



Aquifer & Rainwater Infiltration Study

When rain water hits the ground, it percolates through the soil as **groundwater** to the water table below where it is stored. The spaces where water is stored underground are called **aquifers**. When the soil is paved or compacted, rain water is unable to soak into the ground. Too much water is sent across the hard landscape and either causes flooding and erosion, or is sent into the street, where it ends up polluted in the ocean! To get a better idea of water infiltration in and around your home and neighborhood, do this simple at-home activity using a simple infiltrometer to see which soils will infiltrate rain the best.



Make an aquifer model

What you will need:

- Glass jar or other clear container
- Modeling clay (to fit across the bottom of the jar)
- Enough of the following, to each fill about 1/4th of the jar:
 - Rocks
 - Gravel
 - Sand
 - Soil
- Watering can or other container of water

Instructions:

- Flatten the modeling clay and place it at the bottom of the jar. This represents the clay at the bottom of an aquifer.
- Add the rocks. The space between the rocks creates our aquifer, where the “ground water” will be stored.
- Add gravel and then sand to create more layers of the ground
- Add soil at the top, until the container is nearly full

Observe what happens when it rains:

- Using a watering can to act like rain (or other container of water), slowly pour the water over the top of the soil.
- Watch as the water seeps through each of the layers and stops at the bottom of the aquifer. This may take some time.
- What is being observed, is **infiltration**, the process of water entering the soil.

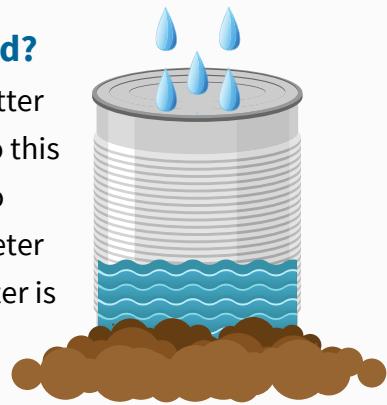
What would it be like with other types of soil surfaces?

We want to share your aquifer model!

Post to your social media and tag us at treepeople.org #greenquarantine

Measure soil infiltration - how much moisture is absorbed?

Comparing the infiltration rate of different types of soils will give a better idea of what types of soil help groundwater get into the aquifer. To do this make a homemade **infiltrometer**. An infiltrometer is a device used to measure the rate of water infiltration into soil. A single-ring infiltrometer is basically a metal ring that is pushed into the ground, that when water is added into the ring, measures how much moisture is absorbed.



What you will need:

- Metal can with the top and bottom removed (your infiltrometer)
- Water Infiltration worksheet and pencil to record data

Find different types of soil situations to test, such as:

- Soft, fluffy soil with organic matter
- Hard, compacted soil
- Grass covered soil
- Gravel covered soil
- Concrete covered soil

In each location:

- On the worksheet, check mark the characteristics of the soil.
- Push the infiltrometer into the ground, as far as it will go.
- Pour $\frac{1}{4}$ cup of water into the hole.
 - If the water is absorbed into the ground, add another $\frac{1}{4}$ cup of water. Continue until no more water is absorbed.
 - If water leaks out the bottom stop adding water.
 - If water sits on top and is not absorbed, take note
- Keep a tally of each time you add water.

Look at your results!

- Thinking about the site characteristics and the amount of tallies:
 - Which location had the most tallies — showing the most infiltration? Why?
 - Which location had the least? Why?
 - What can you conclude about the different types of soil infiltration if the goal is to have as much infiltration as possible?
 - What can you do to help ensure more rainwater infiltrates?



Name:

Date:

Rainwater Infiltration Study

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you add more water**

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