

The Wonderful World of

# Water

SAMPLE



This book belongs to:



### Getting Around Water Town

#### Water Is Everywhere

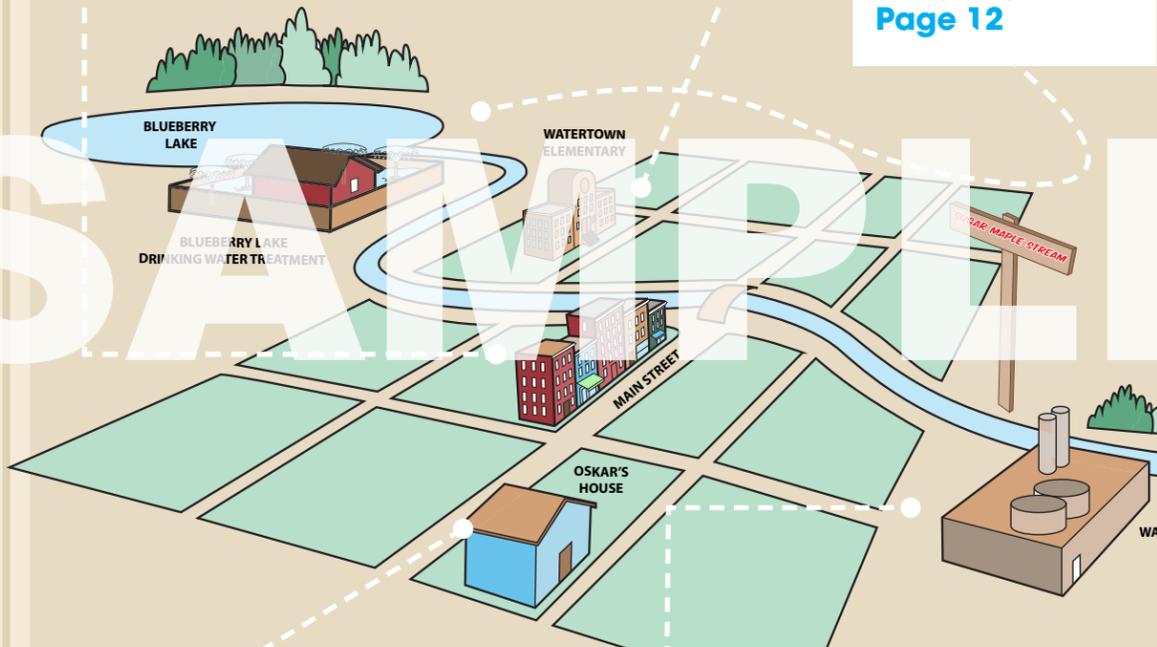
Did you know that water plays an important role in our communities, homes, and parks? **Page 4**

#### Water in Our Bodies

Clean water keeps us healthy and energized! **Page 6**

#### Our Water Utility

Did you know that water utilities make sure we have clean water every day? **Page 12**



#### Water in Our Homes

We use water around the house every day, and we can take small steps to save a lot of water! **Page 14**

#### Our Wastewater Treatment Plant

Where does our water go after we flush it? Discover the smelly truth! **Page 16**

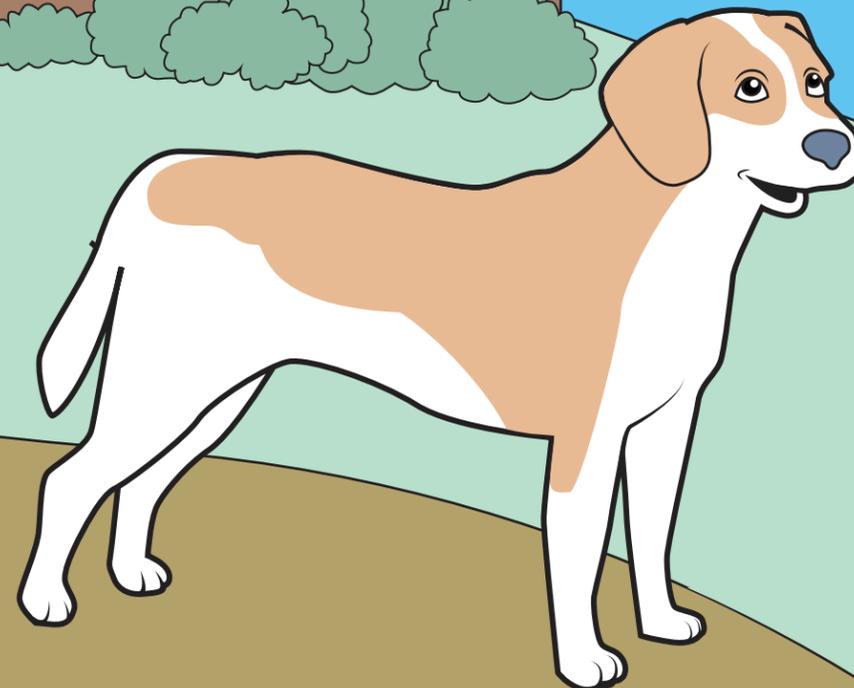
#### Water and You

You can help save water and keep it clean while having fun at the same time! **Page 18**

# WELCOME TO WATER TOWN USA

## WHERE WE CELEBRATE WATER EVERY DAY!

I'm Oskar the water beagle!  
I live in Water Town.



