

Stormwater Sleuth and Running Rain:

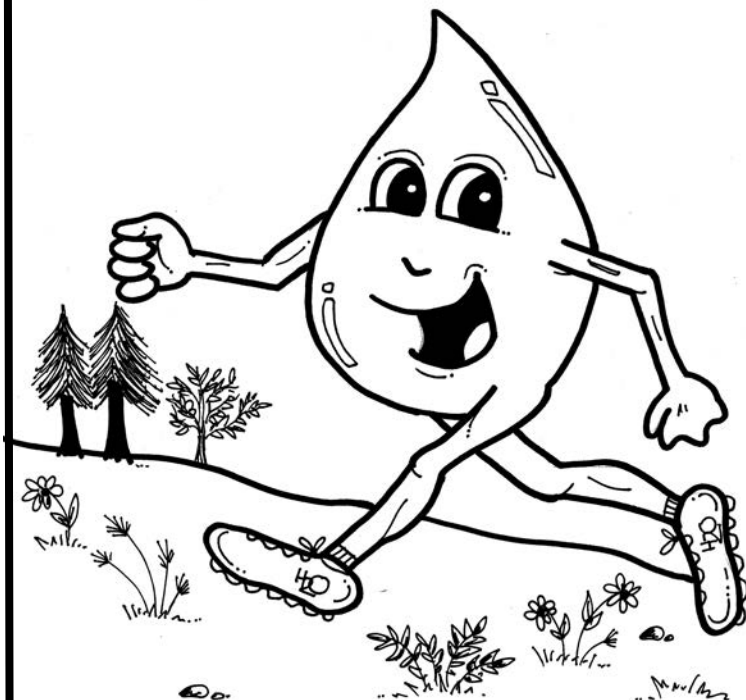


Keeping It Clean! Slowing It Down!

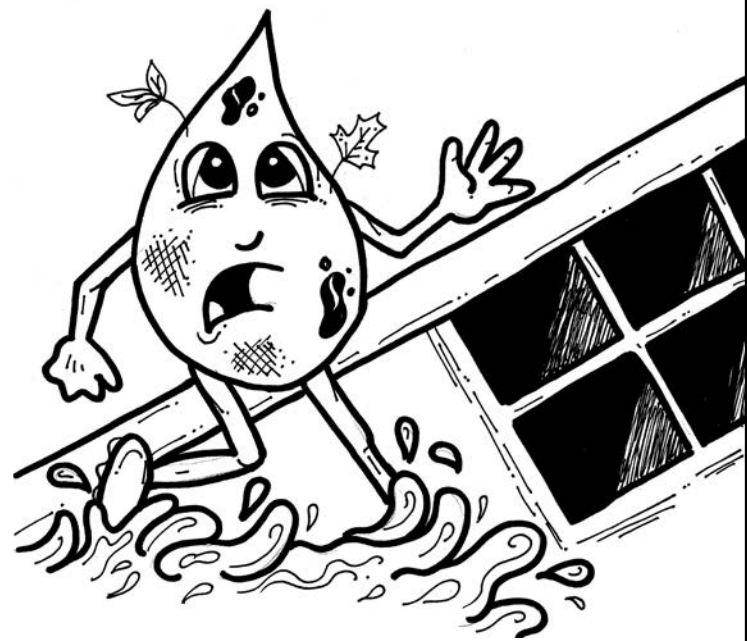
Hi, I'm Stormwater Sleuth! I keep a bird's-eye view on stormwater in cities, towns, and rural areas. Stormwater is water from rain and snow melt.



And I'm Running Rain! I join other raindrops to become stormwater runoff. I'm happy when I'm clean and can easily run (soak) into the soil.



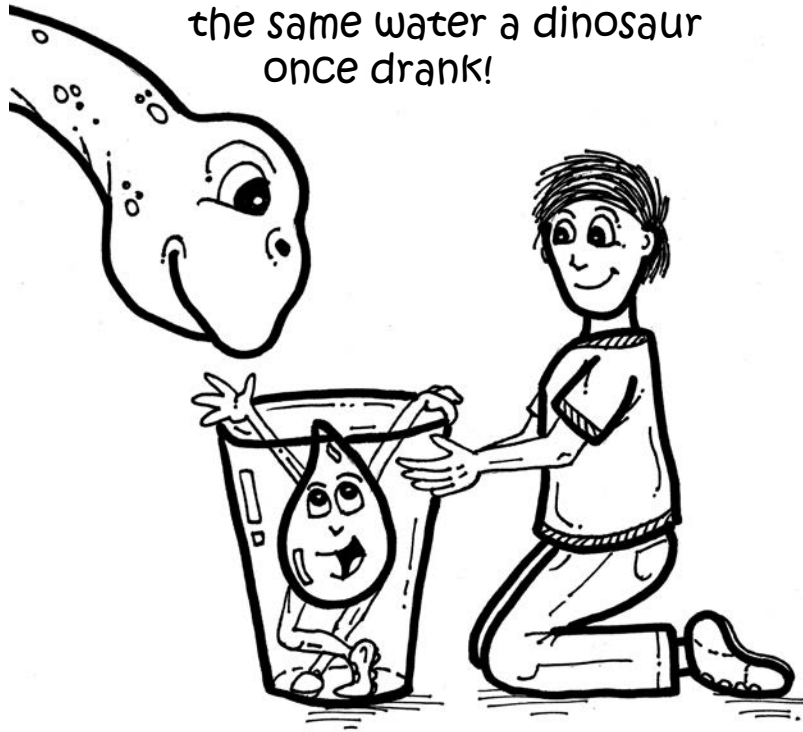
I'm sad when I'm dirty and run down a storm drain, carrying pollution to streams, rivers, and lakes. How I do this is something we will explore.



My job is to keep Running Rain happy by watching for pollution and too much stormwater runoff. **YOU** can help too! Let's start by learning about Running Rain.



Do you know, as a raindrop,
I am as old as the Earth?
Because I am a part of the
water cycle, you might drink
the same water a dinosaur
once drank!



