

Every family should have a [Disaster Supply Kit](#) in their home. The kit will help you and your family during a disaster. In a flood, for example, you might be without electricity and the water supply may be polluted. In a heavy winter storm, you may not be able to leave your house for a few days. In times like this, you will need to rely on yourself. Your disaster supply kit will make it easier. Remember, your family will probably never need to use your disaster supply kit, but it's always better to be prepared.

Below is a picture of a Disaster Supply Kit. It is best if these items are kept in a plastic tub or kept together in a cabinet so they will be easy to find.



For more information on Disaster Supply Kits, visit **FEMA for Kids** at www.fema.gov/kids.

FLOODS AND THE FLOODPLAIN

Information and Activity Book

Developed February 2011

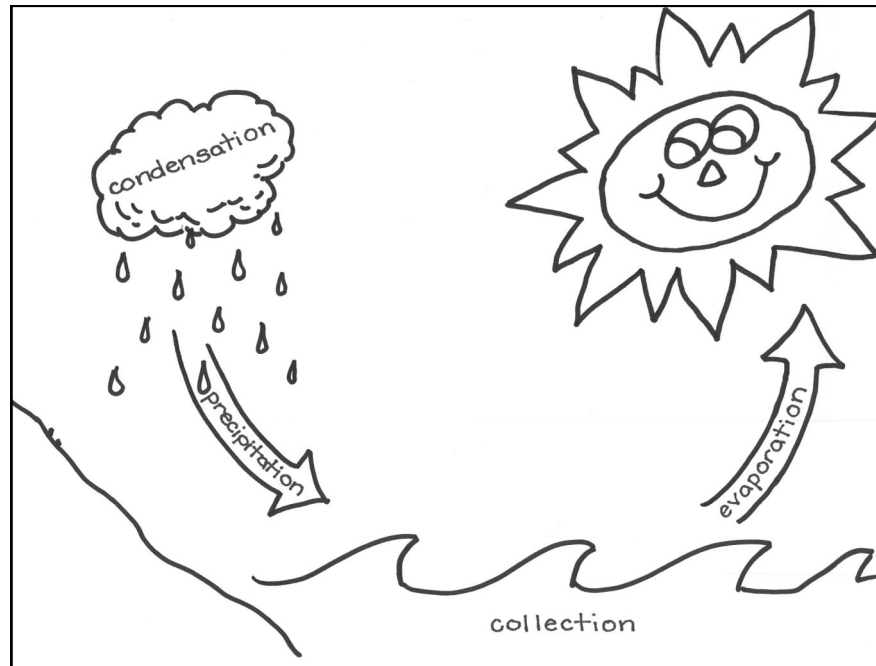
Iowa Floodplain and
Stormwater Management
Association

www.iowafloods.org



The Hydrologic Cycle

Floods are part of the Earth's natural hydrologic cycle. The cycle circulates water throughout the environment. This process maintains an overall balance between water in the air, on the surface and in the ground.



Water in the streams and rivers eventually reaches the ocean. Throughout these processes, water is evaporating and restarting the hydrologic cycle. Groundwater moves slowly until it reaches a low area on the ground, where it becomes surface water. Surface water evaporates or flows to the ocean, where evaporation continues.



Important Terms to Know

FLOOD WATCH OR FLASHFLOOD WATCH

Flooding may happen soon. Stay tuned to the radio or television news for more information. If you hear a flashflood warning, talk to an adult immediately!

FLOOD WARNING

You may be asked to leave the area. A flood may be happening or will be very soon. Tell an adult if you hear a flood warning. If you have to leave the area, remember to bring your Disaster Supply Kit and make arrangements for your pets.

FLASHFLOOD WARNING

A flashflood is happening. Get to high ground right away. Tell an adult!

N G D D K G N D C H M P N S H
 F O X I M J T U H L S G O T Y
 Y L I G N I N R A W I K I N D
 B N O Y G R O U N D W A T E R
 L O O O A L T A N G E N A M O
 R A U I D T H Q E Y O F R I L
 E I T N T P I C L I Q L T D O
 T V V S D U L P T T V A L E G
 A A C E A A L A L A Y S I S I
 W N D E R O R L I C W H F I C
 D O O L F O C Y O N E S N R P
 B D T T P P R R H P X R I B J
 D I S A S T E R V D T C P E G
 K L V D E H S R E T A W L D K
 N E R U N O F F N Y Z U V P J

| | | | |
|------------|-------------|---------------|--------------|
| BOUNDARY | CHANNEL | COASTAL | DEBRIS |
| DISASTER | EVAPORATION | FLASH | FLOOD |
| FLOODPLAIN | GROUNDWATER | HYDROLOGIC | INFILTRATION |
| KIT | POLLUTION | PRECIPITATION | RIVER |
| RUNOFF | SEDIMENTS | WARNING | WATCH |
| WATER | WATERSHED | | |

