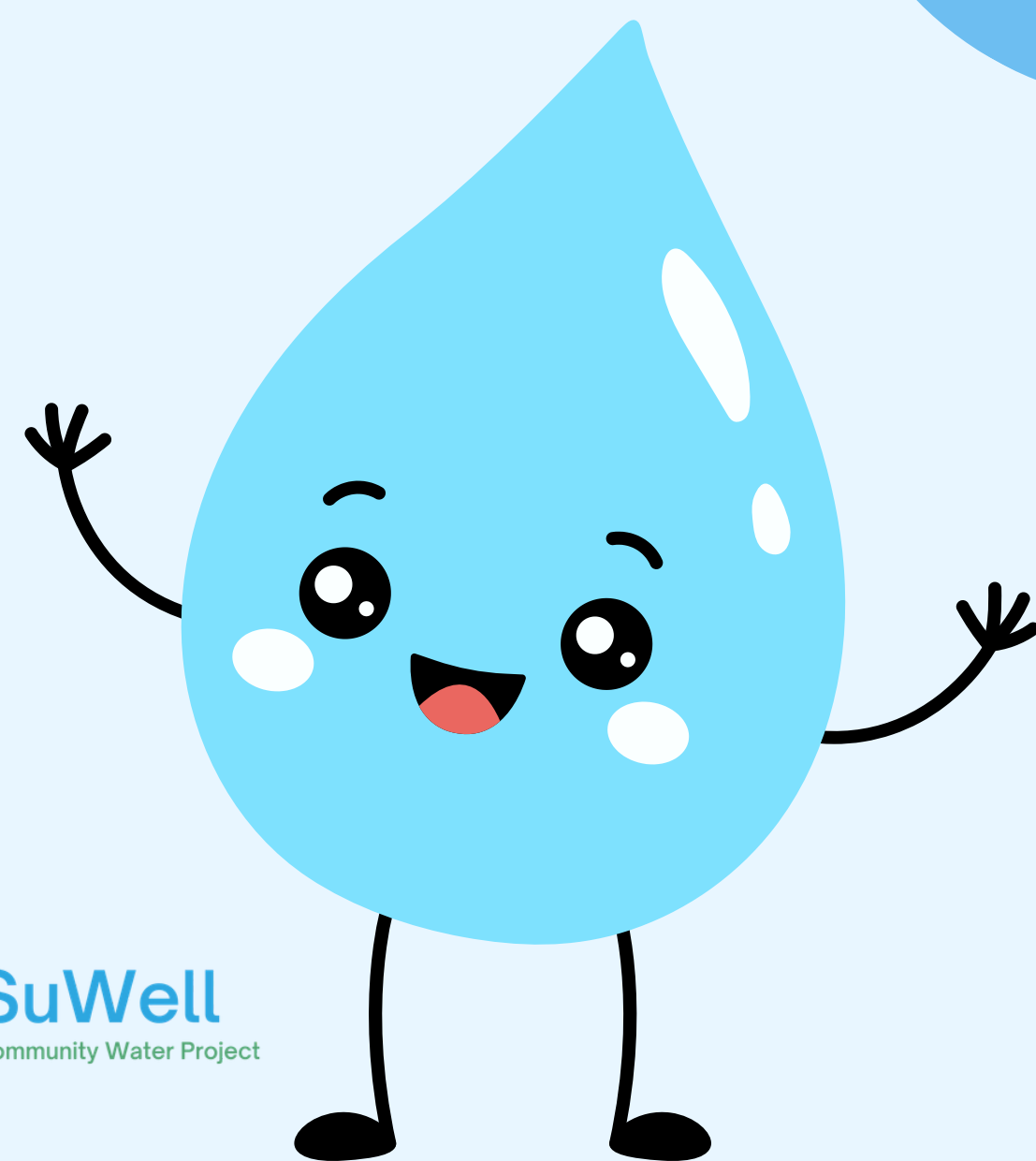


**DRINK SMART.
DRINK SAFE!**

**Safe Drinking Water
Activity Book!**

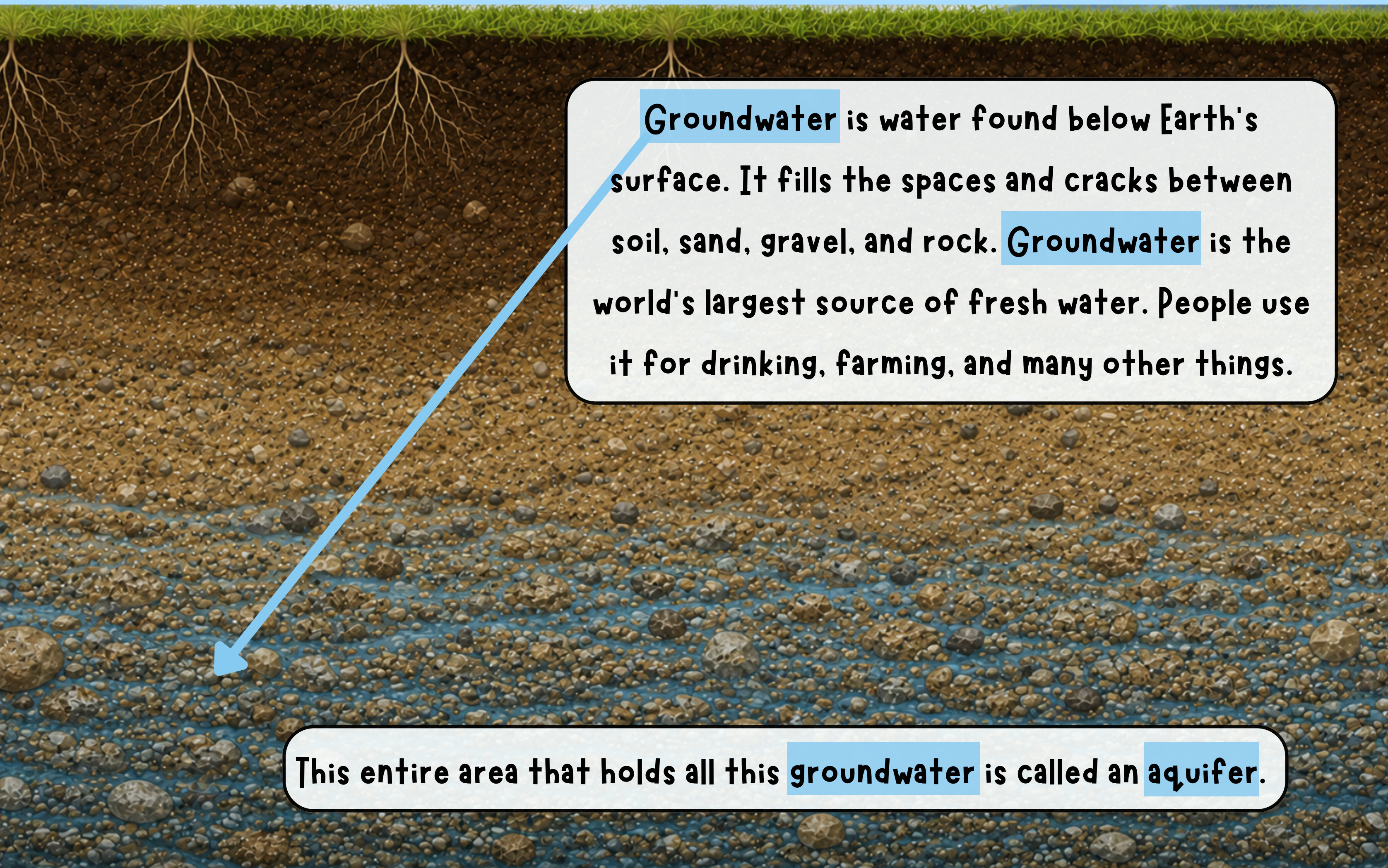


Hi! My name is Jacob. My family lives outside of town and my parents have been teaching me about where we get our drinking water!



We get our drinking water from a domestic well on our land. A well is a system that pumps water from under the ground, called groundwater, into our house.



A cross-section diagram of the ground. At the top is a layer of green grass. Below it is a layer of dark brown soil with tree roots extending down. Underneath the soil is a layer of light brown gravel and rocks. A blue line representing groundwater runs horizontally through the spaces between the rocks. A blue arrow points from the text box to this groundwater layer.

