DETENTION BASIN MAINTENANCE

Storm water detention basins are a best management practice designed to reduce the impacts of pollution and the increase of storm water runoff caused by developments. They are an essential part of the City of Rockford's effort to improve the quality of our streams, rivers and ponds. Once a detention basin fails, it will no longer perform its intended function and is often very expensive to replace.

Why be concerned?

If your property has or borders a detention basin you may be responsible for its maintenance. Most approved plats within the city limits state that basin maintenance is the responsibility of the property owner or those bordering the basin. By performing yearly maintenance on storm water detention basins those responsible for them can reduce costly repairs not only to the basin but downstream as well.

Detention basins require maintenance to ensure they function properly. Poorly maintained basins lose their ability to control flooding and prevent pollutants, such as sediments, fertilizers and pesticides from entering creeks, streams and storm sewer systems near homes and businesses. Should an improperly maintained basin fail the responsible party could be found liable for the resulting damage.

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

For Assistance:

- City of Rockford
  Public Works, Engineering Division
  (779) 348-7175
- Licensed Professional Engineer

Types of Detention Basins

There are two types of detention basins:

- Detention Basin (Dry Ponds)
- Retention Basin (Wet Ponds)

Detention basins detain water and are designed to be dry between rain events. During a storm they fill with storm water. These basins slow the rate at which storm water from new developments enters the streams and rivers and thus helps prevent flooding and in some instances, help reduce contaminates. Side slopes and bottoms of these basins are generally vegetated with turf grass or native plants.

Retention basins also help control flooding and are more effective at removing pollutants from storm water. 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, wetland vegetation helps to filter out pollutants and utilizes others, such as fertilizers, as storm water passes through the basin.

THE CITY OF ROCKFORD ILLINOIS, USA

Detention Basin Maintenance Tasks and Schedule

Tasks / Components	Detention Basin Side Slopes	Detention Basin bottom	Detention Basin Inlets	Detention Basin Outlet or Outflow Control Structures	Catch Basin Inlets	Catch Basin Sumps	Storm Sewer System	Schedule
Inspect for sediment acumulation		●	●	●	●	●	●	Annually
remove Sediment accumulation		●	●	●	●	●	●	As needed
Inspect for debris (dead vegetation & trash)	●	●	●	●	●	●	●	Early Spring, fall & after major storms
Clean debris	●	●	●	●	●	●	●	As needed
Inspect for erosion on banks and bottom	●	●	●	●				Early Spring, fall & after major storms
Reestablish permament vegetation on eroded areas	●	●						As needed
Rake out dead vegetation			●	●				Annually - early spring
Replace stone rip rap	●	●	●	●				Every 3-5 years as needed
Mowing			●	●				**As needed to keep heights below 10 "**
Inspect structural elements during wet weather and compare to as-built plans (by a professional engineer)			●	●			●	Annually
Make adjustments or replacements as determined by annual wet weather inspection		●	●	●			●	As needed
Keep records of all inspections, maintenance and repairs	●	●	●	●	●	●	●	Annually
Keep records of all costs for inspections, maintenance and repairs	●	●	●	●	●	●	●	Annually
If needed, have a professional engineer carry out inspections upon identification of severe problems	●	●	●	●	●	●	●	As needed

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, responsible parties should conduct an annual inspection and an inspection after major storms.

Inspect Inlet and Outlet Pipes

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

Blown out pipe

- Structural integrity - Inspect the pipe to make sure it isn't crumbling or broken or displaced.

Undercutting Inlet Pipe

- 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. Any disturbed area must be reseeded. *Note: Over time sediment may naturally accumulate within the detention basin due to decomposing plant material and other natural processes. Though removal may not be needed immediately eventually it may become necessary for the basin to properly function.*

Sediment in flow channel

Outlet Pipes direct storm water from a detention basin to nearby creeks, streams or storm sewer system. 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:

Failed outlet structure

- Structural integrity - Check the pipe to ensure that it isn't crumbling or broken.

- Obstructions - Inspect the pipe end to determine if sediment, dirt, trees or debris (leaves, grass clippings, trash) 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.

Clogged outlet

Note: If any inlet or outlet pipes appear to be broken, exposed or in a state of disrepair a professional engineer should be contacted to review the structural integrity and to discuss maintenance options.

Inspect for Litter and Debris

Generally, inspections should be done at least twice per year (spring & fall) and after major storms, check for debris near the inlets and within the basin. Remove and properly dispose of debris or litter.

Trash & debris plugging outlets

Structures

Shed in basin

Placing structures in basins such as playground equipment sheds and fencing is discouraged as they will reduce the capacity of the basin.

Examine the Side Slopes and Bottom for Erosion

Check for sloughing or gullies on banks and bottom twice each year (spring & fall) and after major storm events. In addition, check for disturbances from vehicles or animals. Any damage observed should be repaired immediately by filling any eroded areas with topsoil and approved seeding. Mulch or straw should also be placed over seeded areas to prevent additional erosion.

Gully erosion in the basin bottom

Note: Areas where it appears the bank or piping is in danger of failing must be repaired immediately.

Major bank sloughing

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.

Make sure grass clipping and other waste does not clog the pipes after mowing.

Note: The City of Rockford's weed control ordinance states: all premises and exterior property shall be maintained free from weeds or plant growth in excess of 10 inches.

Basin that needs mowing

Inspect Vegetation

In the spring and fall inspect the vegetation on the banks and in the basin. Maintenance activities vary based on the type of basin. If you have a retention basin (wet pond) any dead or decomposing vegetation should be removed if they are clogging the pipe openings. Living vegetation greatly improves the water quality by filtering pollutants such as fertilizers, pesticides, oils and grease from the storm water.

Late fall is a good time to cut down and remove cattails. This will minimize clogging in the spring by dead vegetation.

Remove obstructions at pipes

Repair bare spots along banks and in the bottom. Most basins are a turf grass mix however some basins are planted to native mixes. To assure the appropriate mix is planted the engineering plans may need to be consulted.

Mulch or straw should also be placed over seeded areas to prevent additional erosion.

Poor vegetation

Trees

Basins overgrown with trees are not effective for storm water quality and flood control. As the trees get larger they reduce the capacity of the basin to store water plus tree roots can damage the banks and piping. In addition, the canopy from trees causes poor vegetation and filtering of pollutants. Trees can also block the inlet and outlet pipes creating poor storm water flows and potential erosion.

Trees that have overtaken basins should be removed and the basin reseeded. Any tree that is blocking the pipes should also be removed.

Basin piping blocked by trees