



Floods are one of the most common, and most costly, natural disasters. Preparing now for flood situations can minimize injury to yourself and your family and speed the recovery process.

Before a Flood

- **Be prepared for the possible disruption of services for extended periods of time, including electric, phone and local food and water sources.**
- **Prepare an emergency kit:**
 - Food, water and necessities for all members of the family to last 3 to 5 days
 - Any medications needed for family members
 - First aid kit, battery powered radio, flashlight with extra batteries
 - Sleeping bags or blankets, and extra clothing
 - Important family documents (e.g., insurance policies, emergency contact numbers)
 - Water-purifying supplies (e.g., chlorine tablets, or unscented, household chlorine bleach)
- **Family communication and evacuation plan.**
 - Know how you will contact each other if you are in separate locations or establish a location to meet.
 - Have an out-of-state relative or friend serve as the family contact person.
 - Learn the evacuation routes and locations of emergency shelters in your area.

During a Flood

- **Gather your emergency supplies.**
- **Stay informed.**
 - Listen to the radio or television for situation developments, evacuation instructions and routes, and road closures.
- **Never ignore an evacuation order for the safety of you and your family.**
- **If you have time,**
 - Disconnect electrical appliances to prevent electrical shock when power is restored.
 - Turn off the gas, electricity and water as the main switches or valves.
 - Do not touch electrical equipment if you are wet or standing in water.
- **Follow evacuation routes; expect heavy traffic.**
- **Avoid floodwaters.**
 - Water may be contaminated by oil, gasoline or raw sewage, harmful bacteria or electrically charged from underground or downed power lines.

- **Do not walk through moving water.**
 - If water is above your ankles, turn around and go another way; as little as 6 inches of water can sweep you off your feet.
- **Do not drive in flooded areas.**
 - Most flood-associated deaths are related to vehicle incidents.
 - As little as six inches of water will cause loss of control and possible stalling. A foot of water will float most vehicles. Two feet of rushing water can carry away most vehicles.
 - If flood waters rise around your car, abandon the car and move to higher ground.

After a Flood

- **Only return home after officials have declared the area safe.**
- **Cleanup safely.**
 - Wear protective clothing, (rubber gloves, boots).
 - Do not use water that could be contaminated to wash dishes, brush teeth, prepare food, wash hands, or make ice.
 - Use caution with gas powered equipment – dangerous carbon monoxide can be generated.
 - Be aware of hazards that may cause injury to you or others cleaning up, (e.g., chain saws, pressure washers, electrical or chemical hazards, heat exposure).
- **Prevent and treat injuries.**
 - Exposure to floodwaters in cold weather can lead to hypothermia.
 - Extreme heat can lead to heat stress or exhaustion.
 - Take precautions to minimize insect exposures.
- **Prevent illness.**
 - Wash hand frequently – especially after contacting flood water or contaminated items.
 - Use clean, boiled or disinfected water; if no water is available, alcohol-based hand sanitizers may be used.
- **Food and water safety.**
 - Throw away any food that may have come in contact with flood water.
 - Throw away perishable foods that have been unrefrigerated for 2 or more hours.
 - When in doubt, throw it out!
- **Use safe water (e.g., bottled, boiled or treated) for drinking, cooking and personal hygiene.**
 - Wells may be contaminated following floods.
 - Boil or treat water for drinking and cooking until authorities tell you that your water supply is safe.

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Protecting your home during flood situations can involve a variety of actions, from inspecting and maintaining the property to installing protective devices or materials.