Groundwater is water found below Earth's surface. It fills the spaces and cracks between soil, sand, gravel, and rock. **Groundwater** is the world's largest source of fresh water. People use it for drinking, farming, and many other things.

This entire area that holds all this **groundwater** is called an **aquifer**.

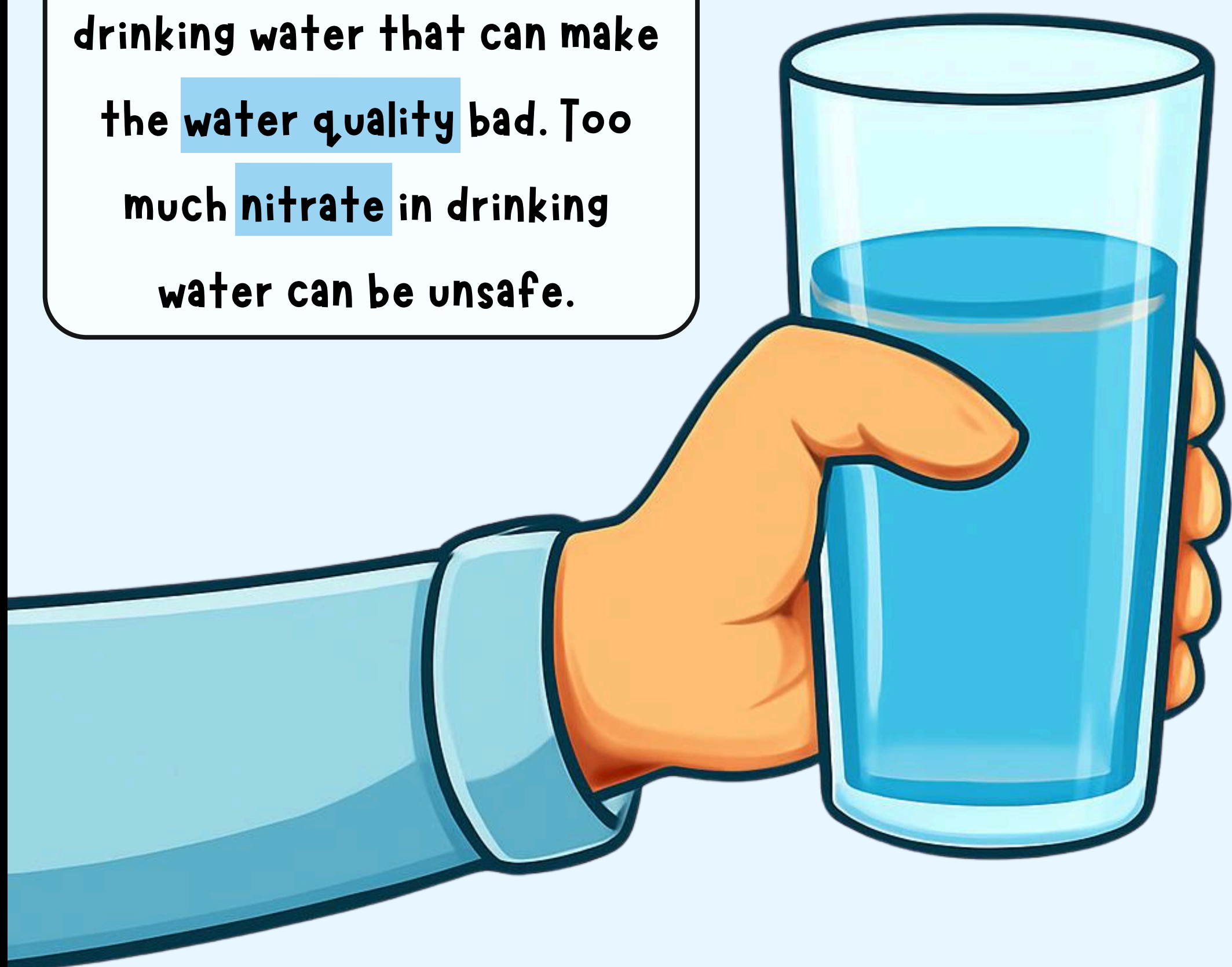
A diagram showing the process of groundwater recharge. The top half shows a green grassy field under a blue sky with white clouds and falling rain. A large, black, wheeled irrigation system is shown on the grass. The bottom half is a cross-section of the ground, showing a layer of dark brown soil above a layer of light brown gravel and rocks. A blue line representing groundwater runs horizontally through the spaces between the rocks. A blue arrow points from the text box to this groundwater layer.

