for filling or re-grading a yard. There may be restrictions on bringing fill onto your site if it blocks the flow of flooding or displaces floodwater storage areas.

Precautions: Barriers can realistically only be built so high. A flood that was higher than planned for can also overtop them. Earthen berms are susceptible to erosion from rain and floodwaters if they are not properly sloped and covered with grass and maintained. Don't plant trees or shrubs on a berm (their roots can cause leaks).
Barriers can settle over time, lowering their protection levels. Some barriers have openings for driveways and sidewalks. Closing these openings is dependent on someone being available and strong enough to put the closure in place. You also need to account for water in the sewer lines that may back up under the barrier and flood inside your house.

Tip:

A berm or floodwall should be as far from the building as possible to reduce the threat of seepage and hydrostatic pressure. However, it must not interfere with drainage along your property line. Where the house is too close to the property line, you may to need place the berm next to the wall of the structure.

Dry Floodproofing

This technique is only allowed for Pre-FIRM residential structures that have not been substantially damaged or improved and for any commercial structures that would be made compliant to BFE requirements. This term covers several techniques for sealing up a building to ensure that floodwaters cannot get inside it. For dry floodproofing, all areas below the flood protection level are watertight. Walls are coated with waterproofing compounds or plastic sheeting. Openings (doors, windows, and vents) are closed, either permanently, with removable shields, or with sandbags. Many dry floodproofed buildings do not look any different from those that have not been modified. Dry floodproofing should be done to a height of 18 inches above the BFE.

Dry floodproofing is only appropriate for buildings on concrete slab floors (without basements) and with no cracks. To ensure that the slab is watertight and sound, an engineering analysis is recommended.
The maximum flood protection level is two feet above the slab, but you must add an additional foot for freeboard. The walls and slab floor were not built to withstand the type of pressures exerted by deeper water. It is smarter to let deep water into your house than to risk losing your walls or floor.**Precautions:** It is very tempting for the owner of a dry floodproofed building to try to keep the flood out if floodwaters get deeper than two or three feet. This can result in collapsed walls, buckled floors, and danger to the occupants. It is difficult to waterproof a crawlspace to protect it from underseepage.

Many commercial waterproofing compounds are designed to protect wood from rain, but they will not withstand the pressures of standing water. Some deteriorate over time, so check with the supplier to be sure the waterproofing compound is appropriate for sealing your walls from water. Installing closures and seals over doors and windows requires enough warning and having someone at the building who knows what to do.

Wet Floodproofing

This technique is feasible for Pre-FIRM multi-story residential structures that have not been substantially damaged or improved and for any commercial structures that would be made compliant to BFE requirements. Wet floodproofing means letting the water in and removing everything that could be damaged by a flood. There are several ways to modify a building so that floodwaters are allowed inside, but minimal damage is done to the building and its contents. These techniques range from moving a few valuable items to rebuilding the floodprone area.

In the latter case, 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. The furnace, water heater, and laundry facilities are permanently relocated to a higher floor. Another approach is to raise these items on blocks or platforms where the flooding is not deep. Wet floodproofing is not feasible for one-story houses because the flooded areas are the living areas.

Many people wet floodproof their garages and accessory buildings simply by relocating all hard-to-move valuables, such as heavy furniture and electrical outlets. Light or moveable items, like lawn furniture and bicycles, can be moved if there is enough warning. Fuse and electric breaker boxes should be located so you can safely turn the power off to the circuits serving floodprone areas.