Before A Flood

- **Determine the risk of flooding for your area**
 - The U.S. Geological Survey (USGS)
<http://water.usgs.gov/pubs/>
 - The National Weather Service
<http://www.weather.gov/>
- **Identify potential hazards on your property.**
 - Know how to turn off electrical power, gas and water supplies.
 - Secure unstable materials that are outside your home (e.g. patio furniture, fuel tanks).
 - Protect your well by using heavy plastic and duct tape to seal the well cap and top of the well casing.
- **Protect your home.**
 - Build with or install flood-resistant materials.
 - Buy and install sump pumps with backup power (e.g., battery-operated).
 - Install backflow valves or plugs to prevent flood water from entering.
 - Place furnace, water heater, washer, dryer on cement blocks above projected flood elevation.
- **Stockpile emergency building materials.**
 - Plywood, plastic sheeting, lumber, nails, hammer, saw, pry bar, sandbags, shovel.
- **Safeguard your possessions.**
 - Create a room-by-room inventory of your possessions, include receipts and photos.
 - Gather copies of critical documents, such as finance records, insurance policies.
 - Keep these lists in a secure place (e.g. safe deposit box, waterproof container).
- **Flood insurance.**
 - Obtain flood insurance
 - Most standard home owner insurance policies do not cover floods.
 - The National Flood Insurance program is available in most areas. For more information www.floodsmart.gov

During a Flood

- **Stay informed.**
 - Listen to the radio or television for situation developments and evacuation instructions.
 - Do not ignore evacuation orders.
 - Follow designated evacuation routes.
- **If you must evacuate,**
 - Ensure your family's safety first.
 - Gather your emergency supply kit; take only essential items with you.
 - Shut off electrical power and natural gas or propane tanks to avoid fire, electrocution, or explosions.

After a Flood

- **Return home only when officials have declared the area safe.**
- **Before entering - Assess the situation.**
 - Assess the impact and areas of damage to your home.
 - Identify sharp objects, dangerous materials, downed power lines, damaged gas lines, or other hazards (e.g., chemical spills).
 - If you smell natural or propane gas, or hear a hissing noise, leave immediately and call the fire department.
 - If power lines are down outside your home or buildings, do not step in any standing water.
- **Approach entrances carefully.**
 - Parts of your home or building structures may be collapsed or damaged.
 - Check if porch roofs and overhangs have all their supports.
- **Keep power off until an electrician has inspected your system for safety.**
- **Account for your inventory.**
 - Compare the list with the one prepared prior to the incident.
 - Take photographs of all damage for insurance or emergency assistance purposes.
- **Contact your insurance company or the National Flood Insurance program to file your claim.**
 - Your adjuster will need evidence of the damage to your home and possessions to prepare your claim.
 - Keep accurate records listing all clean-up and repair bills, flood-related living expenses and actual losses (furniture, appliances, clothing, etc).

- **Clean and disinfect items.**

- Walls, hard-surfaced floors, and many other household surfaces should be cleaned with soap and water and disinfected with a solution of 1 cup of bleach to five gallons of water.
- Thoroughly disinfect surfaces that may come in contact with food, such as counter tops, pantry shelves, refrigerators, etc.
- Areas where small children play should also be carefully cleaned.
- Wash all linens and clothing in hot water, or dry clean; For items that cannot be washed or dry cleaned, (mattresses, upholstered furniture), air dry in the sun, then spray thoroughly with disinfectant.
- Steam clean all carpeting. If there has been a backflow of sewage into the house, wear rubber boots and waterproof gloves during cleanup.
- Remove and discard contaminated household materials that cannot be disinfected, such as wallcoverings, cloth, rugs, and drywall.

- **Prevent carbon monoxide poisoning.**

- Alternative sources of fuel or electricity for heating, cooling, or cooking can cause carbon monoxide to build up in a home, garage, or camper.
- Never run a gas-powered equipment (generator, pressure washer, engines) inside, even if the doors or windows are open.
- Avoid running gas-powered equipment near open windows, doors, or vents where exhaust can enter indoor enclosed areas.

- **Clean up safely.**

- Be aware of hazards that may cause injury to you or others cleaning up - these can include chain saw or pressure washer injuries, electrical or chemical hazards, heat exposure.
- Have an electrician check the house's electrical system before turning the power on again.
- If the house has been closed up for several days. Enter briefly to open doors and windows to let the house air out for awhile (at least 30 minutes) before you stay for any length of time.
- Presume your home has been contaminated with mold.
- Use fans and dehumidifiers to remove excess moisture. Fans should be placed so air blows outwards rather than inwards.
- Have your home heating, ventilating, and air-conditioning (HVAC) system checked and cleaned by a maintenance or service professional who is experienced in mold clean-up before you turn it on.

