Severe Weather – Floods & Flash Floods

Flooding is the nation's most common natural disaster. Flooding can happen in every U.S. state and territory, making them one of the country's most common natural disasters. Flooding happens during heavy rains, when rivers overflow, when ocean waves come onshore (storm surge), when snow melts too fast, or when dams or levees break. Flooding may be only a few inches of water, or it may cover a house to the rooftop.

However, all floods are not alike. Some can develop slowly during an extended period of rain, or in a warming trend following a heavy snow. Others, such as *flash floods*, can occur quickly, even without any *visible* signs of rain.

It's important to be prepared for flooding no matter where you live, but particularly if you are in a low-lying area, near water or downstream from a dam or levee. Even a very small stream or dry creek bed can overflow and create flooding.

Flash floods develop quickly—anywhere from a few minutes to a few hours; from heavy rains, city drains overflowing, quick snow melt or dam/levee breaks.

> Flash floods/floods are the number one thunderstorm killer – nearly 140 fatalities each year. Most flash floods deaths occur at night and when people become trapped in automobiles.

Floods cause an average $5 billion in losses and 100 fatalities yearly—about 3800 towns are on floodplains in the US.

Listen to local weather reports for flooding information and familiarize yourself with these terms to help identify a flood hazard:

> **Flood *Watch*:** Flooding is possible. Tune in to NOAA Weather Radio, commercial radio, or television for information
> ***Flash* Flood *Watch*:** Flash flooding is possible. Be prepared to move to higher ground; listen to NOAA Weather Radio, commercial radio, or television for information.
> **Flood *Warning*:** Flooding is occurring or will occur soon; if advised to evacuate, do so immediately.
> ***Flash* Flood *Warning*:** A flash flood is occurring; seek higher ground on foot immediately.

In any emergency, *always* listen to the instructions given by local emergency management officials.

Learn about the *emergency plans* that have been established in your area by your local and state government.

Some Preventative Measures:

- Find out if your home is at risk for flood. Call your local emergency management office, building department or floodplain management office for information about flooding. Ask to see a flood map of your community. There may be a projected flood elevation for your neighborhood. This information will help you determine how much water is likely to come in. Visit www.floodsmart.gov. It takes 30 days for a flood policy to take effect. This is why you need to purchase flood insurance before flooding occurs.
- Check to see if you have flood insurance coverage. Property insurance does not typically cover flood damage. Talk to your insurance provider about your policy and consider if you need additional coverage.
- Raise your furnace, water heater, or electrical panel if they are in areas of your home that may be flooded.
    - The main electric panel board (electric fuses or circuit breakers) should be at least 12" above the projected flood elevation for your home. The panel board height is regulated by code. All electrical work should be done by a licensed electrician.
    - The furnace and water heater can be placed on masonry blocks or concrete at least 12" above theprojected flood elevation, moved to inside a floodwall or moved to a higher floor. (You have more options for protecting a new furnace. Ask your utility about rebates for new energy efficient furnaces. The rebate plus the savings in fuel costs could make the purchase feasible.)
    - Furnaces that operate horizontally can be suspended from ceiling joists if the joists are strong enough to hold the weight.
    - Installing a draft-down furnace in the attic may be an option if allowed by local codes. Some heating vents can be located above the projected flood elevation.
    - Outside air conditioning compressors, heat pumps or package units (single units that include a furnace and air conditioner) can be placed on a base of masonry, concrete or pressure treated lumber.
    - All work must conform to state and local building codes.
- Consider elevating all electric outlets, switches, light sockets, baseboard heaters and wiring at least 12" above the projected flood elevation for your home.
- You may also want to elevate electric service lines (at the point they enter your home) at least 12" above the projected flood elevation.
- In areas that could get wet, connect all receptacles to a ground fault interrupter (GFI) circuit to avoid the risk of shock or electrocution. Have electrical wiring done by a licensed electrician.
- Install "check valves" in sewer traps.
- For protection against shallow flood waters, the washer and dryer can sometimes be elevated on masonry or pressure-treated lumber at least 12" above the projected flood elevation. Other options are moving the washer and dryer to a higher floor, or building a floodwall around the appliances.
- Construct barriers, such as levees, berms, or flood walls, to stop floodwater from entering the building.
- Seal walls in basements with waterproofing compounds.
- Keep your emergency supplies kit, including water, stored in an easily accessible, waterproof place.