Groundwater is filled up by **precipitation** and excess water used for irrigation. This process is called **recharging**.



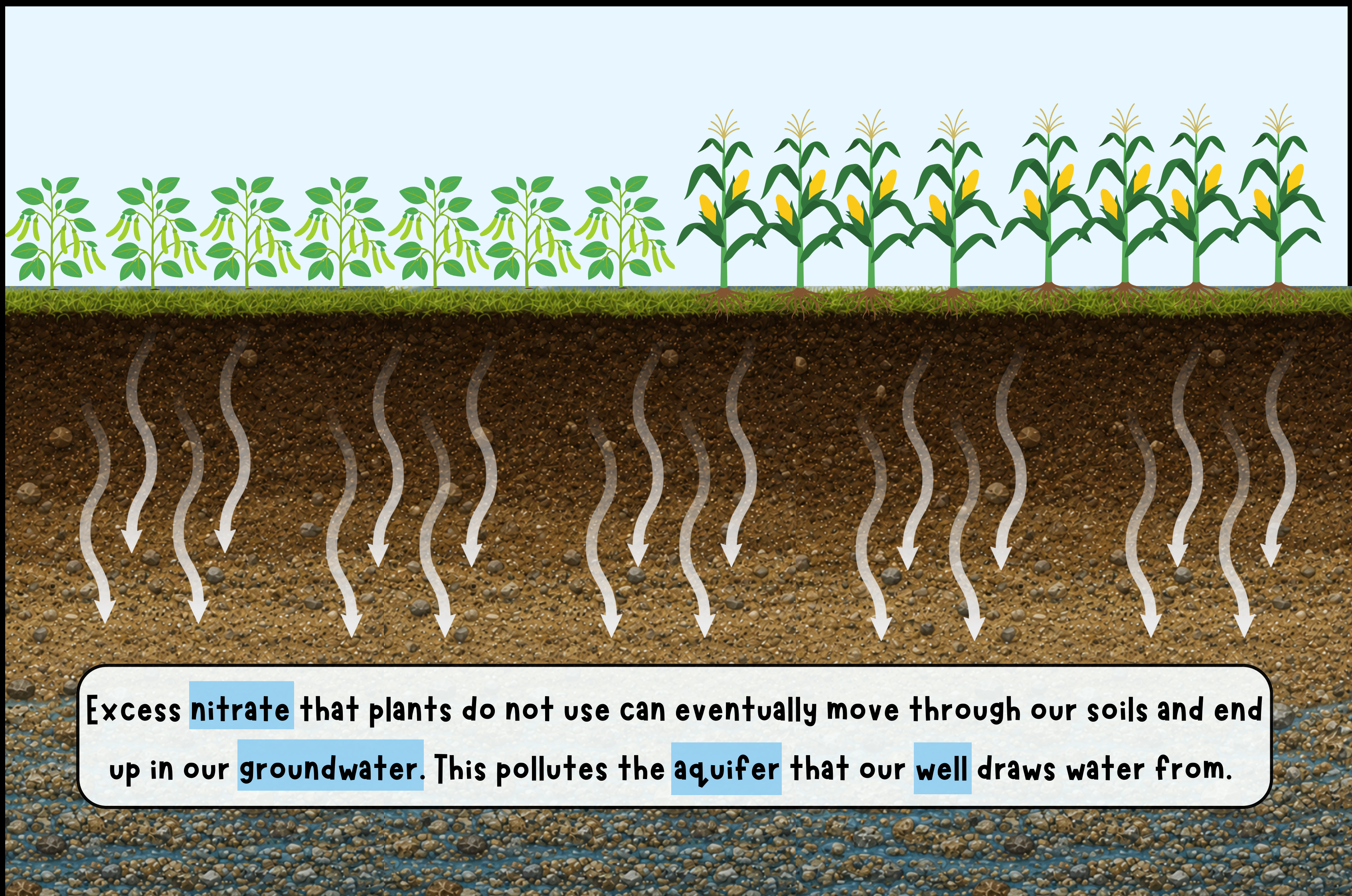
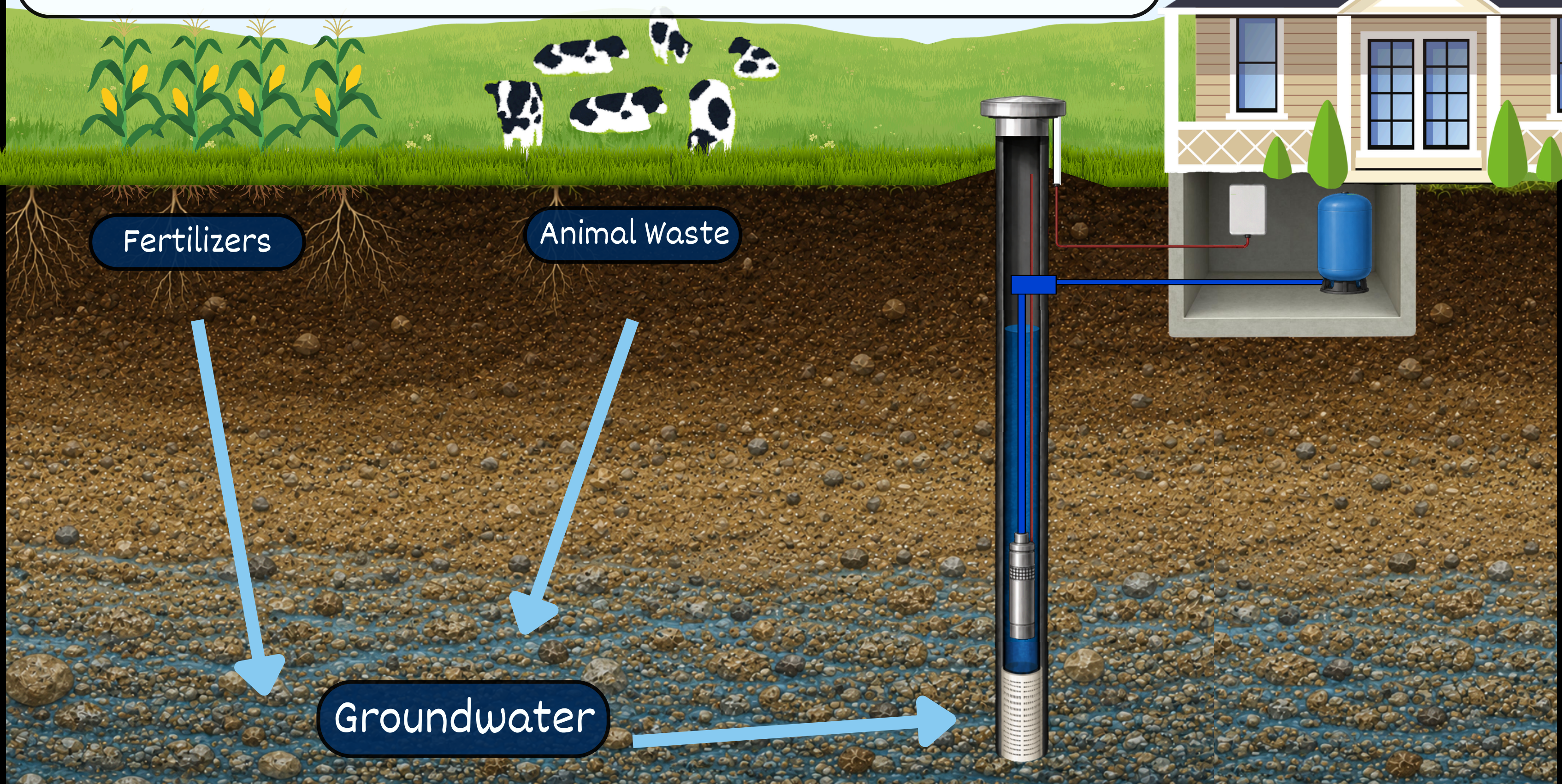
My parents taught me that water can sometimes be unsafe to drink if the **water quality** is bad. **Water quality** tells us how clean and safe water is for people, plants, and animals to consume and use.

Sometimes, things like **nitrate** can get into our drinking water that can make the **water quality** bad. Too much **nitrate** in drinking water can be unsafe.



Nitrate and many contaminants are colorless, odorless, and tasteless. This means that, even if a glass of water looks crystal clear, it still might not be safe to drink.

Nitrate is a chemical compound that can naturally come from animal waste and also from chemical and natural **fertilizers**. **Fertilizers** are chemical or natural substances we put on our crops to help them grow.



Excess **nitrate** that plants do not use can eventually move through our soils and end up in our **groundwater**. This pollutes the **aquifer** that our **well** draws water from.

That is why my family **monitors** our well water.



To **monitor** means to check something regularly to make sure it is working the way it should.



We **monitor** our well water by having our water tested at a trusted **water quality** lab. Their tests let us know if there is too much **nitrate** or any other unsafe chemicals in our drinking water.



To keep our water safe, we use a special filter called a
RO system. This helps keep our water clean!



By testing and monitoring our
domestic well water, my family can help
make sure our drinking water stays safe
and healthy for our friends and family!



GLOSSARY

Water Quality:

How clean and safe water is for people, plants, and animals to consume and use.

Groundwater:

The water below Earth's surface that fills all the voids and cracks in and around soil, sand, gravel, and rock. It is the largest supply of freshwater in the world and is used for drinking water, farming, and more.

Fertilizer:

Chemical or natural substances we put on our crops to help them grow, similar to vitamins we take.

Nitrate Test:

The way to check if there is too much nitrate in your drinking water.

RO System:

A special filter that removes nitrate and other unsafe things from drinking water.

