

# A Waterproof Case

M. TUESDAY  
PRIVATE  
DETECTIVE



Written by Deborah Rodney  
Illustrated by Jessica Bonin

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(for World Water Monitoring Challenge™)

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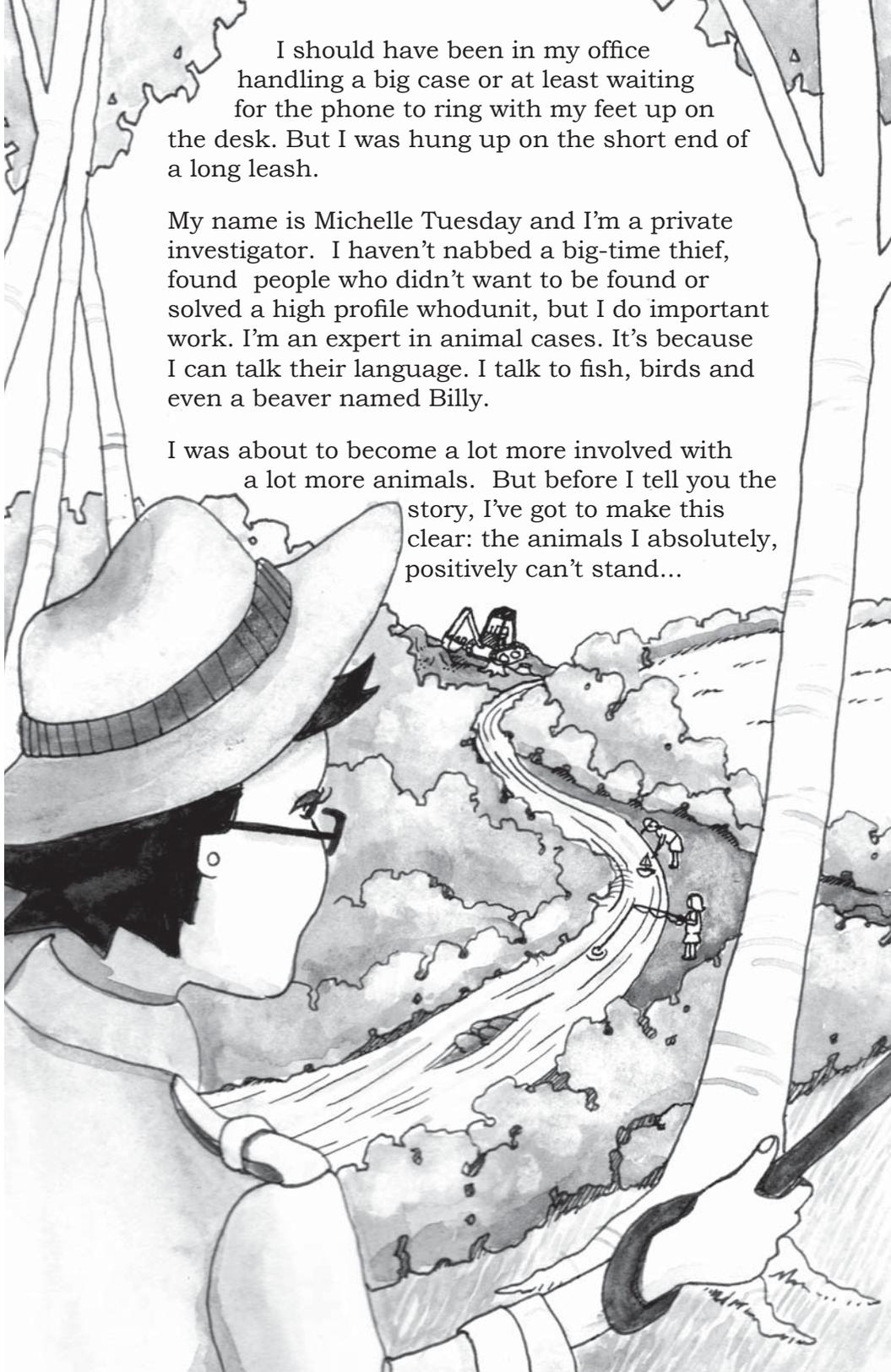


Watch for the butterflies who will show you some special words that you can learn more about in the back of the book!

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I should have been in my office handling a big case or at least waiting for the phone to ring with my feet up on the desk. But I was hung up on the short end of a long leash.

My name is Michelle Tuesday and I'm a private investigator. I haven't nabbed a big-time thief, found people who didn't want to be found or solved a high profile whodunit, but I do important work. I'm an expert in animal cases. It's because I can talk their language. I talk to fish, birds and even a beaver named Billy.

I was about to become a lot more involved with a lot more animals. But before I tell you the story, I've got to make this clear: the animals I absolutely, positively can't stand...

...are dogs. So you can imagine I wasn't happy being tied up with an oversized dust mop named Einstein.

Business was slow. The tide was going out in the detective business, and I had to take a dog-walking job until the tide came in again.



It was a sunny Wednesday afternoon, and I was walking Einstein, or rather he was walking me when my cell phone rang.

It was Reggie. He's a rat. I mean, he's a good guy for a rat.



You see, Reggie is my partner and he is a rat. We met on a case and we've been working together ever since.

He started yammering on about a big, slimy fish who was having some problems and told me I should get back to the office as soon as possible because the case could be one hot tamale.

Reggie's thoughts always lean toward food.

While I was talking, Einstein chewed apart the end of the leash and made a quick getaway.

I was grateful to work off the two donuts I had for breakfast. But I *wasn't* happy chasing down an oversized, runaway fur ball who had completely disappeared—especially when a client was waiting in the office with a big case.



