

CITY OF SANTA FE



# water

## FAMILY ACTIVITIES

EXPLORE OUR MOST  
PRECIOUS RESOURCE!



# A Note for Adults

*Water is a precious resource that we must work together to protect. This activity book is intended for families to do together. It includes projects and information about where the water in Santa Fe comes from, how we can use it more sustainably, and where it goes when we are done. If your child completes activities they will be able to claim prizes. As they complete activities, they can write their answers in the **blue boxes**. When they are done, you can sign on to [savewatersantafe.com](http://savewatersantafe.com) and enter these answers. You will then receive notification when the prizes are ready to pick up.*

*There are resources listed in this guide for your knowledge, as well. These include information on leak detection, plants that are adapted to our climate, and where you can get mulch to reduce water use in the garden. They are in the grey boxes at the bottom of the pages.*

*Thank you for helping us become a more sustainable Santa Fe!*

*Your friends at the City of Santa Fe  
Water Conservation Department*



# Introduction to Activities



Together, we can create a more sustainable Santa Fe! Do the activities in this guide to explore water and its importance in our lives. As you complete activities, write the answers in the **blue boxes**. When you have completed all the activities that you want

to do, have an adult log into the website to claim your prizes.

The City of Santa Fe works hard every day to make sure you have access to clean, safe water. Learn how you can help!

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# Water Conservat

*Keep track of how many activities you've completed to win cool prizes!*



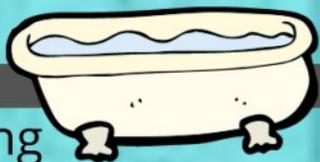
# Water Cycle Treasure Map

Where Does Our  
Water Come From?



1. Water Cycle

6. Reusing  
Water



7. Compost and  
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Plant Hunt



8. Pollinators



14. Rain Gardens

16. Tell a  
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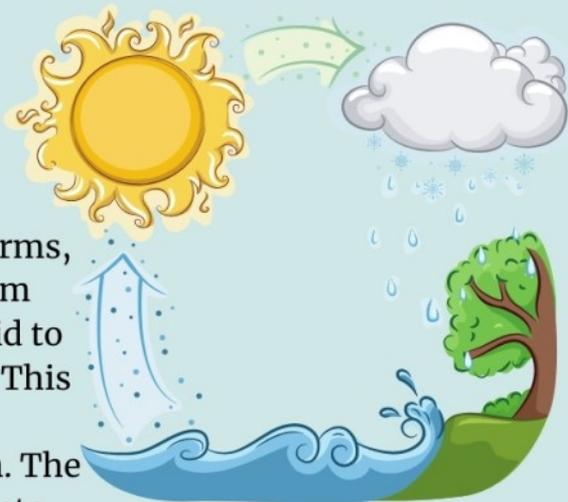
15. Where Does  
Our Water Go?



# Water Cycle

Water moves through our environment as a solid, a liquid, and a gas. The same water molecule can go through this cycle thousands of times.

As water vapor cools it condenses. The **condensation** collects into clouds. You might have seen water condense from humid air on a bathroom mirror.



As water warms, it moves from being a liquid to being a gas. This is called **evaporation**. The gas moves into the atmosphere.

After the water condenses it falls on the land as rain, snow, sleet, and hail. This is called **precipitation**. The water soaks into the ground to refill underground aquifers or runs off into streams, rivers, and lakes.

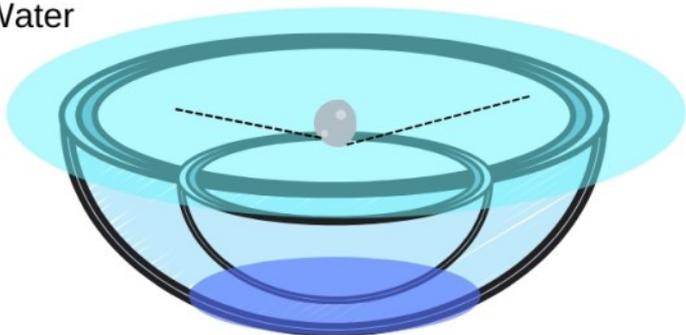
*The water cycle drives our access to water. When we have less precipitation than average, we are in a drought. Droughts are made worse when there are also high temperatures, causing more evaporation.*

# Water Cycle Experiment

Create your own mini water cycle in a bowl.

Materials:

- Large bowl
- Small bowl that fits in the large bowl
- Plastic wrap
- Pebble or small weight
- Water



Pour water into the larger bowl. Carefully put the small bowl inside of the larger bowl.

Stretch plastic wrap tightly over the large bowl.

Place the pebble on the plastic wrap so there is a little dip in the center of the plastic. Don't let the wrap touch the inside bowl.

Put the bowl in the sun for at least 2 hrs.

**What do you see in the small bowl?**

How do you think that this happened? Look back at the water cycle. Look for evidence of evaporation, condensation, and precipitation.