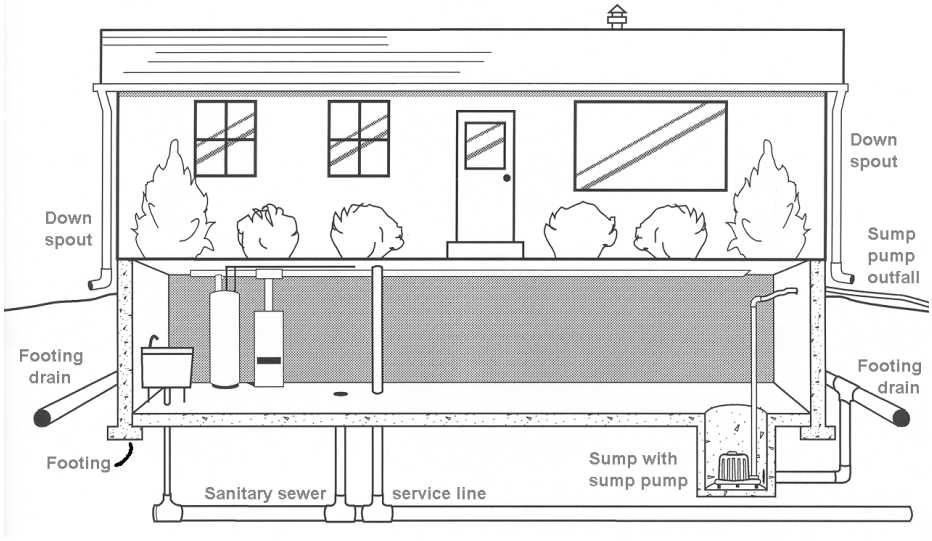
Precautions:

Moving contents is dependent on adequate warning and the presence of someone who knows what to do. Flooding a garage where there is electricity, paint, gasoline, pesticides, or other hazardous materials creates a safety hazard. There will still be a need for cleanup, with its accompanying health problems. **Moving water lines, furnaces, or electric services boxes requires a permit from your building department.**

Another approach is to wet floodproof a crawlspace. If your crawlspace has a furnace in it or is used for storage, these items could be moved to the first or second floor. Vents, which comply with local ordinances, must be placed on the foundation walls to ensure that floodwaters can get into the crawlspace to equalized water pressure.

The next four items of this Citizens Guide focus on protection measures that deal with sanitary sewer backup that occurs when the sewer main is overloaded and backs up through the sanitary service line into the house. There are four ways to stop sewer backup: floor drain plug, floor drain standpipe, overhead sewer, and backup valve. Each of these measures work for buildings with basements or below-grade floors.

Sewer backup: Sanitary sewers should not be affected by storm water because they are separate from the storm sewers. However, there can be cross connections and leaks in sewer pipes that receive inflows and infiltration which can overload a sanitary line during wet weather. With no place to go, sewers back up and flow into the lowest opening in the sewer line. Sanitary sewers back up into structures and storm sewers back up into streets.



Typical basement drain and sewer arrangement

Note: Your floor drain may or may not be connected to the sanitary sewer line

Floor Drain Backup Prevention: The simplest way to stop sewer backup is to plug the opening where it first occurs. This is at the floor drain, the sanitary sewer system's lowest opening in the house. Two inexpensive measures can be used: a plug or a standpipe. Both can be purchased at local hardware stores and are easy for the handyperson to install.

Plug: The flood drain plug stops water from flowing in either direction. Therefore, if the laundry tub overflows or other spillage occurs, it will stay in the basement unless the plug is removed. Because of this, it may be best to leave the plug out under normal circumstances and put it in place only during heavy rains.

One variation is a plug with a float. It allows water to drain out of the basement. When the sewer backs up, the float rises and plugs the drain. A float plug permanently installed will not interfere with the floor drain's normal operation. If the plug is not tight enough, pressure can eject it. Therefore, a plug is not recommended for flood depths greater than one foot.

Standpipe: A standpipe is an inexpensive alternative to a floor drain plug. When the sewer backs up, the water moves up the pipe. If properly installed, water pressure cannot build up to blow a standpipe out of the floor drain. The system works unless the backup is so deep that it goes over the top of the pipe.

Precautions: A plug left in the floor drain may contribute to a wet basement if water from a laundry tub spill or a leaky pipe cannot drain out. Float plugs are known to have been jammed open by a small amount of debris. A plug does not tell you if there is a problem in your sewer service line.

Neither the plug or standpipe stops backup from coming out of the next lower opening, like a laundry tub or basement toilet. Sealing the base of the toilet to the floor will protect you until the water backs up higher than the top of the bowl.

Because water pressure depends on the height of water in the pipes, a standpipe does not reduce the pressure in the pipes or under the floor, if the pipes leak. Because the pressure under the floor is the same with a standpipe or a plug, standpipes and plugs are only recommended for flood depths of one foot or less and for buildings with cast iron sewer lines underneath the floor.