That's right! The water on
Earth today is the same
water as when the Earth
formed. It is used over and
over and over again.



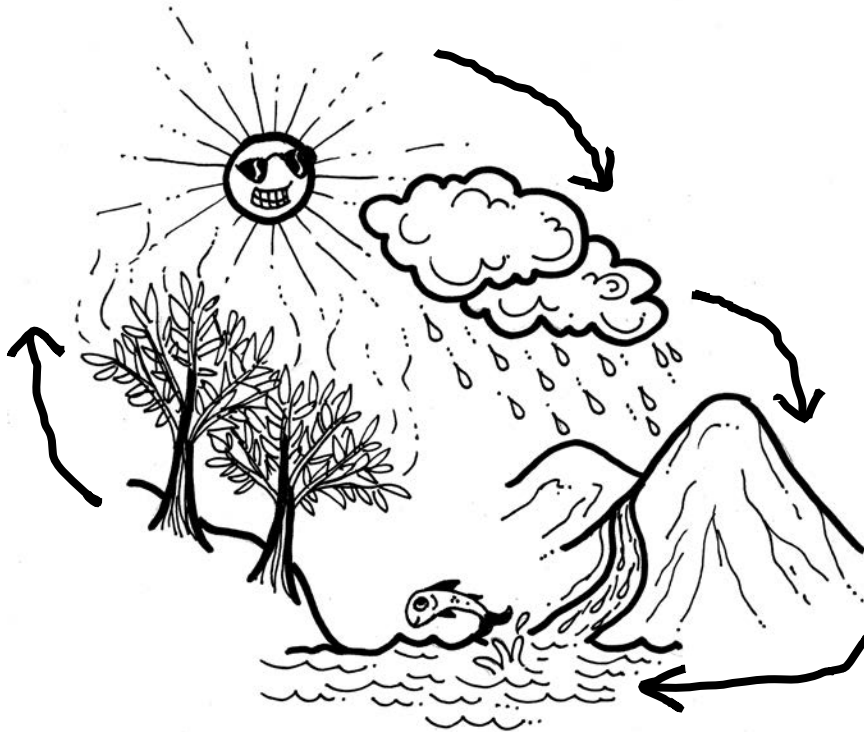
During rainfall new water is not
added to Earth. The amount of
water now is all the water the
Earth will ever have. We need to
take good care of it.



Let's explore the trip Running Rain
takes in the water cycle and learn
about watersheds.



In the water cycle, water moves from the Earth to the atmosphere; changes to rain (or snow); falls back to Earth; soaks into the soil or runs into a stream, river, or lake; evaporates back to the atmosphere; and so on, and so on.....



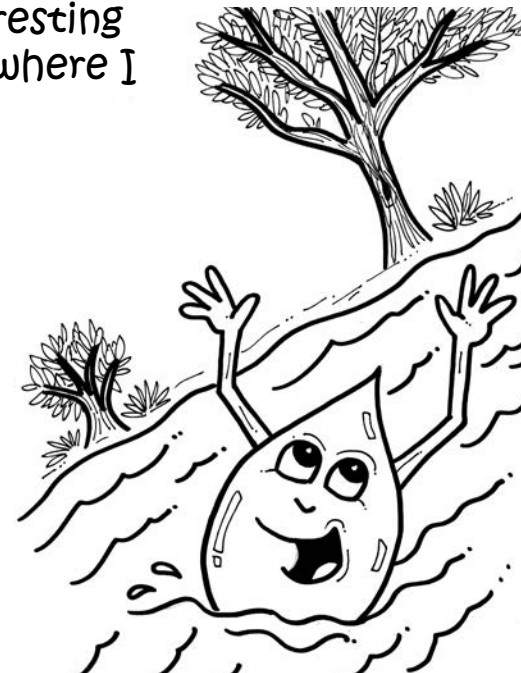
Whenever Running Rain falls from a cloud, he lands in a watershed. This is the area of land where rain drains (sheds) to the same stream, river, or lake.



Did you know you are in a watershed now? We all live in a watershed. Later, you will gather information about your watershed.



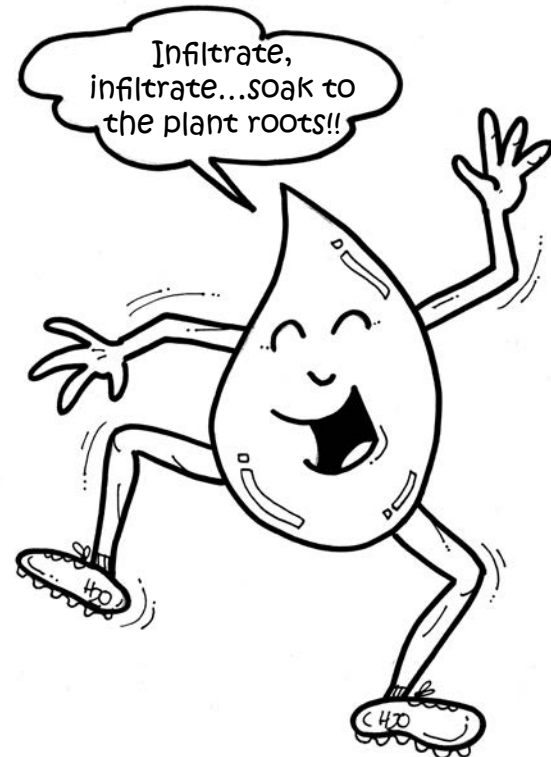
There are lots of watersheds and they're connected. When I run into a stream or river, I keep running downstream through many other watersheds. It's really interesting to watch where I go.