Preventative For Businesses

- Carefully assess **how your company functions**, both internally and externally, to determine which staff, materials, procedures and equipment are absolutely necessary to keep the business operating.
- Identify **operations critical to survival** and recovery.
- Plan what you will do if your **building, plant or store is not accessible**.
    - Consider if you can run the business from a different location or from your home.
    - Develop relationships with other companies to use their facilities in case a disaster makes your location unusable.
- Learn about programs, services, and resources at U.S. Small Business Administration (www.sba.gov).

Before & During Potential Flood Watches & Warnings

- Listen to area radio and television stations and a NOAA Weather Radio for possible flood warnings and reports of flooding in progress or other critical information from the National Weather Service (NWS).
- During a flood or flash flood Watch, be prepared to evacuate,
    - fill your car's gas tank
    - bring in outside furniture
    - move valuables to high points in your home
    - unplug electrical appliances and move them to high points
- Be especially cautious at night when it is harder to recognize flood danger.
- During a flash flood Warning, immediately seek higher ground and stay there.
- Stay away from floodwaters. If you come upon a flowing stream where water is above your ankles, stop, turn around and go another way. Six inches of swiftly moving water can sweep you off of your feet.
- If you come upon a flooded road while driving, turn around and go another way. If you are caught on a flooded road and waters are rising rapidly around you, getout of the car quickly and move to higher ground. Most cars can be swept away by less than two feet of moving water.
- Keep children out of the water. They are curious and often lack judgment about running water or contaminated water.



For predicted or slow flooding you may have time to sandbag around your home, barn(s) or other out buildings. There is a trick to effective sandbagging.

The following how-to was provided by the Walla Walla District, U.S. Army Corps of Engineers:

How To Use Sandbags

Sandbag Construction

The use of sandbags is a simple, but effective way to prevent or reduce flood water damage. Properly filled and placed sandbags can act as a barrier to divert moving water around, instead of through, buildings.

Sandbag construction does not guarantee a water-tight seal, but is satisfactory for use in most situations.

Sandbags are also used successfully to prevent overtopping of streams with levees, and for training current flows to specific areas.

Untied sandbags are recommended for most situations. Tied sandbags should be used only for special situations when pre-filling and stockpiling may be required, or for specific purposes such as filling holes, holding objects in position, or to form barriers backed by supportive planks. Tied sandbags are generally easier to handle and stockpile. However, sandbag filling operations can generally be best accomplished at or near the placement site, and tying of the bags would be a waste of valuable time and effort. If the bags are to be pre-filled at a distant location, due consideration must be given to transportation vehicles and placement site access.

The most commonly used bags are untreated burlap sacks available at feed or hardware stores. Empty bags can be stockpiled for emergency use, and will be serviceable for several years, if properly stored. Filled bags of earth material will deteriorate quickly.

Commercial plastic sandbags, made from polypropylene, are also available from most bag suppliers. These will store for a long time with minimum care, but are not biodegradable. Thus, they have to be disposed of, or will remain around for a long time. Do not use garbage bags, as they are too slick to stack. Do not use feed sacks, as they are too large to handle. Use bags about 14-18" wide, and 30-36" deep.

A heavy bodied or sandy soil is most desirable for filling sandbags, but any usable material at or near the site has definite advantages. Coarse sand could leak out through the weave in the bag. To prevent this, double bag the material.

Gravelly or rocky soils are generally poor choices because of their permeability.

Sandbag barriers can easily be constructed by two people, as most individuals have the physical capability to carry or drag a sandbag weighing approximately 30 pounds.

How to fill a sandbag

Filling sandbags is a two-person operation. Both people should be wearing gloves to protect their hands. One member of the team should place the empty bag between or slightly in front of widespread feet with arms extended. The throat of the bag is folded to form a collar, and held with the hands in a position that will enable the other team member to empty a rounded shovel full of material into the open end. The person holding the sack should be standing with knees slightly flexed, and head and face as far away from the shovel as possible.

The shoveler should carefully release the rounded shovel full of soil into the throat of the bag. Haste in this operation can result in undue spillage and added work. The use of safety goggles and gloves is desirable, and sometimes necessary.