Valve Precautions:

The ejector pump requires electricity to work, so battery backups are recommended. The basement is disrupted during constructions and the ejector pump needs periodic maintenance. **This work requires a licensed plumber and a permit from your building department.**

Overhead Sewer: An overhead sewer is generally viewed as the most effective sewer backup protection measure. It acts like a standpipe but without the shortcomings. A sump is installed under the basement floor to intercept sewage up above the flood level. From there it can drain by gravity into the sewer service line. Plumbing fixtures on the first floor continue to drain by gravity to the service line.

Unless the house is subject to overbank flooding, it is unlikely that the sewers will back up above ground level. If water does go higher, a check valve in the pipe from the ejector pump keeps it in the pipes. Backed up sewage is enclosed in the sewer pipes and doesn't overflow laundry tubs or basement toilets.

Although more dependable than a standpipe, an overhead sewer is more expensive. A plumbing contractor must reconstruct the pipes in the basement and install the ejector pump. It can cost between $3,000 - $7,000.

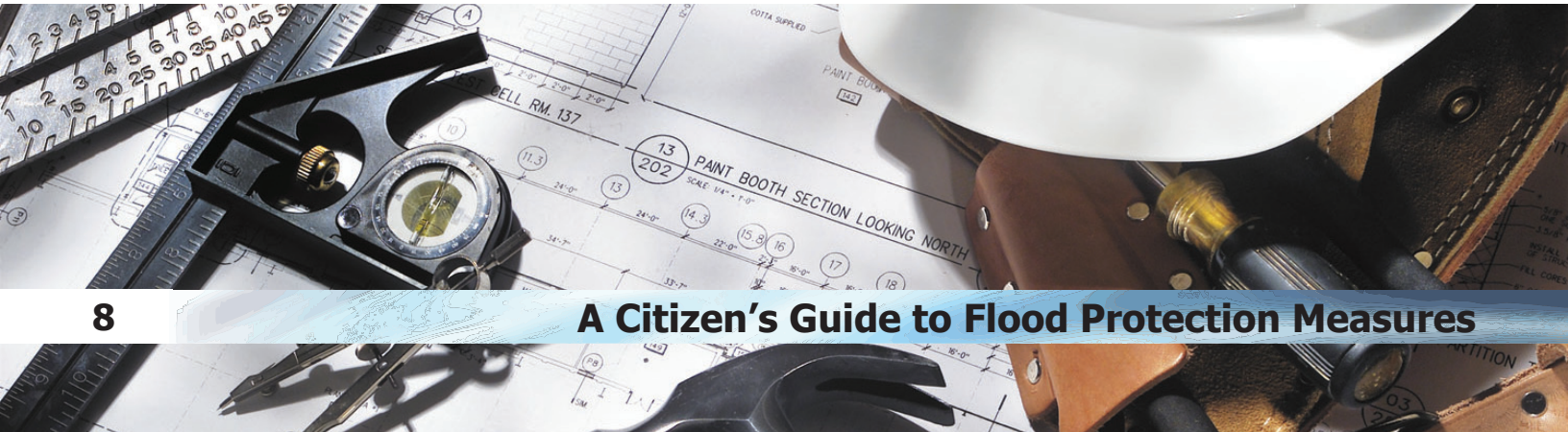
Sewer Backup Valve: A backup valve stops the water in the sewer pipes. While not as foolproof as an overhead sewer, their installations are less disruptive of the basement.

Older versions of this approach were located in the basement floor and relied on gravity to close the valve. If debris got caught in the flapper, the valve did not close tight. Because of its unreliability, valves were discouraged and even prohibited in some communities. Today's systems are more secure. They include installing two valves in line, using better, more watertight materials, or counterweights that keep the valve open all the time so debris will not catch and clog it. Larger valve systems are usually installed in a manhole in the yard, well away from the basement wall, so there is less disruption during construction and no concerns over breaking the pipes under the basement floor. The cost of this type of backup valve is comparable to the cost of an overhead sewer, in the $4,000 - $6,000 range.

Precautions: The ejector pump and the valve require maintenance. **This work requires a licensed plumber and a permit from your building department.**

Working with Contractors

Most building departments in Mississippi require that only licensed contractors do certain work. Building departments usually have a register of licensed contractors, listed by their area of expertise.
If you have been satisfied with work done by licensed local contractors, try them first. If they cannot help you, ask them for recommendations. If you must hire a contractor you do not know, talk to several contractors before you sign anything.