I nearly jumped out of my shoes when, out of nowhere, a big voice boomed like it came from double speakers at a rock concert.

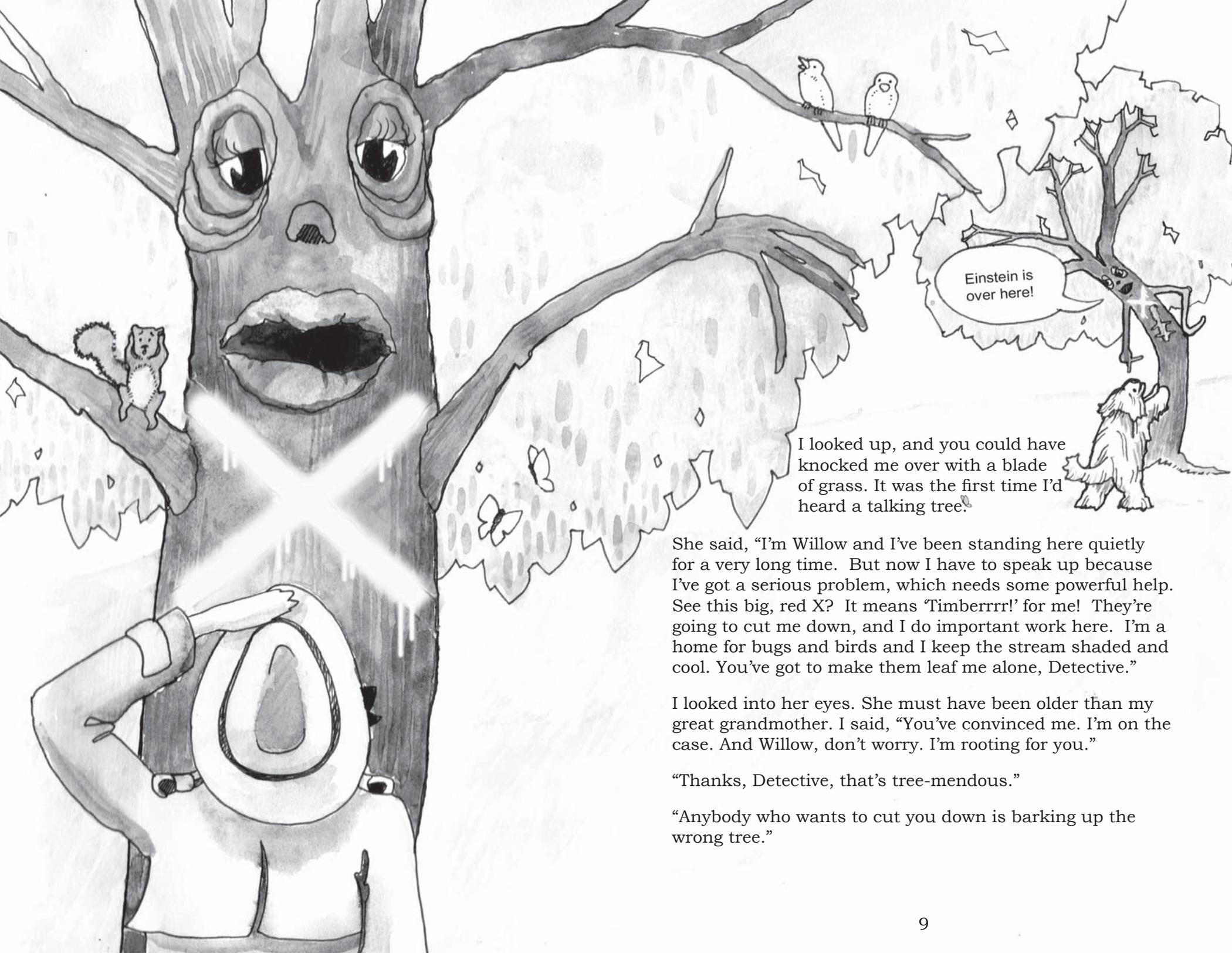
"DETECTIVE, I NEED YOUR HELP," it said.

I froze and asked, "Why me? And where are you?"

The voice said, "I'm right in front of you."

I didn't see a thing except a big tree and some sweet, little yellow butterflies that couldn't possibly have such big voices.

"Up here, Detective," the voice said.



Einstein is over here!

I looked up, and you could have knocked me over with a blade of grass. It was the first time I'd heard a talking tree.

She said, "I'm Willow and I've been standing here quietly for a very long time. But now I have to speak up because I've got a serious problem, which needs some powerful help. See this big, red X? It means 'Timberrrr!' for me! They're going to cut me down, and I do important work here. I'm a home for bugs and birds and I keep the stream shaded and cool. You've got to make them leave me alone, Detective."

I looked into her eyes. She must have been older than my great grandmother. I said, "You've convinced me. I'm on the case. And Willow, don't worry. I'm rooting for you."

"Thanks, Detective, that's tree-mendous."

"Anybody who wants to cut you down is barking up the wrong tree."

I finally collared Einstein, took him home and got back to the office just in time to meet Justin Time, the cold fish Reggie told me about. His big tears were causing an overflow. Not only was he crying up a storm, but Reggie was spraying him with a hose to keep him wet. After all, he was a fish out of water.

The whole place was a mess. Water was all over the floor, the couch and the lampshade. It had filled up my spare pair of shoes. That's where Charlie, my goldfish, was swimming because his bowl had tipped over. It was the only dry spot in the place.