Aquifer:

The area underground that holds all the groundwater.

Domestic Well:

A system that pumps water from under the ground into your house for drinking and preparing food.

Monitor:

To check something regularly to make sure it is working the way it should.

Nitrate:

A chemical compound that can naturally come from animal waste and also from chemical and natural fertilizers.

Recharge:

The process of refilling groundwater with precipitation and excess irrigation water.

Precipitation:

Rain, snow, sleet, and hail.

Hi! I'm Wally the water droplet!

I am going to give you some fun facts about water while you practice what you just learned in Jacob's story!



FILL IN THE BLANK

Word Bank

nitrate test water quality aquifer well
RO system groundwater recharge fertilizer

Choose which word from the word bank above fits in the sentences.

1. The process of refilling the groundwater is called _____.
2. _____ tells you how clean and safe water is for people, plants, and animals to consume and use.
3. A _____ is the only way to check if there is too much nitrate in your drinking water.
4. _____ is the water stored beneath Earth's surface that fills all the voids and cracks in and around soil, sand, gravel, and rock.
5. A domestic _____ pumps water from under the ground into your house for drinking and preparing food.
6. _____ are chemical or natural substances we put on our crops to help them grow, similar to vitamins we take. .
7. An _____ is the area underground that holds all the groundwater.
8. A _____ is a special filter that removes nitrate and other unsafe things from drinking water.

Did you know?

Nebraska has more groundwater than any other state in the US!



WORDSEARCH

Z A Q U I F E R J K S N D R H
W R F E R T I L I Z E R A W R
E I E F N Z Z Z X R I R H E E
L J J M N V Q I A K F O Q T C
L F K O I C S X S H U R H U H
E N L N T H F G K U L E G H A
D R T I R E C P X K K Z P R R
L X G T A J I W K V K Q N W G
Z Y S O T P M O E Z G J B Y E
G R O R E D W A T E R I B M B



Did you know?

Water helps your body break down food so you can absorb all the good vitamins and minerals you need to grow!

Word Bank

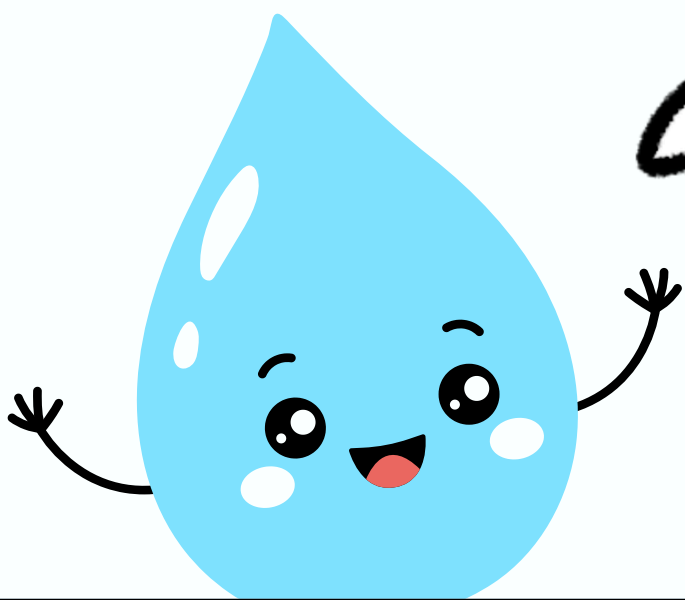
- ☐ groundwater
- ☐ aquifer
- ☐ fertilizer
- ☐ monitor
- ☐ well
- ☐ recharge
- ☐ nitrate

WORD SCRAMBLE

Word Bank

monitor water quality aquifer RO system
domestic well groundwater nitrate test recharge

Unscramble
the Words!



Did you know?

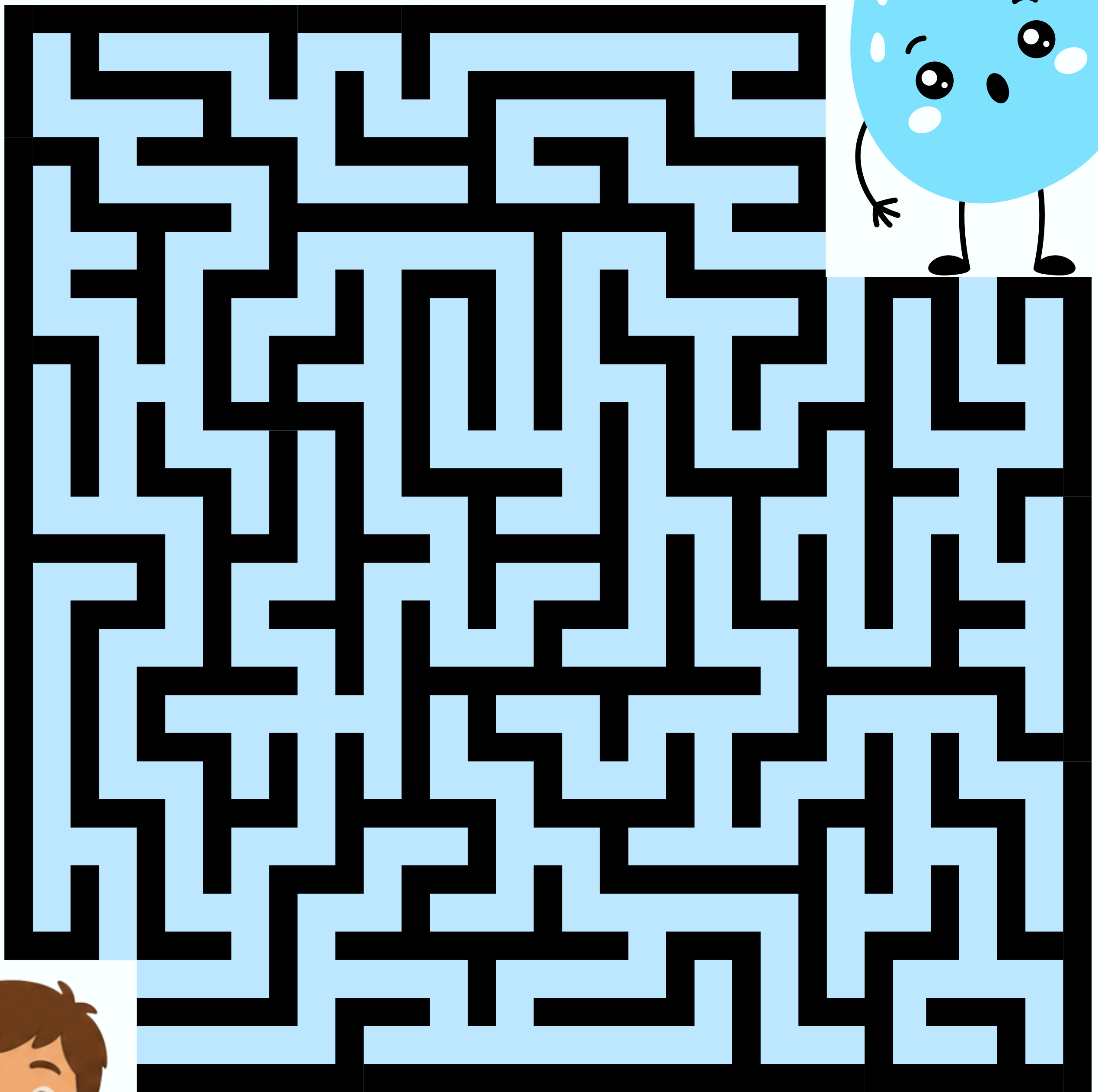
71% of the Earth's surface
is covered in water!