Reputable contractors agree that you should take the following steps:

- ☐ Check several firms and their reputations: The Better Business Bureau, Home Builders Association, or building trades council are excellent sources.
- ☐ Look out for "special deals" or contractors who want to use your home as a "model home."
- ☐ Ask for proof of insurance: Worker's compensation and general liability insurance are essential. If the contractor is not insured, you may be liable for accidents on your property.
- ☐ Ask for references: Contractors should be willing to provide names of previous customers. Call some of the customers and ask if they would hire the contractor again.
- ☐ Ask for a written estimate and check it carefully.
- ☐ Ask for a contract. Never sign a blank contract or one with blank spaces. If a lot of money is involved, it may be worth your while to have the contract reviewed by a lawyer.
- ☐ Avoid cash payments: Beware if you are asked to pay cash on the spot instead of a check made out to the contracting company. A reasonable down payment is 10% - 30% of the total cost of the project.
- ☐ Don't sign off before the job is finished: A reputable contractor will not threaten you or pressure you to sign if the job is not finished.
- ☐ Get your permits: Most plumbing work, home improvements, filling, fences, and other year work require a permit from your building department to be sure that it meets code and will not cause a drainage problem on your neighbors.
- ☐ Get your inspections: When the project is finished, make sure your contractor calls you and the building department to inspect work before it is covered over. Some will be hidden from view and you won't know if there is a problem until the next flood.
- ☐ Get help: If you are a victim of fraud or have problems with a less than reputable contractor, check with **the Mississippi Attorney General's Consumer Protection Division** (601)-359-4230 or www.ago.state.ms.us). Your building department would also like to know of problems in case it needs to revoke a license.

Insurance

Flood Insurance: The majority of homeowners' insurance policies do not cover property for flood damage, which is why flood insurance is highly recommended. Remember, even if the last storm or flood missed you and even if your home has been floodproofed, the next flood could be worse.

Almost all of the communities in Mississippi participate in the National Flood Insurance Program. Local insurance agents can sell a flood insurance policy under rules and rates set by the federal government. Any agent can sell a policy and all agents must charge the same rates.

Any house can be covered by a flood insurance policy. It does not matter if it is in the high-risk area (commonly called the floodplain) or out of it. Detached garages and accessory buildings are covered under the policy for the lot's main building. Separate coverage can be obtained for the building's **structure** and for its **contents,** except for money, valuable paper, and the like.

Some people have purchased flood insurance because the bank required it when they got a mortgage or home improvement loan. If you have a policy, check it closely. You may only have structural coverage (because that's all that banks require). **Don't wait for the next flood to buy insurance protection. There is a 30-day waiting period before National Flood Insurance coverage takes effect. Contact your insurance agent for more information on rates and coverage.**

The **structure** generally includes everything that stays with a house when it is sold, including the furnace, cabinets, built-in appliances, and wall-to-wall carpeting.

There is no coverage for things outside the house, like the driveway and landscaping. Renters can buy contents coverage, even if the owner does not buy structural coverage on the building.

Other Types of Coverage

- **Sewer backup insurance:** Several insurance companies have sump pump failure or sewer backup coverage that can be added to a homeowner's insurance policy. Each company has different amounts of coverage, exclusions, deductibles, and arrangements. Most are riders that cost extra. Most exclude damage from surface flooding that would be covered by a National Flood Insurance policy. The cost varies from nothing to up to about $75 dollars for a rider on your homeowner's premium.

- **Basements, split-levels, and bi-levels:** There is limited coverage for basements and the below grade floors of bi-levels and tri-levels. The National Flood Insurance Program defines **"basements"** as **"any area of the building, including any sunken room or sunken portion of a room, having its floor below ground level (sub grade) on all sides."** This includes split-levels and bi-levels.

- **Building or structural coverage:** These are limited to specific items needed for the operation of the building, such as a furnace, water heater, clothes washer and dryer. There is a very limited coverage for finishings, such as wallpaper and carpeting, and contents. Flood insurance only covers damage when there is a general condition of surface flooding in the area.