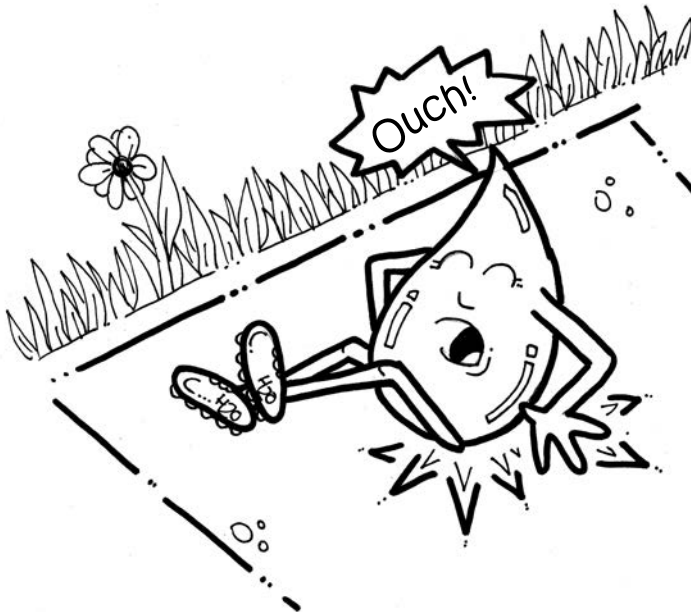
Now let's investigate how Running Rain becomes stormwater runoff in watersheds.



During rainfall, when I land on soft soil or plants, I can soak into the soil (infiltrate). From there, I may evaporate to the atmosphere, be taken up by plants and transpired to the atmosphere, or soak down to ground water.



But sometimes I hit a hard spot like pavement. Then I run over the ground instead of soaking in. This is when I become stormwater runoff.



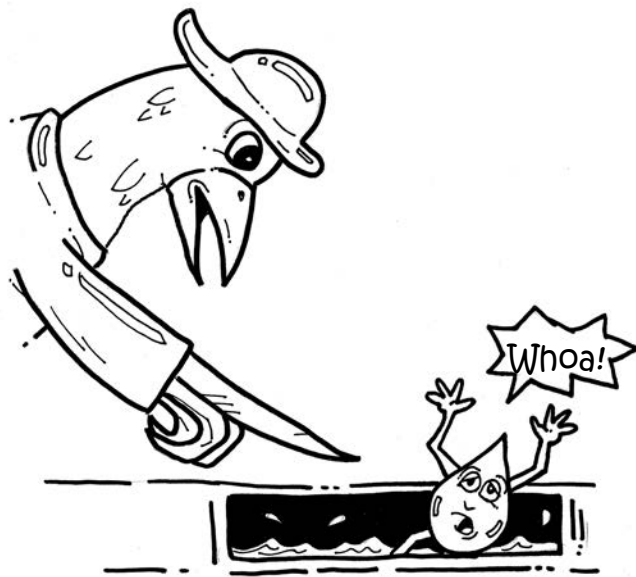
And, when I run over a surface, I pick up loose things in my path. I can become very dirty.



In towns, there are lots of hard spots like roofs, parking lots, and driveways. When I land on these, I easily run to the street and into a storm drain.



When Running Rain disappears into a storm drain, you might think he goes some place to be cleaned, like a sewage treatment plant.



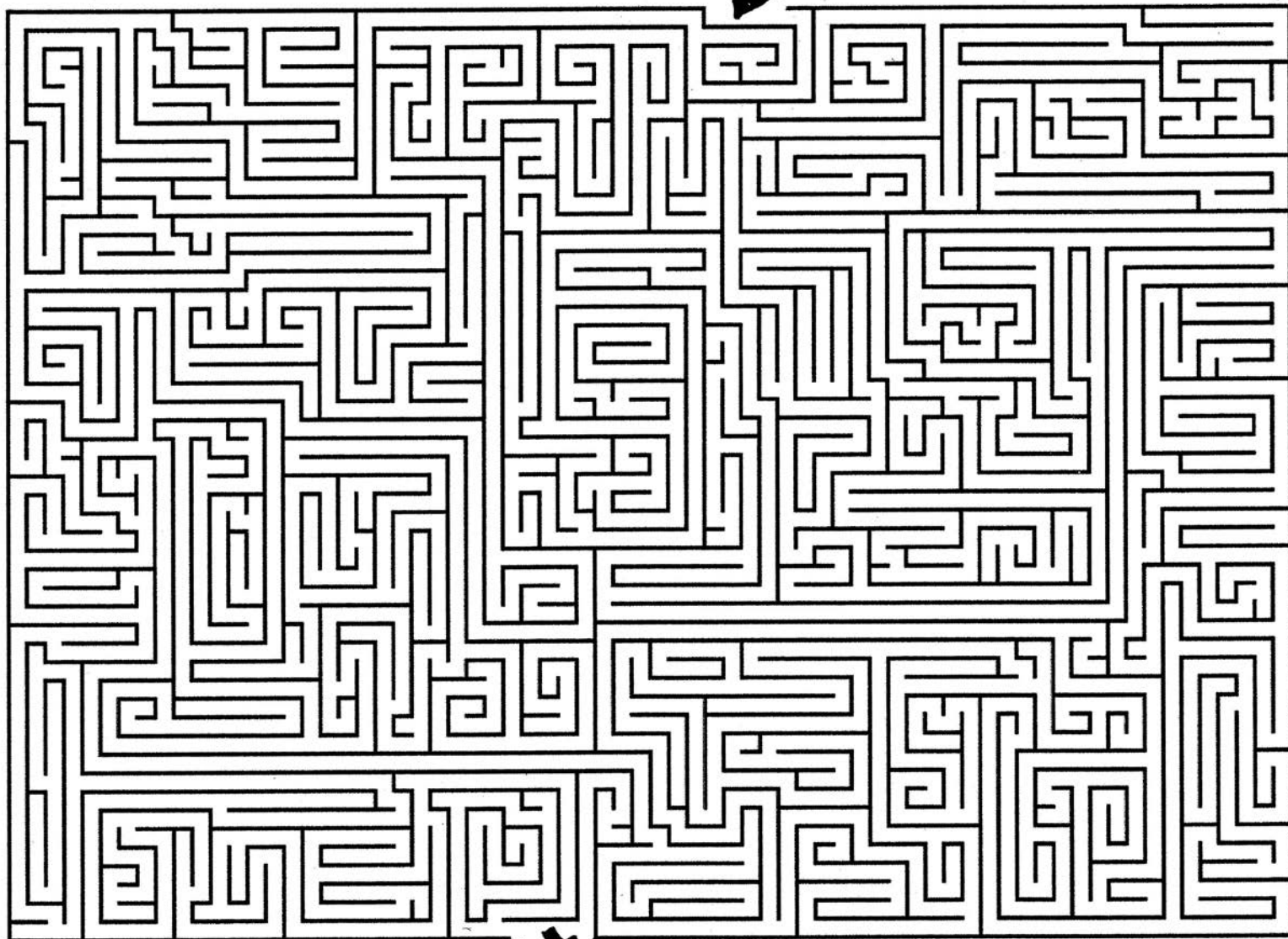
Nope, I almost always flow through a pipe to splash into a stream, river, or lake. This is NOT fun when I'm dirty and moving fast!