### Let's Dive In!

In Water Town, we've always treasured our lake, streams, and waterways. We can't wait to show you how important water is in our town! Join your tour guide, Oskar the water beagle, to explore all the ways we use and enjoy water.

# Water Is Everywhere!

This is Main Street in Water Town, USA. But where's all the water? That's a good question! Water isn't just in lakes, rivers, and oceans. It's under the street, in the walls of buildings, and even up in the sky! Let's take a closer look to discover where all the water is hiding on Main Street!

## People



Your body is about 60% water. You need all that water to stay healthy. That's why it's important to drink water every day. But water is in short supply. Only a small portion of the water on Earth is safe to drink, so we need to conserve as much of it as we can.

## Did You Know?

You can save water by turning out the lights! That's because it takes water to generate electricity, so the less electricity you use, the more water you save!

## Lights

We need electricity to turn on the lights. But did you know we need water to make that electricity? There are lots of ways to make electricity, and almost all of them use water. In a hydroelectric power plant, falling water spins the blades of a giant turbine to generate electricity. Other power plants use steam to make electricity. Without water, there wouldn't be any lights in Water Town!

## Workplaces

Lots of jobs require water. Firefighters spray water to fight fires. Farmers use water to irrigate their crops. Businesses use water to produce goods. Water is essential to the economy.



## Clouds

Clouds might look like fluffy cotton balls, but they're actually made up of millions of tiny water droplets. How much water is in a cloud? So much that a typical cloud weighs more than a million pounds. A big thunderhead can weigh more than 2 billion pounds!

## Vocabulary

**Water conservation:** Making choices to save water.

**Irrigation:** Watering crops when it's not raining to help plants grow.

## Buildings

It takes a lot of water to build a town. We need water to make the bricks for schools, the concrete for the sidewalks, and the asphalt for the roads.



## Pipes

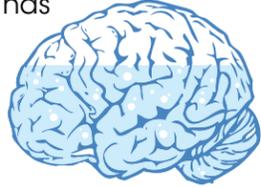
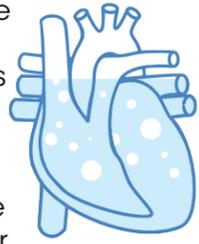
Underground pipes carry clean water to the buildings, houses, and fire hydrants in Water Town. Separate pipes carry away wastewater (that's the water that goes down the drain or toilet). Your water utility cleans all that water and moves it from place to place.

## Water in Our Bodies

Your body needs water to stay healthy! Water keeps your body at the right temperature, helps you digest food, and even removes waste. All parts of your body, from your brain to your bloodstream, have high amounts of water.



Overall, your body is made up of 60% water. Your blood and brain have even higher concentrations of water—as much as 75%. Drinking water throughout the day keeps your body **hydrated**, which means it has enough water to keep it working properly.



# SURFS UP!

WATER IS FUN

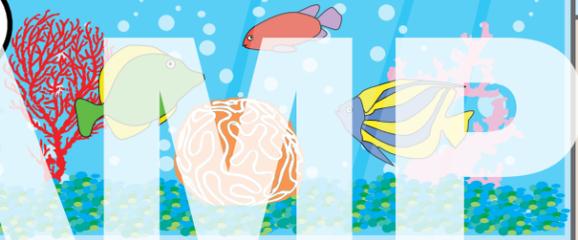


Can you solve this water drop maze and stay **hydrated**?

START →



Even dogs are 60% water!



## Drinking Water

Where can you get the cleanest drinking water? Right from the tap or drinking fountain! Our utilities test and treat our water, so it's clean, safe, and ready to drink.

Drink water every day to keep your body strong and ready to go!

