

# CITY OF OAK RIDGE

## Stormwater Management



### Best Management Practices for Water Quality Protection

#### *Permanent Stormwater Maintenance*

##### **Introduction:**

Poorly managed and/or aging permanent stormwater infrastructure has the potential to become inefficient, allowing pollutants to slip through and contaminate our waterways or contributing to flooding downstream. Implementing best management practices (BMPs) described in this document can help minimize or eliminate pollution caused by permanent stormwater structures existing on your property. This document is intended to be used as a guide for structures that do not already have an existing Private Stormwater Management Facilities Maintenance Agreement and Maintenance and Repair Plan approved by the City with the deed of the property. All structure maintenance is the responsibility of the property owner, and owners should consult with a registered engineer or landscape architect on practices for a specific structure.

Examples of permanent stormwater structures include:

- Detention Basin (dry pond)
  - Conventional
  - Water Quality
- Retention Basin (wet pond)
- Catch Basin Inserts
- Grass Swales
- Bioretention Area / Rain Garden

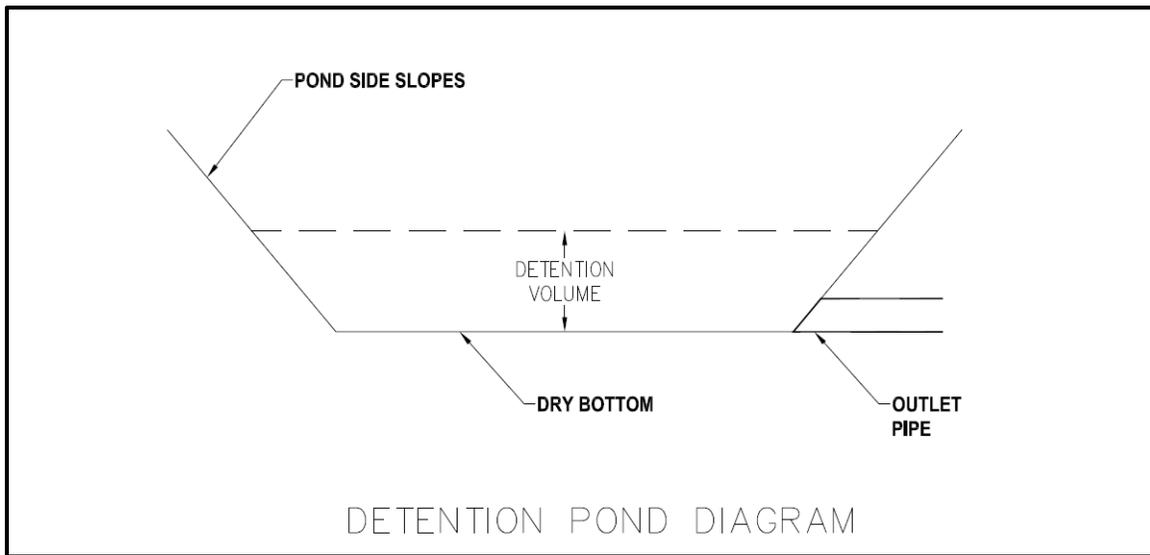
This document primarily focuses on detention basins, as **it is the responsibility of the property owner to maintain all stormwater BMPs in accordance with the minimum design standards.**



