

We Can Make a Difference



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Project Director: Lisa Ross
City of Colorado Springs,
Stormwater Management Team

Story Author: Deb Hannigan
Hannigan and Hannigan, Inc.

Special thanks to:

- Gwen Pratt
Beidleman Environmental Center
- Stormwater Management Team
City of Colorado Springs
- David Eick, Nichole Seay, and Emily Ciejek
Cheyenne Creek Conservation Club

And especially to:

The Cañon Elementary School members of the
Cheyenne Creek Conservation Club

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City of Colorado Springs
City Engineering, Stormwater Drainage Team
30 South Nevada Avenue, Suite 502
Colorado Springs, CO 80903
719-385-5980
<http://www.SpringsGov.com/cityengineering>



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The video finished with dramatic music. The students in Mr. Miller's fifth grade class sat in a daze. There was no chatter, no whispering.

"What's the matter, class?" asked Mr. Miller. "You are never this quiet."

"It's just that the movie was so sad," said Ellen.

"And all about bad things people do to the earth," said Travis.

"Things we can't do anything about," said Nick.

"Yeah. What's the point of learning about pollution, and global warming, and population growth if we can't change anything?" asked Erin.

"Why can't you do anything about those problems?" asked Mr. Miller.

"Because we are just kids!" said the whole class, finally coming alive. "Kids don't run the show. We don't drive the cars or own the factories. We can't make a difference."



Just then the bell rang at the end of school. Ellen, Travis, Nick, and Erin jumped up. It was a Creek Club day and they wanted to be early. If they were early they got to wear the hip waders and go in the water. That was their favorite job.

Mrs. Shay met them and the other Creek Club members in the cafeteria. She liked the way the students knew just what to do. Some got on the waders, some grabbed the buckets, and others got the supplies. The club had been testing the quality of the water in the creek once a month since school began. The students were getting good at it.

“We just got word that we were approved by the Colorado Division of Wildlife!” Mrs. Shay announced. “That means they think our work is as good as the work done by the high school students who usually sample creeks. The Division wants us to keep it up.”



River watch

The Creek Club cheered. They knew that they were one of the only elementary schools that knew how to test water quality in a creek for the River Watch program. It was nice to know they were doing a good job.

“Enough celebrating,” said Travis. “Let’s get out there and see how our creek is doing today.”



There Really is a “Creek Club”

What do you do after school? At Cañon Elementary School in Colorado Springs, interested 4th, 5th, and 6th graders meet as the **Cheyenne Creek Conservation Club**. Teachers David Eick, Nichole Seay, and Emily Ciejek work with students who enjoy chemistry experiments, like the outdoors, and want to help the community. The students test the creek behind their school to answer questions like these:

- What is the creek’s temperature?
- How much dissolved oxygen is in the water?
- What is the pH of the water?
- What size fish live in the water?

The data the club collects are sent to the Colorado Division of Wildlife’s River Watch program. They use the information to make decisions about managing the rivers in Colorado.

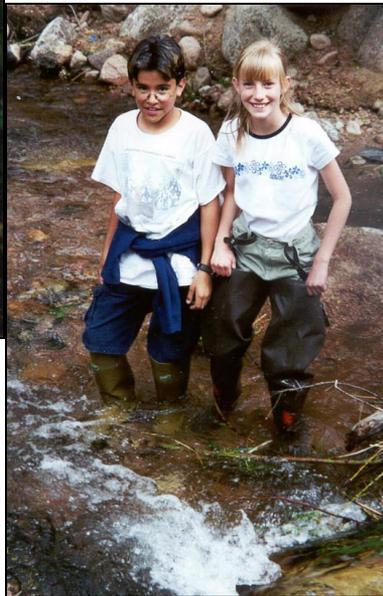


The Cheyenne Creek Conservation Club
Visit them at

The creek ran behind the school. The Creek Club took good care of the creek by picking up trash and testing it to see if the water quality was good.



Each testing day, they took the temperature of the creek. They also took water samples from the creek and they began some of the other tests that they would finish back at school.

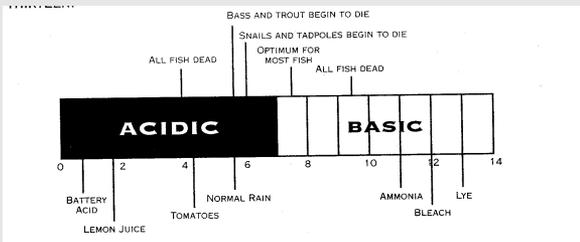


From season to season, they could see the creek change. Sometimes it was muddy and rushing quickly. Other times it was clear and quieter. They were always careful while near the stream. They knew the water speed could change quickly, making the stream dangerous.



