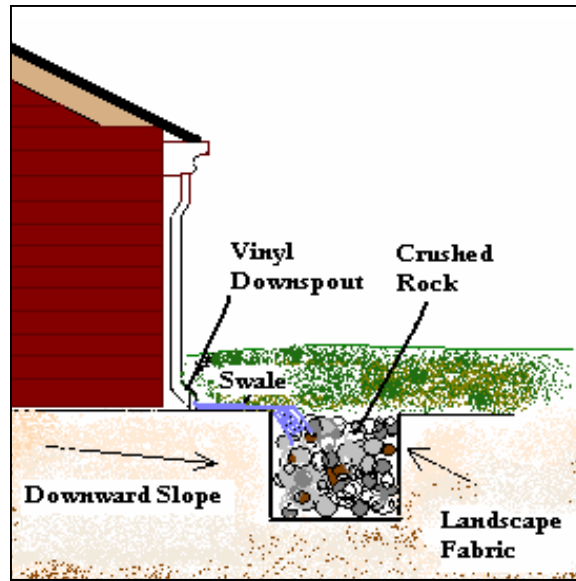


Dry Wells

Dry wells are designed to temporarily store rainwater until the water can infiltrate (soak into) the soil. Dry wells are designed to directly catch rainwater. The collected rainwater is allowed to soak into the soil and be filtered before entering the water system and becoming potential drinking water. Dry wells are used to store water from a downspout or in a problem area of the yard where water collects.

A dry well is a small pit filled with crushed stone. Before constructing a dry well an infiltration test must be conducted to determine if the dry well will function properly (See page 35). The dry well must be sized to ensure that the well will work correctly, see the table below for dry well sizing.



Storm Depth (in.)	Roof Area Draining to Dry Well (sq. ft.)	Depth (ft.)	Area (sq. ft.)	Example Length (ft.)	Example Width (ft.)
0.25	100	1.5	3.8	2	3
0.25	250	1.5	9.4	4	3
0.25	500	1.5	19	7	3
0.5	100	1.5	7.5	3	3
0.5	250	1.5	19	7	3
0.5	500	1.5	38	13	3
1.0	100	1.5	15.1	6	3
1.0	250	1.5	38	13	3
1.0	500	1.5	75	26	3

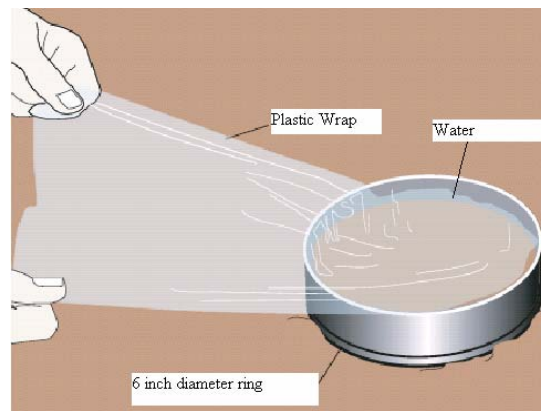
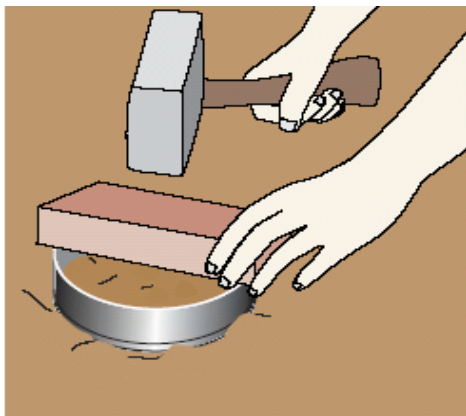
Infiltration Test

Materials:

- 6" diameter ring
- Hand sledge
- Wood block
- Plastic wrap
- 500 mL plastic bottle or graduated cylinder
- Stopwatch or timer
- Pen
- Paper

An infiltration test is used to determine how quickly water can soak in and flow through the soil. This test must be conducted before installing a rain garden or dry well. If the test is not conducted there is no way to tell if the newly installed dry well or rain garden will function properly.