*Look for evidence of evaporation from the soil in your yard. You can reduce how much you need to water by mulching the soil to conserve water.*

# Where does our water come from?

Santa Fe gets its water from three sources: groundwater from wells, Santa Fe River water, and Rio Grande



river water. Rain, snow, sleet, and hail fall in the mountains and flow down the Santa Fe River into the **Nichols and McClure**

**Reservoirs.** The Canyon Road Water Treatment Plant then cleans and sends water out to the city's water system. **Rio Grande** river water is captured and cleaned at the Buckman Direct Diversion Water Treatment Plant.



**Groundwater** is pumped from deep underground wells. All sources of water are mixed and stored in big holding tanks, and then transported through pipes to your homes and buildings in Santa Fe. Our water is a limited resource. It is important to protect, conserve and use it well. The next time you use water, imagine the journey it took to get to your home!

*Our water is important. We need to protect our watershed to make sure that it will continue to provide us with water, our most precious natural resource.*

# Who makes our drinking water safe?

Hello! My name is Bradley Prada. I'm an Advanced Water Treatment Operator, and I work at the Buckman Direct Diversion Water Treatment Plant. The facility is a state of the art water treatment plant that uses the latest technology to produce the cleanest water.



I work with a great team of certified operators who monitor the water treatment plant 24 hours a day, 365 days a year. We treat, sample and test all the water that is distributed from our facility. To do this we use chemistry, microbiology, and math.

My favorite part of my job is knowing when you turn on your faucet on any given day, including holidays, there's someone on our team that is monitoring and producing that water. I make sure that there is plenty of water, while meeting the strict standards of the Environmental Protection Agency and the NM Environment Department.



I would like the community to know that the City has an amazing team of educated people that work hard to produce safe, clean, and sustainable drinking water.

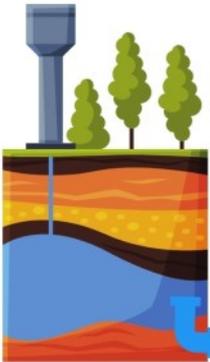
# How is our drinking water cleaned?



1. Surface water is sent to the water treatment plants at Buckman Direct Diversion or the Canyon Road Treatment Facility.



2. The water slows down and allows the dirt to settle to the bottom of the tanks. It is then filtered.



3. Groundwater is pumped into the system. Then chlorine is added to the water to keep it clean in the pipes.



4. Clean drinking water flows through the pipes and into our homes and gardens.

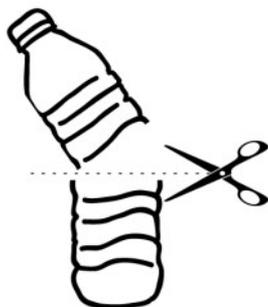


*Santa Fe tap water is cleaned to the highest standard and is regularly tested for safety. Drinking Santa Fe tap water is a more sustainable*

# Build your own water filter

## What you will need:

- Disposable water bottle without a lid
- Scissors or box cutter (for adults to use only!)
- Gravel
- Sand
- Cotton ball
- 2x2 inch square of cloth or coffee filter
- Rubber band
- Dirty water (Do not drink even after filtering)



**Step 1:** Cut off the top of the bottle

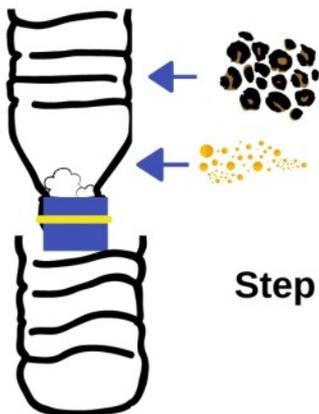


**Step 2:** Push a cottonball into the neck of the bottle.

**Step 3:** Put cloth/filter over the mouth of the bottle and attach with a rubber band.



**Step 4:** Add sand just above the cotton ball. Add gravel above the sand.

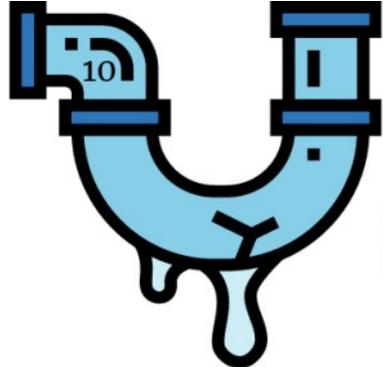


**Step 5:** Pour dirty water into the top of the filter.



**What happened after you filtered the water?**

**Answer:**



# Stop that Leak!

A small leak can be a BIG problem! Do you know how much water can come from a slow leak? Today you are going to figure it out!

## Here is what you will need:

- Gallon container, like a milk jug
- Calculator
- Pencil
- Timer or stop watch

## Instructions:

Start a slow leak in your bath tub of just a drop at a time. Put your jug under it so it will catch the water. Turn on your timer for 1 hour. Come back and see how much water it collected. Use the water you collected to water a plant in your house or yard!

