

Detention Basin Maintenance

Homeowners' Associations and Businesses



Why be concerned?

Homeowners' Associations and business owners are entirely responsible for maintaining their detention basins. Detention basins require maintenance to ensure that they function properly. Poorly maintained basins, regardless of their design, lose their ability both to control flooding on private property and prevent pollutants like sediments, fertilizers and pesticides from entering the creeks and streams near homes and businesses.

Detention basins are typically located where new residential, commercial, and industrial centers are developed. New development replaces open land and forest with impervious surfaces such as parking lots, roads and roof tops. As stormwater runs off these impervious surfaces it enters streams and rivers at a much faster rate, causing streambank erosion and possible flooding downstream. Detention basins help to control potential flooding and improve water quality.

GETTING HELP

Canton Township
Engineering Services (313) 397-5405

Plymouth Township
Public Works (313) 453-8131

Sources and Funding

- Brochure prepared by Canton Township Engineering Services
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Are There Different Types of Detention Basins?

Yes, in general there are three types of detention basins:

- Dry Detention Basins
- Wet Detention Basins
- Stormwater Marsh Basins



Dry Detention Basin

(with less rain) contain higher amounts of pollutants than larger storms. The side slopes of these basins are generally vegetated with short, turf grass.

Dry detention basins are typically dry depressions except after a major rain storm when they temporarily fill with stormwater. These basins slow the rate at which stormwater from new developments enters streams and rivers and thus help prevent flooding; however, dry detention basins are not very effective at removing pollutants because the stormwater from smaller storms passes through more quickly. Smaller storms



Wet Detention Basin

Like dry detention basins, wet detention basins also help control flooding, but they are more effective at removing pollutants from stormwater. Wet detention basins typically have a permanent pool of water and more wetland plant life. The permanent pool of water allows pollutants such as sediments to settle to the bottom of the basin. In addition, the wetland vegetation helps filter out pollutants and uses others up such as fertilizers as the stormwater passes through the basin.

Stormwater marsh basins are similar to wet detention basins, but contain more wetland plants such as cattails, bulrush, and sedges. The wetland vegetation absorbs fertilizers that run off neighboring lawns and filters out other pollutants, which otherwise might enter nearby creeks and streams. They also provide fish and wildlife habitat.

The ideal detention basin provides the greatest number of benefits including flood control and water quality improvements. This typically consists of a wet detention basin combined with a stormwater marsh basin.



Stormwater Marsh

What Type of Maintenance is Required?

Detention basins require regular inspection and maintenance to ensure that they are functioning properly to protect private property and improve water quality. At a minimum, the Homeowners' Association or business owner should conduct an annual inspection and an inspection after major storms.

Obtain a Copy of Your Detention Basin Plan

Obtain a copy of the detention basin plan from Canton Township Engineering Services or Plymouth Township Municipal Services to determine what type of detention basin is in your development.

Inspect Inlet and Outlet Pipes

Inlet Pipes direct stormwater from developments into detention basins, including stormwater from residential yards, driveways and roads. Typically, there are two to three inlet pipes in a detention basin. Check the following:

- Structural integrity - Inspect the pipe to make sure it isn't crumbling or broken.
- Rip rap - Rip rap (typically pieces of stone) is placed around the pipe where it enters the basin to prevent erosion. Check for erosion around the pipe or missing rip rap.
- Obstructions - Inspect the pipe end to determine if sediment, dirt, or debris is obstructing the flow of water from the pipe into the basin. Minor amounts of sediment around pipe openings can be removed with a shovel and wheelbarrow, spread evenly on upland areas and seeded with turf grass.



Typical Inlet Pipe

If any of these problems are occurring, or if you have questions, contact the Canton Township Engineering Services or Plymouth Township Municipal Services for assistance. These offices can provide you with a list of contractors capable of correcting detention basin problems.



Typical Outlet Pipe



Riser Outlet Pipe

Outlet Pipes direct stormwater from a detention basin to a nearby creek or stream. Typically, there is only one outlet associated with a basin. The outlet may consist of a single pipe, a riser pipe, or it may be connected to a pump station. Check the following:

- Structural integrity - Check the pipe to ensure that it isn't crumbling or broken.
- Obstructions - Inspect the pipe end to determine if sediment, dirt, or debris is obstructing the flow of water into the pipe and preventing water from leaving the basin. Stone around the outlet pipe may need to be replaced if it becomes clogged with sediment.



