

1. Manage flood disaster

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Manage flood refers to all methods used to reduce or prevent the detrimental effects of flood waters. Some of the common techniques used for flood control are installation of rock berms, rock rip-raps, sandbags, maintaining normal slopes with vegetation or application of soil cements on steeper slopes and construction or expansion of drainage channels. Other methods include levees, dikes, dams, retention or detention basins.

1.1 Causes of Floods

Floods are caused by many factors: heavy precipitation, severe winds over water, unusual high tides, tsunamis, or failure of dams, levees, retention ponds, or other structures that contained the water.

Periodic floods occur on many rivers, forming a surrounding region known as the flood plain.

During times of rain or snow, some of the water is retained in ponds or soil, some is absorbed by grass and vegetation, some evaporates, and the rest travels over the land as surface runoff. Floods occur when ponds, lakes, riverbeds, soil, and vegetation cannot absorb all the water. Water then runs off the land in quantities that cannot be carried within stream channels or retained in natural ponds, lakes, and man-made reservoirs. About 30 percent of all precipitation is in the form of runoff small and that amount might be increased by water from melting snow. River flooding is often caused by heavy rain, sometimes increased by melting snow. A flood that rises rapidly, with little or no advance warning, is called a flash flood. Flash floods usually result from intense rainfall over a relatively small area, or if the area was already saturated from previous precipitation.

1.2 Effects of Floods

Flooding has many impacts. It damages property and endangers the lives of humans and other species. Rapid water runoff causes soil erosion and concomitant sediment deposition elsewhere (such as further downstream or down a coast). The spawning grounds for fish and other wildlife habitats can become polluted or completely

destroyed. Some prolonged high floods can delay traffic in areas which lack elevated roadways. Floods can interfere with drainage and economic use of lands, such as interfering with farming. Structural damage can occur in bridge abutments, bank lines, sewer lines, and other structures within floodways. Waterway navigation and hydroelectric power are often impaired. Financial losses due to floods are typically millions of dollars each year.

1.3 Methods of Control

In many countries, rivers prone to floods are often carefully managed. Defences such as levees, bunds, reservoirs, and weirs are used to prevent rivers from bursting their banks. When these defences fail, emergency measures such as sandbags or portable inflatable tubes are used. Coastal flooding has been addressed in Europe and the Americas with coastal defences, such as sea walls, beach nourishment, and barrier islands.

A dike is another method of flood protection. A dike lowers the risk of having floods compared to other methods. It can help prevent damage; however it is better to combine dikes with other flood control methods to reduce the risk of a collapsed dike.