

## On-site wastewater treatment systems

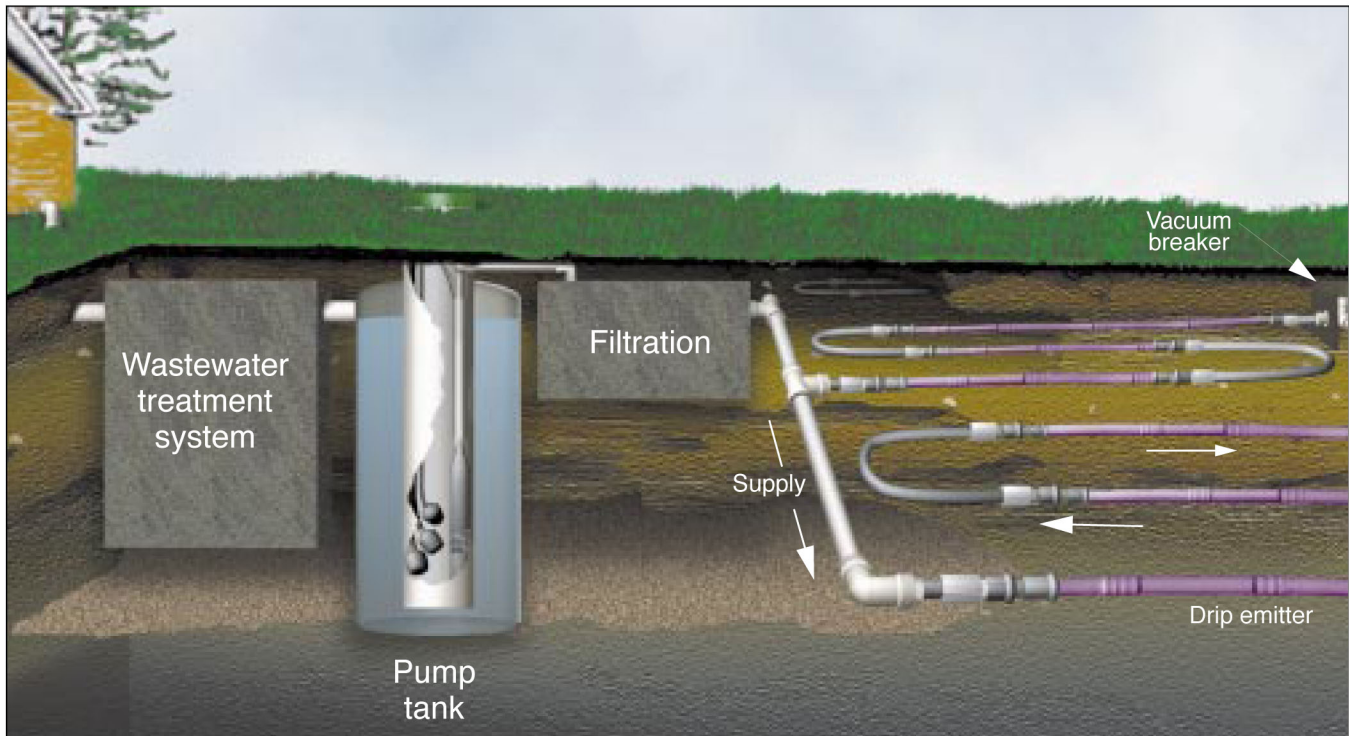


Figure 1: A subsurface drip system.

# Subsurface drip distribution

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**A** subsurface drip system distributes wastewater to the lawn through a system of tubing installed below the ground surface. It generally consists of four main components: a treatment device, a pump tank, a filtering device and a drip distribution system.

Several treatment devices are available, including an aerobic unit, sand filter, trickling filter or constructed wetland. The choice of treatment device depends on the type of drip tubing being used and the manufacturer's recommendations. The minimum treatment required is a septic tank to settle the solids. Most drip systems require additional treatment of the wastewater before it enters the filtering system.