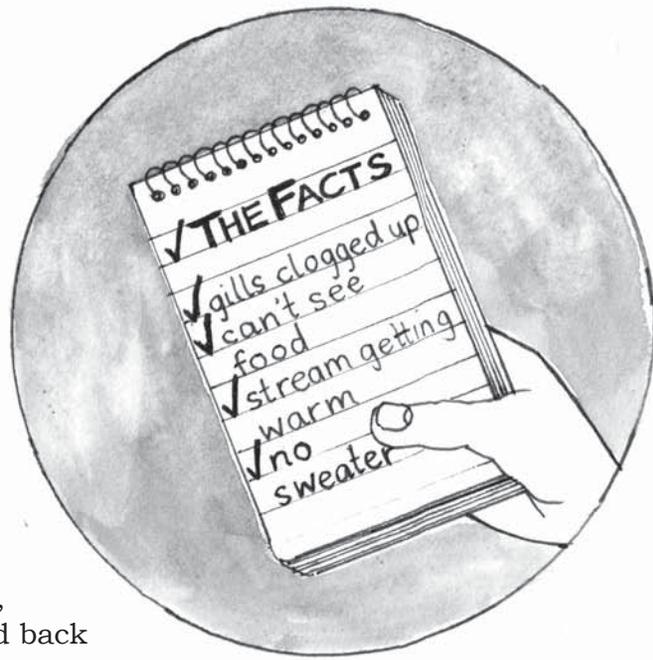
I stepped over a big puddle, and Justin surfed up to me and started talking. "Detective, I've got a problem. I think something's wrong with the stream where I live. Every morning before the sun comes up, I feel like I can't breathe. I think my gills are getting clogged up."

He was right. He sounded like he had a bad cold.

"And the water is so murky sometimes that I can't find my food or see where I'm swimming. And the thicker and murkier the water is, the warmer I feel. I can't take off a sweater when I'm hot or put on a jacket when I'm cold like you, Detective. I need the water temperature in my stream to be just right to suit me."

Then he sneezed.

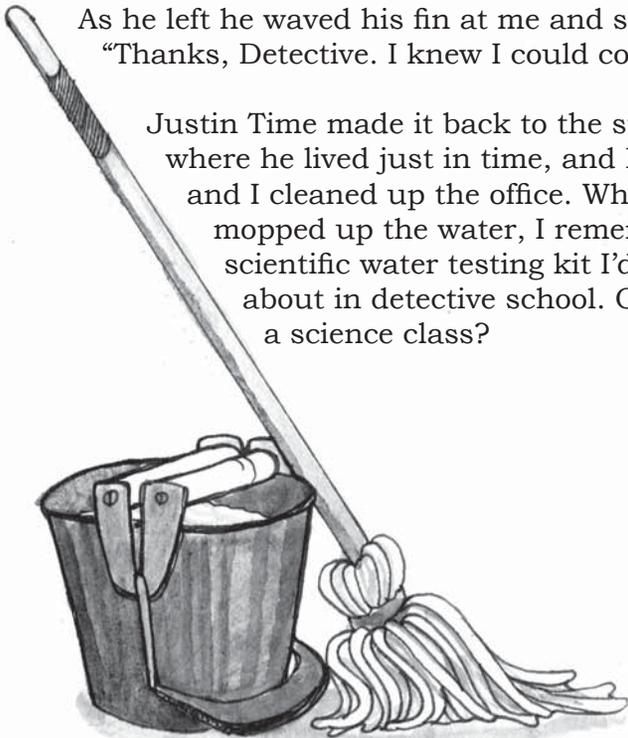




I wrote down the facts. "Look," I told him, "You'd better head back to the stream before you dry out, or my office floats away. I'll check you out tomorrow morning."

As he left he waved his fin at me and said, "Thanks, Detective. I knew I could count on you."

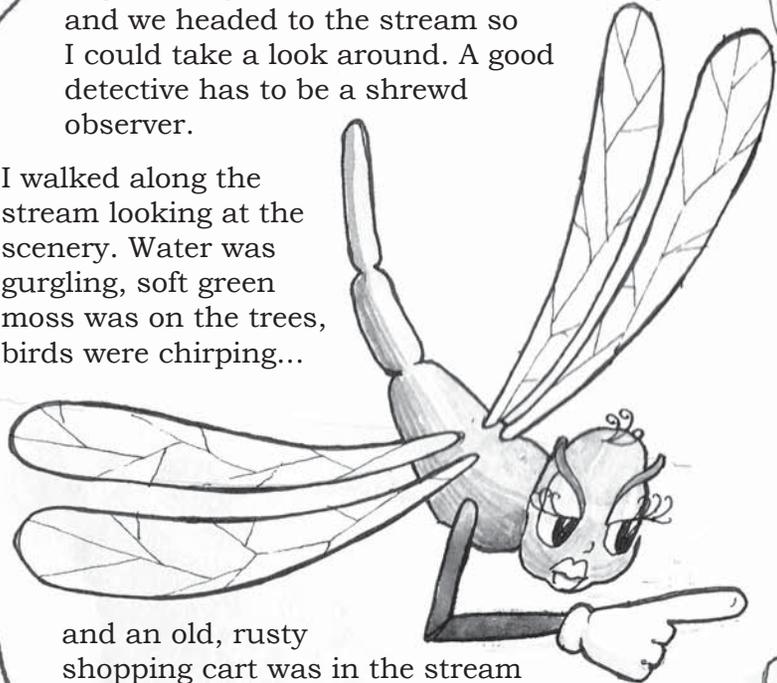
Justin Time made it back to the stream where he lived just in time, and Reggie and I cleaned up the office. While we mopped up the water, I remembered a scientific water testing kit I'd learned about in detective school. Or was it in a science class?