*Make sure you don't have any leaks at home! With EyeOnWater, city water customers can have more control by monitoring your water usage on your phone, tablet or computer.*

*To sign up, visit: [eyeonwater.com/signup](http://eyeonwater.com/signup)*

Do the math below to calculate how much would be wasted in a day and a year with just a small leak!

In one hour I collected \_\_\_\_\_ gallon(s).

If I multiply what I collected by 24, I would waste \_\_\_\_\_ gallons in a day.

If I multiply the waste in a day by 365, I would waste \_\_\_\_\_ gallons in a year.

That is a lot of water wasted!

If you find a leak in your house or your yard tell an adult so they can fix it!



*Here is what you need to set up your own account:*

- *Step 1. Enter in your Zip Code*
- *Step 2. Enter in your City Water Department account number. Do not add the zeros.*



# How much water will I use today?

Today you are going to use water in many different ways. Do you know how much water you will use? Let's calculate it! Tally how many times you do the following:

Flushing Toilet \_\_\_\_\_ x 2 gallons = \_\_\_\_\_ gallons  
# times flushed in a day

Shower or Bath \_\_\_\_\_ x 18 gallons = \_\_\_\_\_ gallons  
# times in a day

Brushing Teeth \_\_\_\_\_ x 1 gallon = \_\_\_\_\_ gallons  
# times in a day

Dishwasher \_\_\_\_\_ x 5 gallons = \_\_\_\_\_ gallons  
# times used in a day

Washing Machine \_\_\_\_\_ x 20 gallons = \_\_\_\_\_ gallons  
# times used in a day

Other \_\_\_\_\_ x \_\_\_\_\_ gallons = \_\_\_\_\_ gallons  
# times used in a day

Total Gallons Used in a Day:



*There are many ways we can reduce our water use or reuse the water that would otherwise go down the drain. Look for ways you and your family can reduce or reuse water in your home. Are there places that you can use grey water in your yard? Especially in a time of drought, it is important to think about how we can use every drop!*

# Reusing my Water



Some of the water that you use today can be reused in a different way! Reused water is called grey

water. The next time that you take a shower, plug the drain and let the tub fill up.

After your shower, use a gallon jug to carry the water from your tub to a tree or shrub outside.

How many trips did it take you to empty the tub?

ANSWER:

How many plants were you able to water?



# Evaporation Experiment

Our soils lose a lot of water through evaporation from wind and sun. How can we slow down evaporation so that we can water less?

## Materials:

- Two trays or pans
- Soil
- Leaves or mulch
- Water



Fill both trays with soil. Add the same amount of water to both trays to wet the soil. Put leaves and mulch on one tray. Leave the other tray open to the air.

Put both trays in the sun. Leave the trays for 24 hours. Touch the soil. What do you notice?

How did the mulch change the moisture in the soil?

Answer

*Mulching is an important part of having a healthy garden. It prevents evaporation and adds nutrients to the soil that plants need to grow. Santa Fe provides free mulch made from yard waste. Learn more here: [sfswwa.org](http://sfswwa.org)*

# Composting with the County

Santa Fe soils are often missing organic matter. This includes old leaves, bark, and other natural material that helps soil grow healthy plants. You can add organics to our soil by making compost with your kitchen scraps. As these break down they provide nutrients for your garden.

## Compost Recipe:

Find a good place for a 3'x3'x3' compost pile a distance from your house. Both shaded and sunny areas are acceptable locations.



You can add all of your vegetable and fruit scraps to the pile with leaves and other yard waste. Never add dairy, meat, or animal waste to the pile.

Always cover the pile with a carpet scrap or similar to seal in moisture. The reason for most compost failures in New Mexico is that they are too dry. A nearby water source (faucet or garden hose) is a good idea to ensure your pile stays moist. Turn the pile every week or two .

*Hint: Top off your kitchen scraps container with water each time you take it to the compost pile.*



*Learn more about composting techniques at [santafecountynm.gov/public\\_works/sustainability/compost](http://santafecountynm.gov/public_works/sustainability/compost). If you live in the county there are also resources like free composting bins available.*

# Pollinator Observation

From: The Xerces Society for Invertebrate Conservation

Insects depend on plants for food and shelter. Some visit flowers for pollen and nectar. Others feed on leaves and stems. Others hide on or patrol around plants to eat other insects. What do you see visiting plants around you? Do some plants support more insects than others?

Observe 3 different plants for 5 minutes each. Be careful not to disturb the insects so you can see them act naturally! Count insects that visit flowers. Look under leaves - can you see anything eating leaves, stems, or flower heads? Count insects walking around or feeding on the plant.

What do you see? Make notes about the different kinds of insects you observe.



*Why it matters! Pollinators are extremely important for keeping our global and local ecosystems functioning. Observing insect visits can help us understand our interdependence. For example,*

# Pollinator Bingo

You will find many types of pollinators around Santa Fe. Some you will find at night. Others come out during the day. Go on a walk with your family and play a pollinator bingo game. Make sure you keep a safe distance from any insects that could sting you.

How many of these pollinators can you find?