1. AWRTE YTAUQLI (2 WORDS) _____
2. RNUOEAGDRTW _____
3. OR MYSTSE (2 WORDS) _____
4. RIQEUF _____
5. CMODTISE LLWE (2 WORDS) _____
6. AETTNIR TETS (2 WORDS) _____
7. CRHAEGRE _____
8. ONRIOTM _____

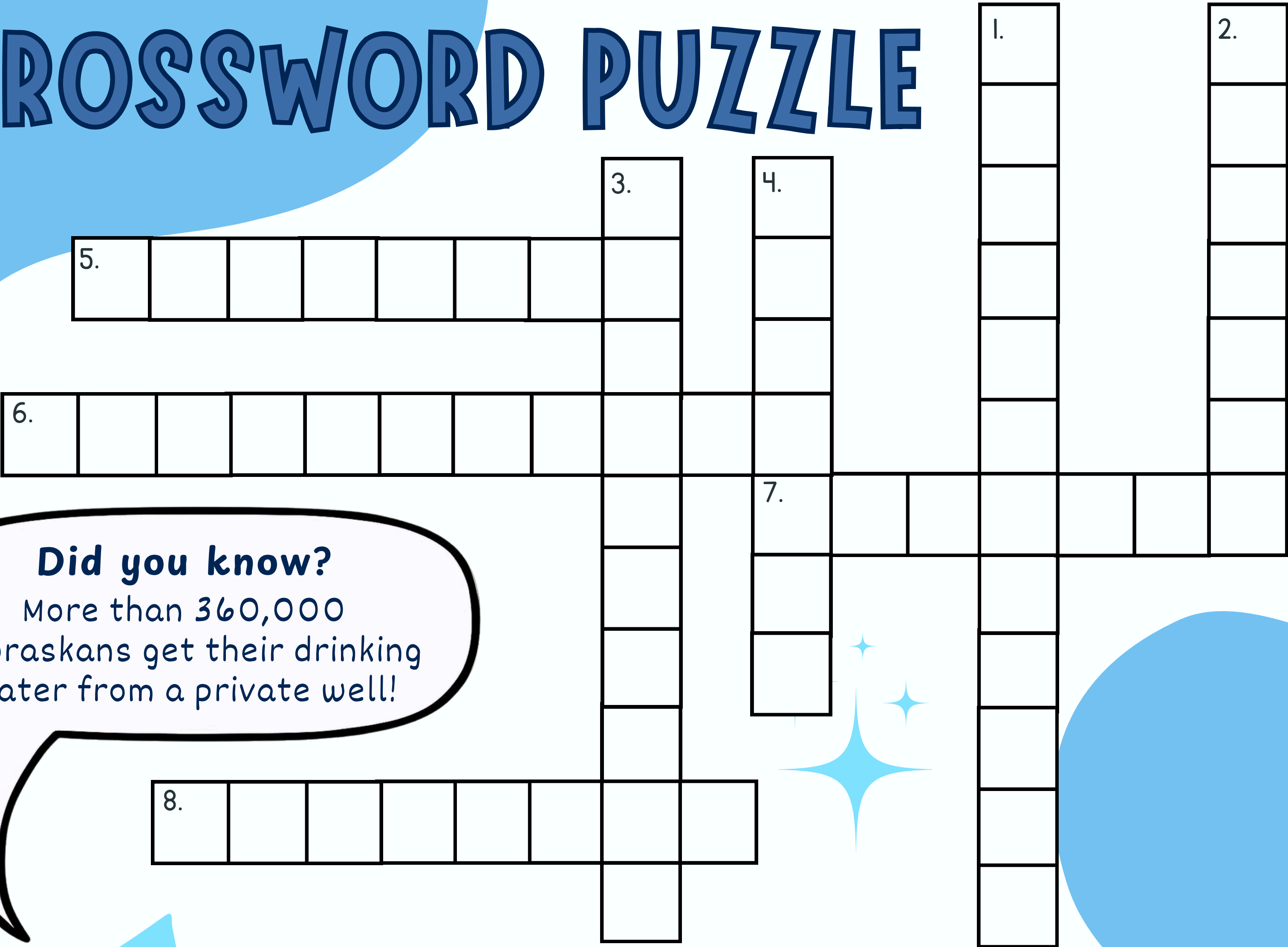
HELP JACOB FIND WALLY!