I needed evidence, and that test kit could be just the ticket! It didn't take me long to find it online. It was called a World Water Monitoring Challenge Kit. I ordered one special delivery.

Early the next morning I thought I could make my annoying dog-walking chore a little more interesting, and we headed to the stream so I could take a look around. A good detective has to be a shrewd observer.

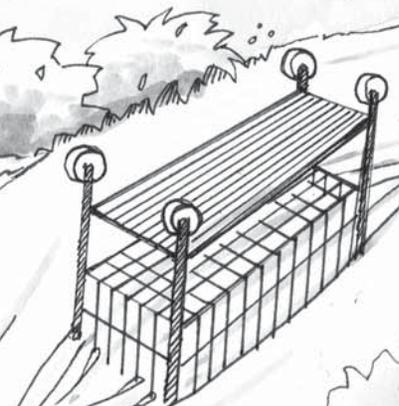
I walked along the stream looking at the scenery. Water was gurgling, soft green moss was on the trees, birds were chirping...



and an old, rusty shopping cart was in the stream with its legs up in the air. I shook my head and wondered how anyone could throw garbage into the stream. I made a note to organize a cleanup.

The next thing I knew, Einstein had jumped in the water and was stirring up the mud.

Less than a second later, a little dragonfly lady had her finger in my face and was mad as a hornet.

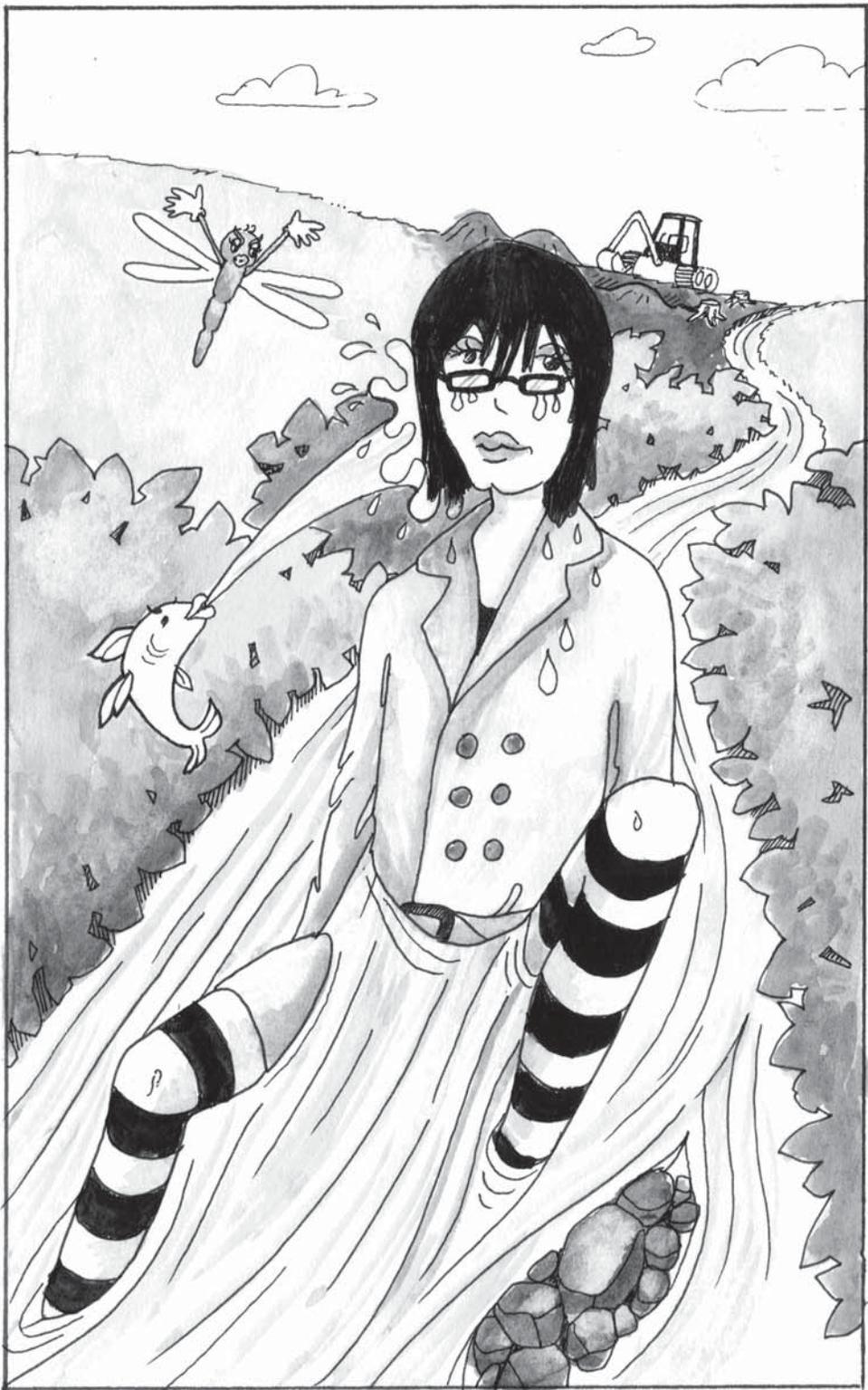


Hmmm? Could this new building construction have anything to do with the water being murky?

She said, "Look at your dog. He's destroying the stream bank and it's crumbling into the stream making a big mess. What do you think happens to all those insect eggs on the bottom when that mess settles? What am I supposed to eat if those critters can't hatch?"

Before I could explain that he wasn't my dog, she batted her eyelashes at me and said, "You'd better get him out of there. You wouldn't want somebody's crazy dog to stomp all over the food you're about to eat, Detective."

