University Elementary School
Calgary Board of Education
www.universityelementary.ca

Know the Bow?

VOLUME I, ISSUE I JUNE 2006

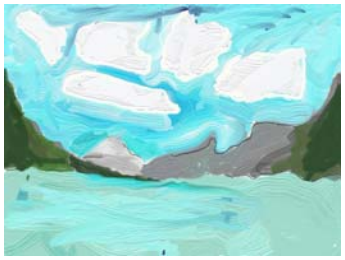
Inside This Issue:

Is the Bow River Fit for Life?

"The Bow River Basin is conserved and protected as a fragile and unique resource and recognized as our lifeline"
- Bow River Basin Council 2005

Today, however, the Bow River Basin, which is home to diverse fish, wildlife and plant communities, is under immense pressure from growing urban communities. Our inquiry work on the Bow River Basin began in September and continued throughout the school year. Travelling with the student from the source along its winding path through the variety of landforms, and the increased demands it encounters, we furthered our understanding of a significant natural resource. We explored the ways in which most of the Bow River is already highly altered in its natural state and examined the implication of the continued changes on the communities for whom the Bow River Basin provides a lifeline.

We were privileged to have many experts work with us in our exploration of the Bow River. These experts provided students with relevant expertise and experience in a variety of situations such as our fieldtrips to the Calgary Zoo, Banff National Park, as well as visits and presentations in our classroom. Some of the experts who visited us explored topics such as riparian areas, agriculture, flooding, and newspaper development.



Bow Lake with Bow Glacier in the background ~Myles

This newspaper is a cumulative project for our year long inquiry work into the Bow River Basin. The students further researched their questions in small groups, and recorded their findings into the enclosed documents.

"Water is the most critical resource issue of our lifetime and our children's lifetime. The health of our waters is the principal measure of how we live on the land." ~Luna Leopold

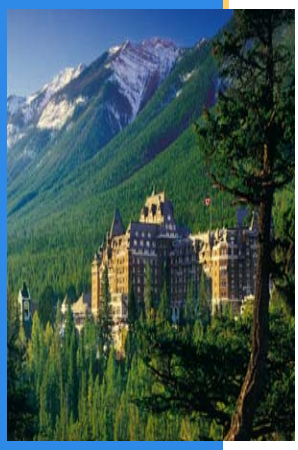
U.E.S. Staff Writers: R. Russell & S. Ashley

Class picture taken along the banks of the mighty Bow River in Banff April 2006

This special focus edition is brought to you by the fantastic grade 3 & 4 students in Ms. Russell & Mrs. Ashley's University Elementary school class in Calgary Alberta.

**We would love to know what you think of our work! Click here to respond...*

The Beauty and The Bow



Banff Springs Hotel

http://www.iasted.org/conferences/2005/banff/

Over 120 years ago, Sir William Cornelius Van Horne, made the plans to build the Banff Springs Hotel inspired by the beauty of the Bow River and its valley. He thought the scenery was so extraordinary that people from around the world could come and pay to stay at his hotel. He said, "If we can't export the scenery, we will import the tourists". Though it was not really just beauty he saw, he saw the opportunity to become rich off of the others coming to see the beauty. Today, in the summer, an average room will cost you about $600 per night.

Through time, people have gone to the Bow River because of its beauty. Some of those are artists who make pictures that reflect their sense of the beauty. Whether the medium be water colour, oil paint, acrylic, pastel or photography, artists spend time recreating the beauty of the Bow River to last beyond the moment. Ted Godwin a Calgary based artist and fisherman painted a series of paintings about the Bow River. He says he is attached to the river forever. "The Lower Bow works are records of the time I have dreamed myself to be an integral part of the river." (Contay, 2005, p.134).

When a person comes to the river, its beauty helps them be calm and relaxed. The worries of the day seem to fall away when they see the Bow River.

Some people think that the Bow River is a spiritual place to go. Pilgrimages to the shore helps some people feed their soul. We know of a lady who goes to the Bow River every single day to take one picture every day to see how it and she changes. She says if she doesn't get to the river, a part inside of her dies.

"People from all around the world go to a river for spiritual reasons. Sacred, water is at the heart of many religions and is used in different rites and ceremonies." (UNESCO, 2006).

Will this beauty last for another 10 years or will people let it down start to pollute and destroy the beauty of it all.

U.E.S Staff Writers: Myles, Haley, Fatemeh, Michael

"If we can't export the scenery, we will import the tourists". ~ Cornelius Van Horne

Safe or Sorry!

Why do we care about our drinking water? Does it really matter if water is treated or not? We treat and disinfect our water supplies to kill pathogens, which are disease causing organisms transmitted by water. If we don't treat water we could get "Beaver Fever" {giardia} or some other sicknesses.