Pump Station

Pump stations are very common methods of removing stormwater from detention basins; however, they also require routine maintenance. Essentially, an outlet pipe directs the water from the detention basin to the wetwell of the pump station. Once the depth of water in the wetwell reaches a specific level, a submersible pump turns on and pumps the water to the nearby creek or larger storm sewer system.

Only a licensed electrician or company that provided the pump system should conduct any maintenance work. Regular maintenance should include the following:

- Remove debris and sediment from the wetwell and valves
- Test the alarm horn and light
- Inspect for loose fittings or missing hardware
- Inspect for pump damage

Inspect for Litter and Debris

Twice each year (spring and fall) and after a major storm, check for debris near the inlets and in the basin. Remove and dispose of debris or litter with your household trash.



Litter and Debris Removal



Erosion

Examine the Side Slopes for Erosion

Twice each year (spring and fall) and after a major storm, check for gullies or sloughing of the banks and other disturbances from animals or vehicles. Any damage observed should be repaired immediately by filling any eroded areas with topsoil and seeding with turf grass. It is also important to place mulch or straw over the seed to prevent it from being washed into the basin. If problems continue, contact your township for additional guidance.

Inspect Vegetation

In the spring and fall, inspect the vegetation on the banks and in the basin. Maintenance activities will vary depending on the type of basin. If you have a stormwater marsh basin, dead cattails and other decomposing vegetation in the basin should be removed if they are clogging pipe openings. Living vegetation greatly improves the water quality by filtering out pollutants such as fertilizers, pesticides, oils and grease, etc. from the stormwater.



Vegetation Removal

Late fall is a good time to cut down cattails. This will minimize clogging in the spring by dead vegetation. Cut cattails should be disposed of with other compost materials.

Remove invasive non-native plants like purple loosestrife. Although its bright purple flowers are pretty, purple loosestrife forms dense colonies which crowd out native wetland plants that are important sources of nutrients for birds and other wildlife. The plant is such a problem that it is illegal to sell it in the State of Michigan.

Removal of purple loosestrife should be done before the plant sets seeds in August. Remove by pulling the entire plant

out of the ground, including the roots. Dispose properly with other yard waste that is composted.

Repair bare spots along banks with turf grass seed, meadow grass or wildflowers. Most of the pre-mixed wildflower seed packages at local nurseries contain a mix of short-lived, brightly colored annuals and long-lived, less showy perennials. Meadow grasses and wildflowers grown along the banks of the detention basin will reduce long-term landscape maintenance. Consult with professional landscape architects and nurseries to learn more about meadow plantings.

Mowing

The amount of mowing required depends on the type of detention basin and the desired appearance. Typically, basins with turf grass only need to be mowed two or three times a year. Basins with native grasses and wildflower plantings should be mowed only once a year in the late fall or early spring. More frequent mowing will prevent the wildflowers from blooming and producing seed. Pathways through wildflower plantings can be mowed more frequently.



Mowing

Adding Vegetation to the Banks

You can add more color and visual interest, as well as improve bird habitat by planting a variety of shrubs and wildflowers along the banks of detention basins. Shrubs such as red-osier dogwood, silky dogwood, meadowsweet, common elder, buttonbush and highbush-cranberry typically grow well where the ground is often damp. Wildflowers like swamp milkweed, joe-pye-weed, cardinal flower, beggartick, marsh blazing star, aster, and goldenrod are good choices for damp areas.



Vegetation Planting

As an alternative to cattails, wetland plants such as softstem and hardstem bulrush, blue flag iris, woolgrass, water plantain, pickerelweed and arrowhead can be planted in year-round ponded areas.

When increasing vegetation around your detention basin, remember that it's best to add plants in a 15 to 20-foot zone next to the water's edge. In addition, remember that pesticides and fertilizers usually applied to grass and planting beds should not be applied within this "edge" zone. Nurseries which specialize in wetland plants are increasing in number. For more information contact the MSU Extension Office for Wayne County at (313) 833-3412.

Record Keeping

Keep records of all inspections including the date, name of inspector, what was observed, and maintenance activities performed. Keep records of all costs for inspections, such as consulting with professional engineers, and repair costs. Good records will help you make adjustments to the maintenance program as needed.