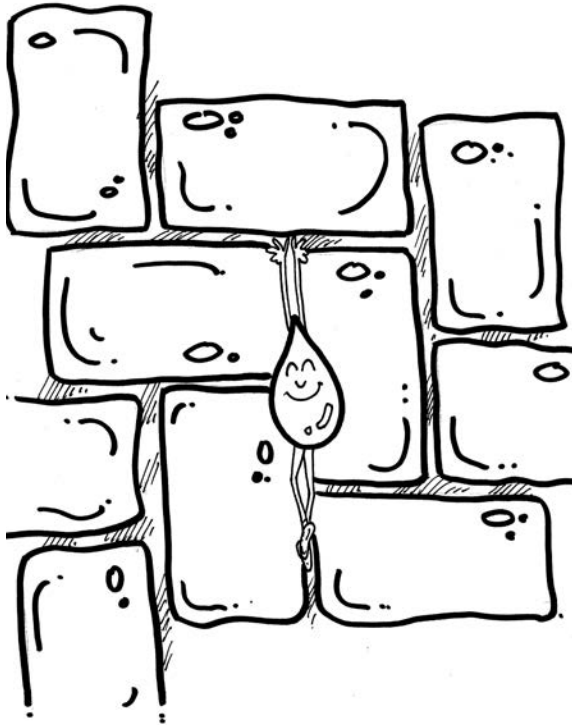
Because of many hard surfaces in towns and cities, lots of stormwater runs off. It moves fast and becomes very dirty. You can observe this when it rains.



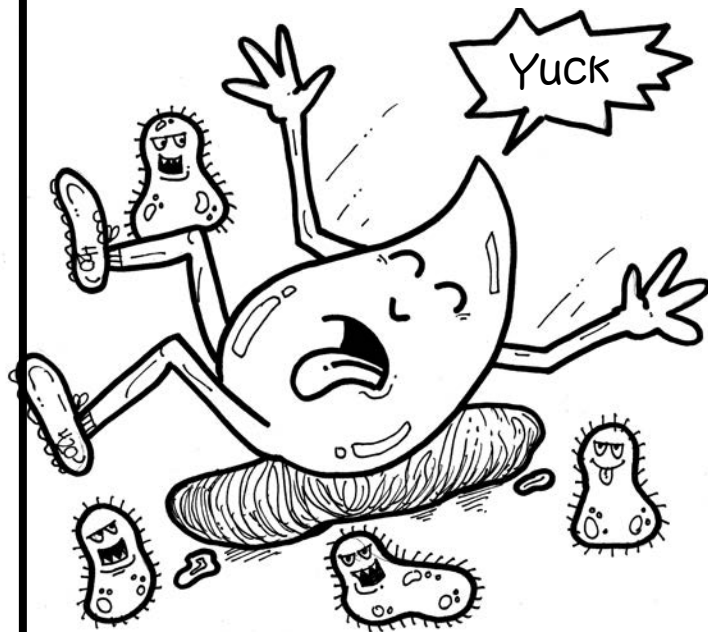
Help Running Rain find his way to the river.
There are different ways to get there



Some places are using new ways to slow stormwater and keep it clean. I'm excited to show you some of these cool, new practices. But first, let's investigate how I pollute water.



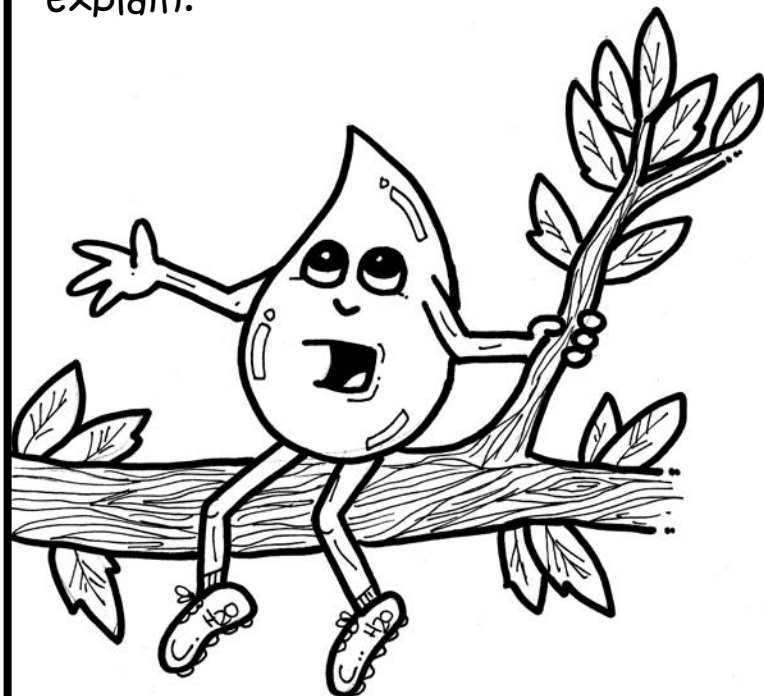
As I said before, when I run, I collect loose things like leaves and litter. Sometimes I even run over dog poop and pick up nasty bacteria.



When Running Rain carries pollution like soil, pesticide, fertilizer, oil, litter, and tree leaves to a stream, river, or lake, the water becomes polluted.



