

Using Water-inflated Barriers

for Flood Protection

Water-inflated tubing is a new and effective emergency method of closing a gap, temporarily raising the height of an existing levee or putting a barrier around a building. It is easier to erect than a sandbag levee or wall, takes much less time and requires little storage space when deflated.

Water-inflated dams have been used widely in industrial applications for containment of oil spills, diversion of water for bridge construction and other large-scale operations. They are available in heights from 2 feet to 6 feet. Some are oval, with one or two internal baffles to prevent rolling; others get their stability from their triangular shape. Commercial products with smaller dimensions are now becoming available.



water-inflated dams

waterbags

Cost and Considerations

One hundred feet of a 4-foot commercial water-inflatable dam costs about \$600 (Spring, 1998 estimate).

You can make a water-inflated barrier up to 2 feet by using irrigation tubing. This tubing comes from irrigation supply stores in 1320-ft. rolls (1/4 mile). Ten-mil, 22-inch diameter tubing costs about 28 cents per foot; other thicknesses and diameters are available.

Irrigation tubing is more fragile than a water-inflated dam, and it cannot withstand as much pressure or debris impact. Because the tubing doesn't come with the fittings you'd get with a dam, it can be more difficult to fill.

The level of protection is only as high as the lowest point along the barrier. This method is effective only on level sections of ground.

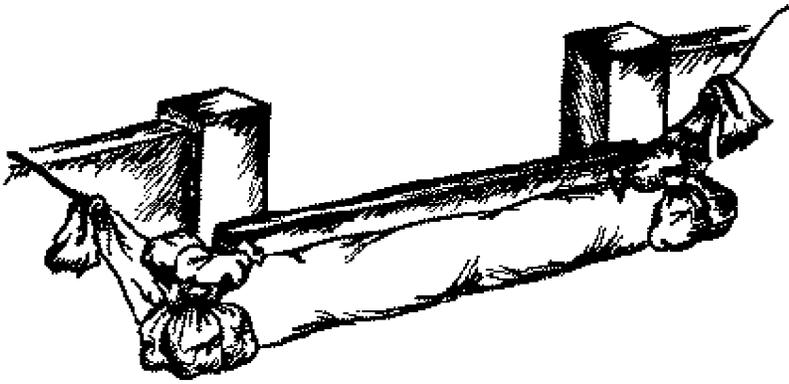
The principle of blocking flood water with a barrier filled with water can be applied to other containers of different materials and different shapes. Find something that won't roll, scoot along the ground or tip over. Beyond that, you need to consider how and where you'll store your temporary barrier when it's not in use.



Tips for using water-inflated barriers:

- Keep the necessary materials on hand. This includes tubing, stakes or other support devices, ties or connectors.
- Be sure you can install the system in the amount of time you normally have to prepare for a flood.
- Have a pump inside the protected area. Even good systems leak. Some water will seep in underground, and rain will fall inside your barrier. You have to pump it out.
- Before each flood season, have a practice run. Find the materials and test the pump. A flood protection system is like a chain; it's only as good as its weakest link. If the barrier across an opening fails, your floodwall or levee is of little use.
- As with permanent levees and floodwalls, you need protection from sewer backup.
- Failure of the system for any reason can result in a forceful rush of floodwater into the property. Plan for your safety. Decide in advance when you will abandon a flood fight and save your life.

Using a Single Irrigation Tube



To block an opening or surround a building, lay out a single length of tubing where you want to erect the flood barrier, and fill it with water.

If the water flow from your municipal water system is too low, or you're filling a large section of tubing, you can speed up the process by pumping pond water, pool water or even floodwater into the tubing by using a pump.

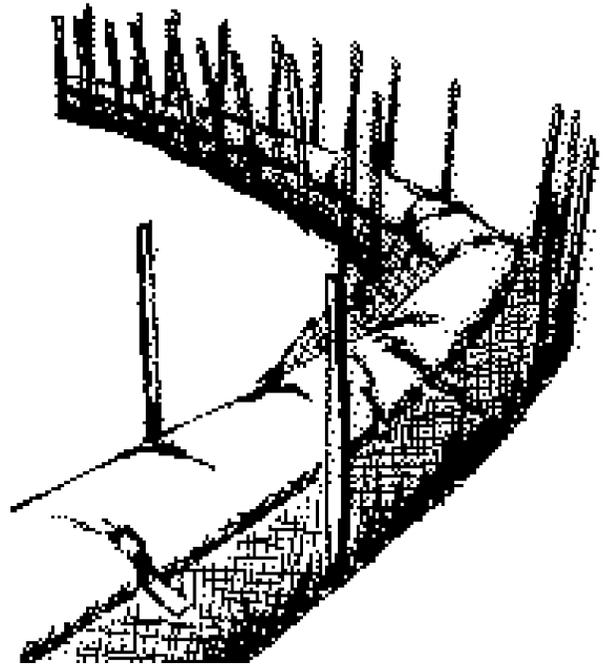
Keep the water in by turning up the ends of the tubing. The ends don't need to be sealed, but they must be secured in the up-turned position.

Use heavy objects that don't float to keep the tube from rolling, sliding or shifting. These might include sandbags, concrete blocks or another section of tubing. On unpaved areas, you can drive stakes in the ground to keep the tubing in place. The tube can rest against a strong board placed across an opening.

Stacking for Greater Protection

Irrigation tubing will not hold back water to the full depth of its diameter. A 22-inch diameter tube may give you only 16 inches of protection. You can get a little higher protection by filling a second tube behind the first one, then laying a third tube in the groove formed by the first two tubes. Brace the lower tubes so they don't separate, and be sure you've closed the ends of the lower tubes securely. Put the tubes in place before you fill them.

Don't stack these tubes higher than two deep. The added weight will increase the pressure in the lower tubes and may cause them to rupture. For protection over 2 feet, use water-inflated dams or other systems.



Additional flood protection and recovery information is available from the parish office of the Louisiana Cooperative Extension Service or from our web site at www.louisianafloods.org.

Extension's flood mitigation work is supported by the Federal Emergency Management Agency through its Hazard Mitigation Grant Program. The HMGP is administered in Louisiana by the Louisiana Office of Emergency Preparedness.

Pat Skinner, Disaster Programs Coordinator

David Bankston, PhD, Specialist (Engineering)

Claudette Reichel, EdD, Specialist (Housing)

Louisiana State University Agricultural Center, William B. Richardson, Chancellor
Louisiana Cooperative Extension Service, Jack L. Bagent, Vice Chancellor and Director

Pub. 2741

(15M)

7/99

Issued in furtherance of Cooperative Extension work, Acts of Congress of May 8 and June 30, 1914, with the cooperation of the United States Department of Agriculture. The Louisiana Cooperative Extension Service provides equal opportunities in programs and employment.