Bags should be filled between one-third (1/3) to one-half (1/2) of their capacity. This keeps the bag from getting too heavy, and permits the bags to be stacked with a good seal.

For large scale operations, filling sandbags can be expedited by using bag-holding racks, metal funnels, and power loading equipment. However, the special equipment required is not always available during an emergency.

Sandbag Berm 4' High

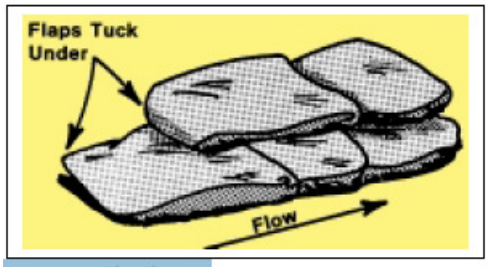
Lineal Feet	Number of Bags	
100	7,800	
200	15,600	
300	23,400	
400	31,200	
500	39,000	
1,000	78,000	
1,300	101,400	¼ mile
2,600	202,800	½ mile
3,900	304,200	¾ mile
5,300	413,400	1 mile

From US Army Corps of Engineers

Sandbag placement

Remove any debris from the area where the bags are to be placed.

Fold the open end of the unfilled portion of the bag to form a triangle. If tied bags are used, flatten or flare the tied end.

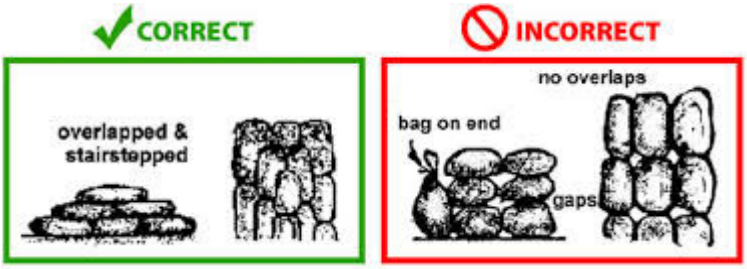


Place the partially filled bags lengthwise and parallel to the direction of flow, with the open end facing against the water flow.

Tuck the flaps under, keeping the unfilled portion under the weight of the sack.

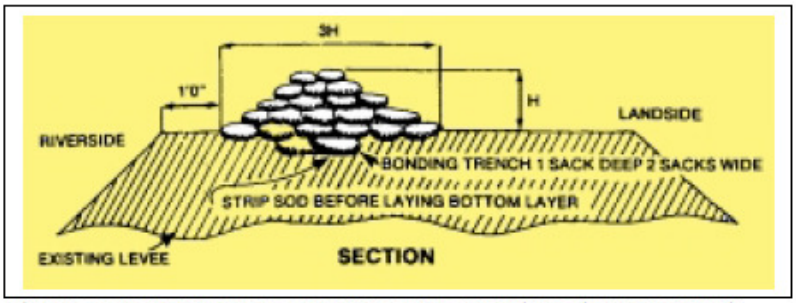
Place succeeding bags on top, offsetting by one-half (1/2) filled length of the previous bag, and stamp into place to eliminate voids, and form a tight seal.

Stagger the joint connections when multiple layers are necessary. For unsupported layers over three (3) courses high, use the pyramid placement method.



Pyramid Placement Method

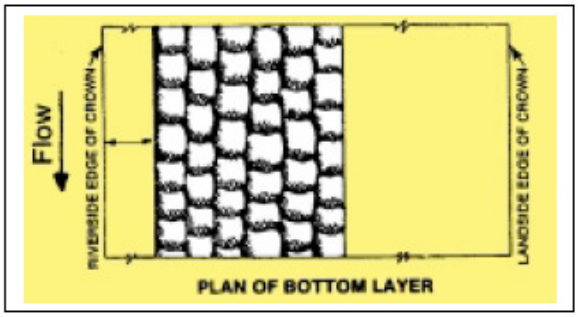
The pyramid placement is used to increase the height of sandbag protection.



Place the sandbags to form a pyramid by alternating header courses (bags placed crosswise) and stretcher courses (bags placed lengthwise).