I tugged on the leash...



...and Einstein tugged back. I landed right in the stream.

The dragonfly fluttered in front of my face and said, "Now *you're* making a mess of the stream, too. Clean, clear water is a precious natural resource that's very important to every living thing, including fish, birds and dragonflies."

"Trees, too," said Willow.

"She needs to get out of there, NOW! And the big, hairy dog, too."

Willow said in a calm voice, "Easy, Draggie Mae. It was an accident. This is Detective Tuesday, and she's going to help with my case."

Einstein and I got out of the water. Good thing I was already wet because when he shook, water went everywhere.

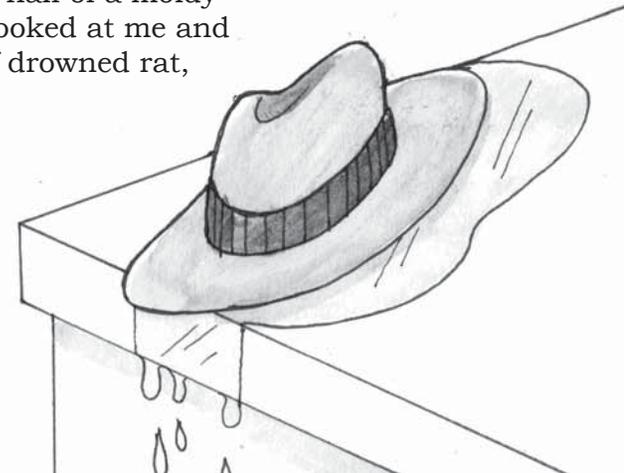
I apologized, agreed with Draggie Mae about keeping the water clean and said, "I know the earth's supply of fresh water is limited, and we can't afford to pollute it."

But it was hard to be seen as a serious, professional detective when my hair was swampy and water was draining out of my pockets.

So, I said I'd be back, excused myself and headed to the office to dry off. When I got there, the first thing I did was change my soaked shoes, but my spare pair was still wet from yesterday. This was one soggy case, all right.

Reggie, who came in with half of a moldy Swiss cheese sandwich, looked at me and said, "You look like a half drowned rat, Detective."

"Einstein took me for a swim, and I'm definitely not happy about it," I grumbled.



Then he handed me the package from World Water Monitoring Challenge. We opened it, and there was a lot of cool testing stuff inside. I was ready for a real investigation.

So Reggie and I headed back out to the stream to look for Justin. Without Einstein. It was a good thing, too, because on the way I checked out the safety tips included with the kit instructions, and they clearly said to keep pets at home.



When we got there, Justin was swimming and sneezing. Draggie Mae landed on my shoulder, looked at the package and said, “What do you have there, Detective? Is it a present for me?”

“I’m here to collect evidence. We’re going to give this stream a check up.” I introduced Reggie. “This is my partner, Reggie. He’s our point man.

“That means I will be keeping my eyeballs pointed at the test results,” he said.

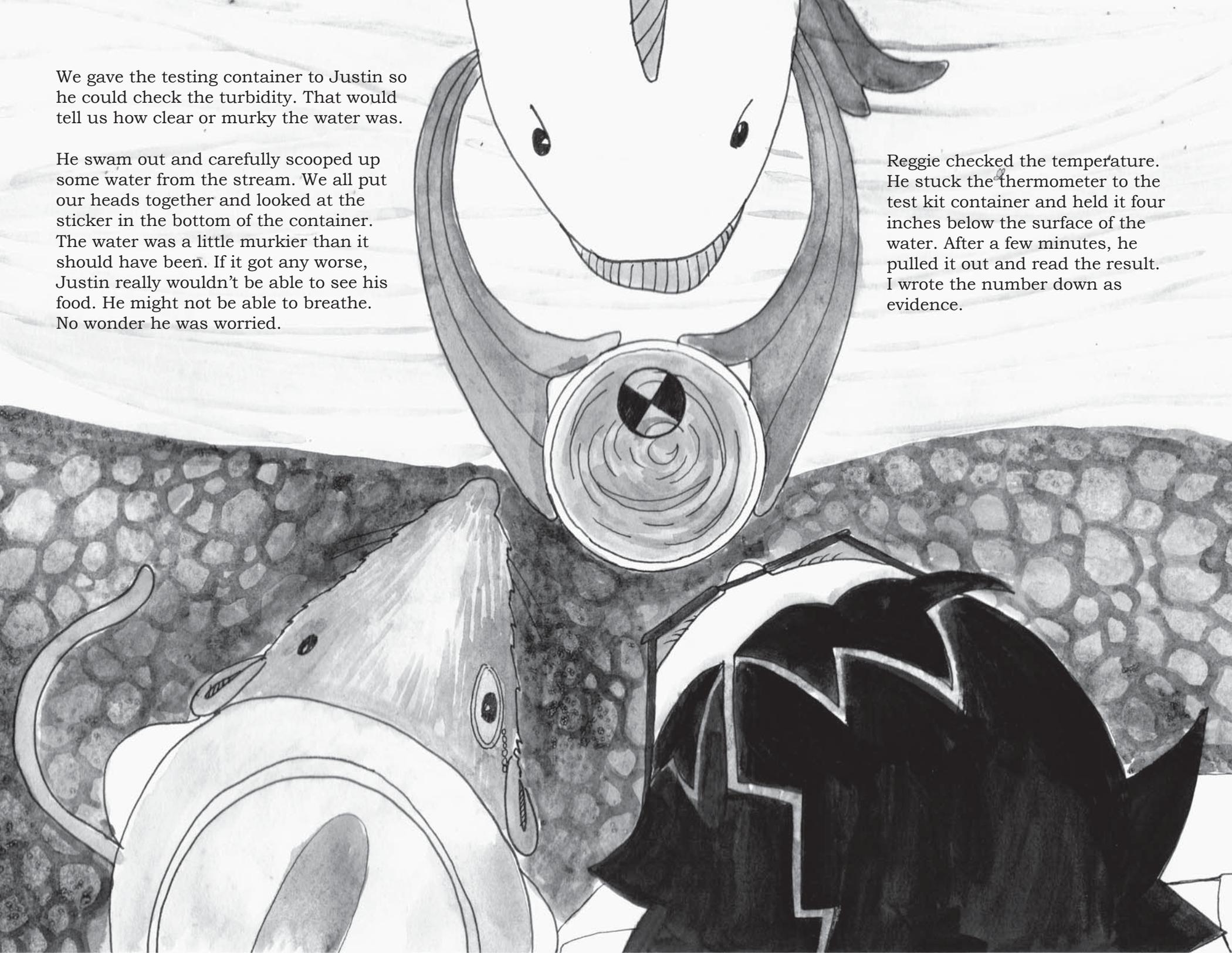
It was good we had a whole team because one of the safety tips said not to work alone.