- **Prevent mold growth.**

- Remove any items that have been wet for more than 48 hours, that cannot be thoroughly cleaned and dried.
- Porous items include carpeting, carpet padding, upholstery, wallpaper, drywall, floor and ceiling tiles, insulation material, some clothing, leather, paper, wood, and food --can remain a source of mold growth and should be removed from the home.
- When in doubt, take it out!

- **Well and pump inspection.**

- There is a danger of electrical shock from any electrical device that has been flooded.
- Do not turn on the pump and electrical system until equipment has dried and been checked by a qualified electrician, or well professional.
- Swiftly moving flood water can carry large debris that can damage the hardware, construction or casing of wells and pumps.
- Flood water could have also entered the well and contaminated it.
- Well water should be sampled and tested for contamination prior to use for drinking, cooking or cleaning.
- Call you state laboratory certification officer or contact the Safe Drinking Water hotline (1-800-426-4791) <http://www.epa.gov/safewater/hotline/index.html>

- **Septic systems.**

- Septic systems should not be used immediately after floods; drain fields will not work until water in the soil absorption field is lower than the water level around the house.
- Floodwater may have also broken septic lines. Have your septic tank professionally inspected and serviced; septic tanks may contain dangerous gases.

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Floods can impact animal health as well as human health. Make plans for your pets in the event you will need to evacuate your home or farm.

Before a Flood

- **Create an emergency supply kit for your pet:**
 - Leash, collar
 - Transport carrier
 - Food and water (5-7 day supply)
 - Any medications
 - Vaccination history, rabies certificate
 - Waste disposal supplies
 - A blanket
 - Favorite toy
 - Your veterinarian's contact information
 - Special supplies for pets such as birds, pocket pets or reptiles (e.g., heat lamps)
- **Make sure pets are current on all vaccinations.**
- **Develop an evacuation plan for your pets.**
 - For public health reasons, evacuation shelters will not be able to accept animals.
 - Identify pet friendly locations in case of the need to evacuate. www.petswelcome.com
 - Check with boarding facilities, pet-friendly hotels, veterinary clinics, or relatives or family friends outside the impacted area.
- **Identification.**
 - All animals should have some sort of identification (collar with tag, microchip).
 - Take a photo of the pet and keep it with the medical records.
 - Include any proof of ownership materials (e.g., registration, proof of purchase, adoption records, microchip information).

During a Flood

- **Bring your pets inside immediately.**
- **AVOID leaving pets behind.**
 - If there is no other alternative, leave them loose inside your home with food and plenty of water.
 - NEVER leave your pet chained outside or enclosed in a way they cannot escape danger.
 - Place a notice on the outside of your home with the location and type of pets inside, their names, your contact phone number and the name and number of your veterinarian.

After a Flood

- **Be aware that a pet's behavior may change before, during and even after a disaster.**
- **Familiar scents and landmarks may be altered and your pet may become confused and lost.**
 - In the first few days after the disaster, leash your pets when they go outside.
 - Always maintain close contact.
 - Reintroduce food in small servings, gradually working up to full portions, especially if animals have been without food for a prolonged period of time.
- **Pets can be poisoned by exposure to harmful chemicals, products, or foods.**
 - If you suspect that your pet has been poisoned, call the Animal Poison Control Center toll-free 1-888-426-4435 (calls answered 24 hours a day, every day).

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Floods are one of the most common, and most costly, of natural disasters. Preventative actions can help to protect your business, ensure the safety of your employees, minimize damage to your property, and speed the recovery process.