Section E. During a Flood

While it can take several days for the larger rivers to flood, flooding on the smaller streams, local drainage problems, and sewer backup can come with little warning. If weather conditions look like flooding, the National Weather Service issues two types of flood notices:

- **Flood watch:** flooding is possible within the area described by the notice.
- **Flood warning:** flooding is imminent or occurring.

To stay abreast of weather warnings, monitor local media and listen to NOAA Weather Radio. This is a radio station operated by the Weather Service. You can buy a special battery-operated weather radio at a local electronics store for $20-$35. It issues an alert signal if a watch or warning is being issued. You can also visit www.crh.noaa.gov/lot/nwr.php. There are several locations on the larger rivers where the Weather Service monitors river levels. Visit "real time" levels at www.crh.noaa.gov/ahps2/index.php?wfo=lot. These can tell you if the streams are rising or falling.

If you hear a siren or a severe weather watch or warning, check the latest instructions on local radio and TV stations. Once the emergency management agencies are sure that the danger has passed, they will issue an "all clear" message. Remember: You may not get a flash flood warning before flooding actually begins. Play it safe in stormy weather, and read the next section.

What You Should Do

Once you hear a flood watch or warning, you should take the following steps:

1. If the radio, television, or emergency vehicle announced what to do, **follow those instructions.**
2. **Implement your flood response plan**, if you have one. If a flood watch was issued, you can still make a flood response plan that includes the items in the **Flood Protection Checklist** on page 4.
3. If you are in the mapped floodplain or suspect you are subject to deep flooding that will get inside your house:
   - Turn off the electricity and gas.
   - Lock your doors and evacuate.
   - If you don't have a place on high ground where you can stay, listen to the radio or TV for information on public shelters.
   - If you are not in the mapped floodplain, it is unlikely that you will be flooded deeply**. If the streets are underwater, you are better off staying in your house.** Read "Flood Safety Indoors" on the back cover.

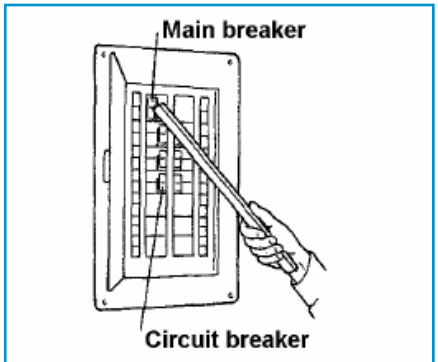
Turning Off the Utilities

If your house is in danger of flooding, turn off your utilities to prevent greater damage. This section provides directions on how you can do this safely. If you are unsure of how to do these things, contact your local electric power cooperative or service provider.

Electricity: The most important utility to turn off is electricity. You have a fuse box or a breaker box in the house. The breaker box is more common in newer buildings or if you have had some electrical work done in the last 10-20 years.

To turn off the electricity at a breaker box:

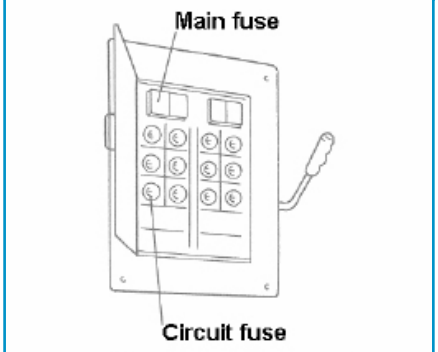
- Stand on a dry spot.
- Use a dry wooden stick or pole to open the door.
- Use the stick to push the main breaker switch to OFF.
- Use the stick to turn each circuit breaker to OFF.



To turn off the electricity at a breaker box

To turn off the electricity at a fuse box:

- Stand on a dry spot.
- If your box has a handle on the side, use a dry wooden stick or pole to pull the handle to OFF.
- Use the stick to open the door.
- Carefully pull out the main fuses.
- Unscrew and remove each circuit's fuse.



To turn off the electricity at a fuse box

Gas: Floodwaters may knock out pilot lights and silt may get into burners. To prevent a fire and safety hazard, you should turn off the gas before you leave. There is a valve next to the gas meter. If the valve handle is parallel to the pipe, the gas is on. You may need a pair of pliers or a wrench to turn the valve. Turn it 90 degrees (a quarter turn) so the handle is perpendicular to the pipe to shut the gas off.