Did you know?

Water is everywhere in your body! Your brain is 73% water, your lungs are 83% water, and your bones are 31% water!



CROSSWORD PUZZLE



Did you know?

More than 360,000
Nebraskans get their drinking
water from a private well!



Word Bank

recharge domestic well aquifer monitor
nitrate groundwater fertilizer RO system

Down

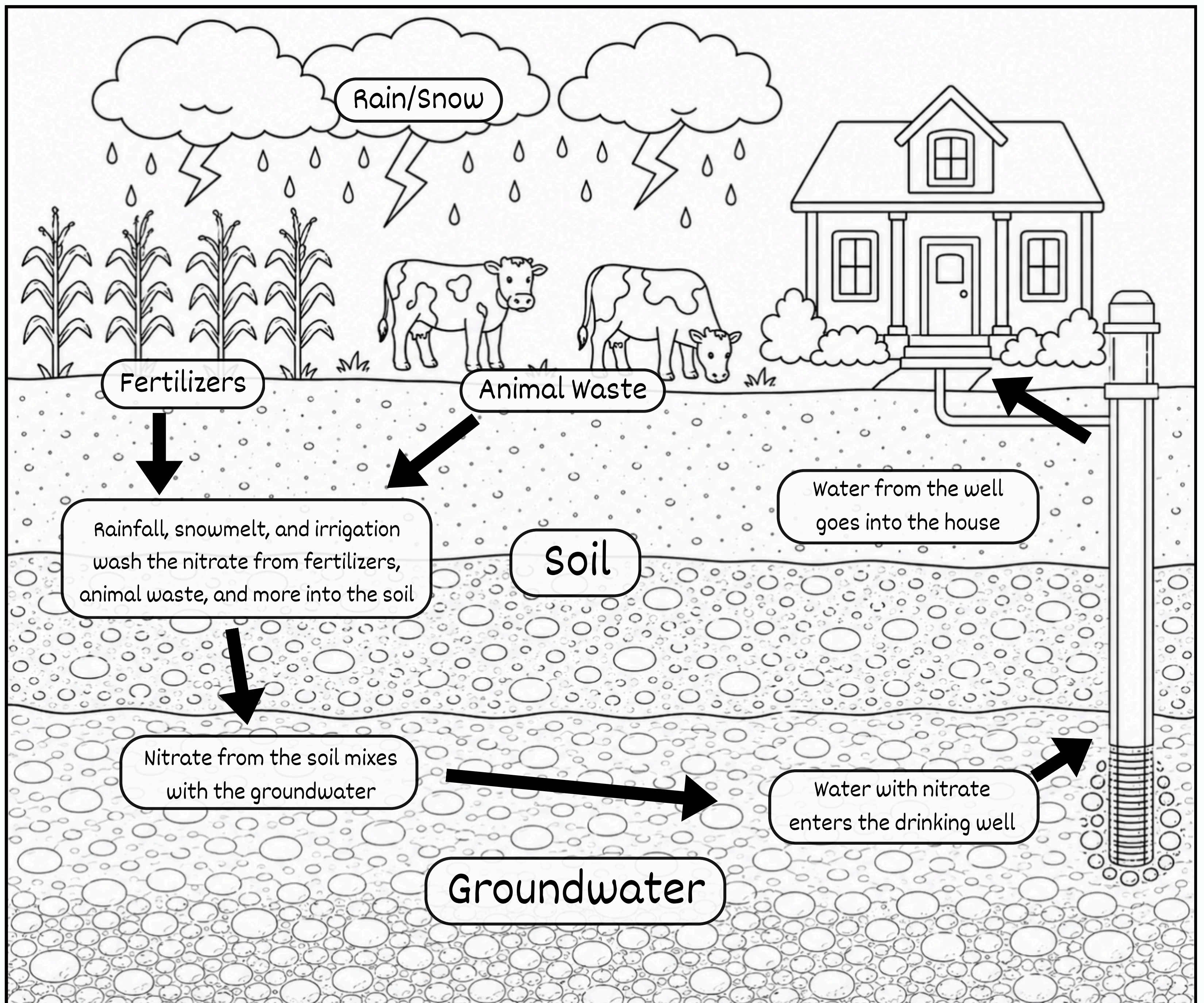
1. A system that pumps water from under the ground into your house for drinking and preparing food.
2. To check something regularly to make sure it is working the way it should.
3. Chemical or natural substances we put on our crops to help them grow, similar to vitamins we take.
4. A chemical compound that can naturally come from animal waste and also from chemical and natural fertilizers.

Across

5. The process of refilling groundwater with precipitation and excess irrigation water.
6. The water below Earth's surface that fills all the voids and cracks in and around soil, sand, gravel, and rock.
7. The area underground that holds all the groundwater.
8. A special filter that removes nitrate and other unsafe things from drinking water.

NITRATE DIAGRAM

Color in this diagram that shows how nitrate can get into your well water!



THANK YOU!