Stamp each bag in place, overlap sacks, maintain staggered joint placement, and tuck in any loose ends. Use the following table to estimate the number of bags required:

Height above levee	Bags/100 feet
1 foot	800
2 feet	2000
3 feet	3400



Ringing boils

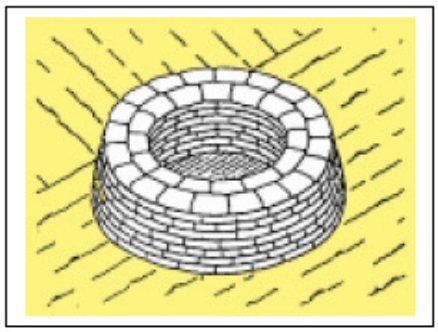
- A boil is a condition where water is flowing through or under an earth structure (such as a levee) that is retaining water.
- Free flowing water wants to move to lower elevations. If a levee is stopping floodwaters, the water may be able to find weak points to enter. This action is called "piping". If the water finds a large enough path, the flow will become visible, and is a serious threat to the integrity of the levee. Most boils occur in sand, silt, or some combination.
- A boil is found on the landward side of the levee, or in the ground past the levee toe (the exact distance varies with local conditions). Possible boil sites can be identified by free standing or flowing water (other than culverts, pumps, etc). A boil can be found only by close inspection. A prime indicator is water bubbling (or "boiling"), much like a natural spring.
- Another is obvious water movement in what appears to be standing water.
- Carefully examine the water for movement. Boils will have an obvious exit (such as a rodent hole), but the water may be cloudy from siltation, or the hole very small. If there is any movement in the water, carefully approach the site, disturbing the water as little as possible. Let the water settle, and look at the suspected site. If you see the hole, examine it carefully. If the water flow is clear, there are no problems as yet. If there is no distinct hole, the water flow is not a threat.

- Monitor the site regularly for changes, and take no other actions.

A dirty water flow indicates that the soil is being eroded by the water, and that could mean failure of the levee.

A boil ring is the best solution. The idea is to reduce the water flow until the water is flowing clear, but not to stop the water flow.

This acts as a relief valve for the water pressure; the water continues to flow, but is not eroding the material. If the water flow is stopped, the pressure will remain, and another boil will form.

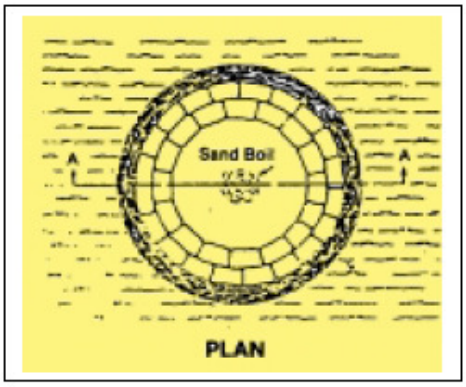


Ring the boil with sandbags, with the first bags back 1-2 feet from the boil. More, if the soil is unstable. Build the first layer in a circle, 2-4 bags across, and then build up, bringing each layer in. If possible, keep the interior face straight. Build the ring wall with the means for water to flow out, leaving a gap in the wall, or using pipes. Adjust the flows until the water slows, and becomes clear. Monitor the ring wall constantly. Raise or lower the height of the wall as necessary, maintaining a slow, clear flow.

The height should be only enough to create enough head to slow flow so that no more material is displaced, and the water runs clear.

Notes:

Do not sack a boil which does not put out material.
The entire base should be cleared of debris and scarified.
Tie into the levee if the boil is near a toe.
Use loose earth between all of the sacks.
All joints must be staggered.
Be sure to clear the sand discharge.
Never attempt to completely stop the flow through a boil.



Corps of Engineers Sandbag Policy

Local governments, flood control districts, and other government agencies, are responsible for maintaining a supply of sandbags adequate to cover anticipated emergencies. The Walla Walla District maintains a limited sandbag stockpile to augment local jurisdictions during actual flood emergencies. The Corps will issue only to agencies or governments.

Individual citizens requesting sandbags will be directed to their local government.

At the discretion of the District Commander, a portion of the District's stockpile may be loaned to meet a specific local flood emergency. Unused stocks must be returned to Walla Walla District as soon as the emergency is over. Consumed stocks must be replaced in kind, or paid for by the local interests, unless the District Commander has declared a flood emergency for that locality, in which case no reimbursement is necessary.

To request sandbags, contact your areas Emergency Operations Center or Emergency Management office.