What Makes a Healthy Creek?

What are some of the measurements that scientists can take to determine water quality? They can measure the pH of the water. Most fish and aquatic life can live only in a limited range of pH.



Scientists also can measure the amount of oxygen in the water and the temperature of the water. Warm water holds less oxygen than cold water. The amount of oxygen in the water affects what can live there. Trout need cold water and high levels of oxygen. Carp and suckers can live in warmer water with less oxygen.

When scientists look at the organisms that live in water, like snails and insects, they can learn about the quality of the water. Some organisms cannot live in polluted water, but others can. If scientists would expect to find certain organisms in a stream, and those organisms are not there, then the water quality probably is not very good. If scientists see good places for organisms to live, and all those organisms are thriving in the stream, the stream probably is very healthy.

Today was different, though. It had been raining hard for three days and the creek was rushing quickly and muddier than usual. The club members could not see through the water to the rocks on the creek bottom. They knew not to enter the stream because of the fast moving water.

“I can’t even see the fish we usually see,” said Nick. “All this mud can’t be healthy for the fish.”

When the Creek Club began their testing back at school, they found even more to be concerned about. When they tested the pH of the creek water, it wasn’t its usual 7.2, which is neutral and perfect for this creek. It was 9.5, which is basic and not perfect for this creek.



When they did their test to see how much dissolved oxygen was in the water, they got a new surprise. The amount of dissolved oxygen was much lower than usual.

“How can any fish be living in our creek?” asked Erin. “There isn’t enough oxygen in the water for them to breathe with their gills.”

For the first time, the creek had failed the Creek Club’s tests. What happened to the healthy creek?

“O.K. Let’s put our heads together,” said Mrs. Shay. “What do we know about creeks that might help us solve this mystery?”

The Creek Club knew a lot about creeks. They knew that the creek held all sorts of life: fish, salamanders, plants, and insects. They knew that this creek was fed by melting snow from the top of Pikes Peak and from rain water that fell on land nearby. They knew that the creek flowed through places upstream that affected what the creek was like downstream.

“That’s it!” cried Ellen. “We need to look upstream. Something has changed up above us that is making our creek unhealthy.”



“Let’s meet over the weekend,” suggested Mrs. Shay. “We will travel upstream from the school along the creek and see what we can see.”

On Saturday, a group of the Creek Club members, Mrs. Shay, and an engineer from the city met at the creek. They used the bridge near the school to send half of them across the creek. Then they began hiking along the banks on both sides of the creek.



“What are we looking for?” shouted Erin over the sound of rushing water.

“We don’t really know,” answered Ellen. “Look for anything that seems different. Maybe something fell into the creek up here. Or maybe the rain washed some trash or chemicals into the water.”

The students kept going. They walked past houses, ducked under a bridge, and climbed over lots of fallen branches. Just when they were about to give up, Erin began shouting for everyone to come over to where she was.



“Look!” said Erin, pointing to the bank above the creek. “Someone is doing construction up there. The rain has washed all the loose dirt down that gully to the creek. That is why it was even muddier than usual after all the rain.”

“And really muddy water holds less dissolved oxygen than clear water,” said Nick. “That would explain some of our test results. But who would let lots of construction dirt fall into the creek? Don’t people know that even dirt, when there is too much of it, is a form of pollution?”

The students climbed up the creek bank to take a look around. They saw piles of dirt and lots of big machines. They noticed a new concrete pad that would be the floor of a new motel by the creek.

“Look!” said Ellen, pointing to a storm drain in the motel’s small parking lot. “There is a white powder leading from the concrete pad to the storm drain.”

“I bet they washed out their concrete truck right here, and the dirty water flowed into the storm drain,” said Travis.



“Then the rain picked up any spilled concrete mix and washed it into the storm drain, too,” said Nick. “When all that concrete water ended up in the stream on our testing day last week, it raised the pH.”

The club members turned to the engineer from the city. “Isn’t it illegal to dump pollutants down a storm drain?” they asked.

“Yes, it is a violation of the Clean Water Act,” said the engineer. “When people leave their chemicals, motor oil, construction materials, or other pollutants outside and the substances wash down a storm drain with rainwater, the people are polluting.”

“What should we do now that we know someone is polluting at this construction site?” asked Nick.