Is it okay for hikers and backpackers to drink water from streams or lakes in remote areas of Alberta? No! Even if the water looks clean and clear, it may still have tiny microscopic things that can make you sick. You may have heard of "Beaver Fever" in the recent years. This disease you can get by drinking contaminated water out of a river or lake and when you are sick with it you can have severe diarrhea that can last for several weeks. Beaver Fever can be carried by mammals, birds, reptiles, amphibians, fish and humans and is excreted through their feces. In addition, other disease-causing bacteria from wildlife may be present in remote streams.

To protect yourself, you should always boil your water for about ten minutes if you draw it from any surface water source like a stream, lake or river. Water filters and water treatment tablets could be used.

In the end, it is our responsibility to take care of ourselves when we are out backpacking or hiking. We must all be careful to treat our water so we don't get Beaver fever or some other illnesses.

STAY HEALTHY!

U.E.S. Staff writers: Madison, Kristina, Vanessa, Dallas

Bow Glacier & Lake by Haley

History in the Making

Bow River with Mt Rundle in the distance from the Banff town site.

Ten thousand years ago natives camped beside Mt. Rundle and they were the first people to live in this area.

In 1871, fulfilling the promise to unite British Columbia with the four eastern provinces, the Canadian government began construction of the nation's rail way to link the west and the east cost.

In 1885 the town site of Banff was established and in 1888 the Banff Springs hotel was built. In 1911 the coach road was built and people with cars could finally go to Banff. In 1990 Banff became an incorporated municipality within the National Park

The town of Banff is very near the source of the Bow River, which is the Bow Glacier. The water quality in Banff is mostly very good because it is near the source and people in Banff get their water from the Bow River and Whiskey Creek. A few years ago some people started getting sick drinking the water, which up until that point came right from the Bow River. Beaver fever (Giardia) was discovered in the water and that's why they got sick. The people had to treat their own water until a water treatment plant was built.

Heather Dempsey, a Park Interpreter from Banff National Park, says that the water quality in Banff Town site is quite clean. But does it stay that way?

Banff is a beautiful place and it has over 4 million tourists come to the town site in a year. With that many tourists more water is used and affects the water quality downstream. Wastewater is collected and treated in the town's wastewater plant. It is cleaned and disinfected and put back into the Bow River. The town of Banff reports that in the year 2000, the quality of water going back into the Bow met Alberta Environment's guidelines but that there were seasonal differences in the water quality. During peak tourist season, the wastewater treatment plant was less efficient at cleaning the higher volumes.

The effluent entering the Bow River at Banff affects the quality of water downstream. The Bow River is home to many different plants and animals and people also use the water for fishing, swimming, boating and for other recreation. When water quality is poor or water levels are lower it affects all of these users.

The Banff town site is near the source of the Bow River and what people do with the water there affects all of the life downstream. So if Banff doesn't take care of the water, the Bow River will be less fit for life and cause troubles further downstream.

U.E.S. Staff Writers: Mitchell, Alex, Ali

"The Banff town site is near the source of the Bow River and what people do with the water there affects all of the life downstream. "

Banff Park Museum

The museum was made when people were drawn to the hot springs and a town began to form. In 1887 Banff had six hotels, nine stores, two churches, and a post office. The government decided to create Banff's first Natural History museum in 1895. Most of the museums specimens are from John Macoun and Dr. Harlan Smith. It was the oldest standing federal building in Banff National Park. It had glass lanterns, some open spaces and big windows for light before electricity was invented.

It is located one block away from the Information Center beside a bridge that cross's over The Bow River. It contains bison and birds including the museums oldest specimen the red breasted merganser, which is a duck. Also there are some big horn sheep and wolves, plus a mountain lion and a few deer.

In the 1950's people thought the museum was a firetrap but they did not demolish it. When Norman Sanson quit as curator it was neglected. After a while they decided that it should be mostly about the Park's history and things that were not related were sent to other museums. Some things were replaced and that's how the museum was formed and some of its history

U.E.S. Staff Writers: Mitchell, Alex, Ali

Our class entering the Banff Park Museum April 2006.

BANFF FIELDTRIP Check out our class video.

Animals Need Water Too!

Deer grazing in Bow Valley Provincial Park http://www.bowvalleycampgrounds.com/b-valley/010.jpg

"We imagine in the future, if people keep on putting waste into the river, it would be a disaster to the animals that live in or near the Bow River."