There were four tests in all. Checking the instructions, Reggie pulled out the first one. It was called a turbidity test.

We gave the testing container to Justin so he could check the turbidity. That would tell us how clear or murky the water was.

He swam out and carefully scooped up some water from the stream. We all put our heads together and looked at the sticker in the bottom of the container. The water was a little murkier than it should have been. If it got any worse, Justin really wouldn't be able to see his food. He might not be able to breathe. No wonder he was worried.

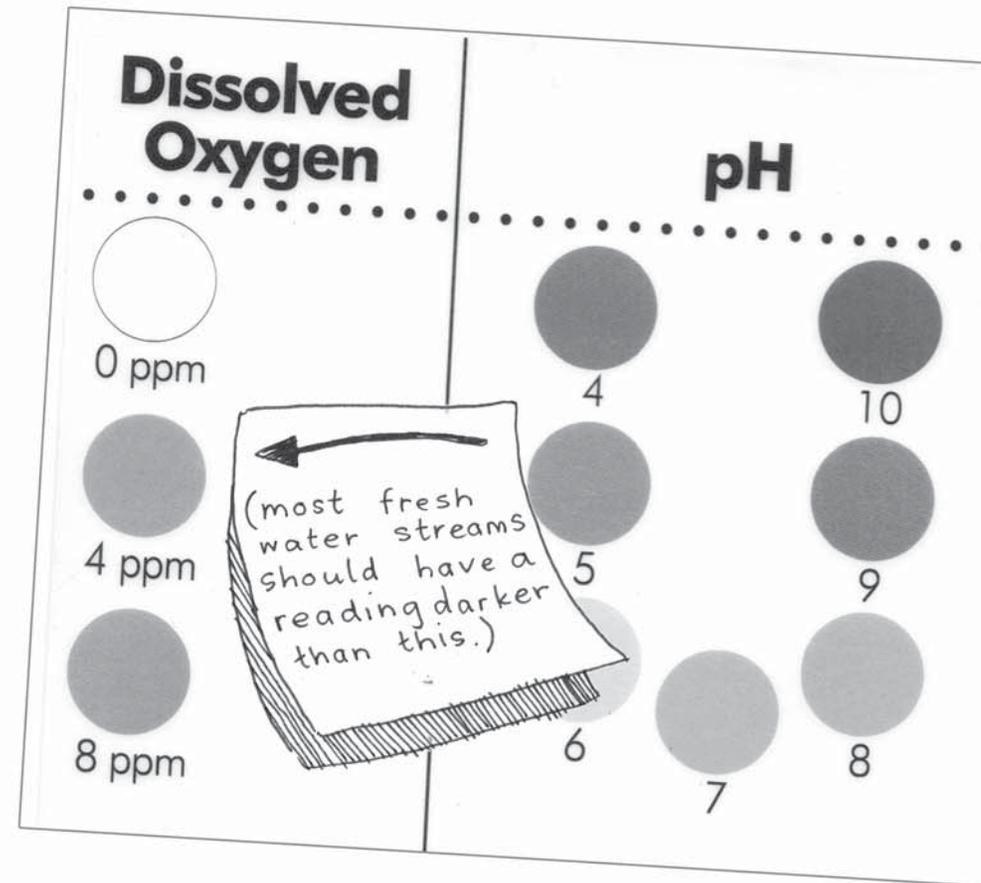
Reggie checked the temperature. He stuck the thermometer to the test kit container and held it four inches below the surface of the water. After a few minutes, he pulled it out and read the result. I wrote the number down as evidence.



To find out how much oxygen was in the water, Reggie checked the dissolved oxygen test instructions. He put on some rubber gloves, watched carefully where he stepped and filled the small vial to the top with water. Then he put in two of the tiny test tablets. We took turns flipping the vial around and around to help the tablets dissolve.

While everybody waited in suspense, Justin said, "Fish need oxygen just like you humans, Detective. In fact everything that lives in the water needs it, so I hope the test shows there's plenty of oxygen in the water."

Draggie Mae, who was peeking over my shoulder said, "Look, the water's changing color!"



Then I held the vial with our sample next to the color chart. I'm sorry to say the results for this stream could have been better.

I said to Justin, "This could be why you've been having trouble breathing."

Things were getting very interesting.