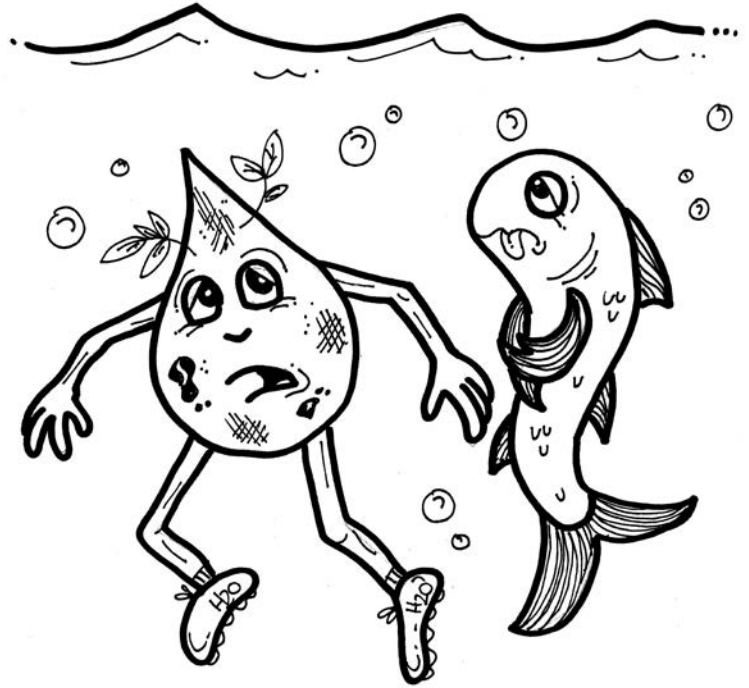
You might question how leaves can pollute water. After all, they have fallen into water for as long as I can remember. Sleuth will explain.



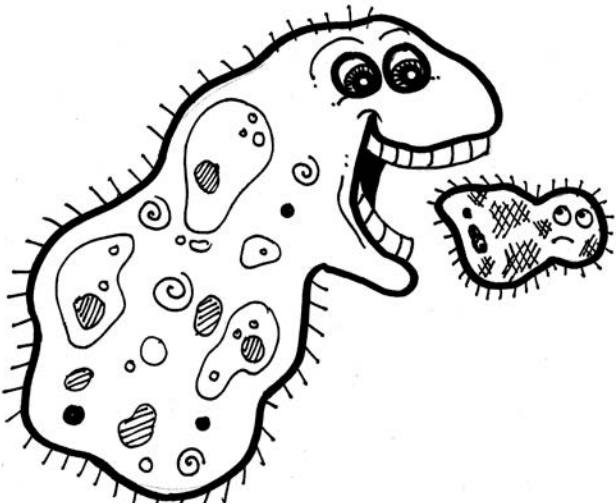
When leaves rot, they release nutrients. Too many nutrients in water cause algae to grow. If water looks like green pea soup, this is evidence of excess algae caused by pollution.



Too much algae can kill fish and other aquatic animals. Some kinds of algae can make animals and people sick too.



If only small amounts of pollution end up in water, good microorganisms in the ecosystem help remove some of this pollution.



But when Running Rain carries too much loose material to water at one time, streams, rivers, and lakes become polluted.

This is called nonpoint or run-off pollution because it comes from many different places; and it cannot be traced to the exact point it came from.



Cities and towns with lots of hard surfaces are becoming larger with more stormwater running off and less soaking into the soil.



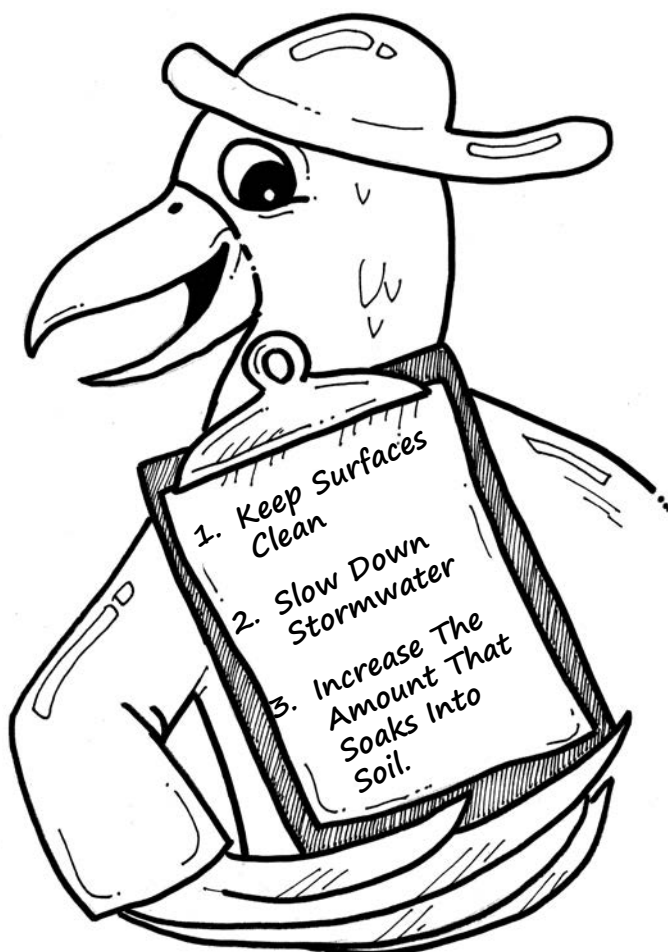
Many people do not know their actions can make me dirty, causing me to pollute water. If they did, I know they would help. Let's explore some ways we all can help keep me and water clean!



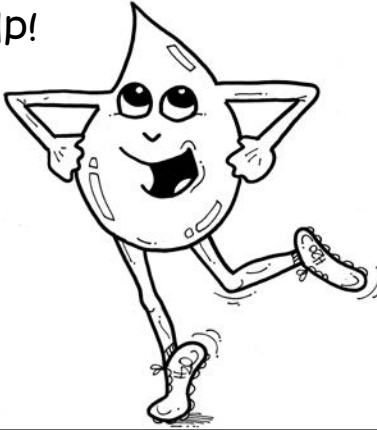
Great idea, Running Rain!! Pollution comes from many different places. Just as a tiny bit of pollution from many people adds up to harm water, many people doing their part can add up to help water!!