Honey bee



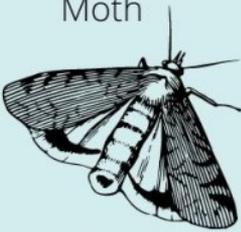
Ant



Butterfly



Moth



Free  
Square

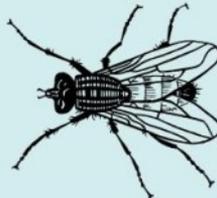
Hummingbird



Bumblebee



Fly



Bat



*if we want to help support bees, this helps us identify plants that are good for bees so we can choose to plant them in our gardens. Santa Fe is now a Bee City USA site. Visit [beecitysantafe.com](http://beecitysantafe.com).*

# Plant Scavenger Hunt

Many incredible plants grow in our region. They are able to live in dry soils and survive hot summers and cold winters. These plants support our native birds and insects. Go on a walk around your neighborhood. How many of these plants can you find?



Three-leaf sumac



Chamisa



Apache plume



Desert willow



Gamble oak



New Mexico privet



Blue grama

*As you plan your garden and select plants, consider planting any of the varieties listed above. They support our local ecosystem and are adapted to survive our harsh conditions. Look for native plants that also support pollinators. For more information, visit*



Chocolate flower



Rocky Mountain penstemon



Firecracker penstemon



Globemallow



Prairie coneflower



Yucca



Prickly pear



Cholla

How many plants were you able to find? **Answer:**

*savewatersantafe.com for a local pollinator resource guide. Look for our Bees, Trees and Water signs in local nurseries to get local discounts. For additional information on native plants and pollinators, visit [pollinators.org](http://pollinators.org).*

# Design a Garden

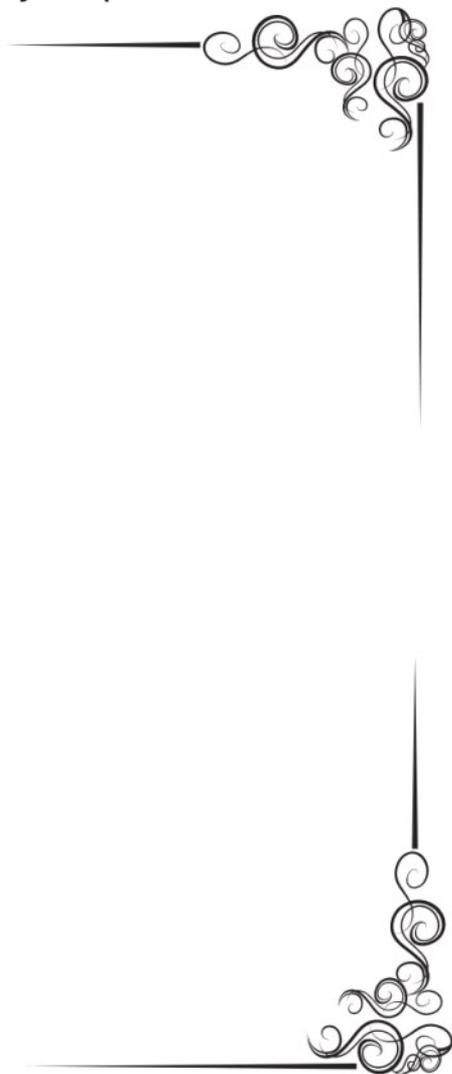
Now that you are an expert in native plants and pollinators, let's look back at the last two activities to remind you about the many different bees, butterflies, birds, insects, and plants that live in our area.



*Visit local nurseries for a wide variety of native plants to include in your yard. Create your own plan that includes trees, shrubs,*