The Bow River is an important part of life. Animals need it for food, water and shelter. Without the Bow, some of these animals would die and without these animals people's lives would be very different. There are cougars, bears, wolves, coyotes and red foxes at the top of the food chain. There are large mammals like mule and white tailed deer, elk and moose. Beavers, squirrels, weasels and other fur bearing small mammals
Rodents, birds, amphibians, reptiles, fish and bugs are at the bottom of the food chain.

We interviewed an Alberta Fish and Wildlife Officer, named Ken Mackay, about the animals that live near or in the river and the risks that they might face. Mr. Mackay told us that big threats to the animals are the roads and train tracks that are built along the river. They are built along the river because the land is flatter there. Some times animals are killed or hurt when they try to cross the roads or train tracks.

Animals near the Upper Bow have fewer problems than those closer to the city. Some animals like coyotes and foxes can survive along the river in the city but not bigger animals like bears, elk, deer and moose. Mr. Mackay told us that the water quality was pretty good up in the mountains but in the city it is more polluted because of factories, oil and gas operations, pesticides and herbicides, and because of people. This affects the food chain. Animals and insects in the water can get sick, store chemicals in their body or die. When insects die or get sick, so can the fish and the birds because they eat the insects. Bigger animals, for example the bear, eat the fish and they can get sick from the fish, and this pattern keeps going on to the top of the food chain. Sooner or later people are affected too.

Downstream from Calgary, because of human waste, more weeds grow. Sometimes this is good for the insects and fish, but it is a problem because it is not natural and it harms other plants and animals.

We imagine in the future, if people keep on putting waste into the river, it would be a disaster to the animals that live in or near the Bow River. If the animals die so would the plants and that can be a problem to us because sometimes we get food from the plants and animals.

We could start cleaning up, not only helping the animals but helping ourselves too. We have been thinking of ways to help. Such as:

- Start taking a bus to school and if you live close walk because you don't now how much exhaust is being released
- Clean up the ground around the river
- Most of all, spread the word around our community telling people about the importance of the animal habitat in our city.

So start helping the Bow River!

U.E.S. Staff Writers: Catherine, Oribel, William

Did You Know?

The beaver is the largest rodent in North America and a very important one at that. http://www.nps.gov/acad/kids/images/beaver.jpg

The beaver is the largest rodent in North America and a very important one at that. He's known for his amazing engineering skills and ability to construct intricate dams and lodges. Beaver dams help form wetlands, which we know are important habitat for fish, frogs, bugs, etc.

So you see, beavers have a lot of friends in nature…even if they don't all know it! Back in the 1600 to 1800s, beavers were nearly all hunted and trapped to extinction. WHY? Because, at that time it was fashionable to wear fur hats and coats made of beaver pelts. Thankfully today, the beaver's population is thriving.

U.E.S. Staff Writers: Catherine, Oribel, William

Birth of the Bow Basin

Bow Lake & Glacier
http://image54.webshots.com/54/1/87/70/409618770qioZKG_ph.jpg

Today the Bow River is a peaceful river that slowly flows down stream from the Bow Glacier through the town of Banff and the foothills of the Rocky Mountains, past the City of Calgary then through the beautiful prairies, ending its journey when it joins with the South Saskatchewan River.

Approximately 100,000 years ago there was an Ice Age. The temperature got very cold so that snow couldn't melt. Over many years layers of snow and ice built up and formed glaciers. As the alpine glaciers formed they pushed, smashed and broke rock. Some of the rocks were smashed so much that they made a rock flour, fine as flour that we use for baking. As the glaciers formed they picked up rocks debris and rock flour. This is called plucking. The glaciers acted like sand paper, carving the mountain. This is called scouring.

The mountain base was originally in the shape of a V. After the glacier moved through the base of the mountains it eroded the base into a U shape. As it carved the base it made it wider and deeper. The glacier overtime moved and grew through the path between the mountains.

There is another type of glacier called a continental glacier. A continental glacier is a huge mass of ice that covers a lot of land. Continental glaciers formed over millions of years, from one layer of snow building up over time. Eventually you have many layers of snow built up. The bottom layers have lots of weight on them. The more weight it has, the thinner and denser it becomes because the weight on the top layers push down and compacts the bottom layers into ice. Continental glaciers can grow to be 5 kms thick. This is the type of glacier that covered the land around Calgary, Alberta.

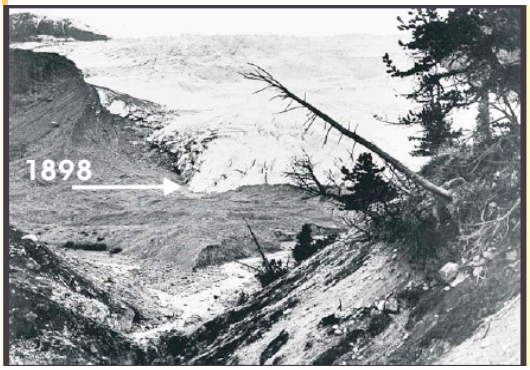
The Bow Glacier is an alpine glacier located in the mountains just outside of the Banff town site. The Bow Glacier is important to the Bow River because it is a source of water. According to the Bow River Basin Council, about 2.5% of the Bow River's water comes from the Bow Glacier. In dry years, when there isn't as much snow or rain, the glacier gives only about 1% to the Bow River.