## Vocabulary

**Hydrated:** When your body has enough water to keep it working properly.

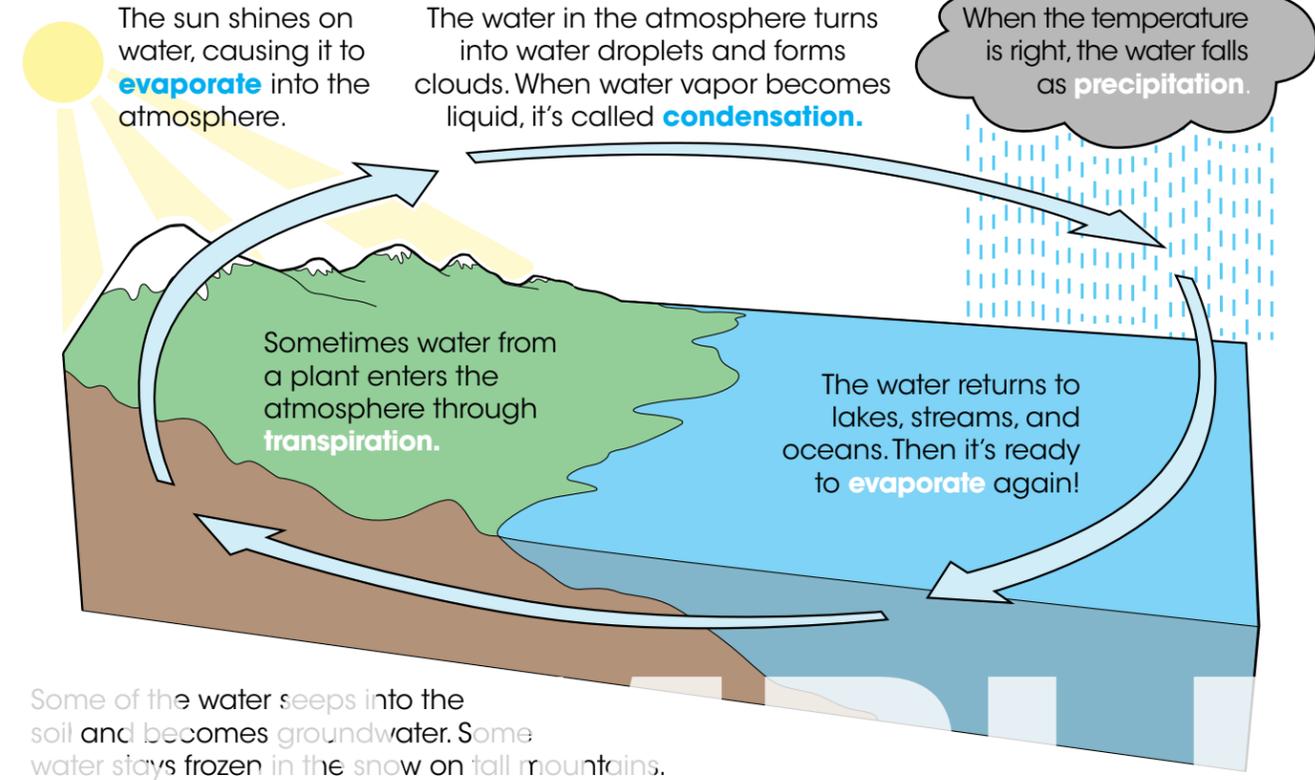
## Water in Nature

Welcome to Blueberry Lake!

This lake is part of a **watershed**, an area where water from many different places ends up. We share the watershed with lots of plants and animals that need clean water, too! Plants pull water up through their roots, which helps them transport nutrients. Animals drink water to nourish their bodies.

Sometimes, water picks up pollutants, especially during a storm, and brings them to the lake. But did you know that plants help protect our waterways? Trees can form a **riparian buffer** that filters pollutants before they reach the water. The buffer also stops **erosion** and provides a habitat for animals.

## The Water Cycle



SAMPLE

## Vocabulary

**Condensation:** The part of the water cycle when water droplets form in the air, often in the form of clouds.

**Erosion:** A natural process that happens when wind, water, or other natural agents gradually wear away the land.

**Evaporation:** When water changes from a liquid to a gas and rises into the air.

**Precipitation:** A general term for water that falls from clouds to the ground; usually rain or snow.

**Riparian buffer:** A group of trees and plants around a waterway that protect it from pollution and erosion.

**Transpiration:** A process where water evaporates from the leaves of plants.

**Water Cycle:** The stages water goes through as it changes from solid to liquid to gas.

**Watershed:** A region where all of the water flows to the same end location.

If I pretend that I'm a water droplet, maybe I can evaporate, too.



# Animals and Plants Near You

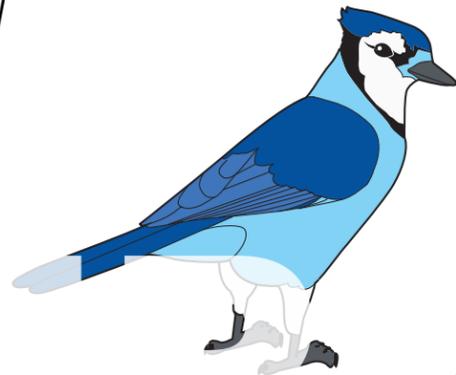
Oskar spotted cattails and a blue jay at Blueberry Lake. Which animals and plants have you seen where you live?



Plant Name: Cattails

Where I saw it: Blueberry Lake

Facts: They grow near water and they look like long grass with little sausages on top.



Animal Name: Blue Jay

Where I saw it: Blueberry Lake

Facts: Dark blue crest and wings. Feeds on seeds and berries.

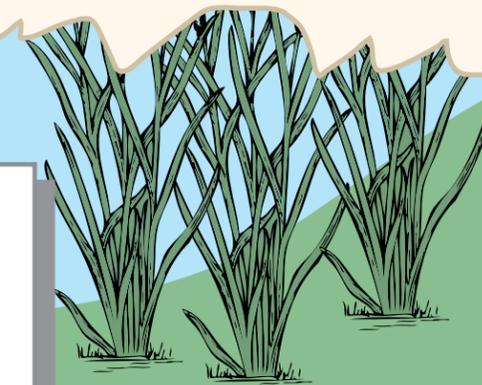
# Create Your Own Field Guide

Is there a lake, stream, river, or ocean near where you live? Take a trip and look for one insect, one plant, and one animal that live there. Then draw a picture of each one and write its name, where you saw it, and some facts about it. This is called a **field guide**, and it's one of the tools that scientists use to learn about nature.