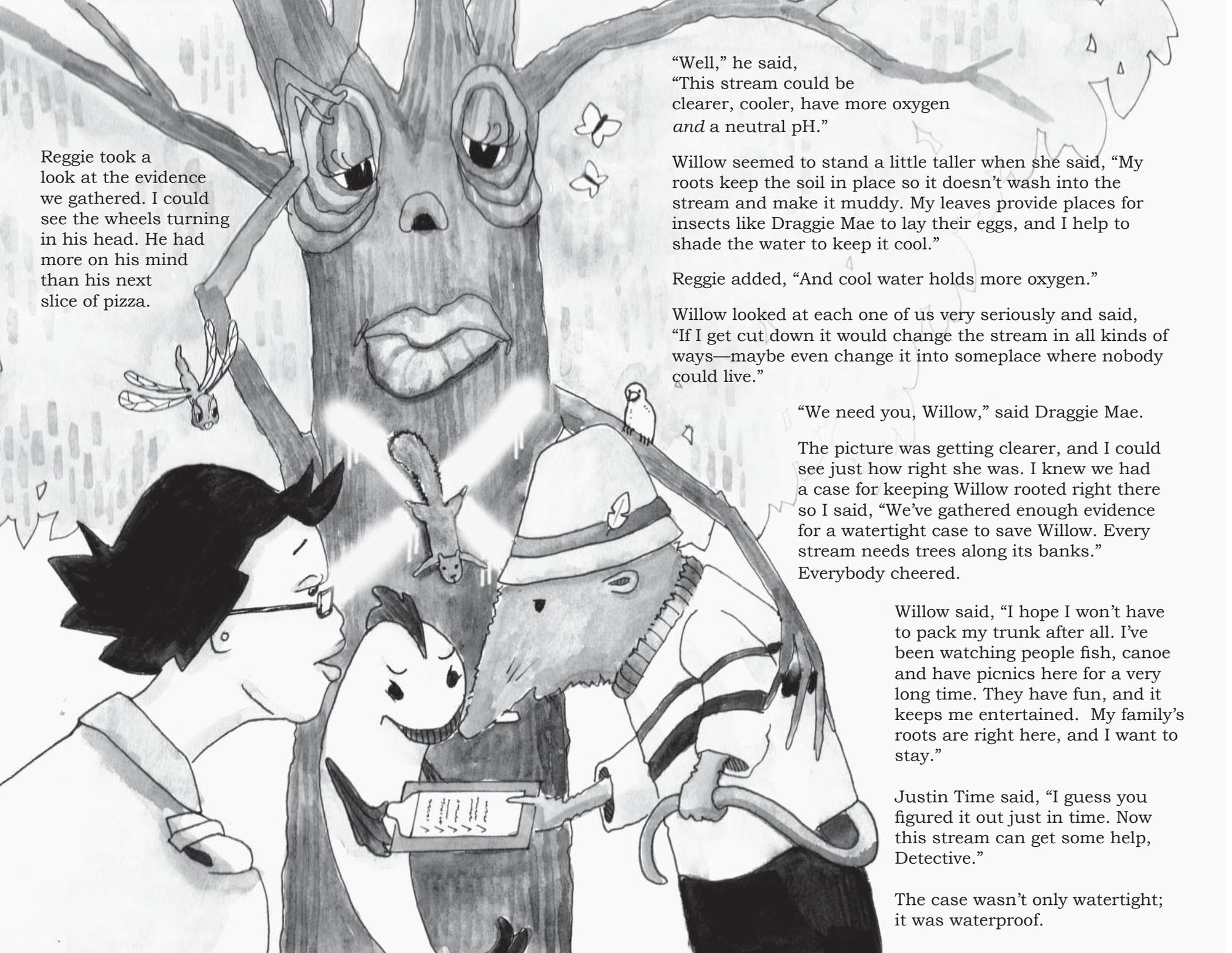
The pH test was next. pH measures whether the water is acidic, basic or neutral. Reggie pulled a rotten lemon out of his pocket and told everybody that lemons are acidic.

Draggie Mae said, "Well, nobody here wants to swim in sour lemonade so this test better be neutral."

I filled the tall test tube with water, put a pH test tablet into it and shook it until it dissolved. Then I compared it to the pH color chart. It was a little on the acid side.

Bragging about some research he'd done the night before, Reggie said, "According to water quality scientists, a pH that is just a little on the acid side is okay for some waterbodies." He jotted the number on the data sheet and added, "Of course, this result could also mean that pollution is getting into the stream from somewhere. Maybe from acid rain, factory waste or garbage."





Reggie took a look at the evidence we gathered. I could see the wheels turning in his head. He had more on his mind than his next slice of pizza.

“Well,” he said,  
“This stream could be clearer, cooler, have more oxygen *and* a neutral pH.”

Willow seemed to stand a little taller when she said, “My roots keep the soil in place so it doesn’t wash into the stream and make it muddy. My leaves provide places for insects like Draggie Mae to lay their eggs, and I help to shade the water to keep it cool.”

Reggie added, “And cool water holds more oxygen.”

Willow looked at each one of us very seriously and said, “If I get cut down it would change the stream in all kinds of ways—maybe even change it into someplace where nobody could live.”

“We need you, Willow,” said Draggie Mae.

The picture was getting clearer, and I could see just how right she was. I knew we had a case for keeping Willow rooted right there so I said, “We’ve gathered enough evidence for a watertight case to save Willow. Every stream needs trees along its banks.” Everybody cheered.

Willow said, “I hope I won’t have to pack my trunk after all. I’ve been watching people fish, canoe and have picnics here for a very long time. They have fun, and it keeps me entertained. My family’s roots are right here, and I want to stay.”

Justin Time said, “I guess you figured it out just in time. Now this stream can get some help, Detective.”

The case wasn’t only watertight; it was waterproof.