Before a Flood

- **Determine the risk of flooding for your area.**
 - The U.S. Geological Survey (USGS)
<http://water.usgs.gov/pubs/>
 - The National Weather Service
<http://www.weather.gov/>
- **Have a business emergency/continuity plan.**
 - Determine the processes and equipment needed to keep your business open -- from answering the phones, to tracking finances, to distributing your product or service.
 - Maintain an inventory of all equipment used by your business.
 - Keep copies of all paper and computer files in an accessible but off-site location.
- **Flood insurance.**
 - Most standard insurance policies do not cover flood damage and the resulting loss of income.
 - The National Flood Insurance program (www.floodsmart.gov) is available in most areas.
 - Consider obtaining business interruption insurance.
- **Plan for continuity.**
 - Store extra supplies offsite.
 - Make a plan for a temporary location if your company is forced to relocate.
 - Have a plan for alternate communication with employees, customers, suppliers during recovery.
 - Develop a plan to maintain payroll.
 - Obtain alternate power source.
- **Prepare your property.**
 - Have electrical equipment (furnace, water heater) and components (e.g., switches, sockets, circuit breakers) raised at least 12 inches above the projected flood elevation.
 - Move electronic equipment (computers), furniture, valuables and important documents to a safe place.
 - Buy and install sump pumps with backup power (e.g., battery-operated).
 - Anchor any fuel tanks or any other unsecured items outside your business.
- **Prepare your employees.**
 - Inform employees of the business emergency plan; review it with them regularly.
 - Ensure employees know the exit locations for the building.

- **Develop a post-disaster communication strategy.**
 - Create a phone tree and designate individuals who will initiate the communication process.
 - Designate a contact person to communicate with customers and vendors.
- **Make plans regarding customers.**
 - Determine the likelihood of customers being present if a flooding situation occurs.
 - Have an emergency plan for customers; review it with employees regularly.
 - Label exit locations for the building.
- **Make plans for suppliers.**
 - Maintain a contact list of your suppliers.
 - Make a plan for supplies in the event of a flood.

During a Flood

- **Stay informed.**
 - Listen to the radio or television for situation developments and evacuation instructions; Do not ignore evacuation orders.
- **If evacuation appears necessary,**
 - Ensure employee and customer safety.
 - If there is time, turn off all utilities at the main power switch and close the main gas valve.

After a Flood

- **Return to your business only when officials have declared the area safe.**
- **Before entering - Assess the situation.**
 - Survey the outside and inside of the building for contaminated water, structural damage, sharp objects, downed power lines, damaged gas lines, or other hazards (e.g., chemicals).
 - If you smell natural or propane gas or hear a hissing noise, leave immediately and call the fire department.
 - Approach entrances carefully. Parts of your building may be collapsed or become damaged.
- **Clean up safely.**
 - Wear protective clothing, (rubber gloves, boots).
 - Use caution with gas powered equipment – dangerous carbon monoxide can be generated.
 - Report any hazardous materials (e.g., fuels, chemicals) that have leaked to emergency response personnel.

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Protecting your farm during flood situations can involve a variety of actions, from inspecting and maintaining the property to installing protective devices or materials.

Before a Flood

- **Determine the risk of flooding for your area.**
 - The U.S. Geological Survey (USGS)
<http://water.usgs.gov/pubs/>
 - The National Weather Service
<http://www.weather.gov/>
- **Identify potential hazards on your property.**
 - Know how to turn off electrical power, gas and water supplies
 - Secure structurally unstable materials (e.g. lumber, logs, equipment, fuel tanks).
 - Keep surface water out of your well by sealing the well cap and top of the well casing with heavy plastic and duct tape.
- **Prepare your buildings.**
 - Build with or install flood-resistant materials.
 - Raise electrical components (e.g., switches, sockets, circuit breakers) above the projected flood elevation.
- **Stockpile emergency building materials.**
 - Plywood, plastic sheeting, lumber, nails, hammer, saw, pry bar, sandbags, shovel
- **Make a list of your farm inventory, include:**
 - Livestock (species, number of animals)
 - Crops (acres, type)
 - Machinery and equipment (make, model #)
 - Hazardous substances (e.g., pesticides, fertilizers, fuels, medicines, other chemicals)
- **Identify areas of higher ground to relocate valuable or hazardous materials.**
- **Obtain flood insurance.**
 - The National Flood Insurance Program is available in most areas. For more information www.floodsmart.gov

During a Flood

- **Stay informed.**
 - Listen to the radio or television for situation developments and evacuation instructions.
 - Do not ignore evacuation orders.
- **If you must evacuate,**
 - Ensure your family's safety first.
 - Follow designated evacuation routes.