Insect Name: _____ _____	Plant Name: _____ _____	Animal Name: _____ _____
Where I saw it: _____ _____	Where I saw it: _____ _____	Where I saw it: _____ _____
Facts: _____ _____ _____	Facts: _____ _____ _____	Facts: _____ _____ _____

## Vocabulary

**Field guide:** A book that identifies plants and animals in their natural environment.

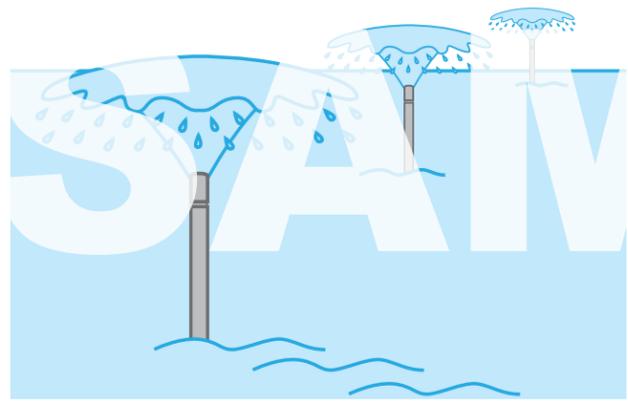


## Our Water Utility

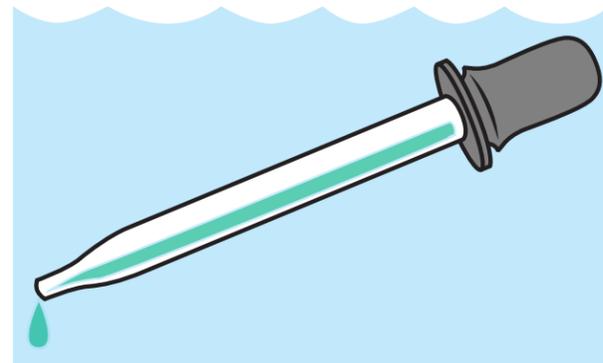
Let's learn about our local **water utility**! Water utilities and **conservation districts** make sure we have clean water by testing, cleaning, and monitoring our water supply.

Clean water is essential for many of our daily tasks, such as drinking, washing, and brushing our teeth. Water utilities take water from rivers, springs, lakes, groundwater, and reservoirs, and then remove **contaminants** and **pollution**. These could be pesticides, chemicals, or bacteria.

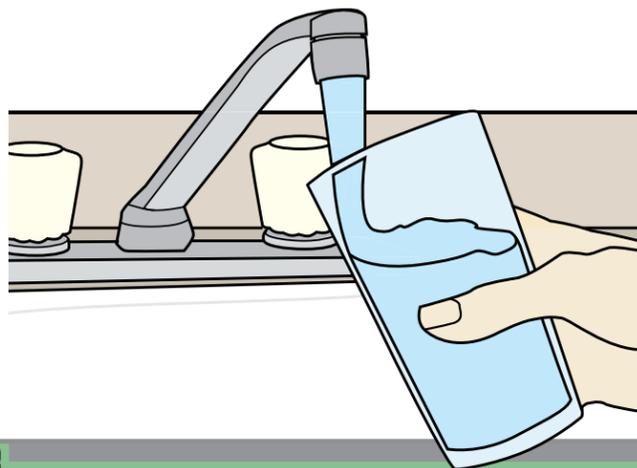
At the water utility, pipes **aerate** the water to increase oxygen, release odors, and filter out harmful particles.



Then chlorine is added to the water. Chlorine is the same chemical used in swimming pools. It kills bacteria and viruses that could make you sick.



Thanks to water utilities, when you turn on the tap, you get clean, refreshing water! How do you plan on using tap water today?



## Fill in the Blank

**Step 1. Fill out the list of words below.**

Adjective: \_\_\_\_\_

Place: \_\_\_\_\_

Adjective: \_\_\_\_\_

Adjective: \_\_\_\_\_

Verb ending in -ing: \_\_\_\_\_

Verb: \_\_\_\_\_

Noun: \_\_\_\_\_

Adjective: \_\_\_\_\_

Animal: \_\_\_\_\_

Proper name: \_\_\_\_\_

Verb ending in -ed: \_\_\_\_\_

Natural object: \_\_\_\_\_

Funny exclamation: \_\_\_\_\_

Adjective: \_\_\_\_\_

**Step 2. Transfer your words into this story and read the hilarious result!**

Last weekend, my friends and I went on a trip to the \_\_\_\_\_ River in the town of \_\_\_\_\_. The river was surrounded by \_\_\_\_\_ trees in a riparian buffer. It certainly was a \_\_\_\_\_ place to visit! We decided to go \_\_\_\_\_ down the river to learn more about the watershed. This river provides water for drinking, irrigation, and even a chance to \_\_\_\_\_. In the water, we saw some sediment that eroded from nearby hills. We also saw a \_\_\_\_\_ floating in the water. Oh my, better clean it up! There were some turtles on rocks as well as a(n) \_\_\_\_\_. What an interesting ecosystem! All of a sudden, we saw \_\_\_\_\_ had \_\_\_\_\_ into the water. Our friend had discovered a \_\_\_\_\_. We yelled: \_\_\_\_\_! We wrote it in our field guide and took it back to school to study under the microscope. Who knew rivers could be so \_\_\_\_\_?