After the flood

- Stay away from flood water. It could be contaminated, meaning contain dangerous substances.
- Stay away from moving water. It can knock you off your feet.
- Keep children and pets away from hazardous sites and floodwater.
- Stay out of the way of emergency workers so they can do their job easily.
- Avoid floodwaters, which could be contaminated or electrically charged.
- Watch out for areas in which the floodwaters may have receded, leaving weakened roadways.
- Watch out for wild animals, especially poisonous snakes that may have come into your home with the floodwater.
- Be extra careful when entering buildings that may have hidden structural damage.
- Service damaged septic tanks, cesspools, pits, and leaching systems as soon as possible. Damaged sewer systems are a serious health hazard.
- Do not or drink or cook with tap water until local authorities say it is safe.
- If you smell natural or propane gas or hear a hissing noise, leave immediately and call the fire department.
- Before returning to your community or neighborhood. Follow the advice of your local authorities.
- Make sure your food and water are safe. Discard items that have come in contact with flood water, including canned goods, water bottles, plastic utensils and baby bottle nipples. When in doubt, throw it out!
- Do not use water that could be contaminated to wash dishes, brush teeth, prepare food, wash hands, make ice or make baby formula. Contact your local or state public health department for specific recommendations for boiling or treating water in your area after a disaster as water may be contaminated.

Returning to your Community & Home

Ensure local officials have declared that it's safe to enter your community and that you have the supplies you will need. Be prepared with:

- ✓ Government-issued photo ID and proof of address
- ✓ Carry plenty of cash. ATMs may not work and stores may not be able to accept credit or debit cards.
- ✓ Plan for delays when traveling. Bring extra food, water, pillows, blankets and other items that will make the trip more comfortable. Keep the fuel tank of your vehicle as full as possible in case gas stations are crowded, out of fuel or closed.
- ✓ Carry a map to help you route around heavy traffic or impassable roads.
- ✓ Find out if local medical facilities are open and if emergency services are functioning again. Do NOT call 9-1-1 or the local emergency number to do this.

Understand that recovery takes time. Focus on the positive and have patience. Others will have similar frustrations.

Items to Take When Returning Home:

- Important phone numbers
- Bottled water and non-perishable foods
- First aid kit
- Cleanser/hand cleaning gel for personal use
- Hygiene products and toilet paper
- Insect repellent and sunscreen
- Long-sleeved shirts, long pants, sturdy waterproof boots and work gloves
- Flashlight, portable radio and extra batteries
- Cameras for photos of damage for insurance claims

There are potential hazards that need to be considered when entering your home: gas leaks, electrical hazards, structural damage, and unsafe drinking water.

- Before entering your home, look outside for loose power lines, damaged gas lines, foundation cracks or other damage.
- Parts of your home may be collapsed or damaged. Approach entrances carefully. See if porch roofs and overhangs have all their supports.
- If power lines are down outside your home, do not step in puddles or standing water.
- First, open windows and doors to allow foul odors and leaking gas to escape. Then inspect your home.
- Materials such as cleaning products, paint, batteries, contaminated fuel and damaged fuel containers are hazardous. Check with local authorities for assistance with disposal to avoid risk.
- Clean and disinfect everything that got wet.
- During cleanup, wear protective clothing, including rubber gloves and rubber boots.

Gas Leaks:

- Use your sense of smell. Do not turn on any light switches; instead, use a flashlight to check damages.
- Lanterns, torches, electrical sparks, and cigarettes could cause an explosive fire if there is a gas leak. If you find a leak, call the gas company for help.

Electrical Hazards:

- Wear rubber gloves and rubber-soled shoes to avoid electrocution. If the house has been flooded, do not turn on any lights or appliances.
- Do not operate flooded electrical appliances until they have been reconditioned. Call an electrical contractor or repair shop for further information.
- Turn off the electricity when checking electrical circuits and equipment or when checking a flooded basement.
- If the circuit breaker is in a flooded basement, the power company will need to turn off the electricity from outside the house. Make sure the circuits are dry before turning on the power.

Structural Damage:

- Watch for falling debris and check for possible damage to floors and walls. Knock down any hanging plaster. If you are not sure of the dangers the structural damage presents, call the city building inspector or engineer.
- There is a danger of foundation walls collapsing, especially if the basement is flooded. Keep an eye on the foundation walls as the water is removed. This causes a change in pressure and could cause the walls to cave in.