Global warming is making the Bow Glacier melt faster and the hotter temperatures are creating drought conditions more often. The water volume in the Bow River is getting less and less as a result. There are many things that people can do to stop the global warming that affects the Bow Glacier and the Bow River. The Pembina Institute says that the most important thing to be done is for the Government to make new polices to reduce green house gases. For things that you can do by yourself or with your family to reduce greenhouse gases see the Canadian Government Site at http://oee.nrcan.gc.ca/english. If the climate continues to change, there might not be a Bow River. This will affect agriculture, industry, people and nature. It will change our life.

U.E.S. Student writers Brennen, Josh, Austin, Sana

"Global warming is making the Bow Glacier melt faster and the hotter temperatures are creating drought conditions more often. "

Bow Glacier Recession Since 1898



Bow Glacier (pictures from Bow River Basin Council Fact Sheet, 2003)

Cry of the Bow

Blackfoot Tepee
http://www.google.ca/images?q=tbn:aYu3cXCu-RtUTM:www.canadianheritage.org/images/regular/10089.jpg

"The Bow River has been important to the First Nations people for at least ten thousand years."

The Bow River is a sacred river to T'suu Tina, Nakoda and Blackfoot people. The name of the Bow River comes from plants that the First Nations People used to make bows and arrows. These plants grew along side the river, they called the Bow.

The Bow River has been important to the First Nations people for at least ten thousand years. There are archeological sites all along the riverbanks that tell us that First Nations People lived by the river. The First Nations people hunted many kinds of plants that they used for medicine, food and tools. They found animals for food, like the bison, elk, deer, and moose. They trapped beaver, weasel and other small mammals for their fur for clothing along the river, which they used and sometimes traded. They gathered water and timber from the edges of the Bow River. Lodge Pole Pines were used to make tepee poles. They considered the banks of the Bow their home.

The bison needed the water in the Bow River to drink from. So the Native people came to the river taking advantage of the bison going to drink there. The First Nations people hunted the bison for food, took the hides for clothing, tepees, the bones for weapons, and used the horns for spoons. The bison was very important to the First Nations people and they used every part of the bison for something. The river was part of the circle of life. If there were no river, there would be no bison and if there were no bison, people would have a harder time to find food.

Where the Elbow River and the Bow River meets, there are two large flat plains, they are called the Blackfoot River Crossing. This place is important for the First Nations People, the Blackfoot and the T'suu Tina. They camped there and hunted the bison by using slopes for Buffalo Jumps. They also could cross the river there. In 1877, Crowfoot, the leader of Siksika met officials of the Canadian Government to talk about a treaty to preserve the Bow.

Many First Nations people believe that the four elements which are water, fire, earth and air are very important in our lives. Of course, the Bow River is part of the water element and water is important for life and so are the other elements. The water element is sacred.

The Bow River has been part of the lives of First Nation's people's for at least ten thousand years. There are burial sites on the land near the river and many artifacts have been covered by the land. The Bow River is an important place to go to remember their ancestors and the stories of their people.

If we pollute the Bow River or use the water carelessly, we can hurt the lives of many and we aren't being very respectful to the First Nation's Ancestors and we are doing wrong to the water element. This isn't a good way to remember the life before us or welcome the life to come. This is the cry of the Bow.

U.E.S. Student Writers: Esther, Eric, Gaby, In Kyoung

The Bow River and Agriculture

Irrigating the prairies
www.brid.ab.ca

THE HISTORY OF IRRIGATION

The First Nations people were the first to find the Bow River. The first recorded irrigation scheme was developed in 1879. It was a small gorge that brought water out to remote dry land called a prairie. Without this precious water farmers would never have successful crops. Irrigation brought water to land that otherwise could not have been farmed.

WATER USE IN AGRICULTURE

Farmers and ranchers mostly use water for feeding animals and/or watering crops. Farmers and ranchers have pumps in the ground for drinking water.

Now, in 2006, farmers are limited to the amount of water they may take on a certain day for irrigation. Plants and animals need a lot of water to grow so the Bow is an essential water source.

PLANTS AND ANIMALS DEMAND MORE WATER

How much water do I need to grow?

One pound of lettuce, tomatoes, potatoes, or wheat each need about 95 liters of water to grow.