Most gas meter valves have a hole in the handle that lines up with a hole in the valve body when the gas is shut off. This hole is used by the gas company to lock and seal the valve closed when the building is vacant. When the holes are lined up, you know that the gas supply has been shut off. If you have any doubts, play it safe and call your gas company.

To turn off the gas:

- There is a valve next to the gas meter. If it is parallel to the pipe, the gas is on.
- Use pliers or a wrench and turn it 90 degrees.
- To be sure the gas is off, write down the numbers on all the dials on the meter.
- Check the dials at least 5 minutes later. If the numbers have changed, the valve is not closed.

Fuel oil tanks: If you have a fuel oil or propane tank, turn off the fuel valve at the tank.

Gas or oil leaks: Check for leaky fuel pipes by smelling for gas. A chemical that has a disagreeable, distinctive odor is added to natural gas and propane to tell you if there is a leak. If you have any doubts, have a professional check for you. Do not use open flames. Make sure that the valve leads to each appliance is closed. If you find any pipes that moved or any area that smells like gas, brush soapy water on each pipe connection. The pressure in the pipes will make bubbles appear where there is a leak.

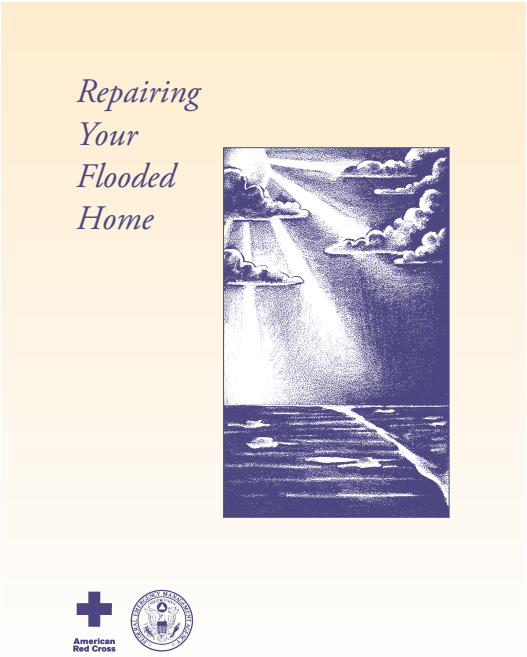
If you find a leak, turn off the gas. Unscrew the pipe connection, clean the joint, and apply pipe joint compound or pipe tape (available at hardware stores) on the threads. Screw the pieces back together tightly. Turn on the gas and check the connection again with soapy water. If you have a leak, or you are not sure your system is safe, turn off the gas and call a professional immediately.

Water: Since your water faucets are usually turned off, you shouldn't have to worry about turning all the water to the house off. However, if your washing machine is in the basement, or if the floodwaters around your house could be several feet deep, the floodwaters could get into the water lines through the appliances. If you have the time, turn off the water to the house. There should be a valve near the water meter, similar to a faucet knob. Turn clockwise all the way.

Section F. After a Flood

If you've been flooded, your home and its contents may look beyond hope, but many of your belongings can be restored. If you do things right, your flooded home can be cleaned up, dried out, rebuilt, and reoccupied sooner than you think.

You should get a copy of Repairing Your Flooded Home (ARC4477), published jointly by the American Red Cross and the Federal Emergency Management Agency. Copies of the book are available free from your local Red Cross chapter or you can see it at www.redcross.org/services/disaster/.



Ask for Help. Many people can do a lot of the clean up and repairs discussed in this guide. But if you have technical questions or do not feel comfortable doing something, get professional help. If there is a federal disaster declaration, a telephone hotline will often be publicized to provide information about public, private, and voluntary agency programs to help you recover. Here are some of the first things you can do after a flood. The next steps are explained in Repairing Your Flooded Home.

Step 1. Take Care of Yourself First

Care for children:

Watch your children closely. You can expect to see them display fear or symptoms of stress. Be understanding. Remember, they are going through a rough time too.

You and your family have been through a disaster. Your life has been disrupted and you must allow time for things to return to normal. You should recognize that the flood will take its toll on you as well as your property. You need to look after yourself and your family while you focus on cleanup and recovery.

Play it safe. The dangers are not over when the water goes down. Your home's foundation may have been weakened, the electrical system may have shorted out, and floodwaters may have left behind things that could make you sick. When in doubt, throw it out. Don't risk injury or infection.

