

INFILTRATION BASINS

STORMWATER MANAGEMENT PRACTICES GUIDANCE FOR PRIVATE OWNERS



INFILTRATION BASIN BASICS

Infiltration basins are depressions that collect and store stormwater until it can infiltrate into the ground. The bottom is usually flat and wide, planted with turf grass or native vegetation. Larger basins may be split into multiple smaller 'cells' using level spreaders, which help to prevent erosion within the basin.

While their primary purpose is to reduce the amount of stormwater leaving the site by promoting infiltration, they can also provide other benefits by removing sediment and reducing peak rates. As water flows through the basin vegetation, sediment settles out, and nutrients, metals, and organic material are adsorbed by the soil as the water infiltrates. Peak rates can be reduced if a multi-stage outlet is used.



Infiltration basins are susceptible to clogging from sediments so they are often used in conjunction with other stormwater management practices that can remove sediment, such as wet ponds. Due to their susceptibility of clogging and connection to groundwater, snow should not be placed in the effective infiltration area. It may be placed on the pretreatment area or areas draining into the pretreatment area. The use of fertilizers and chloride deicers should be limited in the areas draining directly to the basin to reduce the potential for groundwater contamination. If turf grass is utilized, the basin cannot be used for recreational purposes due to compaction concerns.

Clogged basins that do not drain within 24 hours should have maintenance performed to improve infiltration capacity, as failure to do so will result in poor vegetation, erosion, and reduced infiltration. Regular inspection and maintenance are crucial to ensure proper function.

ADVANTAGES

- Increase recharge into groundwater
- Preserve base flow in streams
- Remove sediment, nutrients, and organic material from stormwater
- May be designed to reduce peak flows
- Reduce thermal impacts of runoff

BASIN COMPONENTS

Berm: the compacted earthen wall.

Inlet: where pretreated stormwater enters the infiltration basin.

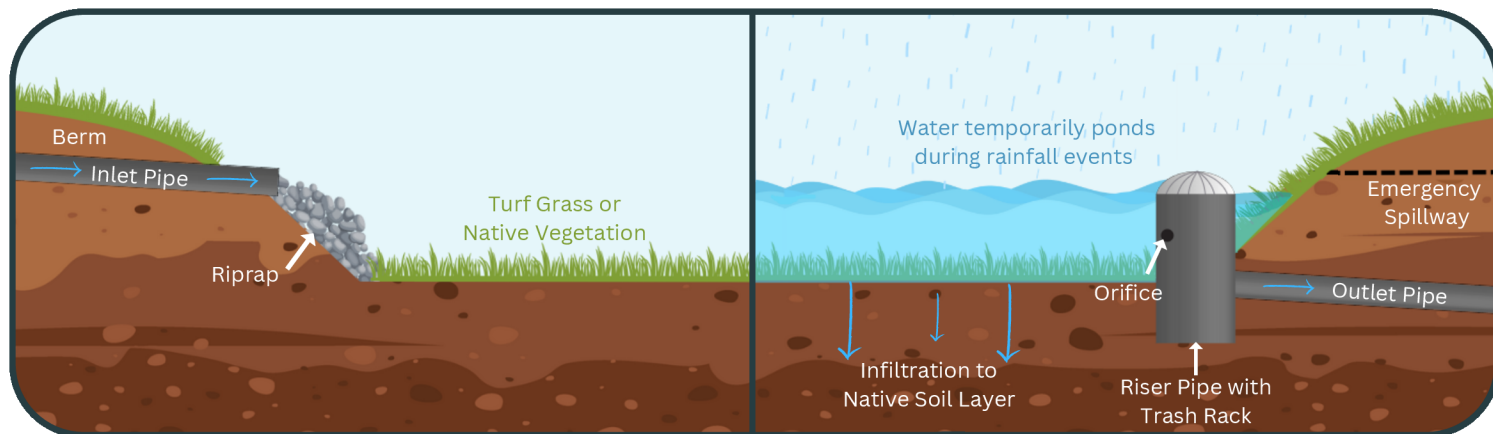
Riprap: angular rock that protects soil from erosion in areas of high or concentrated flows. Often used for energy dissipation.

Ponding Zone: receives and holds runoff until it has an opportunity to infiltrate.

Vegetation Layer: flat, vegetated area where water infiltrates into soil.

Outlet: where water exits the pond after being treated. There may be multiple outlets, such as an orifice and riser pipe (pictured below) to release water at different rates.

Emergency Spillway: a secondary outlet designed to safely release water during large storms.



BASIN MAINTENANCE

Proper maintenance will not only increase the expected life span of the facility, but will also improve aesthetics. While some maintenance tasks can be performed independently, others may require a professional. Below are several common maintenance tasks needed for infiltration basins.



Activity	Frequency	Maintenance Notes
Routine Inspection	Semi-annually	Perform a routine visual inspection twice per year and following major storm events to ensure the infiltration basin is operating properly and there are no problems such as erosion, extended ponding, unwanted vegetation, outlet obstructions, or structural damage.
Vegetation Management	As needed	<p>Vegetation plays a crucial role in the stability of an infiltration basin. Maintain vegetation type specified in approved plan. Remove all other vegetation from the device as needed.</p> <p>Routine vegetation management includes removing weeds, reestablishing vegetation in bare spots, removal and replacement of dead vegetation, and cutting back perennial plants each year in late winter/early spring. Watering may be necessary during extreme drought.</p> <p>Avoid the use of herbicides and fertilizers since these applications can directly contribute undesirable pollutants to waterways.</p>
Trash & Debris Removal	Every 1-3 months	Basin structures should be kept clear of debris to allow stormwater to flow as intended. A blocked outlet pipe can reduce drainage capacity, resulting in overflow, erosion and extended ponding. This not only jeopardizes the basin's functionality but also poses a risk of potential structural damage. Basins near high traffic areas may collect more trash & debris.
Basin Bottom Management	As needed	Infiltration basins that do not empty within 24 hours after a rain event may have a clogged soil surface. Deep tilling every 5 to 10 years to break up the clogged surface layers followed by regrading and revegetating is recommended. This may include removing any accumulated sediment; sediment removal should be performed only when the soil surface is in a very dry condition to avoid compaction of the basin bottom.
Observation Well Inspection	Annually	If the infiltration basin has an underdrain pipe to facilitate drainage, check the observation well for standing water by removing the cap and looking inside. Clean the pipe and underdrain if obstructions are present.

The information in this fact sheet provides general maintenance recommendations. Refer to your maintenance plan and agreement for specific requirements.



For more information or if you have questions please visit:
townofbuchanan.org/stormwater

Or contact Dennis Jandrey, Engineering Technician
 (920) 257-5844, DennisJ@townofbuchanan.wi.gov