A pound of chicken requires 3,089 liters

A pound of pork and beef

needs 6,178 liters and 19,761 liters of water.
30.5 cm of rainfall or irrigated water is needed to grow one average crop.

HOW FARMERS ARE PRESERVING WATER

Irrigation is a BIG threat to the Bow River. Farm Irrigation starts in May and continues until October. As previously said, farmers are limited to take a certain amount of water at a certain time. There are farmers who don't have irrigation the only way they get water is by rain. If farmers took too much water, the rushing Bow would be reduced to a stream. If a farmer does take too much water, he/she will get fined a large amount of money.

The three irrigation districts along the Bow River, the Western Irrigation District, the Bow River Irrigation District and the Eastern Irrigation District use 96 percent of all water taken from the Bow. This is a threat because not very much of the water gets put back into the Bow River.

Riparian areas occur along streams and wetlands, like the Bow, where moist soils and shallow water tables allow water-loving plants to grow. These 'green zones' in the prairies and foothills provide habitat for wildlife, make the stream banks stronger, and protect water quality. Cattle grazing in the areas very close to the Bow must be monitored closely so that these delicate landscapes are not destroyed. Farmers and ranchers are not allowed to have their cattle right beside the Bow River. This stops the manure from going into the river and causing pollution.

I think the Bow is important to life, because without it crops and plants couldn't grow. We would not have some of our essential foods like grain and vegetables. In fact we wouldn't even have meat or eggs because animals need water to grow their food as well. To keep the Bow River alive and fit for life we will need to limit our water use and try not to pollute it.
U.E.S Student Writers: Regan, Liam, Brodie, Brendan

"It has been hard finding the information I need, like for example, when irrigation got started and what the challenges really are out there. This is information that the experts are just figuring out." ~ Regan

No More Flow? Save The Bow!

Water is a good thing to have because without it, humans and all other species would die!! Did you know that every living thing needs water to survive? Did you know that every living thing is mainly made of water? Water is important to everyone and everything!!

The Bow River supplies water to many towns and the large city of Calgary. People use this water for industry, recreation, irrigation and homes. As Calgary and the towns along the Bow River grow in population so does the water demand. This is a problem because if our water demand grows, the water level in the Bow River can go down. Also, there have been differences in the overall water level of the Bow River because of climate changes like floods and droughts. This is a big problem! What can we do about it? Experts from the Alberta Government and the City of Calgary have recommended that people along the Bow River reduce the amount of water that they use. If they don't our water level may not support life in the future. We should use our water supply wisely.

Here are some ways you can cut back on how much water you personally use:
In the bathroom, replace old toilets that use 13 litres of water with low flush toilets that use 3-6 litres. Follow the rule, "If it is yellow, let it mellow; if it is brown, flush it down." By taking shorter showers using a low-flow showerhead or taking fewer baths you also save water. Did you know that you could water your garden flowers with left over bathwater? Turning off the tap while brushing your teeth or shaving also reduces water use. In the kitchen, keep a jug of water in the fridge so that you won't have to let the tap run. Only use the dishwasher when it is full of dirty dishes. In your yard, use a timer on your sprinkler and don't over water. Catching water in a rain barrel provides a healthy source of water for plants. In the laundry room, use a frontloading washing machine, which uses less water. Throughout the house, Always repair leaky taps.

The Bow River is not an unlimited supply of water. We will run out of water in the future if we are not careful with how much we use today. We need water for life and the Bow River gives us life

U.E.S Student Writers: Marissa, Derek, Ty

"As Calgary and the towns along the Bow River grow in population so does the water demand."

The Bottled Water Debate

Taste Testing Station during May Student Led Conferences staffed by Lecia.

"Bottled water companies take this water, put it in a bottle, put on a label and they ship it off. They spend lots of money on advertisements to make people think that bottled water is better."

Water is something that people depend on. Drinking clean water is necessary to our well being. In the last few years more and more people are becoming worried about the quality of the drinking water coming from the tap. Some people think that tap water can make you sick. There is a well known tragedy where seven people died and 2,300 people became ill in the Ontario town of Walkerton in May 2000. This tragedy has raised the awareness of many Calgarians to the safety of our drinking water.

Is our tap water safe to drink?

Yes. In 2004, the City of Calgary Waterworks, reported that our drinking water was safer and of higher quality than all Canadian Government guidelines and Alberta Environment water quality standards. There are more than 100,000 water analyses that are done in the City's labs each year on tap water.

If our tap water is safe to drink, why do people in Calgary drink bottled water?

