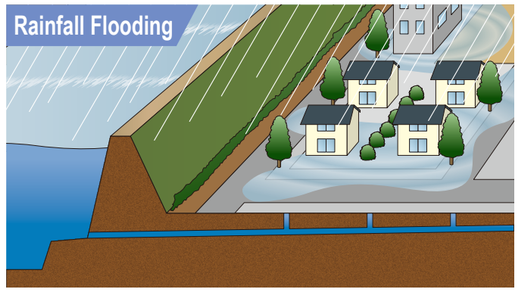
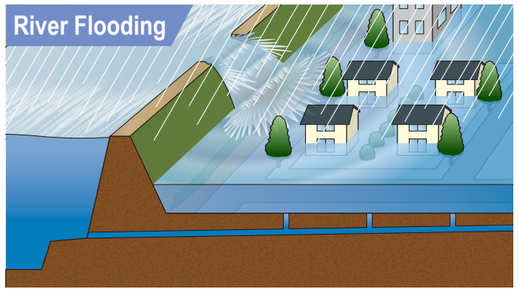
Rainfall Flooding and River Flooding

Flooding usually occurs because of either rainfall that channels and drains cannot cope with (rainfall flooding) or river water that floods an area after spilling over an embankment (levee) or draining through a burst in an embankment (river flooding). Therefore, the first thing to do is ascertain which type of flooding might occur, and then confirm the evacuation route to be taken to an evacuation facility.

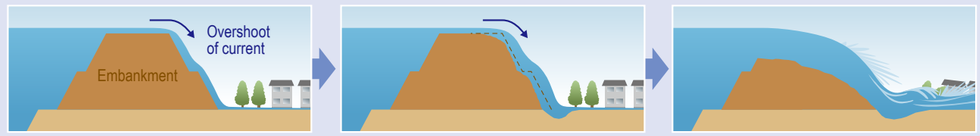




Embankment Bursting Mechanisms

Rainfall or floodwater induced embankment bursting mechanisms are broadly separated into three types: (1) Overflow, where a river is breached by an overflow of water, (2) Scouring, where a strong flow of river water undermines an embankment and breaks it down, and (3) Seepage, where water penetrates into an embankment, weakening and breaking it down.

Overflow

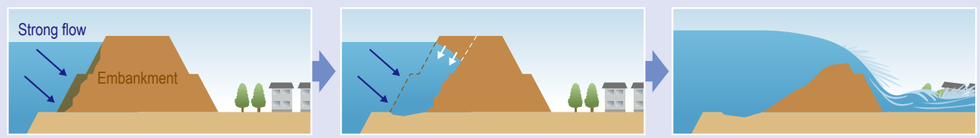


The volume of river water increases due to heavy rainfall, etc., and water flows over the top of the embankment.

The overflowing water then scours away the embankment on the residential side.

The embankment collapses and water rushes through.

Scour

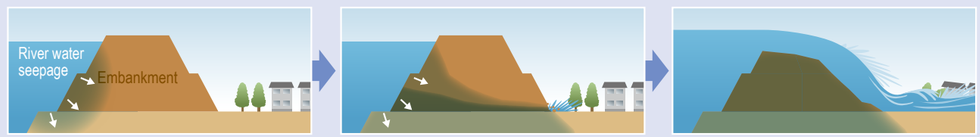


The force of fast flowing river water scours away the embankment.

If damage increases, the embankment will begin to slip.

The embankment collapses and water rushes through.

Seepage

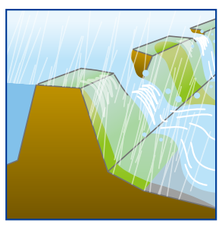


If river water remains at a high level for a prolonged period, water will seep into the embankment.

Once water seeps through to the residential side, the weakened embankment will start to collapse.

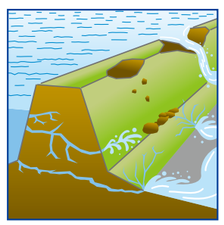
The embankment collapses and water rushes through.

Times to be especially cautious!!



At times of heavy rain

At times of heavy rain, the levels of rivers will rise and flow over the embankment, which will be eaten away in the process, and may break. And, in cases where sediment and driftwood block the flow, a current can easily overshoot the embankment, creating a much higher risk of erosion and collapse.



At times of large earthquakes

At times of large earthquakes, excessive force is exerted on embankments of rivers, which may cause cracks and there is risk of liquefaction of foundations. Indeed, even comparatively small earthquakes can cause cracks inside embankments, weakening strength and making it hard for embankments to withstand water pressure - so, care must be taken, as embankments can break in various situations.