# For Our Pollinators

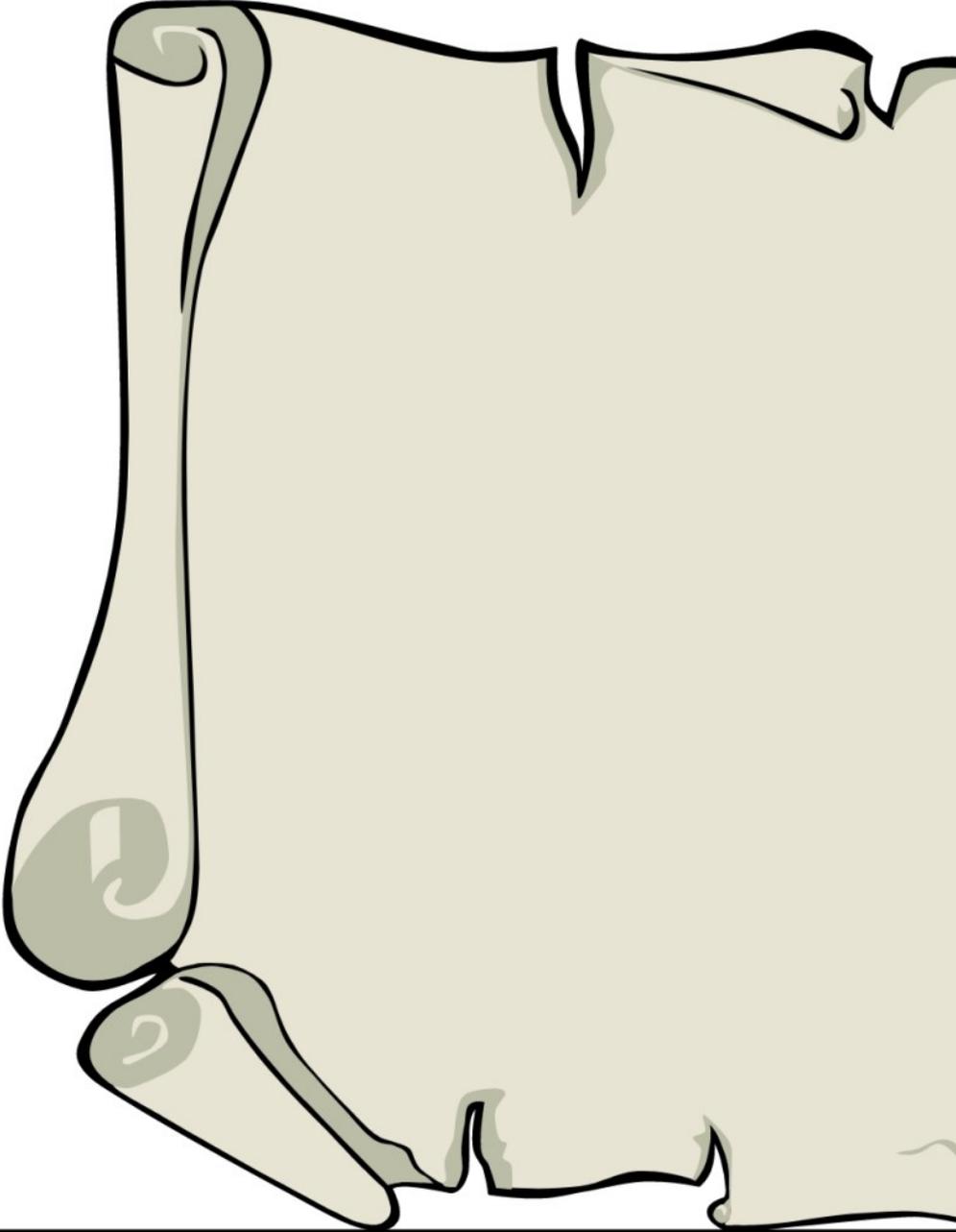
Use what you learned to design a garden that is beautiful and provides habitat for native animals, birds and insects. Make sure to include different ways to capture rainwater to water to your plants.



*and flowers. Find out more about the City's Bees, Trees and Water campaign at [savewatersantafe.com](http://savewatersantafe.com).*