CBC News Marketplace (2005) reported that Canadians bought more than 700,000,000 liters of bottled water in 2004. Some people think that the bottled water tastes better than the tap water. In Calgary, the City Waterworks adds some chlorine to disinfect the water. In the spring, there is more runoff in the Elbow and the Bow Rivers and this affects the water quality. During the spring, you might notice more of a chlorine smell and taste in the water and the chlorine is put in by the City Waterworks to make sure the water is safe. Aside from chlorine, what might affect the water's taste in Calgary?

The City Water Works explains that the water is "hard" because of the amounts of calcium and magnesium.

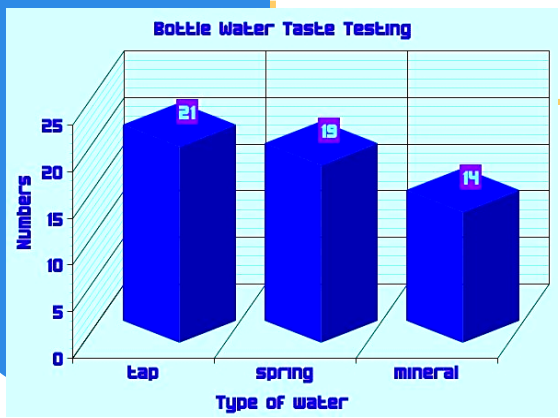
In our classroom this spring, we did our own research to see if people thought that tap water, spring water or mineral water tasted better. We asked 50 people to taste each kind of water without knowing which one was which kind. They then rated the taste of the water. What we found out is that tap water received nearly the half the votes for tasting the best, followed by spring water and then mineral water.

ABC News did a similar test with Americans last May and they had the same kind of results as our tests. The television program "20/20" did a test with 5 national brands of bottled water and a sample of tap water from a water fountain in the middle of New York City. They tested the water for safety and they found that, "There was actually no difference between the New York City Tap Water and the bottled waters that we evaluated," said microbiologist Aaron Margolin from the University of New Hampshire. The "20/20" test showed that most people preferred the taste of tap water.

In fact, some bottled water comes directly from a tap. The organization, *Inside The Bottle*, reports that "25% of bottled water including Pepsi's *Aquafina* and Coke's *Dasani*, before being processed, is the same water that flows from your tap." Other sources of bottled water come from artesian wells (a well that is under a layer of rock or sand), mineral water (water with more than 250 parts per million total dissolved solids), purified water (distilled or reverse osmosis), sparkling water (carbon dioxide added) and spring water (water from an underground source). Bottled water companies take this water, put it in a bottle, put on a label and they ship it off. They spend lots of money on advertisements to make people think that bottled water is better.

From our research, we think that the people in Calgary that buy bottled water are wasting their money and assuming the wrong thing about taste. We also found out that in fact bottled water is expensive, bottles pollute the earth and bottled water companies do not necessarily promote recycling.

U.E.S Student Writers: Lecia, Sydney, Mohammad R, Nastaran



Tap water was the most popular in our Taste Testing!

"This is nothing like Grade 1 or 2. This is huge change. We've really started to change our personalities with this. We had to work hard with others and with hard thinking. We have really learned so much that this makes us smile when we look back and see all this good work. A couple of times, I just stop and smile since we know so much now." Madison & Kristina

Farmers and Ranchers

Riparian Area along the Bow River
http://www.cowsandfish.org/riparian.html

Why are farmers and ranchers not allowed to let their animals drink directly from the Bow River? If you want to know more about this topic, keep on reading! Ranchers and farmers are not allowed to have their animals near a river because of these reasons: the animals can cause ground erosions and silt will go into the water causing water pollution and spawning problems for fish; animal's waste will slide into the river; and if the animal has a disease and they drink from the river the disease could go into the water and possibly spread to other living things.

Ranching areas have to have a space between the river and their farms, so that the animal's waste will be able to decompose and there won't be a lot of germs left in the waste. Farmers are also using caution against germ spreading by supplying water troughs for their animals to drink from and prevent germs from inhabiting the river water.

All animals owned by ranchers and farmers have tags that contain information about the animal. The tag tells people about where the animal came from, and when it was born. If the animal spreads any diseases, other people will know where to call and ask the owner of the animal about what the animal was fed and other things that might have caused the animal to get the disease.

Riparian is an area that can be found along the banks of water sources. Riparian areas usually have trees and shrubs. The trees and shrubs usually have very deep roots so that it makes the soil stay firm, which will prevent the soil from getting into the water. If the soil gets loose, then the trees and shrubs can trap them and use the soil or dirt to live. Some farmers let their cows graze and drink at the banks of the river, but they will usually have another water source so that they only graze and drink there for a while, then they move their cows to the other water source. If the cows leave their waste behind, then the grass along the river bank will use it as a natural fertilizer.