What is a Watershed

A watershed is an area that drains into a lake, stream or other body of water. Other names for it are basin or catchment area. Watersheds vary in size. Larger ones can be divided into sub-watersheds. The boundary of a watershed is a ridge or divide. Water from rain and snowmelt are collected by the smaller channels (tributaries) which send the water to larger ones and eventually to the lowest body of water in the watershed. (main channel)

Channels are defined features on the ground that carry water through and out of a watershed. They may be called rivers, creeks, streams or ditches. They can be wet all the time or dry most of the time.



Floodplain Functions

Floodplain lands and adjacent waters combine to form a complex, dynamic physical and biological system found nowhere else. When portions of floodplains are preserved in (or restored to) their natural state, they provide many benefits to both human and natural systems.

These benefits range from providing aesthetic pleasure to reducing the number and severity of floods, helping handle stormwater runoff and minimizing non-point water pollution. For example, by allowing floodwater to slow down, sediments settle out, thus maintaining water quality. The natural vegetation filters out impurities and uses excess nutrients. Such natural processes cost far less money than it would take to build facilities to correct flood, stormwater, water quality and other problems.

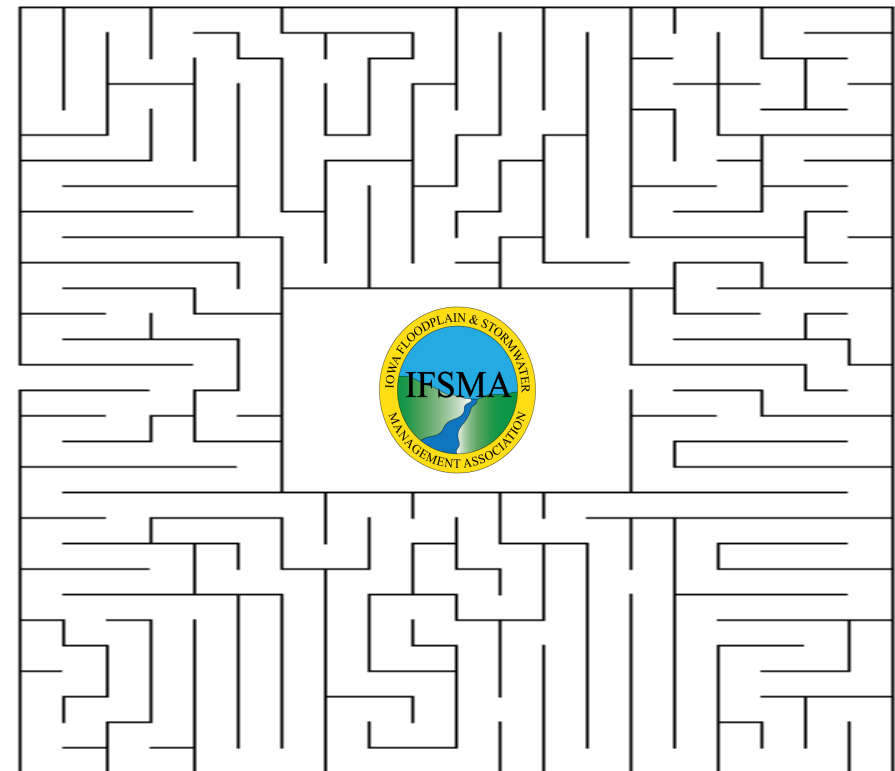
If the floodplain is undeveloped, it has two major effects on a flood:

- it stores water temporarily while the channel is overflowing; and*
- it infiltrates water during the flood.*

Humans may also cause floods. Floods sometimes occur when artificial structures such as dams fail. If the dam is poorly designed or built in a place where earthquakes and landslides occur, the dam will break and the water floods the land.