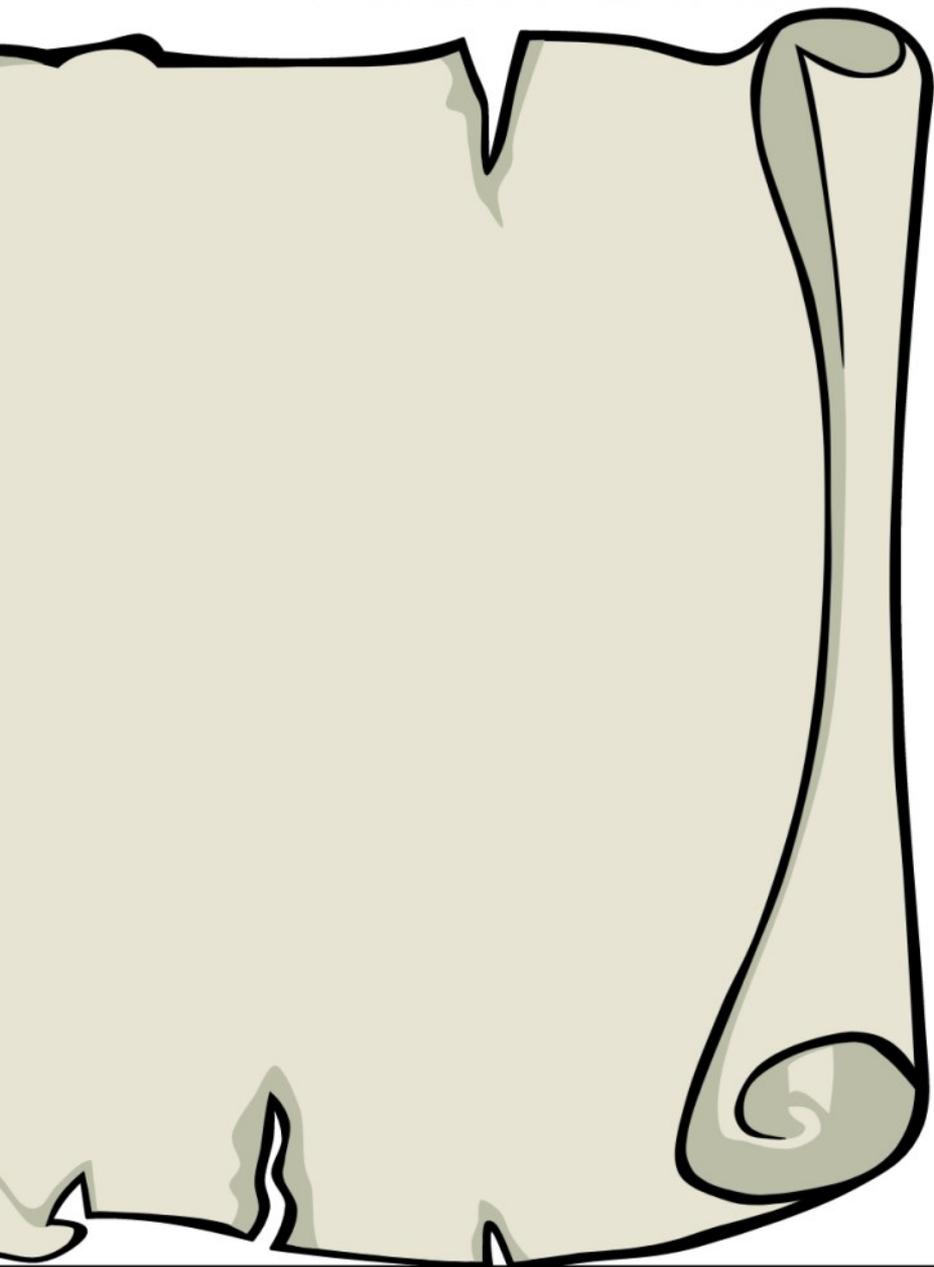
# Map of Water Outside my Door

Draw a map of how water flows in the area around your home.



Include:

- Where water collects and where it flows
- Where water is eroding the soil
- Rain barrels and water collection



*and learn more about how you can reuse water on your property.*

# Find Your way to a 100

Keep track of all your waste for a day or week. Use a pebble or other small object to mark your progress. Invite your friends and family to see who gets the most squares.

	Aluminum Cans, Foil	+ 3 squares
	Paper, Cardboard	+ 2 squares
	Plastic Bottles, Packages	+ 1 square
	Food Scraps	+ 1 square
	Styrofoam	- 3 squares
	Plastic Bags	- 2 squares
	Littered	Back to Start!
	Reused, Repaired, Refused	+ 6 squares

Start Here



Forgot to pick up your pup's poop? Go back 5!



Garbage that is not disposed of properly can become litter and harm creatures like me!

# Low-waste Future!

Push a small object and move it along the map. Play with your friends to get to the end fastest!

It's best to reduce our waste as much as possible, and recycle or compost what's left over. The City of Santa Fe has lots of great resources to help us recycle and compost!



End Here ↗



**KEEP Santa Fe BEAUTIFUL** 

Remember, everything dumped on streets, parks, and yards ends up in our waterways when it rains. Yuck!



# Infiltration Experiment

Different surfaces soak up water at different rates. This is called infiltration rate. Today you are going to explore how quickly water infiltrates into different surfaces.

## Materials:

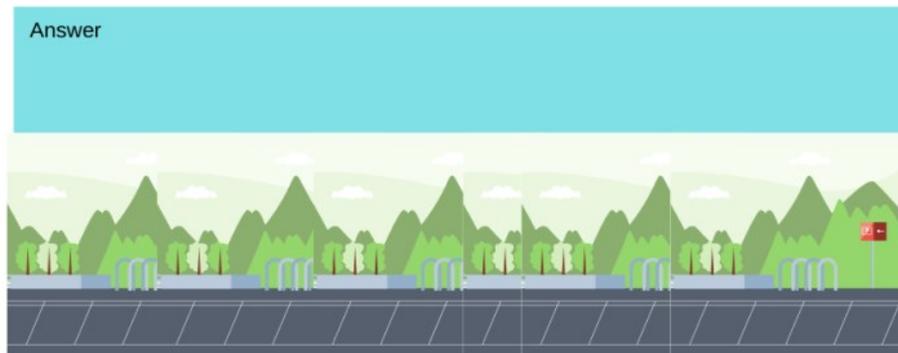
- Measuring cup
- Water
- Timer



Choose three different surfaces near your home. One should be cement or blacktop. The other two surfaces should be different from one another. Pour the water on the different surfaces and time how long it takes to soak in.

Which surface soaked up the water the fastest?  
Which didn't allow the water to infiltrate?

Answer



*Mulching is an important part of having a healthy garden. It prevents evaporation and adds nutrients to the soil that plants need to grow. Santa Fe provides mulch made from yard waste. Learn more here: [sfswma.org](http://sfswma.org)*

# Rain Gardens: Natural Teamwork at its Best!

When it rains, water flows off of buildings, roads, and parking lots. It collects lots of gross stuff like dirt, trash, dog poop, oil, and chemicals from cars. All of that water, called **stormwater runoff**, flows into our arroyos and the River. That's bad for water, plants, animals, and people!