- To prevent radical changes in pressure, pump about a third of the water out each day. The water pressure needs a chance to equalize. Use a gas sump pump if the electricity has to remain off.

Report broken utility lines to the authorities.

For More Information

- The National Flood Insurance Program (http://www.fema.gov/business/nfip/index.shtm)
- American Red Cross: What to Do After a Flood or Flash Flood (http://www.redcross.org/portal/site/en/menuitem.53fabf6cc033f17a2b1ecfbf43181aa0/?vgnextoid=a3871c99b5ccb110VgnVCM10000089f0870aRCRD&currPage=ed081f517fc12210VgnVCM10000089f0870aRCRD)
- Your local university or college Extension Service may also have information.

Record Keeping After the Flood

Keep complete records of losses and flood-related expenses even if you don't have insurance coverage. These are helpful in applying for State or federal aid that may become available and for allowable income tax deductions. Most flood losses are deductible for income tax purposes.

This is where your Important Documents Book comes in handy as it should contain a physical inventory of your household's property and assets that can be used to compare with what you are facing after the flood.

Include records on the following:

- All actual losses, including furniture, clothes, paintings, artifacts, food, and equipment, even if you don't intend to replace them.
- All flood-related expenses. This includes the additional cost of living, if any, for your family and you, such as motel and restaurant bills, temporary rental of cars or home rental.
- Clean-up expenses, rented equipment, and depreciation of equipment purchases.
- Restoration expenses, including all labor and material purchased and other costs to return your home to its prior condition.
- Photographs of ruined homes or objects are excellent evidence for later documentation. After completing your list of losses, have two or three of your neighbors sign the list as witnesses. Make sure they inspect all damaged material, so that they can vouch for the list's accuracy.
- Try to document the value of each object lost. Include bills of sale, cancelled checks, charge account records or prior insurance evaluations. If you don't have these, estimate the value, purchase place, and date of purchase. Include this information with your list.
- After the clean-up, make an inventory of your household and document it with pictures or receipts. Keep it in a safe deposit box or in another safe place away from the area.

First inspection

- If possible, leave young children and pets with a relative or friend. If not, keep them away from hazards and floodwater.
- Beware of snakes, insects and other animals that may be in or around your home.
- Before entering your home, look outside for damaged power lines, gas lines, foundation cracks and other exterior damage. It may be too dangerous to enter the home.
- If you smell natural gas or propane, or hear a hissing noise, leave immediately and contact the fire department.
- If your home was flooded, assume it is contaminated with mold. Mold increases health risks for those with asthma, allergies or other breathing conditions.
- Open doors and windows. If the house was closed more than 48 hours, let it air it out before staying inside for any length of time.
- Turn the main electrical power and water systems off until you or a professional can ensure that they are safe. **NEVER** turn the power on or off, or use an electrical tool or appliance while standing in water.
- Check the ceiling and floor for signs of sagging. Water may be trapped in the ceiling or floors may be unsafe to walk on.
- Wear protective clothing, including rubber gloves and rubber boots.
- Be careful when moving furnishings or debris, because they may be waterlogged and heavier.
- Throw out all food, beverages and medicine exposed to flood waters and mud, including canned goods and containers with food or liquid that have been sealed shut. When in doubt, throw it out.
- Some cleaning solutions can cause toxic fumes and other hazards if mixed together.
- If you smell a strong odor or your eyes water from the fumes or mixed chemicals, open a window and get out of your home.
- Throw out items that absorb water and cannot be cleaned or disinfected (mattresses, carpeting, cosmetics, stuffed animals and baby toys).
- Remove all drywall and insulation that has been in contact with flood waters.
- Clean hard surfaces (flooring, countertops and appliances) thoroughly with hot water and soap or a detergent.
- Return to as many personal and family routines as possible.

Cleaning a house after a flood

This is a major undertaking and very important. Careful cleaning can prevent further damage to property, reduce the chance of injury, and prevent illness.

While cleaning, wear waterproof boots and gloves and open all doors and windows, and use fans to air out the building.

CAUTION: Fumes from all dry-cleaning solvents are toxic and some are flammable.

- Use only with adequate ventilation.
- Read and heed the precautions on the label.

EXTERIOR SIDING

- Clean with a non-abrasive household detergent and rinse well.
- Clean mildew with a commercial mildew wash or mildew siding cleaner.

