

ROCK INFILTRATION



MAINTENANCE

COSTS

- Range: \$510 – \$9688
(average = \$3800)
- Healthy Lakes grant funding available:
\$1000 per rock infiltration practice

MATERIALS

- Shovel or excavating equipment
- Clean crushed stone
- Landscaping fabric
- Catch basin (possible)
- Perforated drainage pipe (possible)

PERFORMANCE STANDARD

- Capture - one year 24-hour storm runoff



Deer Lake, Polk County - Cheryl Clemens

A ROCK INFILTRATION PRACTICE, an upland best practice, is an excavated pit or trench filled with rock that reduces runoff by storing it underground to infiltrate. A catch basin and/or perforated pipe surrounded by gravel and lined with sturdy landscape fabric may be integrated into the design to capture, redirect, and pre-treat water. Pit and trench size and holding capacity are a function of the area draining to it and the permeability of the underlying soil.

PURPOSE

This infiltration best practice captures, cleans, and infiltrates runoff that would otherwise move downhill into the lake. It is appropriate for sandy to loamy soils only (not clay!) and may require a catch basin or diversion practice to redirect runoff water to it.

HOW TO BUILD

It may be necessary to work with your local land and water conservation department or a landscaper to design and/or construct this practice, particularly in regards to size and placement. Check with your local zoning department to determine if any permits are necessary.

Detailed guidance is found here: <http://tinyurl.com/runoffguide>.

1. Find a location

Place the practice at least 10 feet away from your home to prevent flooding. It can be placed closer to structures without basements or foundations. It should also be 50 feet from drinking water wells, especially if the well is old, and should not be placed uphill from or over a septic field. If the rock infiltration pit is backfilled/buried, a spillway outlet will be necessary; be sure the outlet drains away from the lake. Dig a hole to be certain there is at least three feet of soil depth before groundwater is reached. You will also want to be sure the soil is sandy to loamy.

The rock infiltration practice may function better if you locate it where incoming runoff first moves and cleans itself across a grassy area. Alternatively, identify a catch basin location at the base of a downspout. The gutter should lie on top of the catch basin and not be a sealed connection in the event

PROJECT TIMELINE

SITE PREP
1 DAY

INSTALLATION
1-2 DAYS

PROJECT END
< 1 YEAR
Same growing season

Ongoing
maintenance checks
subsequent years.



FACT SHEET SERIES: **ROCK INFILTRATION PRACTICE**

of backup. You may need to use a gutter extension to be sure the catch basin is several feet from the foundation.

2. Measure drainage area and size the practice

The size of the practice will depend on the soil type and its infiltration rate as well as the size of the surface area it drains. The fact sheet links provide some tools to measure drainage area and practice size.

3. Create a design

Sketch the design and dimensions to be sure you understand what area it will cover and how it may function or fit into your landscape. Consider the following:

- How will water flow from the practice if/when it overflows?
- Will you have adequate access to properly maintain it?
- Will it be placed in a location free of motor vehicle traffic or other activities that cause soil compaction?

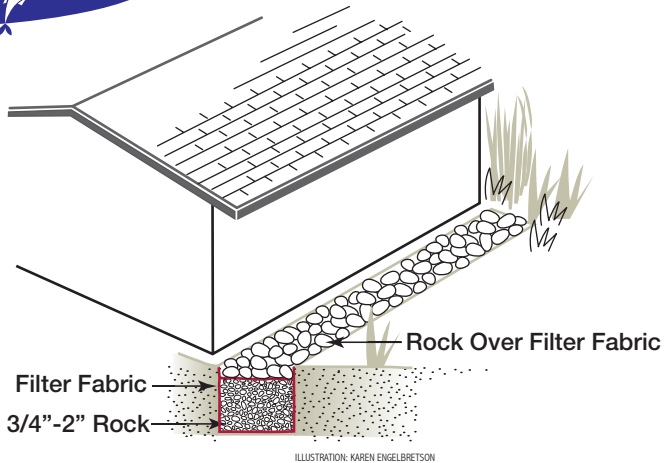


ILLUSTRATION: KAREN ENGELBRETSON

4. Lay out the best practice

Lay out the shape and boundary of the project based on the design. Before you start digging, contact <http://www.diggershotline.com/>.

5. Construct the practice

Install silt fence downslope of where the practice will be constructed. Dig the pit or trench in a location downslope and deep enough to drain the area calculated in Step 2. It shouldn't be deeper than 5 feet because the soil below will compact and not drain effectively. Line the trench with landscape fabric and fill with 3/4-2" rock to no more than within 6" of the top of the pit. Lay filter fabric over the top and cover the remaining space with 4-6" of clean rock. The top layer of larger rock and filter fabric can be removed and replaced for maintenance and cleaning purposes.

If using a catch basin with drain tile, install the catch basin at the base of a downspout, dig a trench in a location downslope and deep enough to allow for 6-12" of stone to be placed around the drain tile. A standard trench is about 1.5 feet deep and 10-12" wide, varying based on the size of the pipe chosen (usually 4-6") and the desired depth. Line the trench with landscape fabric and place 6-12" of stone in the bottom of the trench. Install a 4" or 6" perforated drain tile and surround the pipe with stone and then backfill with soil. The landscape fabric should be wrapped all of the way around the stone to prevent mixing of the surrounding soil into the stone. This will keep the porous spaces in the stone open for the water to flow through. The trench should be sloped enough to move water through the drain tile to the desired destination and have an outlet at the end for extreme storm events.

\$ FUNDING NOTE

Healthy Lakes rock infiltration practice grant funding is not intended for heavily developed parcels, sites with large volumes of runoff, or sites with complex problems that may require engineering design.

MAINTENANCE

- Mark the location of the practice above the ground, if it is backfilled, to avoid compaction, and do not drive across the area.
- Remove materials like leaves and pine needles that collect on top of the system and in/around the catch basin and/or overflow pipe.
- Inspect the practice and remove, wash and/or sift, and replace surface layer rock as necessary. If filter fabric is used to line the bottom of the practice, the smaller rock may also need to be removed and washed to clean out accumulated sediment.
- The rock infiltration practice must remain in place for 10 years if Healthy Lakes grant-funded.

LINKS

Healthy Lakes Website – <http://healthylakeswi.com>

Controlling Runoff and Erosion on Your Waterfront Property: A Guide for Landowners <http://tinyurl.com/runoffguide>

Vermont Lake Wise Program: http://www.watershedmanagement.vt.gov/lakes/html/lp_lakewise_standards_bmps.htm

DNR Lake Protection Grants – <http://dnr.wi.gov/aid/surfacewater.html>

For more information contact Pamela Toshner at 715-635-4073 or pamela.toshner@wi.gov.