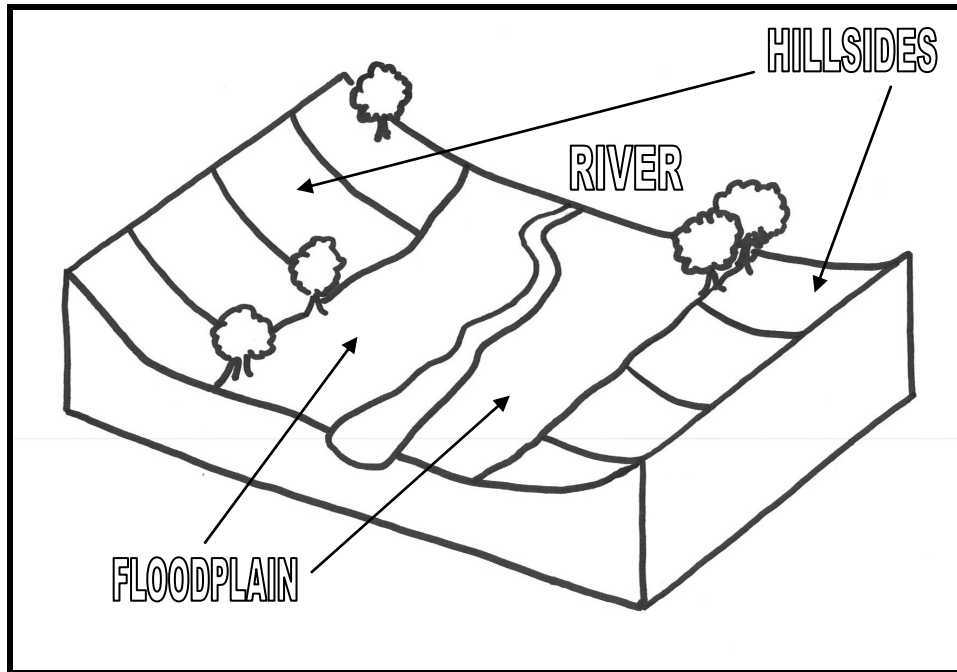
When floodwaters rise slowly people have time to get ready. They can move themselves and some of their property to higher ground, or build barriers to keep the water out of their homes. Sometimes the water rises quickly and people and cars get caught in the flood. Water gets into buildings causing damage, things are washed away, and people have to leave their homes.

(SOURCE: Thomas, Ron & Sydenham, Shirley. *Floods* [Online] www.kidcyber.com.au2009)



Floodplains form alongside rivers. As the rivers move back and forth across the landscape they form an area around the river where the elevation of the land is lower than other areas. This lower land around the river is known as a floodplain. During times of excess precipitation, water leaves the banks of the river and spreads out into the floodplain.

(SOURCE: <http://www.kidsgeo.com/geology-for-kids/0080-floodplains.php>)



Color

The RIVER dark blue.

The FLOODPLAIN light blue.

The HILLSIDES green.

The TREES, green and brown.

Types of Floods

River floods happen when rivers and streams cannot carry away all the extra water that falls as rain or comes from melting snow. The water rises in the rivers and streams and overflows onto normally dry land. Floods destroy farmland, wash away people's houses and drown people and animals. Towns and cities are flooded too.

Coastal flooding can be caused by strong winds blowing waves onto the land. Hurricanes and major storms produce most coastal floods. Very high tides and tsunamis also flood the coasts. In many countries, large groups of people live along the coasts and for these people coastal flooding can be very serious. Thousands of people have been drowned in coastal flooding in many parts of the world.

A **flash flood** is a quick flood caused by a sudden cloudburst or thunder storm. Huge amounts of water fall in a short time and in cities and towns the drains overflow and roads become flooded. Flash floods also happen in mountainous areas, where steep slopes cause the water to travel at high speeds. The rushing water erodes the soil, washing it away down the slopes. Flash floods often occur rapidly and with little warning.

(SOURCE: Thomas, Ron & Sydenham, Shirley. *Floods* [Online] www.kidcyber.com.au2009)

Be Safe When it Floods!

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 where the water is not flowing.

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 the power company.



FLOOD SAFETY INDOORS

Turn off your electricity if your building is flooded. If you don't know how, 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. Don't smoke or use candles, lanterns, or open flames unless you know the gas has been turned off and the area has been thoroughly aired out. If you have questions on gas, call the 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. Flood waters 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. Recovering from a flood is a big job. It is tough on both the body and spirit and the effects a disaster has on you and your family may last a long time. Keep your eyes open for signs of anxiety, stress, and fatigue in you and your family.