



# THIS IS Groundwater

Did you know that most of the water that we use is underground? This is known as **groundwater** and it makes up 30% of all fresh water! While the water we see on the surface — in streams, lakes, and rivers — is important, so is groundwater.

Since 95% of the fresh water we use to drink, bathe, and cook comes from groundwater, it is important that we take good care of it and make sure it stays clean. **Water quality** refers to the level of cleanliness of water.

## KEY DEFINITIONS

**Aquifer:** underground geological formation of sand, soil, gravel, and rock able to store and yield water.

**Groundwater:** water contained under the ground's surface, located in the spaces between soil particles and in the cracks of sand, gravel, and rock.

**Infiltration:** flow of water from above to below ground.

**Spring:** emergence of groundwater at the surface through a steady flow.

**Surface Water:** water above ground, such as lakes, rivers, streams, ponds, floodwater, and runoff.

**Unsaturated Zone:** section immediately below the earth's surface that contains both water and air, but is not completely saturated with water.

**Confining Layer:** underground geological formation of fine-grained material, such as clay or shale, that restricts the flow of groundwater.

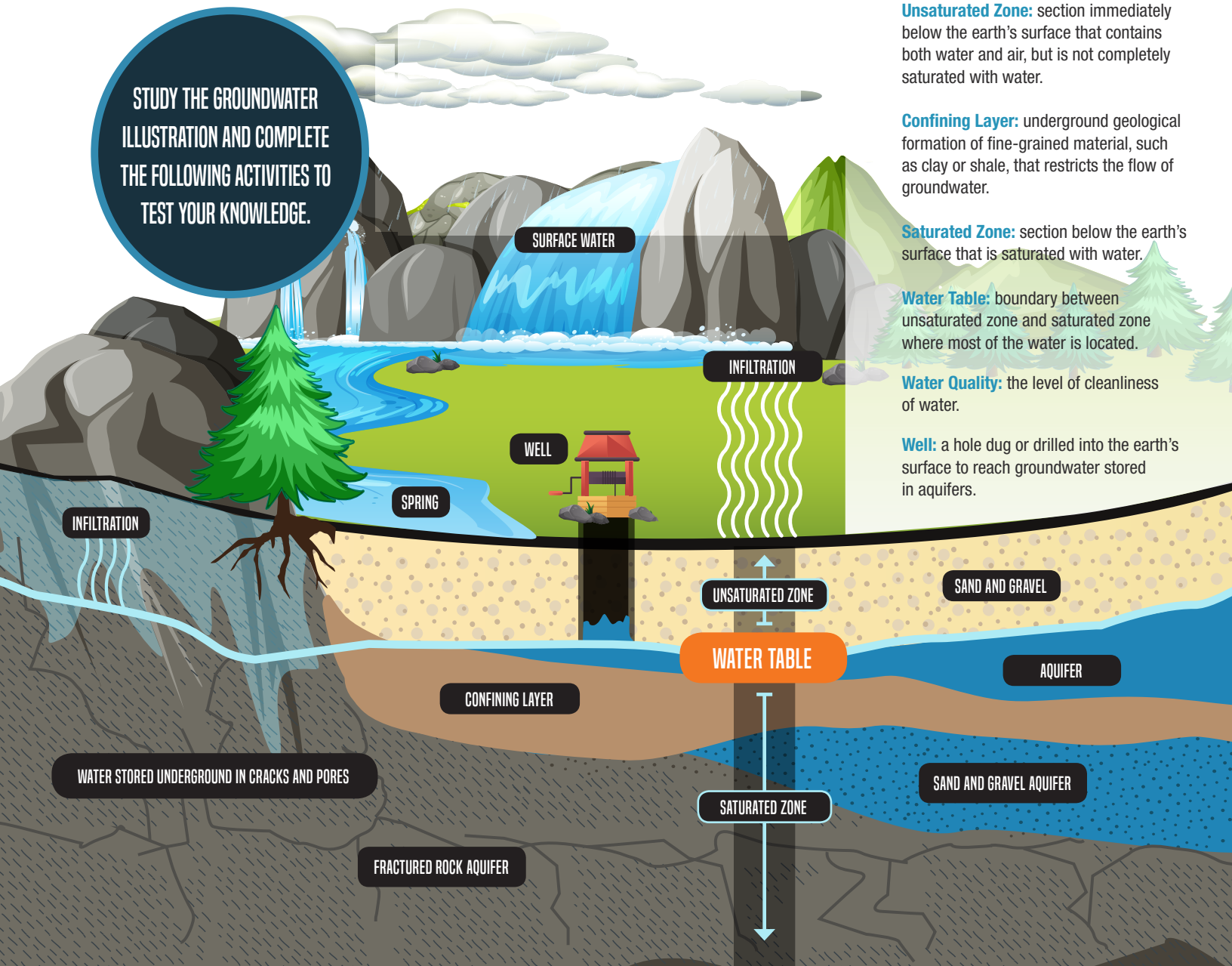
**Saturated Zone:** section below the earth's surface that is saturated with water.