Luckily, **when people and nature work together we can do amazing things.** Instead of letting stormwater runoff be wasted, we can trap it in special basins called Rain Gardens.

Rain Gardens come in all shapes and sizes, but they all have special soils and plants that capture stormwater, clean it, and save it in our aquifers. It is like an underground water savings account!

Plants that grow in rain gardens don't need extra water, they can grow with water that would have otherwise been wasted! Especially in droughts, rain gardens are the perfect places to grow plants.



Have you seen  
a rain garden  
in Santa Fe?

*Learn more about keeping our arroyos clean from the Santa Fe Watershed Association. Visit [santafewatershed.org](http://santafewatershed.org) for ways that you can get involved.*

# Who teaches us to recycle?



Hi! My name is Michaela. I'm the Outreach Coordinator for the City of Santa Fe's Environmental Services Division.

I help educate Santa Feans about recycling and sustainability. I use photography, videography, graphic design and writing to connect with people through

marketing and teach them how to recycle right and how they can be more sustainable (and, what the City is doing to work toward our sustainable future). I love art and writing, and this job allows me to put the creative side of my brain to use to promote data-driven solutions for a better tomorrow. Win-win!

Trying to live a sustainable life style can be intimidating, but it doesn't need to be. We don't need a few people doing sustainability "perfectly"; we need lots of people doing a little bit every day. It all makes a difference, so don't get overwhelmed, just do what you can!



**RETHINK:** Start by simply paying attention to your consumption/waste. Do you really need that new thing?

**REFUSE:** Next, say no to items you don't need, or items that have excessive packaging.

**REDUCE:** Practice actively

decreasing the items you own. Consume less, waste less!

**REPAIR:** Something broken? See if you can fix it before you throw it away!

**REUSE:** Once an item has served its original purpose, could it be used for something else instead of being tossed out?

**RECYCLE:** If an item has truly reached the end of its life, try to find a way to recycle it instead of throwing it in the garbage.



RECYCLING | TRASH | SUSTAINABILITY  
KEEP SANTA FE BEAUTIFUL



**RECYCLE RIGHT,  
SANTA FE!**

[WWW.SANTAFENM.GOV/ESD](http://WWW.SANTAFENM.GOV/ESD)

# THE ADVENTURES OF MS. POOP

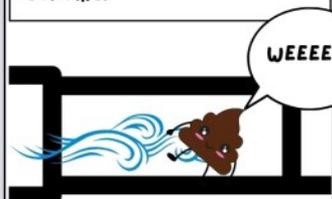
IT WAS A DAY LIKE ANY OTHER WHEN BRENDA CREATED MS. POOP



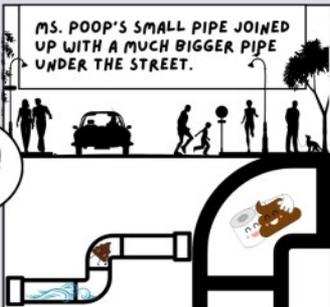
WHEN BRENDA FLUSHED, MS. POOP WENT ON A BIG ADVENTURE!



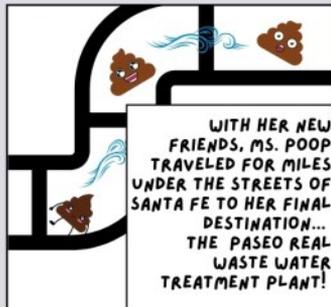
SHE WAS PUSHED THROUGH THE PIPES BY THE FORCE OF WATER. THE PIPE BROUGHT HER UNDER THE FLOOR OF THE APARTMENT BUILDING.



MS. POOP'S SMALL PIPE JOINED UP WITH A MUCH BIGGER PIPE UNDER THE STREET.



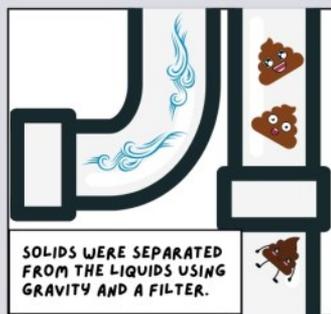
WITH HER NEW FRIENDS, MS. POOP TRAVELED FOR MILES UNDER THE STREETS OF SANTA FE TO HER FINAL DESTINATION... THE PASEO REAL WASTE WATER TREATMENT PLANT!



COOL! IT IS POWERED BY SOLAR ENERGY!



SOLIDS WERE SEPARATED FROM THE LIQUIDS USING GRAVITY AND A FILTER.



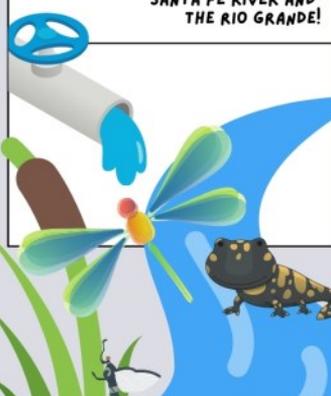
MS. POOP WAS DRIED OUT AND COMPOSTED TO MAKE RICH GARDEN SOIL!