Anybody, anywhere can check out a river, stream, lake, bay or other waterbody. It's easy. Just register your site at the World Water Monitoring Challenge website, prepare your monitoring equipment, gather the evidence by doing the tests and report the data.

In fact, people all over the world from Argentina in South America to Zimbabwe in Africa are checking out their waterways and telling their stories. Everybody can be a water quality detective. And since not everybody can talk to animals and trees like I can, we need to be able to speak *for* them when their homes get in trouble.



I joined a local watershed group and helped organize a cleanup of Justin's stream. They also helped me convince our city not to chop down Willow.

After that, I had my work cut out for me helping kids check out their rivers and streams. Fortunately, I didn't have time for any more dog-walking.

But wouldn't you know it—just then Einstein came running toward me, knocked me over and licked my face like we were old friends.

Ick! He'd escaped his new dog walker, too, so

I didn't feel so bad. I grabbed him before he could get into the stream.

I turned around to look for someone with the other half of his leash and I heard Draggie Mae say, "Oops, Detective. Einstein did his business here on the stream bank where it could wash into the water."

That was another reason dogs and I did not see eye to eye. Luckily I had a plastic bag in my pocket.

If we're always ready to do our part, we can all work together to protect our waterways!



# Water Sleuthing

Find all the little butterflies in the story and learn more about the words!



**Acid rain:** Rain, sleet, hail or snow that picks up pollution from the air or other sources can become acidic (or sour like a lemon even though we can't taste it). Acid rain is not good for our environment. You've probably seen water running down streets and heading for drains. Sometimes those drains empty right into your neighborhood stream. If the rain is acidic, it can hurt our fish friends like Justin.



**Data:** It's information. The data we look for when checking or 'monitoring' water for World Water Monitoring Challenge helps us to understand the health of a waterbody. It's like when we go to the doctor for a check up, and she writes our temperature and weight 'data' on our chart.



**Dissolved oxygen:** Oxygen is in the air we breathe. Without it, we can't live. Waterbodies need oxygen, too. Without it, bugs, fish and plants can't live either. When there is not enough dissolved oxygen (a 4.00 ppm or less on the test that the Detective and Reggie did) some fish and bugs won't be able to survive.



**Dragonfly:** Draggie Mae, a dragonfly, is an insect that eats mosquitoes, ants, flies and bees. She can come to my picnic anytime. Dragonflies live near streams and other waterbodies because they lay their eggs in water.



**Factory waste:** Anything that's made in a factory—shoes, t-shirts, DVDs and pickles—uses processes that create waste. Sometimes the waste is hot water; sometimes it contains pollution. If factory waste, even hot water, gets into streams or other waterbodies, it can cause the water to become unhealthy for the creatures that live there. Factories are supposed to take care of their waste.



**Garbage:** Stuff like soft drink cans, candy wrappers, bubblegum and cigarette butts quickly become trash. Even big things like old televisions end up as garbage. If garbage gets into streams, it makes a mess and causes real problems. Plastic soft drink rings can strangle fish. Colored bits of plastic can poison birds. It's important to put garbage where it belongs—in a trashcan. When there isn't one available, take your trash home and put it in the bin. Stream clean-up teams in your neighborhood help keep carelessly tossed garbage from becoming serious pollution.



**Gills:** Put your hands on your chest and take a deep breath. You will feel your lungs fill up with air. Fish breathe by filtering water through their gills. We need our air to be clean so that our lungs stay healthy, and fish need their water to be clean so that their gills don't get clogged up.



**Insect eggs:** There are over a million different kinds of insects on the Earth. There are over 5000 different dragonfly species related to Draggie Mae. Most insects hatch from eggs. No matter where eggs are laid—in water, trees or the ground—they need a healthy environment to hatch. This is important because insects play a key part in a water habitat (for example, they provide food for birds, fish and dragonflies like Draggie Mae).



**Natural resource:** A natural resource is like the Earth's storehouse of materials that keep it healthy and that we get to use. Trees, water, oil, sand and soil are some of the Earth's most precious resources.



**pH:** Acidic and basic are two extremes that describe matter, just like hot and cold are two extremes that describe temperature. The pH scale measures how acidic or basic a substance is. If it is neither acidic nor basic, it is neutral. The pH of a lemon is around 2 on the scale. A pH greater than 7 is considered basic. A body of water must be close to neutral (neither too acidic nor too basic) to be healthy enough for living things.



**Temperature:** Sometimes we need a coat and sometimes we want to cool off in a sprinkler. Unfortunately, plants and animals that live in the water can't do those things to make themselves comfortable. In a stream, temperature affects the amount of oxygen that water can hold. If it gets too hot, there won't be enough oxygen for fish and other wildlife to breathe. Trees shade a stream and keep it cool, so they are a very important part of a stream's environment.



**Thermometer:** It is a measuring device that tells us how hot or cold a substance is. It is included in the World Water Monitoring Challenge Kit and shows us the temperature of the waterbody we are monitoring.



**Tree:** Trees hold the soil in place on a stream bank. When trees are cut down, the soil slowly slides into the water making it too cloudy (turbid) for the fish to see their food. Trees provide shade for a stream and are homes for birds and bugs, too.



**Turbidity:** This measures how clear or cloudy water is. If the turbidity in a stream is high, there might be things like clay, sand or plant gunk in it. Sometimes water gets cloudy because soil gets into it when a bulldozer clears land for a new house or building. Did you see a bulldozer in the story?



**Water quality:** This is a standard created so we can measure and determine how healthy a waterbody is. The World Water Monitoring Challenge program collects information that helps us to understand water quality in our neighborhood stream and in waterbodies around the world.



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