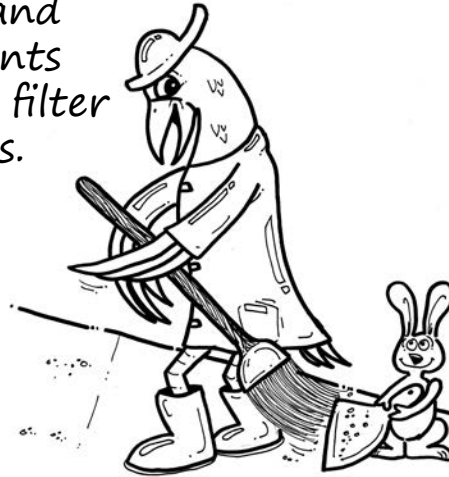
I've made a list of some ways we can help keep our water clean.



Remember I said I'm happy when I'm clean and I run into the soil; and sad when I'm dirty and run down a storm drain? Here are some things you, your friends, and adults can do to help!



Sweep dirt, fertilizer, and pesticide granules off sidewalks and driveways and onto the lawn, not into the street. The leaves and roots of grass and other plants trap and filter pollutants.



Scoop pet poop! Throw it in the trash or flush it down the toilet!



Wash cars at a car wash because this water goes to a treatment plant. Dirt and soap rinsed off of a car onto pavement will run into a storm drain. Soap has the nutrient phosphorous in it which can cause too much algae to grow in water.

After mowing, sweep grass clippings off pavement and onto the lawn. Or, add clippings to compost, use them as mulch, or take them to a recycling facility. Don't forget to do this with tree leaves too.



Put litter in the trash!



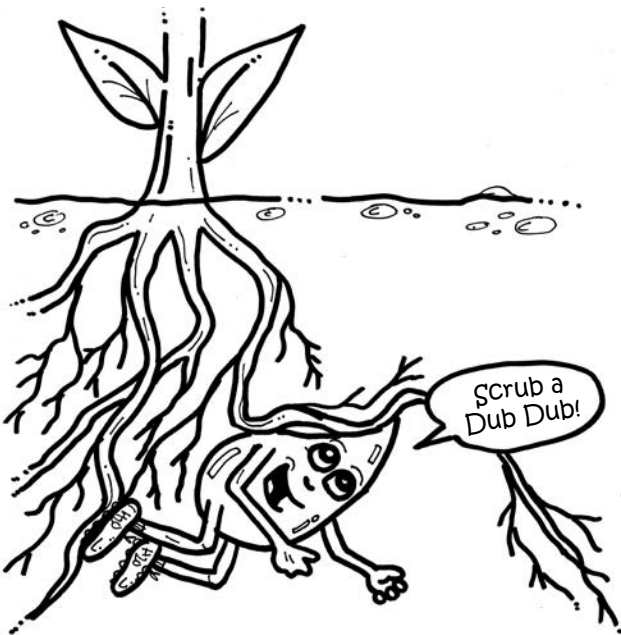
Know what else keeps me clean and happy? **Rainwater harvesting.** This helps to slow me down and keep me clean.



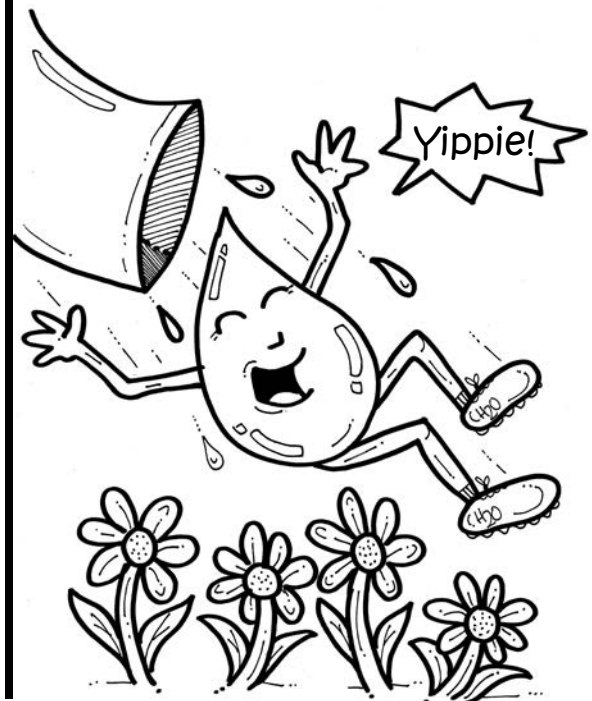
Rainwater harvesting is catching rainwater in a container or planted area so less runs off. This water then soaks into the soil or is used for other purposes.



When I soak into soil, good microorganisms and plant roots clean me. Here are some cool ways to slow me down and help me soak in.



Start by turning gutter downspouts away from pavement so I land on a soft, planted area.





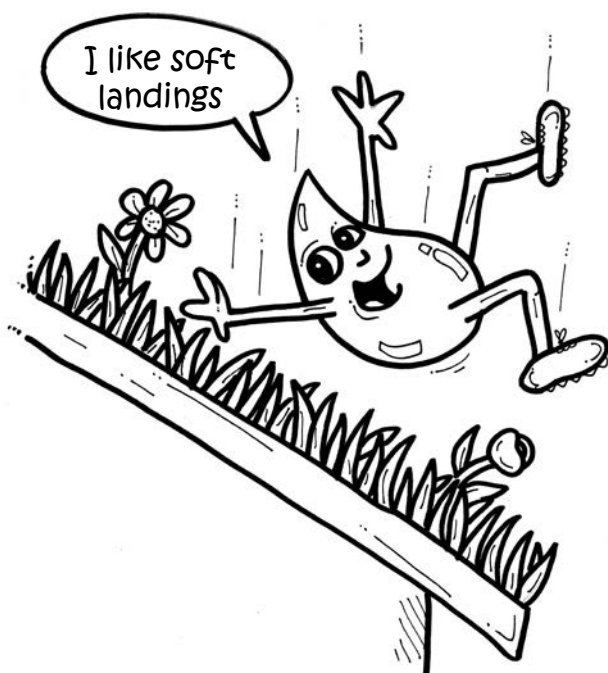
Use a rain barrel to catch rainwater from your roof to use for watering plants.