## Vocabulary

**Aeration:** The process of circulating air through water.

**Conservation district:** A group that manages and protects our land and water resources.

**Contaminant:** Anything in our waterways that is harmful and unnatural.

**Pesticide:** Poison used by farmers to kill bugs, mold, and other things that hurt their crops; pesticides are also used to protect gardens and lawns from weeds.

**Water utility:** The organization that provides drinking water and wastewater services to your home and community.

## Think About It

By cleaning and testing the water, our utilities make sure that we have clean, delicious water for drinking. Tap water costs less than bottled water, and it's just as good or better for you.

Our water utilities do more than clean the water. They also fix leaky pipes and install new ones, monitor water levels in our waterways, and much more!

Water utilities  
keep our  
water clean!



# Water in our Homes

Welcome to Oskar's house on Poppy Street, where water conservation is fun! Let's go inside Oskar's house to learn more about saving water!

## Bathroom

- Reuse your towel so you don't have to wash it as often.
- Listen to music when taking a shower, and get out after two songs.
- Only flush waste and toilet paper. Don't put anything else in the toilet!
- Check for leaks in the toilet. Put a drop of food coloring in the back of the toilet. If the coloring shows up in the bowl after 15 minutes, that means there's a leak!



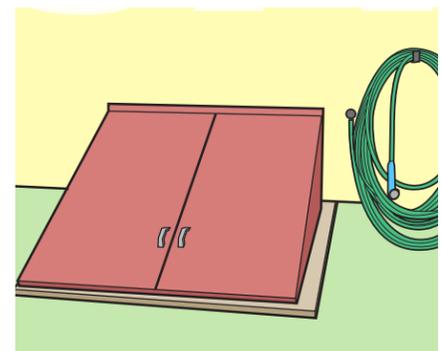
## Don't Flush It!

Some things shouldn't go down the drain at all. Certain substances can clog the pipes or harm the water quality. Don't flush these things:

- HAIR
- GREASE
- Q-TIPS
- BAND-AIDS
- COTTON BALLS
- FATS & OILS
- MEDICINE & PILLS
- PAPER TOWELS
- HOUSE PAINT
- PAINT THINNER

## Kitchen

- Save water by filling your glass halfway—you won't waste water if you can't finish. If you have any leftover water, use it to water a thirsty plant!
- Make sure you load the dishwasher completely before running it.
- Try not to let the faucet run when you're washing a dish.



## Outdoors

- When you water the lawn or garden, make sure you point the hose at the plants and not at the sidewalk.
- If it's going to rain, then it's not necessary to water the plants.
- Grow native plants that don't need as much water.



## Brain Teasers

Oskar takes an 8-minute shower every day. His showerhead has a flow rate of 2 gallons per minute. How much water does he use in a week?

$$\frac{\text{Minutes in Shower}}{\text{Minutes in Shower}} \times \frac{\text{Gallons per Minute}}{\text{Gallons per Minute}} \times \frac{\text{Days in a Week}}{\text{Days in a Week}} = \underline{\hspace{2cm}}$$

Oskar's family has a dishwasher that uses 15 gallons of water per load. They run their dishwasher 3 times a week. How much water do they use per month?

$$\frac{\text{Gallons per Load}}{\text{Gallons per Load}} \times \frac{\text{Washes per Week}}{\text{Washes per Week}} \times \frac{\text{Weeks in a Month}}{\text{Weeks in a Month}} = \underline{\hspace{2cm}}$$

How do you save water in your home?

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# Our Wastewater Treatment Plant

Welcome to Water Town's **wastewater** treatment plant. The workers at the plant clean our water after we use it. Every time water goes down the drain or toilet, it travels through a series of pipes to the wastewater treatment facility. Play the wastewater treatment board game to learn more!

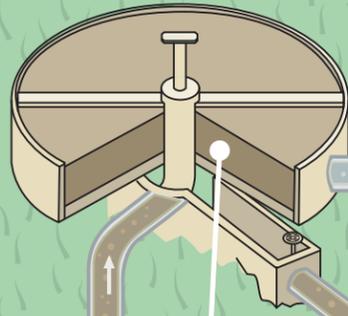


Wastewater from all over town begins its journey here.



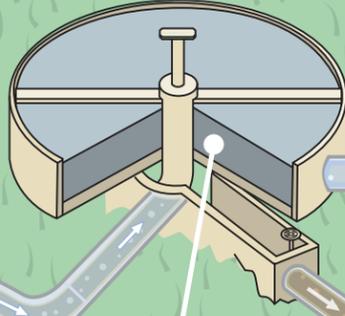
**GRIT FILTER**  
This is where big, solid materials, such as rocks and balls, are removed. Garbage trucks take these solid materials to landfills. **You got stuck in the filter. Lose a turn.**

## SETTLING TANK 1



**SETTLING TANK 1**  
The water flows into tanks to let it settle. During this step, solids fall to the bottom and grease rises to the top. The grease gets skimmed off, and then trucks take it to landfills. The solid waste is called sludge. It goes into another series of tanks for storage and treatment. **You're getting cleaner. Roll again!**

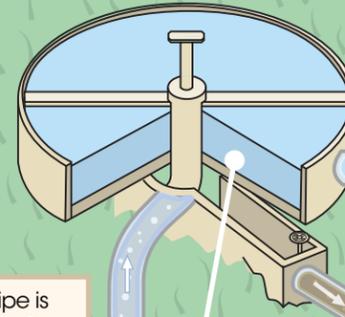
## SETTLING TANK 2



**SETTLING TANK 2**  
The settling process is repeated multiple times to remove all the sludge and grease. **Stay here until you roll a 2 or a 5.**

The pipe is leaking. **Go back three spaces** while it's being repaired.