WINDOWS

- Remove broken glass from the window frames.
- If windows are swollen shut:
  - Remove the small strip (inner stop) that holds the lower sash with a wood chisel.
  - Force the lower window up slightly to clear the sill, and
  - Remove it from the frame by pushing it from the outside into the hands of a helper. Do not push against the glass.
- Some windows may need to be replaced.

DOORS

- Do not force open a closed door. The door may be swollen tight, the flooring behind it may be buckled, or debris may have piled against it.
- Make sure the door is unlocked and then carefully push it in from the outside to avoid further damage.
- Do not attempt to plane or fit a door until the door, frame, and jamb have thoroughly dried.
- Wash doors with a mild alkali solution (5 to 6 tablespoons of baking soda to a gallon of water). A non-sudsing product is preferred.

WALLPAPER

- Badly soaked wallpaper should be removed.
- Clean unwashable wallpaper with commercial putty-like wallpaper cleaner.
- Use a mild soap or detergent and two sponges and two buckets to clean washable wallpaper.
  - One sponge is for the cleaning solution, and the other is for clear rinse water.

  - Wash the paper beginning at the top and work down to the floor.
  - Work quickly so paper does not become soaked.
- Remove grease spots from wallpaper by applying a paste of dry-cleaning fluid with cornstarch or talcum. When the dry cleaning fluid has dried, brush it off the wallpaper.

WALLS and CEILINGS

- If walls are out of plumb or ceilings are not level, inspect the underlying foundations for movement or undermining.
- If necessary, plaster walls and ceilings may be wiped gently with a slightly damp cloth.
- Stains can be painted over or covered with wallpaper once the wall is completely dry.

CARPETS

- Throw out wall-to-wall carpet and padding that has been saturated by flood waters. Usually these carpets cannot be cleaned and dried quickly enough to prevent the growth of molds and bacteria. Wrap these in plastic and take them to an area transfer station or landfill for disposal.
- Small area rugs may be taken to a laundry or cleaners and be professionally cleaned and dried.

DRYWALL

- Throw away any dry wall that is wet. Parts of damaged drywall partitions can be replaced with new material. Make vertical edge cuts at the centers of wood studs and nail each end of the repair sheet directly to a stud.

WOOD PANELING AND WOOD WORK

- Scrub wood paneling and other woodwork, including painted surfaces, with a stiff bristle brush, plenty of water, and a detergent.
- To remove mildew, scrub with a alkali solution (5 tablespoons of washing soda [salsoda or sodium carbonate decahydrate] or trisodium phosphate to 1 gallon of water).
  - If mold has grown into the wood under paint or varnish, use 4 to 6 tablespoons of trisodium phosphate and 3/4 cups of 5.25% household bleach to 1 gallon of water.
  - Rinse well with clear water. Allow wood to dry thoroughly.

WOOD FLOORS

- Do not attempt to straighten warped or buckled wood floors until they have dried out.
- Remove rugs and other floor covers to allow the floor to dry more quickly.
- Mop off excess water as soon as possible.
- After the flooring is completely dry, re-nail the floor where necessary.
- Some surface roughness may be removed by planning or sanding.
- If damage is too severe, the flooring may have to be removed and re-laid. If only the surface finish of wood flooring is damaged, it may be refinished.

TILE OR TERAZZO FLOORS

- Remove ceramic tile or terrazzo if the underlayment was wood sub-flooring. Clean and reinstall the tiles using a moisture-proof sealant or adhesive after the underlaying material has dried thoroughly or has been replaced.
- Floor tiles may loosen if the adhesives have been damaged or the underlayment or sub-flooring has warped. Remove loose pieces of tile to dry the underlayment completely, then, re-cement the tiles.

LINOLEUM FLOORS

- If sheet linoleum has bulged, carefully remove the entire sheet to allow the sub-flooring to dry completely. Carefully puncture any blisters with a small nail and hammer.
- Re-cement by forcing linoleum paste through the nail hole and weighing the linoleum down with boards or bricks.
- Remove broken and brittle linoleum with a chisel and a hoe.
- CAUTION: Older linoleum contains asbestos and needs to be professionally removed.

INSULATION

- Cut out any wet insulation and throw away. Piece in new insulation.

TNT