Plant a rain garden! These are decorative gardens that catch rain to soak into soil. (Learn more about it at: water.unl.edu)



There are special "green roofs" that have plants growing on them to catch and slow me down.

(Learn more at: epa.gov/greeninfrastructure/)

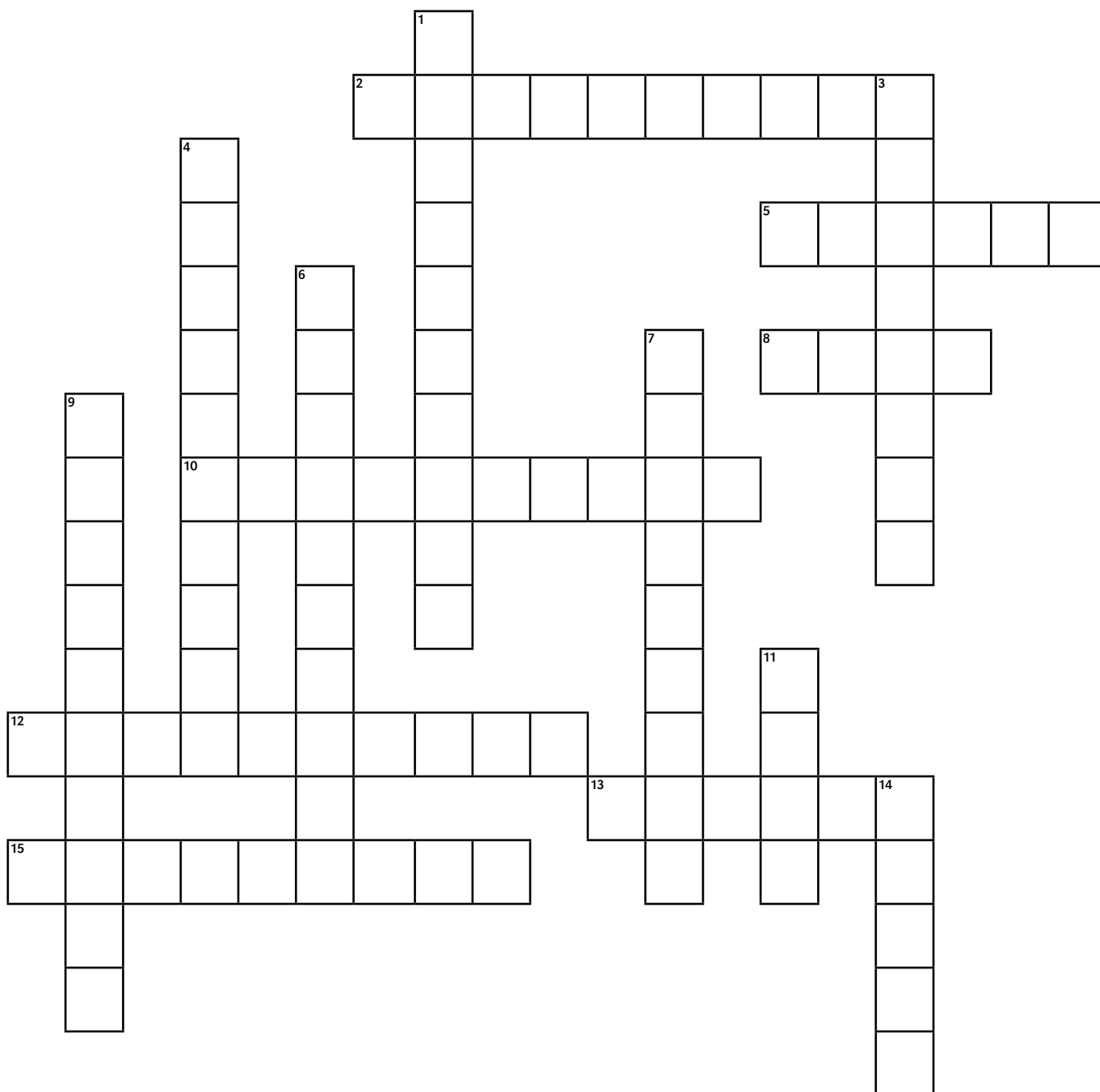


There is even porous pavement made from pervious concrete that Running Rain can soak into.



Crossword Puzzle

(Answers found on page 16)



ACROSS

- 2** A garden that catches and holds rainwater for a short time, soaking it in
- 5** Stormwater that flows over the ground
- 8** A green _____ helps to soak in rainwater before it flows off of a building
- 10** Describes how water moves from the Earth, to the atmosphere, to clouds and back to Earth
- 12** Pipes that carry stormwater from a street and empties into a stream, river, or lake
- 13** Water soaks into this type of pavement
- 15** Area of land that drains to the same stream or river

DOWN

- 1** Container used to capture rainwater from a roof
- 3** The pollution you cannot trace to the exact place it came from
- 4** Water from rain and snowmelt
- 6** Chemicals that kill insects and weeds, it can be picked up in stormwater
- 7** Fertilizer, pesticide, oil, fuel, grass clippings, or soap that is carried into water
- 9** Soak into the soil
- 11** Pet _____ can pollute water with harmful germs
- 14** _____ fertilizer off the sidewalk so it isn't picked up by stormwater

Let's learn about your watershed. Be a sleuth like me. Surf Your Watershed at:
<http://cfpub.epa.gov/surf/locate/index.cfm>
to find answers to these questions

What is the name of your watershed?

What rivers, streams, and lakes are in your watershed? What rivers do they run into downstream?

What cities/towns are upstream of you?