- **If you have time,**
 - Turn off all utilities at the main power switch and close the main gas valve.
 - Leave building doors and window open at least 2 inches to equalize pressure and help prevent buildings from shifting.
 - If possible, move motors and portable electric equipment to a dry location.

After a Flood

- **Return home after officials have declared the area safe.**
- **Before entering - Assess the situation.**
 - Survey damage to the outside and inside of your home and buildings, equipment, livestock and crops.
 - Identify areas of contaminated water.
 - Identify sharp objects, downed power lines, or other hazards (e.g., chemical spills).
 - If you smell natural or propane gas, or hear a hissing noise, leave immediately and call the fire department.
 - If power lines are down outside your home or buildings, do not step in any standing water.
- **Approach entrances carefully.**
 - Building structures may be collapsed or damaged.
- **Stay safe during cleanup.**
 - Wear protective clothing, including rubber gloves and rubber boots.
 - Use caution with gas powered equipment – dangerous carbon monoxide can be generated.
- **Account for your inventory.**
 - Compare with the list prepared prior to the incident.
 - Note any livestock losses.
 - Check machinery and equipment for damage.
 - Take photographs of all damage for insurance or emergency assistance purposes.
 - Report any hazardous materials (e.g., fuels, agricultural chemicals) spills or leaks to emergency response personnel.
- **Flooded farm machinery.**
 - Floodwater may permanently damage machinery; mud and silt may be deposited.
 - Thorough cleaning, drying and lubrication of parts is necessary.
 - Work with your mechanic to properly recondition equipment before use.

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Flooded fields can lead to loss of top soil as well as damage to crops. While little can be done prior to flood situations, prompt action after the flood may help minimize the impact to your crops.

Before a Flood

- **Open all drainage ditches.**
- **Remove any debris from fields and pastures that could injure plants or damage machinery.**

After a Flood

- **Assess your crops.**
 - Determine how much of your crops are water logged (only roots flooded) and fully submerged (entire plants under water).
 - Corn can typically last 12 hours completely submerged if the temperature is above 70 degrees, but up to four days if the weather is cooler.
 - Soybeans can typically last 48 to 96 hours completely submerged. Cooler temperatures allow for a longer survival time.
- **Factors affecting the extent of crop damage include:**
 - Degree of submergence of plant
 - Weather conditions prior to the flood situation (e.g., temperature)
 - Plant growth stage and height – younger stages are more vulnerable
 - Mud disposition, which stresses plants and reduces photosynthesis
 - Some root death will occur – while new root growth will occur, it will be stunted and therefore subject to greater injury if a dry summer follows
- **Be prepared with a rotary hoe to break up the dense surface crusts that may form as soil dries to aid emergence of plants.**
- **Flooding can cause significant losses of soil nitrogen.**
 - If fertilizer had been recently applied to the soil surface, substantial nitrogen loss may occur in runoff.
 - If fertilizer was applied several months ago, loss can occur by denitrification or leaching.
 - Signs of nitrogen loss in plants include the lower leaves yellowing as well as inverted “V” yellowing pattern of leaf tips.
- **Contact your crop insurance agent to discuss coverage.**
 - The Farm Service Agency provides assistance for natural disaster losses, resulting from drought, flood, fire, freeze, tornadoes, pest infestation, and other calamities for both insured and uninsured producers.
 - For more information, www.fsa.usda.gov