“If you ever see a spill or someone dumping chemicals that could wash down a storm drain, call **444-7000**,” said the engineer. “The city will investigate and make arrangements to clean up the chemicals. If the city can find the person who caused the spill, that person might have to pay a fine or spend time in jail.”



444-7000

Just then, a truck pulled into the parking lot. A woman got out and walked over to the group.

“Hi. I’m Norma Conner,” said the woman. “This is my new motel. Can I do anything for you?”

“We were wondering if you could tell us why you are polluting the creek below your construction site,” asked Erin.

“Oh! I am sure I am not polluting. My construction crew filed a plan for the work they are doing for me,” said Mrs. Conner. “I will check to make sure that they are following the plan. But, luckily, any pollutants that the crew accidentally spills wash into this storm drain. Water in the storm drain goes to a treatment plant where the pollution is removed.”

“Mrs. Conner, that isn’t how it works,” said the engineer. “Many people don’t realize it, but storm drains in our city are not connected to the wastewater treatment plant like they are in some cities. The pollutants that the rain water picks up at your construction site wash right into the creek.”

“Oh, no! That is awful,” said Mrs. Conner in distress. “I know that my crew washed their concrete truck right into the storm drain. All that concrete in the water would be very unhealthy for a creek.”

“That’s why we are here,” said Erin. “ We test the creek every month, and this month it did not pass the tests.”

Mrs. Conner looked at the storm drain in her parking lot. She told the group that sometimes she hoses off the parking lot to get rid of grease and oil from cars. She often uses lots of fertilizer, even more than the bag says to use, so she can keep her grass green for the tourists to enjoy. She sometimes spreads salt on the parking lot during the winter to get rid of ice. Then, when the snow melts, or the rain falls on her newly fertilized grass.

“...all the pollutants wash down the storm drain and into the creek!” said the Creek Club members all together.

“Oh dear, oh dear,” said Mrs. Conner.



Nonpoint Source Pollution

There are two major kinds of water pollution. One kind is **point source pollution**. An example is a factory that dumps chemicals in water through a pipe—it comes from one source, or a “point source.” Point source pollution usually is easier to identify and stop.

The other kind of pollution is **nonpoint source pollution**. Nonpoint source pollution comes from lots of different sources that are harder to identify. Some of these sources are buildings, parking lots, farmland, and construction sites. Rainwater or snowmelt runs over these sources, picks up pollutants, and carries them directly into rivers and streams.

Nonpoint source pollution is made of everyday substances. A lot of these substances can be found at your home, such as pesticides, fertilizers, motor oil, pet waste, grass clippings, and dirt. Stormwater picks up these substances and carries them to the stream.

Because the sources of nonpoint source pollution are everywhere, nonpoint source pollution is hard to control. There isn't a “pollution police squad” watching every backyard, every parking lot, or every farm. Everyone needs to be careful storing, using, and disposing of substances that pollute. Stopping nonpoint source pollution is everybody's job.



Nonpoint Source Pollution Facts

Did you know...?

- Nearly 40 percent of the nation's waters remain too polluted for fishing, swimming, and other uses.
- Polluted stormwater runoff is the source of most of the contamination in the nation's waters.
- Just four quarts of oil from your car's engine can form an eight-acre oil slick if spilled or dumped down a storm sewer.
- Dumped oil from one oil change can ruin one million gallons of fresh water—enough to supply 50 people with water for a year.
- As little as one teaspoon of certain pesticides rinsed down a storm drain is enough to show up as a pollutant in local streams.
- Dumping wastes into a stream is a crime and could result in jail terms and/or fines.

Sources: *Getting in Step, A Guide to Effective Outreach in Your Watershed*, The Council of State Governments; *Homeowner's Guide to Protecting Water Quality and the Environment* and *Homeowner's Guide to Pesticide Use Around the House and Garden*, Colorado State University Cooperative Extension; Colorado Recycles.

Later, the Creek Club learned that Mrs. Conner received a warning for her construction crew's mistakes. Within a few days, the crew had placed a fabric fence along the creek banks so that loose dirt wouldn't wash into the creek. They also put pollutants into a shed, under cover. This way the pollutants couldn't wash into the storm drain when it rained. When the Creek Club tested the creek water again, it passed all the tests.

They worried that lots of other people did not know that whatever washed down storm drains with rain water goes directly into the creek.

"It's just another big problem we can't solve," complained Ellen.

"I think we can!" said Nick. "People go by storm drains all the time. What if we put a message next to the drains that told people not to put stuff down the drains?"



