

INFILTRATION TRENCH

STORMWATER MANAGEMENT PRACTICES GUIDANCE FOR PRIVATE OWNERS



TRENCH BASICS

A stone infiltration trench is a stormwater management practice that collects and stores runoff so it can infiltrate into the subsurface soil. They are typically longer than they are wide, less than 15 feet in width, and are filled with a washed stone aggregate that is 0.5 to 2.5 inches in size. Infiltration trenches are highly susceptible to clogging from sediment, so geotextile filter fabric is used to line the trench to prevent the surrounding soil from mixing with the stone.

Unless they receive runoff directly from a roof, runoff directed to a trench must be routed through a pretreatment device before entering the trench. Pretreatment of the runoff helps prevent both clogging of the trench from sediment, as well as groundwater contamination from pollutants contained in the runoff that is being infiltrated to the groundwater.

After pretreatment, water is directed to the trench, either via overland flow or through a pipe, where it temporarily ponds in the void spaces of the stone aggregate until it infiltrates into the subsurface soil. While these structures effectively treat the runoff volume from small storms, they typically lack sufficient capacity for larger storm events, in which case excess water may be conveyed out of the system through a perforated underdrain pipe.

Infiltration trenches also include observation pipes, which allow the owner to remove the cap and check for standing water in the bottom of the trench after storm events. Observation pipes should be checked 72 hours after the end of a storm event; if inspection shows ponding water, it may be an indication that the infiltration trench has failed and maintenance is needed.

As with all stormwater management practices, routine inspection and maintenance are crucial to ensure proper function.



PREVENTING GROUNDWATER CONTAMINATION

The application of lawn care fertilizers and pesticides should be avoided upstream of an infiltration trench to prevent groundwater contamination.

COMPONENTS OF AN INFILTRATION TRENCH

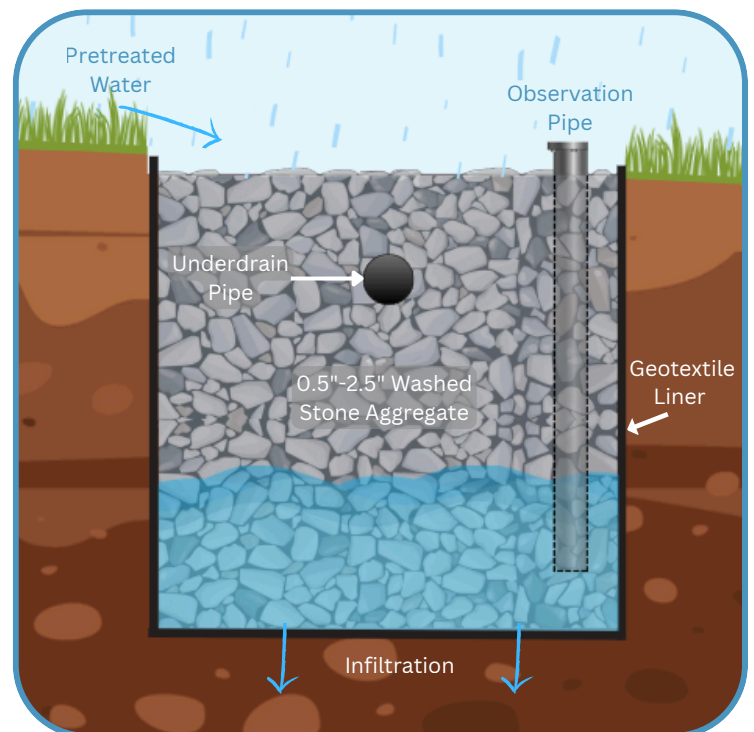
Pretreatment: Areas or means to remove larger debris and sediment prior to stormwater entering the system.

Storage Cell: The stone aggregate or gravel-less storage area where water ponds prior to infiltrating.

Geotextile Liner: A geotextile fabric that encloses the trench and provides separation between the storage cell and native soil, while still allowing drainage out.

Underdrain Pipe: A perforated pipe that is placed at the top of the storage layer as an outlet for runoff that cannot be infiltrated as quickly as needed. The underdrain must have a clean-out port that can be accessed for maintenance.

Observation Pipe: Pipe installed to monitor the level of ponded water at the bottom of the trench.



INFILTRATION TRENCH MAINTENANCE

Upon the construction of stormwater facilities, landowners sign a maintenance agreement where they commit to carrying out necessary maintenance on the facility to keep it functioning as designed. While some maintenance tasks can be performed independently, others may require a professional. Below are several common maintenance tasks needed for infiltration trenches.



An underground infiltration trench (with observation pipe) during and after construction

Activity	Frequency	Maintenance Notes
Routine Inspection	Twice per year	Perform a routine inspection twice per year to ensure the trench is operating properly, and there are no problems such as erosion, unwanted vegetation, standing water, or structural damage. For assistance on inspections, follow the Dane County BMP inspection guide.
Inspect & Clean Pretreatment Areas	Twice per year	Inspect pretreatment devices and conveyance features for sediment accumulation, clean pretreatment areas, and restore to original state as needed.
Trash & Debris Removal	Every 1-3 months and after large storm events	Trenches should be kept clear of debris to allow stormwater to flow as intended. A blocked stone trench can clog or result in overflow. Trenches near high traffic areas may collect more trash & debris.
Vegetation Management	As needed	Remove all weeds, trees, and woody vegetation growing in the trench. Remove grass that is growing in the stone. Mow grass around the perimeter of the trench, keeping grass clippings out of the trench to prevent premature clogging. If the top of the trench is grassed, it should be mowed regularly. Any bare or eroding spots should be reseeded to keep sediment from washing into the trench.
Observation Well Inspection	As needed	Observation wells should be checked 72 hours after the end of a storm event. If monitoring shows that water is ponded inside the trench, it may indicate that the bottom of the trench has failed and corrective action is needed.
Rehabilitate the Trench & Restore Design Capacity	Upon failure	If an infiltration trench has failed due to clogging at the top layer, the accumulated sediment should be removed by excavating the upper portion of the storage cell, removing the geotextile, and replacing the clogged stone with clean aggregate before reinstalling the fabric as needed. If standing water is observed in the inspection well, a full rehabilitation may be required, including excavation down to the original design depth to remove all clogged gravel, filter fabric, and accumulated fines. The trench bottom should be scarified or lightly loosened to restore infiltration capacity, then rebuilt according to the original specifications. Excavation and backfilling should be performed when soil moisture is low to minimize compaction and preserve permeability. Finally, upstream sediment sources or runoff misdirection should be corrected to prevent premature failure.

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