## SETTLING TANK 3



**SETTLING TANK 3**  
In Water Town we have three settling tanks at our wastewater treatment plant. Each one of them makes the water cleaner. **Wait for all the sludge to settle. Lose a turn.**

There's a big rainstorm, and there's a lot more water running through the system. **Move forward five spaces.**

A serviceman needs to replace this pipe. **Lose a turn.**

## CHLORINE

**CHLORINE TANK**  
After removing all of the sludge and grease, the water is mostly clean. But before the water is reintroduced into the ecosystem, it gets treated with chlorine (the same stuff in swimming pools). The chlorine kills any harmful bacteria that's still living in the water. **You're almost there! Move 3 spaces ahead.**

**Did You Know?**  
When we use a lot of water, it can overwhelm a wastewater treatment plant, especially on a rainy day. So saving water can actually help our wastewater professionals do their job more efficiently.

**BLUEBERRY LAKE**  
The clean water now goes back into Blueberry Lake! **Congratulations! You win!**



## Board Game Rules

Roll a die to move through the plant in the direction of the arrows. Your goal is to make it to Blueberry Lake. Otherwise, you'll get stuck in a sludge cake on your way to a landfill!

Each player places a coin, button, or token on the start box. Whoever rolls the highest number goes first. Roll the die to move forward. Each arrow and water container counts as one space. When you reach a fork in the road, take the high road if you roll an even number and the low road if you roll an odd number. If you land on a water tank, follow the instructions written next to it.

Whoever gets to Blueberry Lake first is the winner!

Without looking, what happens in the sludge cake bakery? **Get it right and move to settling tank 1. Get it wrong and stay on your spot!**



**CENTRIFUGE**  
This tank spins the wastewater like a giant washing machine. **Roll again!**



**SLUDGE TREATMENT 1**  
The job of the sludge tanks is to remove as much water as possible from the sludge. The water is sent back to the settling tanks to get cleaned up. The sludge keeps getting thicker. **You're stuck in the slow tank. Lose a turn.**



**SLUDGE TREATMENT 2**  
The plant workers add bacteria to eat the waste. Then they disinfect the water and remove the bacteria. **Go to Settling Tank 2.**



**SLUDGE CAKE BAKERY**  
Once all of the water has been removed and the sludge has been treated with bacteria, the final product is called sludge cake. Trucks take the sludge cake to landfills. Sometimes farmers use sludge cake as as fertilizer. **This is the end of the road for the sludge. Go back to the start.**

## Vocabulary

**Wastewater:** Water that has been used in homes and businesses that must be cleaned before it's released back into the environment.

# Water and You!

Water helps us to stay active! Drinking water every day keeps us healthy. There are also many water sports, including boating, canoeing, scuba diving, jet skiing, rafting, surfing, swimming, snorkeling, and water polo. It's important to keep our waterways clean, so we can continue to participate in water sports.

## Clean Water Tips

Here are some tips to help keep our waterways clean:

- Throw your recycling and trash into the proper bins, so they don't end up in our waterways.
- Pick up your pets' waste, especially if you have a dog, so the bacteria doesn't wash into our waterways.
- Don't flush medicine, grease, or hair down the drain or toilet.
- Planting a garden? Make it a rain garden! Ask your parents about planting vegetation on the lowest point in your yard to capture water and clean it, too!
- Volunteer for a local clean-up to remove trash from our waterways. Or talk to your parents and teachers about organizing your own clean-up!

## Think About It

Learning about water makes playing in the water even more fun! Can you answer these questions about your local waterways?