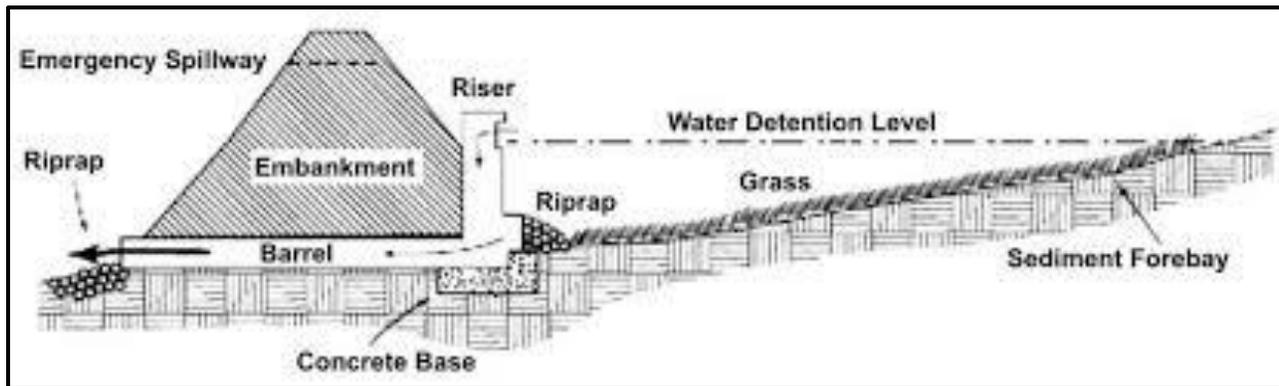
##### **What is a Detention Basin?**

Important for managing flooding and excess sediment/pollutants from impervious surfaces, a detention basin collects stormwater and loose sediment after a rain event and slowly releases it over time (ideally between 24-72 hours) to avoid overwhelming areas downstream. Detention Basins are otherwise known as dry ponds, because all the water will eventually drain out and leave the area dry between storm events.

There are two types of Detention Basins: Conventional and those designed to improve Water Quality.



A **Conventional Detention Basin** (as seen above) is an older design that is generally more focused on floodwater management than on water quality. By using a natural slope in the landscape, water is diverted to a large collection area and is slowly channeled through an outlet pipe at the bottom. While it is effective in reducing the flow of runoff that comes from impervious surfaces and goes directly to our waterways, this type of basin does not always allow for enough time for pollutants and sediment to settle out in the pond, allowing them to flow into and pollute water downstream.



Alternatively, a **Water Quality Detention Basin** (as seen above) incorporates a riser into the design, which means the water has to reach a certain level before passing through the riser and discharging into the stream. As the basin fills to reach the water detention level, more time is given for pollutants and sediment to settle to the bottom. Located at the base of the riser as an additional protection measure is riprap, which consists of large rocks used to slow stormwater and control erosion.

## Guide to Inspecting and Maintaining a Detention Basin:

Type	Activity	Suggested Schedule
Inspection	<ul style="list-style-type: none"> <li>After several storm events or an extreme storm events (of 2 inches or more), inspect for: bank stability; signs of erosion; and damage to, or clogging of, the outlet structures and pilot channels.</li> </ul>	As Needed
	<ul style="list-style-type: none"> <li>Inspect for: trash and debris; clogging of the outlet structures and any pilot channels; excessive erosion; sediment accumulation in the basin and inlet/outlet structures; tree growth on dam or embankment; the presence of burrowing animals; standing water where there should be none; vigor and density of the grass turf on the basin side slopes and floor; differential settlement; cracking; leakage; and slope stability.</li> </ul>	Semi-annually
	<ul style="list-style-type: none"> <li>Inspect that the outlet structures, pipes, and downstream and pilot channels are free of debris and are operational.</li> <li>Note signs of pollution, such as oil sheens, sediment, discolored water, or unpleasant odors.</li> <li>Check for sediment accumulation in the facility.</li> <li>Check for proper operation of control gates, valves or other mechanical devices.</li> </ul>	Annually
Maintenance	<ul style="list-style-type: none"> <li>Clean and remove debris from inlet and outlet structures.</li> <li>Mow side slopes (embankment) and maintenance access. Periodic mowing is only required along maintenance rights-of-way and the embankment.</li> </ul>	Monthly or as needed
	<ul style="list-style-type: none"> <li>Repair and revegetate eroded areas and slopes.</li> <li>Remove vegetation that may hinder the operation of the pond.</li> <li>Repair damage to pond, outlet structures, embankments, control gates, valves, or other mechanical devices; repair undercut or eroded areas.</li> </ul>	As Needed
	<ul style="list-style-type: none"> <li>Monitor sediment accumulations, and remove sediment when the pond volume has become reduced significantly.</li> <li>Repair any control structures, pipe, or outlet failures.</li> <li>Add new riprap if missing.</li> </ul>	As Needed (typically every 20 to 50 years)
Records	<ul style="list-style-type: none"> <li>Record and keep all inspections and repair work for the structure</li> </ul>	As Needed



**To ensure that a detention basin is working properly, it is important that it is properly and routinely maintained.** Examples of detention basins in need of maintenance, as provided by Nashville Metro Water Services, can be seen above.

For more information please visit our website: <http://stormwater.oakridgetn.gov/>

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