FLOODS

A flood occurs any time a body of water rises to cover what is usually dry land.

Floods are the most frequent and costly natural disasters in terms of human hardship and economic loss. As much as 90 percent of the damage related to all natural disasters (excluding droughts) is associated with flooding.

Floods have many causes:

- Heavy rain, which may occur over several days or as intense rainfall over a short period of time.
- Spring snowmelt or ice or debris jams that cause a river or stream to overflow its banks and flood the surrounding area.
- Dam and levee failure. While dam and levee failure occurs relatively infrequently, it can be a risk, especially following prolonged heavy rain, such as occurred throughout the Midwest in 1993.
- Low absorption or no soil percolation. As land is converted from fields or woodlands to roads and parking lots, it loses its ability to absorb rainfall. Urbanization increases runoff two to six times over what would occur on natural terrain. In areas with rocky geology, rainfall or snowmelt cannot be absorbed. The result can be flash flooding with little or no warning.

Each of these causes can be factored to several key elements.

- Rainfall intensity is the rate of rainfall (in inches per hour).
- Duration is how long the rain lasts.
- Topography is the overall configuration of the of the Earth's surface, including natural and manmade features.
- Soil conditions include the type of soil, the amount of moisture in the soil, and the amount of soil relative to the amount of rock.
- Ground cover includes vegetation as well as manmade covers. Ground that includes larger amounts of vegetation can also absorb greater amounts of water. Ground that is paved or has structures on it will cause runoff.

FLOODS (CONTINUED)

The reasons floods pose such a risk are that:

- Heavy rainfall can exacerbate problems with runoff, absorption, and flood-control measures.
- Riverine flooding can potentially inundate a city or downstream areas when protection fails.
- In rocky areas, lack of absorption can cause flash flooding.

Every major drainage basin in the United States has a floodplain surrounding it. Two areas where inundation is very likely are:

- Along the Mississippi River.
- The central valley of California.

Most areas of the United States are subject to some degree of flooding.

Floodplain areas are widespread in the South Atlantic, the Gulf Coast, and the Missouri and Arkansas River basins.

Note that there are almost 4,000 communities that are at risk of flooding, and more than 100 million people are exposed.

The costs associated with flooding are increasing as more development occurs in coastal areas and floodplains. Each year, flood losses and damages reach into the billions of dollars. During the 10-year period from 1992 to 2001, floods cost, on average, $4.1 billion annually. The long-term (1971 to 2000) annual average lives lost is 127 per year, primarily as a result of flash floods.

Floods are measured according to the height that the waters reach. Their magnitude is based on the chances that water levels will equal or exceed a certain point on a recurring basis. Intervals of probability are classified into hazard zones.

FLOODS (CONTINUED)

FLOOD PREPAREDNESS

It is important to:

- Know the flood risk in the area, including the elevation above flood stage and the history of flooding in the area.

- Prepare a flood evacuation plan, and practice the route. Be aware of which roads become flooded and which remain passable. The entire family should know where to go if they have to evacuate.

- Obtain flood insurance if living in a floodplain (Special Flood Hazard Area). Homeowner's policies do not cover flooding! Check with the city or county government to review the Flood Insurance Rate Maps (FIRMs). Then, check with an insurance agent to obtain coverage under the National Flood Insurance Program (NFIP).

- Keep important documents in a water-proof box. Most documents can be replaced, but some are more difficult to replace than others. Protecting them in a water- (and fire-) proof container is the safest plan of action.

- Check emergency messages using a portable radio. NWS and local officials update watches and warnings as necessary. Listen often for up-to-date information.

The best way to protect your property from flood damage is to avoid building in a flood plain unless the home is elevated and other flood protection measures are taken. If an existing home is in a floodplain, there are some steps that can help reduce potential damage.

- Elevate the furnace, water heater, and electric panel to at least one foot above the level of the floodplain (also called the Base Flood Elevation). In some areas, elevating these appliances and utilities may mean relocating them to a higher floor or even to the attic.

- Move furniture and other items to a higher level. Even if the main floor of the home is flood damaged, moving furniture and other items to a higher level will reduce flood losses.

- Install check valves in plumbing to prevent flood water from backing up into the drains of the home.

- Waterproof the basement floor and walls to prevent seepage through cracks.

FLOODS (CONTINUED)

In some cases, even these suggestions will not be enough to prevent serious damage from flooding. If you live in a floodplain, consult building professionals to see if they think they need more elaborate mitigation measures (such as elevation).

If you must evacuate, you should:

- Not walk, swim, or drive through flood waters. Learn and practice driving the local flood evacuation routes. They have been selected because they are safe and provide the best means of escaping flood waters. Flood waters move swiftly and may carry debris that can cause injuries. Remember that 24 inches of water can wash a car away and six inches of fast moving water can knock a person off his or her feet.

- Stay off bridges over fast-moving water. Fast-moving water can wash bridges away without warning, especially if the water contains heavy debris.

- Keep away from waterways. If you are driving and come upon rapidly rising waters, turn around and find another route. Move to higher ground away from rivers, streams, and creeks.

- Heed barricades. Local responders place barricades to warn of flooding ahead or to direct traffic safely out of the area. Never drive around barricades.

- Avoid storm drains and irrigation ditches. During a flood, storm drains and irrigation ditches fill quickly with fast-moving water. Walking in or near storm drains or irrigation ditches is nearly a sure way to drown.

FLOODS (CONTINUED)

Precautions to follow after a flood.

- Stay out of flooded areas. Flooded areas remain unsafe. Entering a flooded area places you—and the individuals who may need to rescue you—at risk.

- Reserve the telephone for emergencies only. Telecommunication lines (both land line and cellular) will be busy following a flood. A nonemergency call may prevent an emergency call from getting through. It is best not to use the phone unless it is necessary.

- Avoid driving, except in emergencies. Reserve the roads for those who must evacuate and for emergency vehicles.

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