The pump tank stores the water until the drip field is ready for a dose of water. A high head pump delivers the water from the pump tank through the filtering device to the drip distribution system.

The filtering device can be a sand, disk or screen filter. Its main purpose is to remove larger particles from the wastewater so they do not cause problems with the drip emitters.

Depending on the wastewater quality, the filter may need to be an automatic cleaning system.

The drip distribution system is made of a drip tubing approved by the manufacturer for use with wastewater. The tubing is generally 1/2 inch in diameter with an emitter in the tubing wall. The pressure inside the tubing is generally operated at 15 to 20 pounds per square inch (psi), with the water exiting the emitter at 0 psi.

The collection manifold for the drip system needs to be connected back to the treatment device for

flushing solids collecting inside the drip tubing back to the treatment device.

## Advantages

The drip distribution system can be used in most sites. It can be placed in clay soils, shallow soils and sites with moderately saturated conditions. It requires 1 foot of unsaturated soil below the drip tubing, and less surface area than a spray distribution system.

The drip system distributes the water uniformly in the lawn for reuse by the plants in the landscape. Pressure-compensating emitters can be used on fairly steep slopes.

## Disadvantages

The drip system requires at least 1 foot of unsaturated soil below the drip tubing, which is generally installed at 6 to 8 inches below the surface.

The drip system has very small emitters that can become clogged with organic matter and solids if the system is improperly maintained.

Drip distribution systems require an ongoing maintenance contract to operate and maintain the drip field.

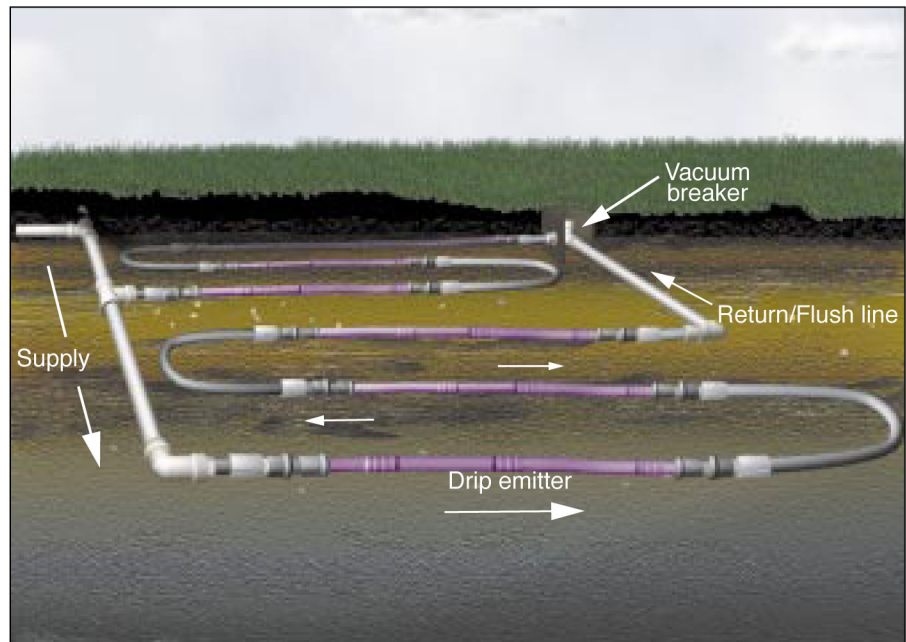


Figure 2: A subsurface drip system distributes water uniformly in the lawn.

## How to keep it working

- ✓ Pump the treatment system at least every 2 to 3 years to prevent solids from being dosed into the drip tubing.
- ✓ Check the filtering system periodically.

## Estimated costs

Installation generally costs between \$4,000 to \$10,000, depend-

ing on the type of pretreatment, filtering device and monitoring system. The pretreatment system is a large component of the installation costs. A drip distribution system generally costs \$2,000 to \$3,000.

Maintenance costs are about \$300 to \$600 per year, which includes periodic pump-out, electricity and required maintenance visits.

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