"That's a good idea," said Ellen. "But how can we make sure the message is permanent?"

They called the engineer from the city, and she knew just what to do. She told the Creek Club members about a storm drain stenciling program. She said that she could help them plan a day to stencil a message by each storm drain along the creek. That way, lots of people could learn that storm drains lead directly to the creek.

The morning of the stenciling project, the Creek Club gathered at the school. The students wore orange safety vests since they would be working in the street. The city brought orange cones and a crew of people to keep the students safe. Then the students used a stencil and spray paint to make a message by each storm drain that read:



Reporters wrote stories for the newspapers about the Creek Club's project. Television camera crews came by to take pictures of the students for the news. Moms and dads drove by and honked and waved. People walking down the street stopped and read the stenciled message.



“It is working!” said Ellen. “All these people are learning that storm drains lead directly to the creek.”

“I bet they will remember this,” said Nick. “They won’t pour or wash anything down a storm drain again.”

“We really have done something that will help keep pollution out of the creek,” said Erin.

“Guess what, you guys,” laughed Travis. “We might just be kids, but we really can make a difference!”



Household Sources of Water Pollution

Imagine a Saturday for a typical family. Dad fertilizes the lawn. Mom sprays for bugs in her rose garden. Brother paints the fence and washes his paintbrush with the hose into the gutter. Sister washes the car with lots of detergent and sprays down the driveway, too. At the end of the day, the whole family feels good about the amount of work they got done.

What the family might not realize is that they also did a lot of polluting. That night, a storm washed the extra fertilizer and bug killer off their lawn and garden into the storm drain at the end of their street. When the kids hosed down the paintbrush, car, and driveway, a toxic mix of paint, detergent, brake fluid, and motor oil flowed into the gutter and down to the storm drain. From there, the chemicals flowed into the nearby stream.

Household pollution makes up a big part of nonpoint source pollution. Some common sources are:

- bug killer (pesticides)
- weed killer (herbicides)
- plant food (fertilizer)
- motor oil
- gasoline for lawnmowers
- pet waste
- paint and paint thinner
- soap and dirt from vehicle washing
- leaves, grass clippings, and soil



When people spill these materials or allow them to wash off their property, they are contributing to water pollution.



Ways You Can Make a Difference

Sometimes, making a difference is very simple. And, if everyone did each of these simple things, our water would be cleaner for everyone to enjoy.

1. Clean driveways and sidewalks by sweeping instead of using a hose and water or letting rainwater wash the material away.
2. Pick up pet waste and put it in the trash.
3. Leave grass clippings on your lawn or compost them.
4. Learn the right way to dispose of leftover chemicals like paint and cleaners and their containers.
5. Read the directions on household chemicals before you use them.
6. Wash your car at a car wash. Their dirty water is treated at a wastewater treatment plant.
7. Don't litter.
8. Join a neighborhood or community cleanup event or help organize a recycling program and clean up trash and litter at your school.
9. Report spills or dumping to **444-7000**.





Fun Activities for Your Class!

Your school class or club can stencil storm drain inlets just like the Cheyenne Creek Conservation Club. The adult sponsor for your club or your teacher will need to contact the City of Colorado Springs, Stormwater Management Team. They will come to your school and tell you more about stormwater and give you information on stenciling. Then get ready to have fun painting!



Another fun activity that the City can bring to your school is a stormwater model. The model is an example of our City landscape. You will get to add pollutants to the model surface. Then you get to make it rain and watch the stormwater runoff pick up the pollutants and carry them to the lake. You will see nonpoint source pollution occurring right in front of you.

**To schedule these programs
call 385-5980.**

Your municipal government doesn't stop at City Hall.

The City of Colorado Springs' outreach efforts stretch well beyond the building at 30 South Nevada Avenue. In fact, the City has a vital interest in a wide range of issues, from public safety and neighborhoods to transportation and the natural environment, all of which impact citizens' daily quality of life.

One of the City's most critical outreach efforts is educating the community, both young and old, on the importance of protecting our natural waterways from harmful pollutants—pollutants that not only cause harm to wildlife, but also to humans.

Stormwater, the runoff from rain or snow, can carry a host of dangerous pollutants directly to a stream like Monument or Fountain Creek. Runoff does not go through a treatment process, rather it is conveyed to storm sewers and takes a direct path to Colorado Springs' waterways.

This literacy booklet seeks to better inform the community's youth about stormwater and why it is important to keep it clean—via an entertaining story to which students can relate.

**For more information,
contact the City's
Stormwater Management
Team at 385-5980.**