- **Monitor for diseases.**
 - Flood conditions can increase disease incident in surviving plants.
 - Scout the fields often to determine if and when problems occur.
- **Do not use flood damaged or wet feeds until tested.**
 - Flood damaged grain always need to be destroyed due to the contaminates that can enter through the water.
 - Good grain on top of the flooded grain MUST be removed from the top or side, not through the damaged grain.
 - Rain damaged grain is likely to contain toxins, as warm wet conditions are ideal for mold growth. Soaked grain will spoil within a day or two at high moisture and summer temperatures.
 - Rain damaged grain can be saved by drying and cleaning. It must be tested for mycotoxins before use.
 - Wet seed grain probably will not be suitable for seed, as wetness causes the seed to germinate.
- **Do not feed heated, molded or sour feeds or moldy legume hays (alfalfa, clover) to any livestock.**
- **Replant considerations. Evaluating whether to replant will depend on:**
 - The existing plant stand
 - Distribution of the plant stand
 - Calendar date
 - Weed situation
 - Seed availability of earlier maturing hybrids
 - Cost to replant
 - Yield potential of the existing crop

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Floods can impact animal health as well as human health. Make plans for your livestock and horses in the event you will need to evacuate your farm.

Before a Flood

- **Maintain an inventory.**
 - Keep a current list of all animals on your farm.
 - Include their location and any records of vaccinations, testing and ownership.
- **Have identification for all animals.**
 - Make sure animals have some form of permanent identification (e.g., ear tags, tattoos).
 - Ensure animals are properly vaccinated before exposure to floodwaters.
- **Prepare an evacuation kit.**
 - Handling equipment (e.g., halters, nose leads)
 - Water, feed, and buckets
 - Medications
 - Tools and supplies needed for manure cleanup
 - Safety and emergency items for your vehicles and trailers
 - Gas powered generators
- **Make evacuation arrangements.**
 - Determine possible evacuation areas – higher elevation, alternate production facilities (e.g., temporary milking parlors).
 - Determine several routes to these locations.
 - Identify alternate water or power sources.
 - Locate and prearrange feed and water delivery, needed equipment (e.g., milking) and services (e.g., milk pickup).
 - Have well maintained backup generators for livestock production operations.
 - Make transport arrangements (e.g., trucks, trailers) with experienced handlers and drivers.
 - Condition animals to being loaded and transported.
- **Ensure a safe environment.**
 - Assess the stability and safety of barns and other structures.
 - Remove dead trees or objects from fields or livestock areas that may serve as potential debris during a flood situation.

During a Flood

- **Be aware animal behavior may change before, during and even after a disaster.**
 - If you must evacuate, ensure your family's safety first
 - If there is time - move or evacuate livestock and horses to higher ground.

- **AVOID leaving animals behind.**
 - If there is no other alternative, keep gates or buildings open so they can escape high water.
 - Provide access to safe free-choice food source, clean water and the safest living areas possible.
 - Do not rely on automatic watering systems, because power may be lost.
 - Establish escape routes to safe locations (higher elevation).
 - Place your contact number and the name and number of your veterinarian on the building.

After a Flood

- **Assess your animals and building structures.**
 - Survey damage to your barns and other structures; assess the stability and safety.
 - Examine your animals closely; contact your veterinarian if you observe injuries or signs of illness.
- **Return animals only after the threat has passed and the safety of buildings or the area has been assessed.**
 - Release animals in a safe and enclosed area until familiarity of the surroundings can occur.
- **Provide non-contaminated feed or water.**
 - Provide clean, uncontaminated water.
 - Do not feed flood damaged or moldy feed or hay.
 - Do not use any feed or forage that may have been contaminated by chemical or pesticides.
- **Animal disposal.**
 - Record any animal deaths.
 - Check with your state or local authorities for proper disposal methods for animal carcasses.
- **Prevent illness.**
 - Keep animals away from flood waters which may contain harmful bacteria or chemicals.
 - Monitor animals daily for signs of illness.

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