Farmers and ranchers use these ways to protect the water source close to them: trapping sediment, maintaining their banks, storing water, recharging their underground aquifer and storing ice water.

In the future, if we keep on letting our animals drink or use the Bow River as a washroom, it's going to pollute the river. If that happens it's going to use more money to get clean drinking water, because it's going to take more materials to clean it. So it would help so much to not let your animals go near the river.

U.E.S. Student Writers: Jack, Siddhartha, Mohamed A.

"In the future, if we keep on letting our animals drink or use the Bow River as a washroom, it's going to pollute the river."

Watt Dam?

The Bow River is one of the most dammed rivers in Alberta. There are 11 hydro-electric facilities along its length. The facilities create hydro-electric power. Hydro-electricity comes from water driving a water turbine and generator. TransAlta utilities operate these hydro-electric stations. According to TransAlta, these stations generate about 838,000 megawatt hours of electricity a year. This sounds like a lot but actually it isn't. It only helps Calgarians have enough electricity during "peak periods" at dinner and night and for load control, which is when lots of electricity is used at once.

These are some of the major dams on the Bow River.

Cascade Plant

The Cascade was built in 1942 is at the junction of the Cascade River, Ghost River and the Minnewanka River. It produces 52, 612 MwH energy for peak power demand.

Spray Lakes Plant

Spray Lakes was built in 1951 and is on Spray Lakes near Canmore. It produces 287,800 MwH for load control and peak power demand.

Horseshoe Plant

This plant is at Horseshoe Falls near Seebe and the Stoney Reserve. Built in 1911, the Horseshoe Plant was TransAlta's first power plant. The Horseshoe Plant generates 83,200 MwH and is built for continual power production.

Ghost Plant

Ghost Dam was built in 1929. In 1954 the plant was expanded. The plant is downstream of the Ghost River. The Ghost plant generates 172,033 MwH. It provides electricity for peak demand and continual power usage.

Bearspaw Dam

The Bearspaw Dam is at the western limits of the City of Calgary. Bearspaw Dam was constructed in 1954. It produces 70,691 MwH. It regulates river flows and is for continual power production.

Bassano Dam

Bassano dam is one of the largest dams on the Bow River. The Bas-

Ghost Dam
Photo courtesy of R. Russell

sano Dams main purpose is to supply water to farmers for irrigation. Construction of the Bassano Dam began in the spring of 1914. In 1935, a group of farmers in the Brooks area acquired the canal system. The Bassano dam is located on the Bow River, 6km southwest of the town Bassano. It is in the East Irrigation District.

Good Things and Bad Things about Dams

Some people think that changing the course of a river for a dam is not right just because humans are changing nature. When a dam is built, the water level behind it rises. When the water rises, vegetation is destroyed and animal habitats are lost. It has a big impact on the life of plants and animals that live along the shores of the river downstream. When dams control the flow of water in rivers, this changes what animals and plants can live in or near the river as water levels change.

When water is held in the reservoir of a dam, the quality of water is changed in lots of ways. One way is that the temperature of the water changes and when it does it can affect aquatic life. Aquatic animals and plants have a preferred temperature. When this changes, sometimes there is more growth and sometimes there is less. Aquatic animals have adapted to reproduce in certain temperatures and when the temperature changes it affects this as well. Another way that the water can change is in chemical composition such as oxygen and carbon dioxide levels. This can impact what survives.

So, in some ways dams make the Bow River unfit for some life. In other ways, they help. They make additional wildlife habitat for some species above and below them. Water in the reservoirs, like Bassano, can be used by farmers for irrigation, which helps them grow food for all of us. Dams aren't all bad.

Generating electricity and gathering water for irrigation by having dams on the Bow River affects life in and around the Bow River for both good and bad. If you care about the Bow River then you need to look at how you use electricity and how we irrigate. How can you help reduce usage? What are you willing to change?

U.E.S. Student writers: Tyler, Roxy, Sean, Saptashwa

"Generating electricity and gathering water for irrigation by having dams on the Bow River affects life in and around the Bow River for both good and bad. "

"This project has been more important than any other thing we have ever done in school. We can even study it at our homes as the river is part of our lifestyle."
Tyler

Things To Do- On, In and By the Bow

Canoeing, one of the many recreational activities available. http://www.google.ca/images?q=tbn:AIIPV3E4e1NGIM:www.ab

The Bow River is beautiful in many ways, like its white rushing water, and lots of plants and animals living in it and around. It can be enjoyed by adults, elders, and children, who bring back with them wonderful stories and memories of their visits to the river. There are adventurous activities on the Bow River like white water rafting, and more peaceful ones. White water rafting is for those who love adventure and excitement by going through waves with the boat tilting, bouncing, and jumping wave to wave. There's a wonderful white water trip that begins close to Banff, passes Canmore, and ends shortly after passing Calgary. Also, there is another trip, through the Bow River Horseshoe Canyon that offers glorious scenery and grade 3 to 4 white water.