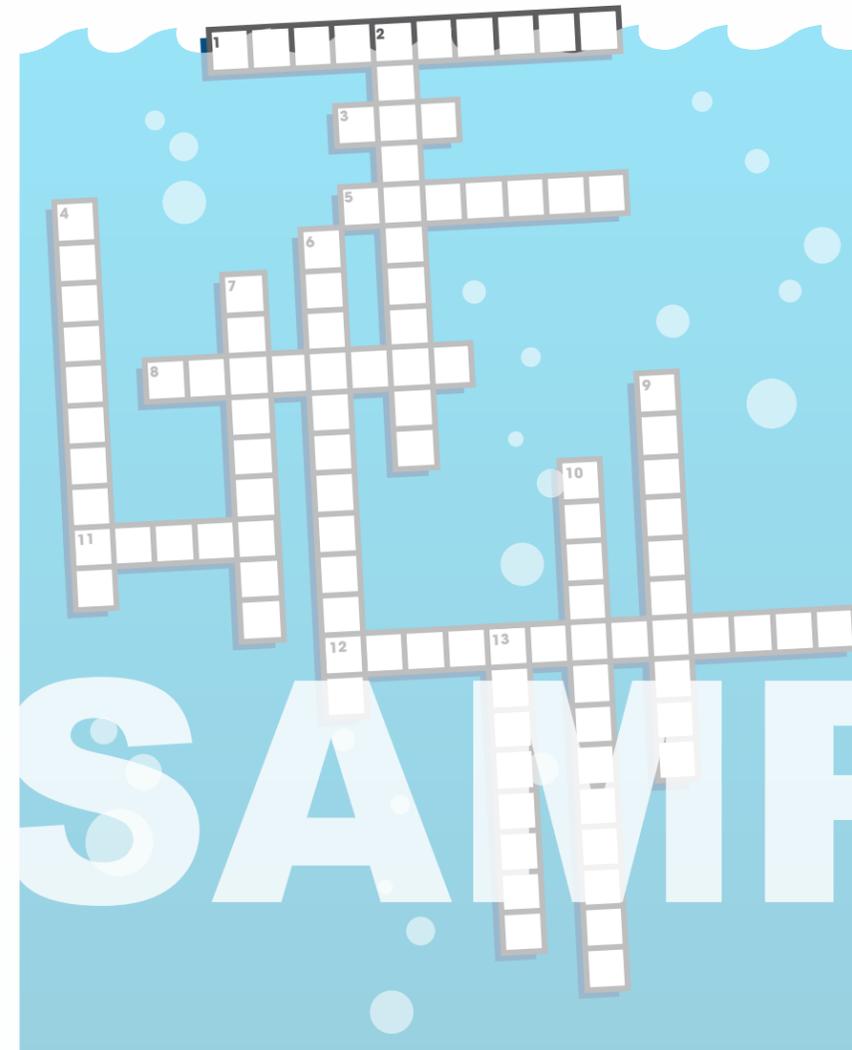
**What is the name of the closest body of water to your home?**

\_\_\_\_\_

**What is the name of your watershed?**

\_\_\_\_\_

## Crossword



### ACROSS

1. Another word for saving
3. The type of water that we receive from our utilities that comes out of our faucets
5. Another word for drinkable
8. Where you can find water in your school
11. A seriously charming beagle who loves to learn about water
12. This occurs when water on a plant evaporates

### DOWN

2. What happens when the sun shines on a lake or river
4. The fancy word for how farmers water their crops
6. The name for harmful pollutants in our waterways
7. The name of the lake where our town's water comes from
9. What we become when we don't drink enough water
10. The word scientists use for rainfall
13. A fun water sport with a butterfly stroke

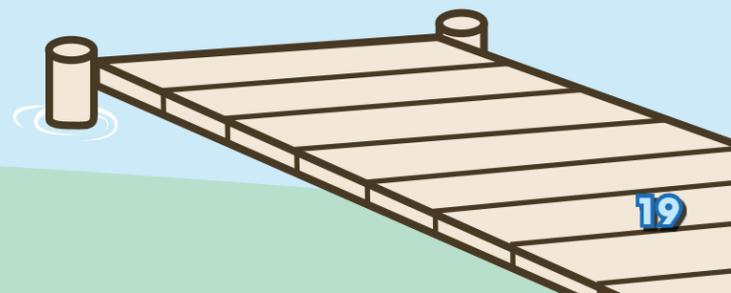
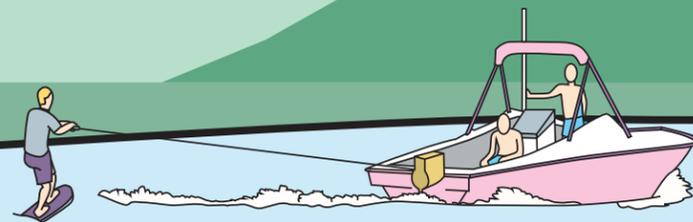
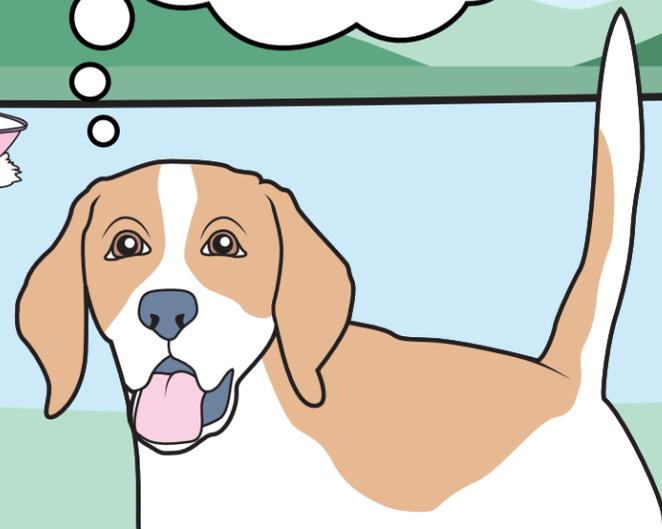
### ANSWERS

Contaminants  
Potable  
Precipitation  
Oskar  
Evaporation

Dehydrated  
Fountain  
Tap  
Conserving

Blueberry  
Irrigation  
Swimming  
Transpiration

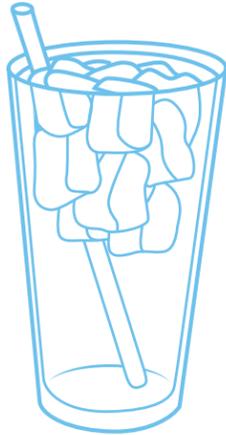
My favorite water sport is paddle surfing. Doggy paddle surfing, that is!