**We hope you enjoyed learning
about well water quality!**

To learn more, visit our website:



Booklet created by:

**Katherine Thaden, Becky Schuerman, Krista Brown,
Anni Poetzi, Taylor Dahl, Summer Woolsey, and Jesse Bell**

**Funding for this project was provided by Builders
Vision Philanthropy and the Claire M. Hubbard Foundation.**

Some illustrations in this booklet were generated or edited using AI.

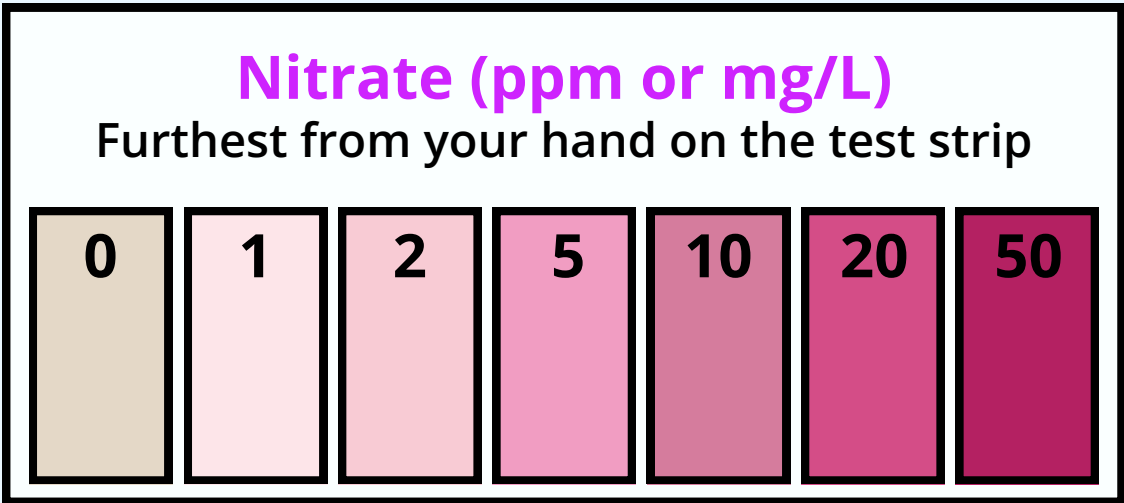
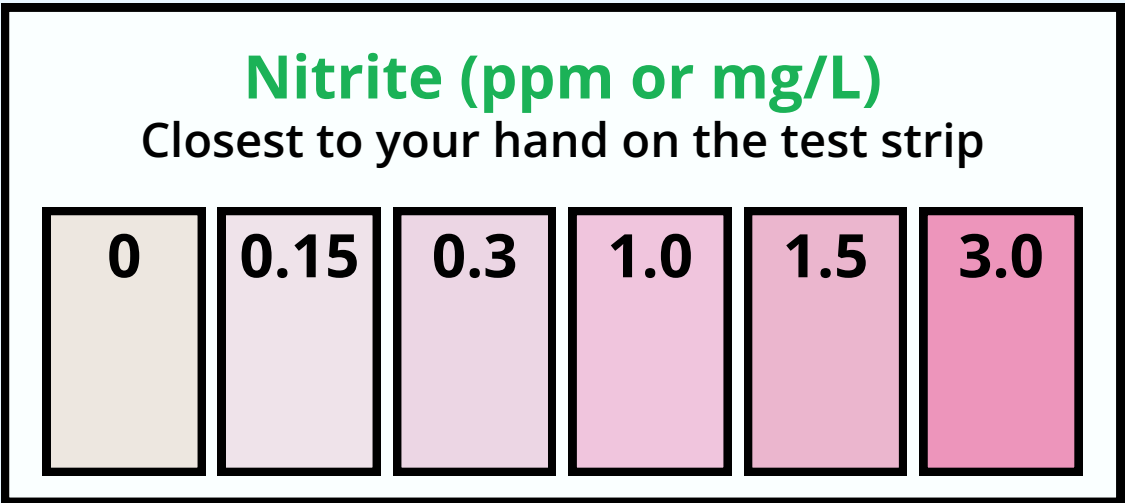
Test your water at home!

What you will need:

- 1. **Your Testing Kit** — This kit contains all of your testing strips for measuring nitrate in your water sample(s). The strips are all time sensitive, so be sure to read them at the right time (see directions).
 - 2. **A Stopwatch** — As stated earlier, all of the test strips are time sensitive. Feel free to use your phone, wristwatch, or any other device which allows you to keep accurate time in seconds.
 - 3. **A Water Sample** — If you are testing surface water such as a river, stream, or creek, you can use these tests without any preparation.
- If you are testing well water in your home, you need to allow your water to run for at least five minutes prior to testing in order to flush your system and accurately measure nutrient levels in the water.

Nitrate/Nitrite Testing Steps:

- Step 1:** Familiarize yourself with the test strip. In order to get an accurate reading, you must be sure to read the correct pads at 60 seconds.
- The pad which is about 1/4 of the way up the strip is for **Nitrite** (labeled in green)
 - The pad which is at the very end of the test strip is for **Nitrate** (labeled in purple)
- Step 2:** Submerge the strip in water for 1 second. Remove. Be sure to get both of the pads wet. **Do not shake off excess water.**
- Step 3:** Hold the test strip horizontally with the pads facing upwards.
- Step 4:** After **60 seconds**, read and record your result for the **Nitrite** and **Nitrate** pads.



Your Sample Information:

Please answer the following:

Your Name: _____
Phone #: _____
Email: _____
Date: _____
Time of Testing: _____

Testing location:
Address (if available): _____

Latitude (if known): _____
Longitude (if known): _____

Well Water Tests:
Well depth, if known = _____

Submit your results:

<https://go.unl.edu/wqcs>