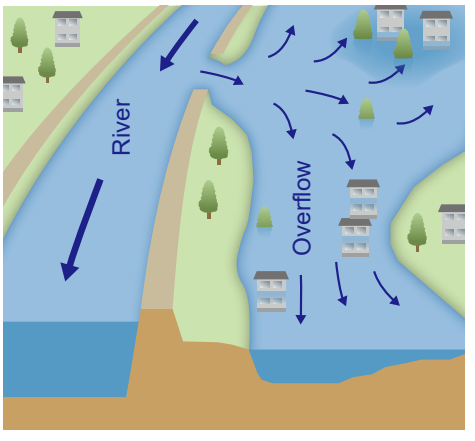
The Roles and Activities of Voluntary Organizations for Disaster Prevention

At times of disaster, Anjo city administration and related bodies will do their utmost to respond to the disaster but, in cases where the spread of various forms of damage (such as fires, road cuts, water cuts, power blackouts) widens, perceivably the task of responding will become extremely difficult. Thus, in such cases, collaboration among the entire region to help each other becomes vitally important. Therefore, please participate in trainings conducted by local voluntary disaster prevention organizations to learn about disaster prevention, so that if an emergency occurs, you too can take your allotted role to boost disaster prevention in your neighborhood.

Characteristics of River Overflows

The behavior of overflow water during flooding can be categorized from topographical conditions in any given area, so that the characteristics of river overflows can be separated into three types: "wide-spreading overflow", "downward flowing overflow" and "accumulating overflow".

Wide-spreading overflow



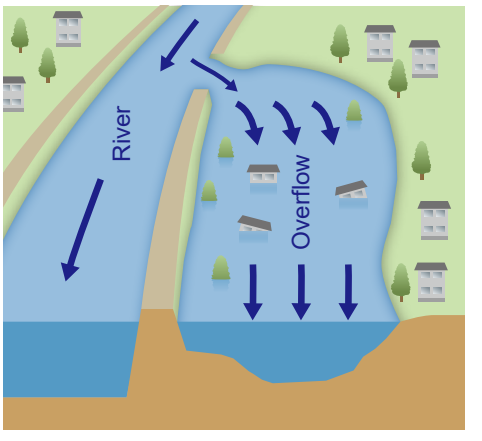
Features

- Seen in widespread topographies in low-lying areas, such as alluvial fans, natural levee belts and deltas.
- Overflow water spreads across a wide area.
- Apart from the area in the vicinity of the breached embankment the flow speed is comparatively slow.

Precautions to be Taken

Flood water may reach areas quite some distance from the embankment. For large river, in many cases, overflow flooding occurs after the rain has stopped.

Downward flowing overflow



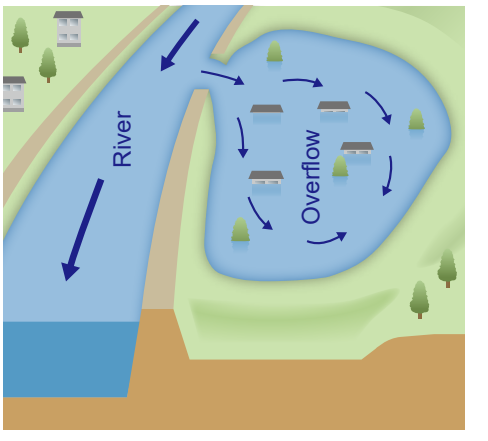
Features

- Seen in topographies with different elevations or with small flat areas, such as valley plains.
- Deep, fast flowing water often causes floodwater to flow downward, and may create enough energy to wash away buildings.

Precautions to be Taken

The flood area moves down following the flow of the river. So, as the overflow water does not spread that far but follows the downward flow of the breached river, it is best to evacuate in a direction away from the river.

Accumulating overflow



Features

- Seen where rivers merge and flood areas are surrounded by hills or natural levee belts.
- Flooding type where inundation time is comparatively long.

Precautions to be Taken

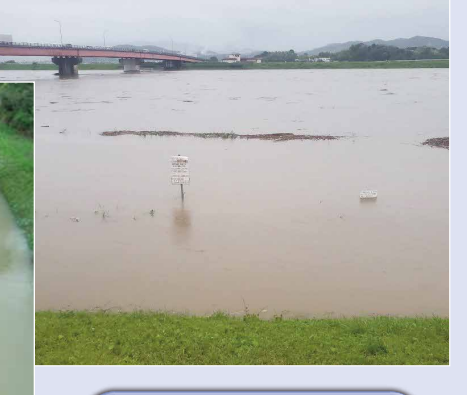
Often, floodwater depth is deep, with water level rising over a short span of time, so it is imperative to leave the flood area as quickly as possible.

What types of flooding occur in Anjo?

In Anjo, wide-spreading overflows occur on the Yahagigawa, Kanorigawa and Sawatarigawa rivers, where overflow spreads out across low-lying land but, on the whole, care must be given to downward flowing overflows that follow the course of the river. Furthermore, in the southern area of the city, in the vicinities of Aburagafuchi, Yahagigawa River and Kanorigawa River, accumulating overflows occur too.

Past Flood Damage in Anjo

▼ 27 July 2022
Hanba River burst situation



▲ 2 June 2023
Yahagi River water rise situation

27 July 2022

Total rainfall : 144mm
Maximum rainfall in a single hour : 92mm
- Flooding above the floor : 12
- Flooding below the floor : 24
- Road closure (city roads) : 11
- River burst : Hanba River

2 June 2023

Total rainfall : 200mm
Maximum rainfall in a single hour : 38mm
- Flooding above the floor : 1
- Flooding below the floor : 1
- Road closure (city roads) : 14
- Road cave-in(city roads) : 1