Watch for signs of stress. Your hidden enemy is stress. Watch for signs of trouble like short tempers, getting upset over little things, having difficulty sleeping, bad dreams, aches, pains, stomach problems, apathy, and depression. These are ways your body tells you that times are difficult. Reactions to stress are common and usually temporary. If you cannot shake feelings of despair or other telltale signs of stress, get professional help.

Important Health Notes:

- Wash your hands thoroughly. This is especially important before eating, cooking or smoking.
- Confirm that the water is clean and safe. Don't drink it or wash dishes until you're sure.
- Disinfect dishes and all items that floodwaters touched.
- Watch out for fatigue. When your body is tired, you are more prone to accidents, back strain, and depression.
- Report health hazards. Call your local health department if there are animal carcasses, rats, dangerous chemicals, or other hazards on your property.

Step 2. Give Your Home First Aid

Read the safety precautions on the back cover of this guide. Each year an average of 150 people die in the United States because of floods. Many of those fatalities are due to electrocution or other accidents that occur after the floodwaters have gone down. Your first job is to make sure everything is safe. Follow these steps:

Check with your insurance agent to see if some of your cleanup and repair work is covered. If so, you may want to hire professional help for the rest of these steps.

Walk around the outside of your house and check for loose power lines and gas leaks. You can detect leaking gas by the putrid, rotten egg smell of chemicals that have been added to it to make a leak noticeable. If you find downed lines or leaks, call the power or gas company. Remove tree limbs or other trash that may have landed on or floated into the house.

Check the foundation for cracks or other damage. Examine porch roofs and overhangs to be sure they still have all their supports. Look for gaps between the steps and the house. If you see obvious damage, have a building inspector check the house before you go in.

Turn off the electricity at your house, even if the power company has turned it off. The power company may turn it back on when you're not ready. If you have to go through water to get to your fuse box or breaker box, if the boxes are wet, or if you're not comfortable with electrical matters, call an electrician. **Go inside carefully.** It may be easier to enter your house through a window if the door won't open easily. Look carefully at the ceiling before you go in to be sure it is not ready to fall. Do not smoke or use candles, gas lanterns, or other open flames until the house has been well ventilated. There may be explosive gas.

Rescue the most valuable items. Find and protect the "irreplaceable," like money, jewelry, insurance papers, photographs, and family heirlooms. Wash the mud off before they have a chance to dry. Put them in a safe, dry place like the upper story, a plastic bag, or take them to a friend's home. Wash the mud off photographs, papers, and put them in a freezer for clean up later when you have the time to do a careful job.

Keep the damage from getting worse. Open the windows and doors, if weather permits, to reduce the moisture and get rid of any gas. Cover holes in the roof, walls, or windows with boards, tarps, or plastic sheeting to keep out the wind and rain.

Check for broken or leaking water pipes. If you find any, cut off the water supply by turning off the valve at your water meter. If sewer and water lines are damaged, don't use toilets or sinks. If the water pipes are not leaking, you can use your tap water for hosing things down and cleaning. But do not drink or cook with tap water until the health department declares it safe.

Step 3. Start Cleaning

Get rid of the mud and silt. Most of the health hazards brought by a flood are in the mud and silt that is left after the water drains away. It is therefore very important to clean it out as soon as possible. This is a lot easier if you do it before the mud dries out. Follow these steps:

- First, shovel out the mud.
- Next, make sure the electricity is turned off. Remove all light bulbs from sockets that have been flooded. Throw away flooded wall switches and outlets. They should be replaced later with new ones.
- Hose the house down, inside and out. If you have an attachment that sprays soap, wash and then rinse the walls and floors. Hose the furniture, too, and other major items that got muddy.
- Double check that the electricity is off, then thoroughly hose out the electrical outlets, switch boxes, and light sockets that you opened up.
- Don't let the water sit on the floor too long. Mop it up right away, especially if your floor is particleboard or another wood product that tends to fall apart when wet.

Clean everything that got wet:

Floodwaters have picked up sewage and chemicals from roads, farms, factories, and storage buildings. Spoiled food and flooded cosmetics and medicines are health hazards. **When in doubt, throw them out.**

Follow the rest of the guidance in **Repairing Your Flooded Home**.

