

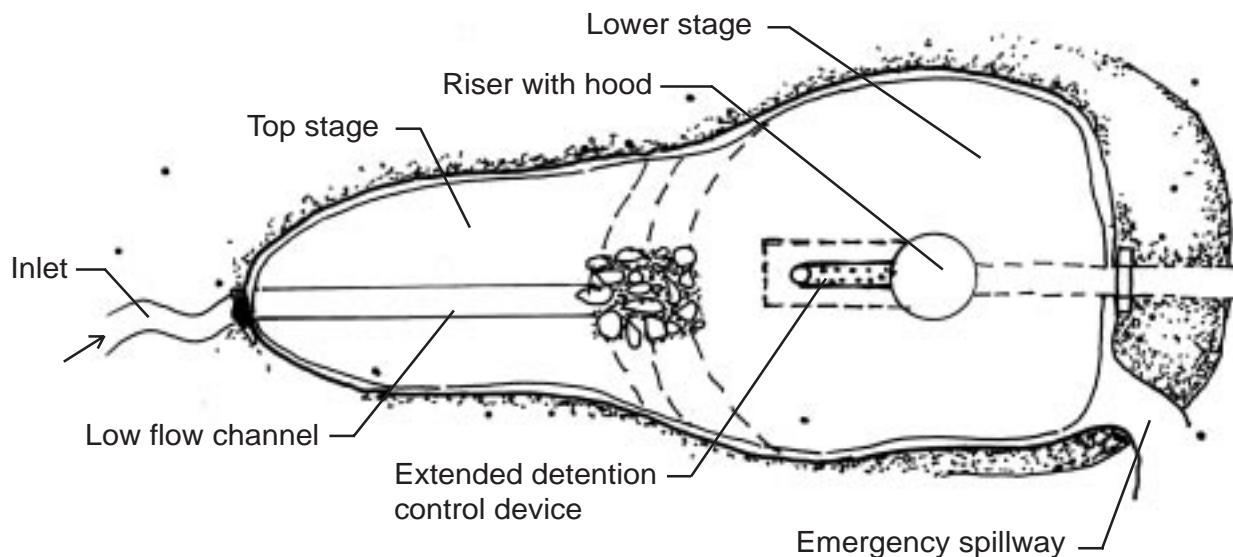
**PRIMARY USE:** To control increases in downstream bank erosion, and to remove particulate pollutants.  
**ADDITIONAL USES:** Protection of aquatic habitat.

## DRY EXTENDED DETENTION PONDS

**What is it?** The dry extended detention pond is a shallow intermittent impoundment which utilizes devices normally attached to low flow orifices or risers for purposes of lengthening the period that stormwater runoff is detained.

### Purpose

These ponds are an effective, low cost means of controlling increases in downstream bank erosion by reducing the frequency of erosive floods, and removing particulate pollutants. Stormwater detained for 24 hours or more can remove as much as 90% of particulate pollutants. Construction costs seldom are greater than 10% higher than those for conventional dry ponds. Other advantages include creation of wildlife and wetland habitat, and some protection of aquatic habitat downstream. This type of treatment is applicable to most new development, as well as existing wet and dry ponds that could be retrofitted for extending detention times.



**Dry Extended Detention Pond  
Plan View**

### Limitations

Extended detention only slightly reduces soluble phosphorous and nitrogen levels in urban runoff. Other limitations concern occasional aesthetic and nuisance problems in detained areas, e.g., odor, weeds, and debris.

### Materials

Rip-rap, gravel, material suitable for a riser and barrel.

### Installation

Adaptations can extend detention times of wet and dry detention ponds. A two-stage design is suggested for dry ponds where a pond's top portion is designed to remain dry most of the time, and a smaller area near the riser is regularly inundated. See supplemental information for methods to extend detention through use of specific control devices.

**Source:** Controlling Urban Runoff, Metropolitan Washington.

## DRY EXTENDED DETENTION PONDS

### Installation guidelines continued:

Devices for extending detention are connected to risers or low flow orifices.

#### Perforated Riser

A method for dry ponds uses standard corrugated metal pipe that is perforated and acts as a riser. The normal low flow orifice is closed. A wire mesh screen and gravel jacket act as a filter to prevent clogging. Target detention times are difficult to identify with this device, and the bottom area of the gravel jacket may become clogged over time.

#### Inlet Controlled Perforated Pipe

This device is an extension of the low flow orifice and can be used for dry ponds. The extended PVC pipe is perforated with small holes and protected with 1/4 in (6 mm) wire mesh and a layer of gravel and stone. Regular clean-out required.

#### Internally Controlled Perforated Pipe

This device is intended for dry ponds. The pipe's release rate is controlled by a flange in the pipe, which provides additional protection from clogging due to the large number of holes drilled on the flange's outward side.

#### Internally Controlled Slotted Standpipe

This device uses an "L" shaped PVC pipe attached to the low flow orifice. A plate inside the pipe internally controls the release rate. Perforations and slots are spaced vertically above the orifice plate to prevent sediment collected around the standpipe from impeding water supply to the plate. Used for dry ponds and shallow wet ponds or marshes.

#### Negatively Sloped Pipe From Riser

Designed for wet ponds and shallow marshes. The release rate is regulated by the pipe orifice. Clogging is mostly eliminated by locating the pipe opening at least one foot (305 mm) below the water surface.

#### Hooded Orifice on Riser

This device uses an orifice located on the riser face near the top of the permanent pond level. Wire mesh and a hood can protect the orifice from clogging.