**Water Table:** boundary between unsaturated zone and saturated zone where most of the water is located.

**Water Quality:** the level of cleanliness of water.

**Well:** a hole dug or drilled into the earth's surface to reach groundwater stored in aquifers.

STUDY THE GROUNDWATER ILLUSTRATION AND COMPLETE THE FOLLOWING ACTIVITIES TO TEST YOUR KNOWLEDGE.



# WORD SEARCH

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Aquifer  
 Infiltration  
 Spring  
 Surface Water  
 Water Table  
 Water Quality  
 Well

## QUIZ ANSWER THE QUESTIONS TO SEE HOW MUCH YOU KNOW.

1 True or false. Most of the water we use is groundwater.

True                      False

2 Which of the following means the flow of water from above to below ground?

A. Water Table    B. Aquifer    C. Infiltration    D. Spring

3 What zone do plants absorb water from?

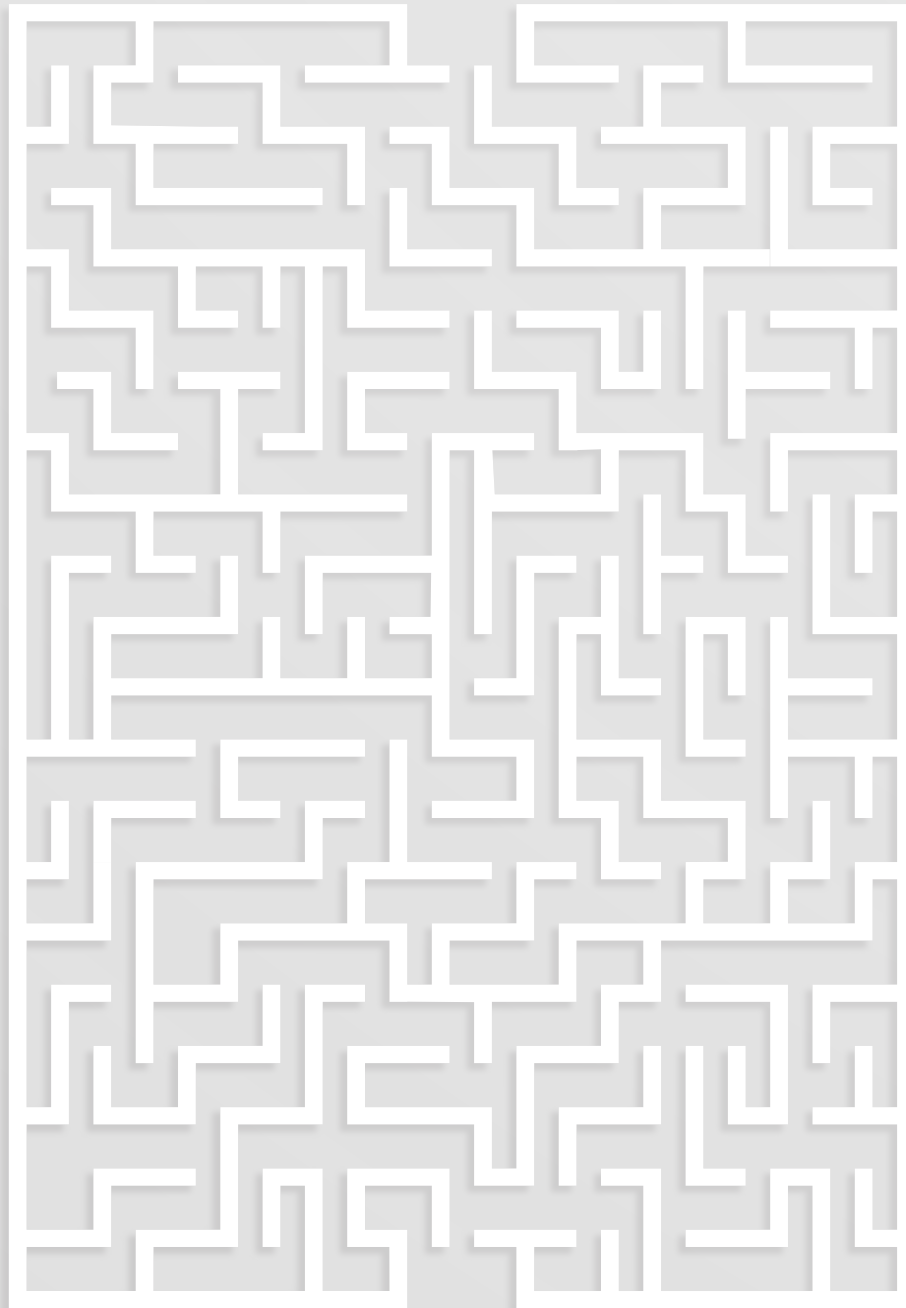
A. Unsaturated Zone    B. Spring    C. Saturated Zone    D. Water Table