What cities/towns are downstream from you?

Where might Running Rain end up if he falls in your watershed?

Are there impaired waters in your watershed?



Now let's explore where I go after I land on your house or school. Go outside with a parent, teacher, or other adult to observe and find the answers to these questions.



After rain lands on your roof, where does it run to?

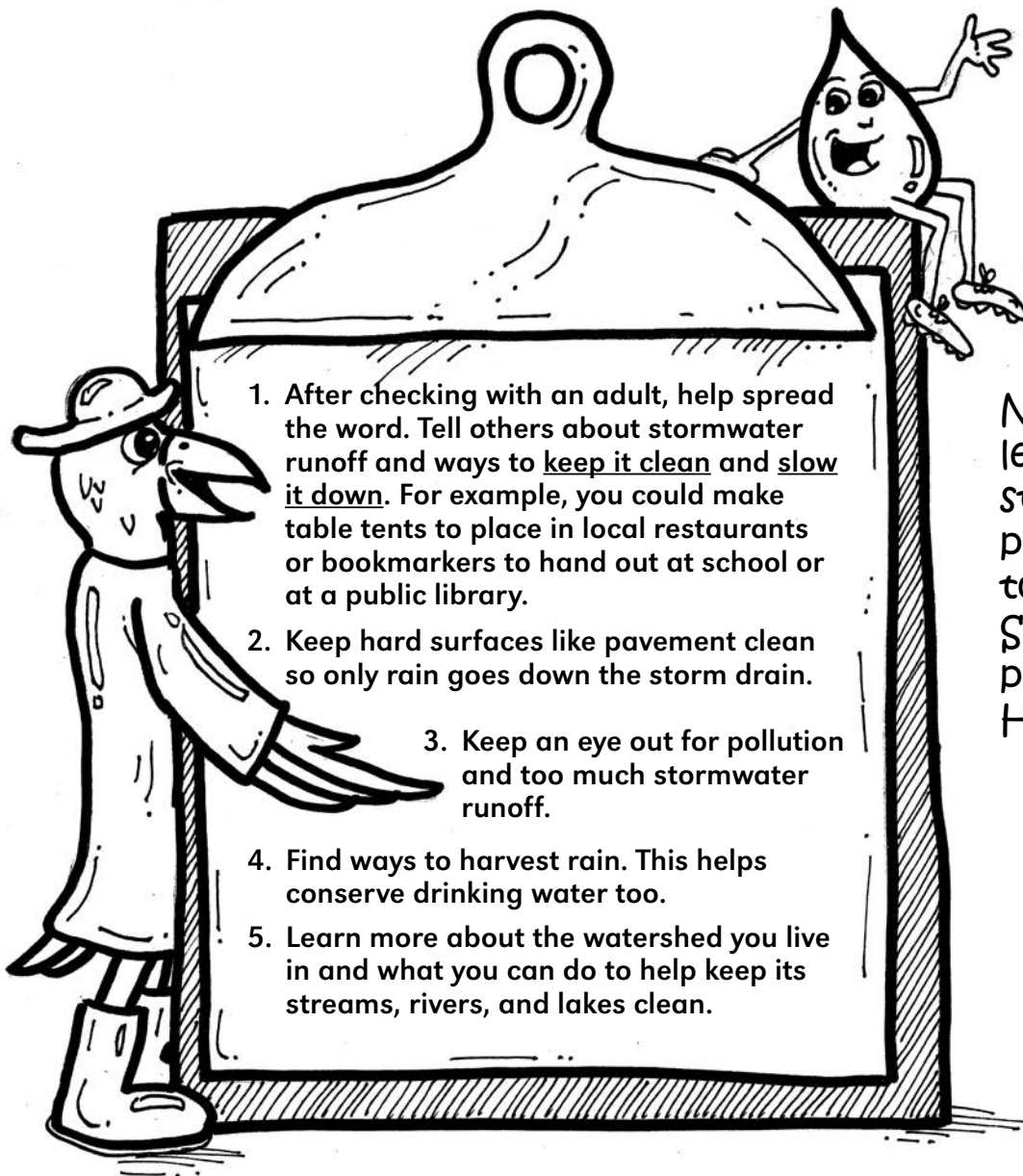
If it runs into a street, does it flow to a storm drain?

Once in the storm drain, where does the stormwater go? (*Hint: Call your city offices to learn more about this.*)

What streams, rivers, or lakes will rain from this roof end up in?

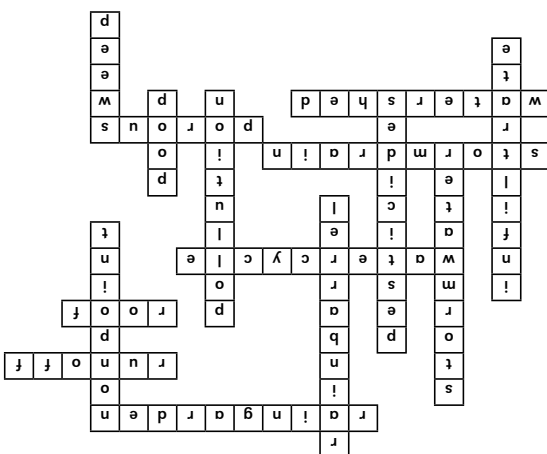
What types of pollution might stormwater runoff take from this property?

What are some things you can do on this property to slow down stormwater and keep it cleaner?



1. After checking with an adult, help spread the word. Tell others about stormwater runoff and ways to keep it clean and slow it down. For example, you could make table tents to place in local restaurants or bookmarks to hand out at school or at a public library.
2. Keep hard surfaces like pavement clean so only rain goes down the storm drain.
3. Keep an eye out for pollution and too much stormwater runoff.
4. Find ways to harvest rain. This helps conserve drinking water too.
5. Learn more about the watershed you live in and what you can do to help keep its streams, rivers, and lakes clean.

Now that you have learned about stormwater and pollution, you are ready to be a Stormwater Sleuth too! Do your part to help water out! Here are some ideas!



Answers to the Crossword Puzzle
on page 14

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