THE WASTE WATER WAS CLEANED. FIRST WITH CHLORINE. THEN WITH UV LIGHT.

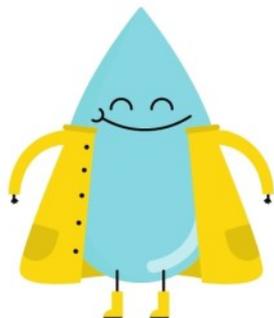


WHEN THE WATER IS CLEAN, IT IS ADDED BACK INTO THE SANTA FE RIVER AND THE RIO GRANDE!



# Tell us a Story

Now that you know all about water it is your chance to tell us a story! You know where our water in Santa Fe comes from, how it is cleaned, how it is used, and where it goes when we are done with it.



Write a story about what happens to a drop of water that falls in the mountains. Where does it go? How is it used? What adventures does it have?

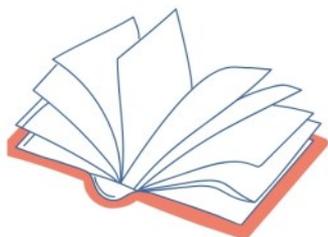
**Take a picture of your story and submit it with the rest of your answers to win a prize!**

## Reading Challenge



**Santa Fe Public Library**

Community Services Department, City of Santa Fe, New Mexico



Visit the Santa Fe Public Libraries and look for our Bees, Trees and Water display to find a book about water, pollinators, native plants and trees. We hope you enjoy it!

**Name of the book I read:** \_\_\_\_\_

*Visit the Santa Fe Public Libraries to find books and learn more about nature, water, and sustainability. Visit [santafelibrary.org](http://santafelibrary.org) to learn more about how to get a card.*

# Prizes

To Collect Your Prizes Follow these Steps:

- Do as many activities as you can. Record your answers in the blue boxes.
- Have an adult log into [savewatersantafe.com](http://savewatersantafe.com)
- Have the adult enter the answers you found.
- The more activities that you complete the more prizes you can claim.



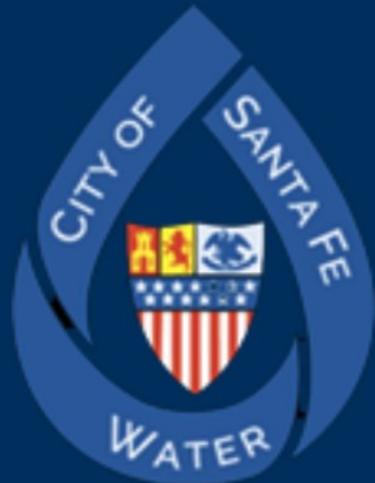
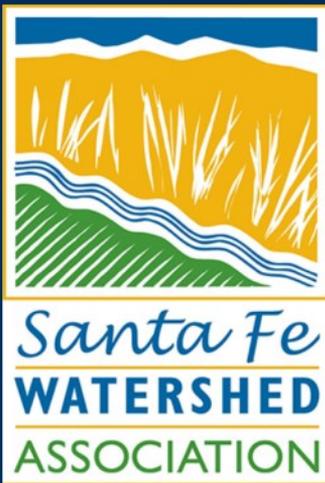
# Additional Resources and Links

- City of Santa Fe Water Conservation - [savewatersantafe.com](http://savewatersantafe.com)
- Eye on Water App - [eyeonwater.com](http://eyeonwater.com)
- Tree Smart - [santafenm.gov/news/detail/announcing\\_treesmart\\_santa\\_fe](http://santafenm.gov/news/detail/announcing_treesmart_santa_fe)
- Bee City Santa Fe - [beecitysantafe.org](http://beecitysantafe.org)
- City of Santa Fe Recycling and Environmental Services - [santafenm.gov/trash\\_and\\_recycling](http://santafenm.gov/trash_and_recycling)
- City of Santa Fe River Commission - [santafenm.gov/river\\_and\\_watershed](http://santafenm.gov/river_and_watershed)
- City of Santa Fe Wastewater Treatment - [santafenm.gov/wastewater\\_division](http://santafenm.gov/wastewater_division)
- City of Santa Fe Water Treatment - [santafenm.gov/water](http://santafenm.gov/water)
- Santa Fe County Open Space - [santafecountynm.gov/open\\_space\\_and\\_trails\\_program](http://santafecountynm.gov/open_space_and_trails_program)
- Santa Fe County Sustainability Office- [santafecountynm.gov/public\\_works/sustainability](http://santafecountynm.gov/public_works/sustainability)
- Santa Fe Watershed Association - [santafewatershed.org](http://santafewatershed.org)
- Tree City - [arborday.org/programs/treecityusa/](http://arborday.org/programs/treecityusa/)
- Xerces Society - [xerces.org](http://xerces.org)



# Thanks to all our Partners

We appreciate all of our partners and their help putting this book together! The City does a lot to help us every day. They provide water, recycle paper, glass, and metal, loan us books and so much more!



WE HOPE YOU WILL HELP  
US PROTECT OUR WATER!