### HIDDEN BUT MASSIVE

*At any given moment, the amount of groundwater is 20 to 30 times greater than the amount in all the lakes, streams, and rivers of the U.S.*



**START**



## MAZE

HELP OUR WATER DROPLET FRIEND FIND THE WATER WELL, AND LEARN SOME FUN FACTS ALONG THE WAY.

### PUMP, PUMP, PUMP...

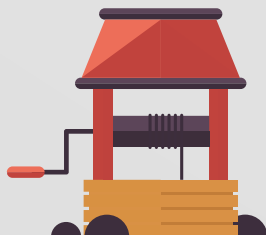
*There are more than 15.9 million water wells in the U.S. — all used for a variety of purposes, from irrigation to mining.*

### GROUNDWATER ROAD TRIP

*The distance that groundwater flows per year varies from a few feet to hundreds of miles, depending on the aquifer's makeup and flow system of groundwater.*

### WHAT MAKES WATER TASTE SO GOOD?

*The most commonly dissolved minerals in groundwater that give it its unique flavor are calcium, magnesium, sodium, potassium, chloride, sulfate, and bicarbonate.*





# DIY Visualize Groundwater

USING A CLEAR PLASTIC CUP, SAND, GRAVEL, AND WATER, YOU CAN CREATE YOUR OWN GROUNDWATER.

- 1 FILL CUP 3/4 WITH THE FOLLOWING MATERIALS IN ORDER:
  - GRAVEL
  - SAND
  - CLAY
  - DIRT
- 2 ADD WATER UNTIL HALF OF THE GROUND FROM STEP 1 IS SATURATED WITH WATER. CAN YOU IDENTIFY THE WATER TABLE?
- 3 ADD MORE WATER UNTIL IT COVERS THE GROUND. YOU'VE CREATED SURFACE WATER.
- 4 TRY OTHER COMBINATIONS OF MATERIALS FROM STEP 1 - AND HAVE FUN!

## DID YOU KNOW?

*The U.S. uses 79.6 billion gallons of fresh groundwater per day for public supply, irrigation, livestock, manufacturing, mining, thermoelectric power, and other purposes.*

## THAT'S A LOT OF GROUNDWATER!

*Out of all the freshwater in the world, minus the polar ice caps, about 95% is groundwater.*

**Age Level:** 11-14 (middle school).

**Key Definitions:** Aquifer, Groundwater, Infiltration, Saturated Zone, Spring, Surface Water, Unsaturated Zone, Water Table, Water Quality, Well.

**Objective:** To learn about the importance of groundwater.