## True/False Water Facts

What do you know about water so far? Take this true/false quiz to find out!

### 1. The water that we use now has always been on Earth.



True: Our ancestors drank the same water as we do!



### 2. Water shrinks as it cools down, like other substances.

False: Water actually expands and becomes less dense when it freezes. That's why ice floats in water.

### 3. Turning off the tap to save water also saves energy.

True: It takes energy to heat and clean the water from your tap.

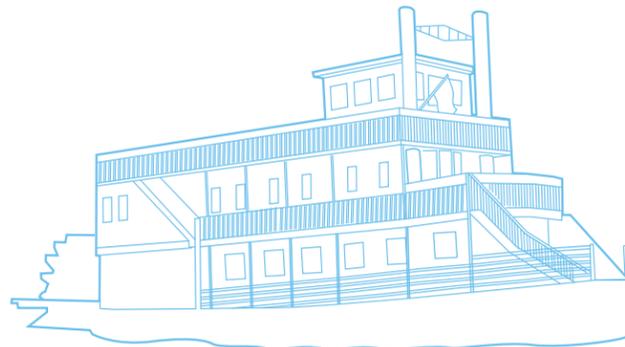


### 4. When farmers need to water their fields mechanically because there's not enough rain, it's called "irrigation."

True: Farmers use pipes and canals to water their crops when there's not enough rain.

### 5. The longest river in the United States is the Mississippi.

False: The longest river in the United States is the Missouri River, although it does meet up with the Mississippi River. Both rivers are among the longest in the world.



### 6. Approximately 45% of Americans know how to swim.

True: Studies show that less than half of Americans are able to swim.

## Wet Letter Jumble

Oskar wrote you a letter, but his letter fell into a puddle and some of the words got jumbled. Can you unscramble the words to read Oskar's message?

Hey Kids,  
Water is definitely GRUSIDOE. It's amazing how we all need water every day.

I heard that we're in a drought. It's not NARIGNI as much as it usually does, and Blueberry Lake doesn't have as much water.

I made sure to turn off the tap when brushing my teeth and watered our plants with my leftover KRIDNIGN water.

There was a lot of SHATR in the pond, so my friends and I helped clean it up. It was so much fun to spend time with them and make sure that the BATITAH was nice and clean for all of the animals and ALPTSN.

I'm off to go for a swim.

Bow wow,  
Oskar



## Vocabulary

**Drought:** A lack of rainfall that causes low water availability.

# Word Find

Find all the water words in this wacky word search!



- Condensation
- Water conservation
- Drought
- Ecosystem
- Erosion
- Evaporation
- Irrigation
- Pollutant
- Precipitation
- Riparian buffer
- Transpiration
- Wastewater
- Watershed
- Water cycle

# The Lake Clean-Up Logic Problem

Oskar and his friends decided to help clean up Blueberry Lake. Each was assigned a different day of the week, when he or she helped with a task (such as planting flowers) and picked up a piece of trash (such as an empty soda can). Can you match the friends with their day of the week, their task, and the piece of trash each picked up?

## Instructions:

If you know a certain day, task, or item doesn't match a friend, draw an X in the corresponding box. When you identify a combination that is correct, draw a dot in the corresponding box and cross out all the other options in that column and row. For instance, if Wendell took water samples, then he did not perform any other task, and none of the other friends took water samples.

## Clues:

Oskar did not plant flowers and he did not volunteer on Friday.

Wendell did not pick up the shoes or a soda can, but he did volunteer on Thursday.

The friend who worked on Wednesday swept paths.

The friend who picked up a tennis ball also pulled weeds, but not on Tuesday.

Rosie picked up a soda can on the day before Skylar volunteered in the park.

The friend who spread mulch volunteered on Tuesday and picked up the shoes.

Ferdinand picked up a tennis ball the day after a friend picked up a potato chip bag, which happened after Skylar spread mulch.

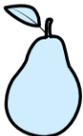
Rosie took the water samples.



DAYS	FRIENDS				
	Oskar	Skylar	Ferdinand	Rosie	Wendell
MON					
TUES					
WED					
THURS					
FRI					
TASKS	DAYS				
	MON	TUES	WED	THURS	FRI
	PLANT FLOWERS				
	SPREAD MULCH				
	WATER SAMPLES				
PULL WEEDS					
SWEEP PATHS					
PIECES OF TRASH	TASKS				
	PLANT FLOWERS	SPREAD MULCH	WATER SAMPLES	PULL WEEDS	SWEEP PATHS
	SHOES				
	TENNIS BALL				
	SODA CAN				
GUM WRAPPER					
CHIPS					

## Pictogram

Can you decipher the hidden meaning?

R   ian



\_\_\_\_\_

\_\_\_\_\_

# Resources

For more information check out these great sites!

## US Geological Survey

[water.usgs.gov/edu](http://water.usgs.gov/edu)

## Environmental Protection Agency

[www.water.epa.gov](http://www.water.epa.gov)

## National Oceanic and Atmospheric Administration

[www.education.noaa.gov](http://www.education.noaa.gov)

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