Step 4. File Your Flood Insurance Claim

Contact your agent to report your loss: Have ready the name of your insurance company (your agent may write policies for more than one company), policy number and a phone number and/or e-mail address where you can be reached. If you get in touch with your agent or company representative directly, they will advise you how to file your notice of claim. Otherwise, you must send a written notice to your insurance company with your policy number.

Tips:

You are encouraged to point out all damage you have noticed.

Be sure to keep a copy of the Proof of Loss and all supporting documents for your records.

Separate your property: Your policy requires you to separate damaged property from undamaged property. But don't throw anything away before an adjuster has seen it. If local officials require damaged items to be thrown out, take photos before disposing of them and keep samples for the adjuster to see. For example, cut out a piece of wall-to-wall carpet. Do all you can to protect undamaged property.

Make a list of damaged contents: If you have contents coverage, make a list of damaged property. List the quantity of each item, a description, brand name, where purchased, its cost, model and serial number, if appropriate, and your estimate of the loss amount. Attach your bills, receipts, photos and any other documents.

List areas of structural damage: As you look over your property, make a list of any areas of structural damage you want to point out to the adjuster. If you have damage estimates prepared by one or more contractors, provide them to the adjuster since they will be considered in the preparation of your repair estimate.

Contact with adjuster: Generally, your adjuster will contact you within 48 hours after receiving your notice of loss. However, depending on local conditions and the severity of flooding, it may take more time. Once the adjuster reaches you, a time will be set for the adjuster to view your property.

Adjuster visit: During the visit to your property, the adjuster will take measurements and photographs and note the flood damage. This is called **"scoping"** a loss. Your adjuster will be an experienced claims professional and will notice many points of damage you could overlook.

Damage estimate: Your official claim for damage is called a **Proof of Loss**. It includes a detailed estimate to replace or repair the damaged property. It must be fully completed, signed, and in the hands of your insurance company within 60 days after the loss occurs. In most cases, the adjuster, as a courtesy, will provide you with a suggested Proof of Loss. However, you are responsible for making sure that it is complete, accurate and filed in a timely manner.

Damage claim: The adjuster uses the knowledge gained from the visit(s) – and the documentation you provided – to complete a detailed estimate of damage. You will get a copy. You may ask the adjuster for an advance or partial payment. If you have a mortgage, your mortgage company will need to sign a building property 'advance check.'

Flood Safety

Outdoors

Do not walk through flowing water. Drowning is the number one cause of flood deaths. Currents can be deceptive; six inches of moving water can knock you off your feet. Use a pole or stick to ensure that the ground is still there before you go through an area under water.

Do not drive through a flooded area. More people drown in their cars than anywhere else. Don't drive around road barriers; the road or bridge may be washed out. A car can float in as little as two feet of water.

Stay away from power lines and electrical wires. The number two flood killer after drowning is electrocution. Electrical current can travel through water. Report downed power lines to local electric power cooperative or service provider.

Indoors

Turn off your electricity if your building is flooded. If you don't feel safe doing this, call an electrician. Some appliances, such as television sets, can shock you even after they have been unplugged. Don't use appliances or motors that have gotten wet unless they have been taken apart, cleaned, dried and inspected by a professional.

Watch for animals. Small animals like rats and snakes that have been flooded out of their homes may seek shelter in yours. Use a pole or stick to poke and turn items over and scare away small animals.

Look before you step. After a flood, the ground and floors are covered with debris including broken bottles and nails. Floors and stairs that have been covered with mud can be very slippery.

Be alert for gas leaks. Use a flashlight to inspect for damage. Do not smoke or use candles, lanterns, or an open flame unless you know the gas has been turned off and the area has been thoroughly aired out. See page 20. For more information, please contact your local gas company.

Carbon monoxide exhaust kills. Use a generator or other gasoline-powered machine outdoors. The same goes for camping stoves. Fumes from charcoal are especially deadly – cook with charcoal outdoors.

Clean everything that got wet. Floodwaters have picked up sewage and chemicals from roads, farms, factories, and storage buildings. Spoiled food and flooded cosmetics and medicines are health hazards. When in doubt, throw them out.

Take good care of yourself. Wear gloves and boots. Wash your hands frequently during clean up.