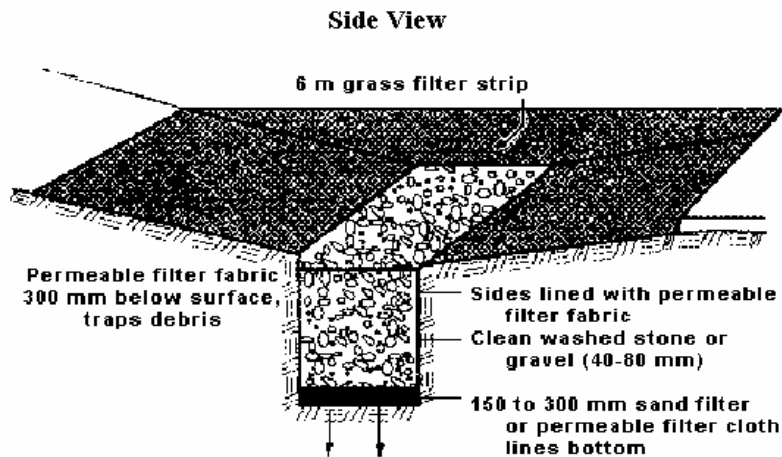
1. Drive a ring 3" into the soil, where vegetation has been cleared.
2. Firm the soil around the outside edges of the ring to prevent seepage.
3. Line the soil surface inside the ring with plastic wrap.
4. Fill a bottle with 444 mL of water. Pour water over plastic wrap, remove plastic wrap, and record the time when the water has soaked into the soil and the soil surface is glistening.
5. Repeat the test 2-3 more times over the same test area. Do not move the ring. The tests should be run consecutively and last under one hour. If the test lasts more than one hour then a dry well or rain garden will not function properly.



Where To Get Help for dry wells & infiltration tests

- Step-by-Step Directions for both Dry Wells and Infiltration Testing; <http://www.greentreks.org/eacnetwork/pdf/PWDFinalHomeownerBMPManual11006.pdf>
- Infiltration Test; <http://soils.usda.gov/sqi/assessment/files/chpt3.pdf>

Infiltration Trench



Infiltration trenches are designed to collect and filter rainwater. When water is collected in an infiltration trench, the water is allowed to permeate into the soil rather than flowing directly into the water system. Infiltration trenches are excavated trenches that range from 3 to 12 feet deep. The trenches are backfilled with stone aggregate and lined with filter fabric. Research has shown that infiltration trenches can remove up to 90 percent of sediments, metals, coliform bacteria, and organic matter. Up to 60 percent of phosphorus and nitrogen, and 70-80 percent of biochemical oxygen demand can be removed by infiltration trenches.

Infiltration trenches function in cold weather only when surface icing is avoided. Installation of infiltration trenches should be in areas where levels of sediments and hydrocarbons (grease and oil) in runoff are low. When sediment levels are high, infiltration trenches can become clogged and stop functioning properly. Before installing an infiltration trench, be sure that the groundwater will not become contaminated. Do not install a trench where hazardous materials or chemicals are stored.

Where To Get Help for infiltration trench information

- Environmental Protection Agency, Infiltration Trenches;
<http://www.epa.gov/owm/mtb/infltrenc.pdf>
- Infiltration Trench;
<http://www.knoxcounty.org/stormwater/pdfs/vol2/4-3-7%20Infiltration%20Trench.pdf>

Pervious Pavement

Impervious surfaces, such as parking lots, collect pollutants in higher concentrations than the surrounding surfaces. These pollutants include oil and anti-freeze and are easily washed into rivers and streams by rainwater. The EPA Storm Water Phase II Final Rule provides programs and practices to regulate the concentrations of pollutants that can be found in waterways.

There are two ways to reduce the pollutant levels found in waterways. The amount of runoff to the waterways can be reduced, or the amount of pollutants in the runoff can be reduced. One method to reduce the pollutants found on surfaces such as parking lots is to use pervious (porous) pavement.



Pervious pavement reduces the ability of pollutants to build up. Pervious pavement uses the same materials as conventional concrete, but the fine aggregate material found in conventional concrete is removed. Upon curing, water is allowed to flow through the porous pavement. Since water can flow through the porous pavement pollutants cannot build-up. Instead, the pollutants move from the surface through the pervious pavement and into the soil. The soil acts as a filter, ridding the water of many harmful pollutants before the water travels to streams and rivers.



Pervious pavement requires a little maintenance. The pervious pavement must be cleared of debris that can clog the pores and reduce the ability of water to infiltrate. Soil will support pervious pavement if the soil can support a septic tank.

Pervious pavement can be used to construct low-volume pavements, residential roads and driveways, tennis courts, swimming pool decks, patios, and parking lots.

Where To Get Help for pervious pavement information

- EPA Storm Water Technology Fact Sheet Porous Pavement; <http://www.landarch.uiuc.edu/resources/courses/coursewebsites/LA441Web/Readings2006/EPA-PorousPaving.pdf>
- Pervious Concrete; <http://www.perviouspavement.org>