White Water Riverboarding is a new sport where your whole body gets right in the river. You go on a regular surf board in the water and float downstream with the current through water obstacles like rapids and whirlpools. Before you go out professional guides give a safety training session. Once on the river your guide and safety kayaker will show and tell you the way, by giving continuous instructions, and provide a safe journey.

Another new way of traveling through the water of the Bow River is by inflatable

kayaks. You will feel accomplishment and great after this trip. Again before having fun, there is pre-trip instruction, and you will be given safety gear, and equipment to keep you warm and happy, and a guide to help with the trip. They will carefully explain all features of the River, to make sure that you'll be safe and have a wonderful experience.

Here is a peaceful trip that most people would love, a nature float on the Bow River. There is slow and calm water unlike the other activities. It all starts at Banff, and is a nice two hour trip on the Bow. The trip offers a good view of the Three Sisters Mountains, and animals like osprey, beaver, elk and more. There also are quick stop to see plants and more for taking pictures. The guide will share information on the trip about the Bow Valley's natural and local history.

Fishing is a very popular sport on the Bow River, and attracts fishermen from around the world. The amount of fish you catch is always different. It depends on the weather, what you're using, and some days the fish just won't bite. Weather counts a lot, cloudy weather is usually the best, but sometimes sunny is good too.

Fly fishing is best on the Bow River, and more common to see on the River. There are more bugs and flies on the Bow so it is better to fly fish. Other ways are good too, so go out and try them all.

The Bow River can also be used to view the beauty, and to relax, or view birds and animals from shore.

Bird watching is a nice hobby, and can be done all along the Bow River. Taking strolls or a walk can be done a lot too. Many paths are on both sides of the river, almost from where it starts to the end.

Hiking is a good way to see the Bow River and have a fun trip. You can see animals and experiencing the warm sun filled mountains and valleys.

Bow Valley Provincial Park is where it happens, and it is less than an hour drive west of Calgary. You can have a short walk, or a day hike! It is all up to you to decide. Witch ever, you'll chose it will be a great experience.

Did you know?

It is illegal to use power boats on the Bow and Elbow Rivers in Calgary. The rule protects the fish, wildlife, and lets people who are there to enjoy the river do so safely and quietly.

The Bow River is beautiful and there are fun activities to enjoy. If we keep the Bow River clean and healthy we will have many more years to take pleasure in all it has to offer. The Bow can be enjoyed in many ways such as white water rafting, fishing, or simply sitting back and viewing scenery and beauty. Try all of the activities at the Bow River! Enjoy!

U.E.S. Student Writers: Dylan, Rawand, Andy, Maytham

I LOVE TO FISH! DO YOU?

TO LEARN MORE PLEASE VISIT MY POWER POINT PRESENTATION~ TYLER

Alberta Water Quality Awareness Day (AWQA)

The students are excited to be part of the water testing team this month. Building awareness of water resources through local monitoring of Alberta's surface waters is the main goal of this day. The collecting of water temperature data is an important part of the day because aquatic organisms require a certain temperature range to survive.

Our collection will be made along the banks of the Bow River in Edworthy Park. Student representatives will then entered our data into the provincial data base. Further information can be found at

http://awqa.ca

U.E.S. Staff writers: Madison, Kristina, Vanessa, Dallas

Regan testing the water temperature along the banks of the Bow River at Edworthy Park

Kristina, Mohammed, Eric, Sean, Dylan, Derek and their families testing the water for temperature, dissolved oxygen, pH, and turbidity.

"It doesn't rain very often in southern Alberta so nature needs to store water and slowly release water in many different ways: aquifers, snow melt, glaciers, and wetlands."

Water Through Rocks

The water in the Bow River flows from the Wapata Ice field to Bassano in less than two weeks. It doesn't rain very often in southern Alberta so nature needs to store water and slowly release water in many different ways: aquifers, snow melt, glaciers, and wetlands.

An aquifer is an underground storage place for water. This water comes from rain and snow melt and is filtered by the soil on its way down to the aquifer. It is because of this filter that the water found in an aquifer is almost bacteria free. The aquifer refills when water flows over land and absorbs down through to the aquifer. Rain and snowmelt infiltrate the ground. Soil and rock act as the filter for water. Every year millions of cubic meters of groundwater enter the aquifers depending on rainfall and snowmelt. Groundwater slowly travels through connected pores in any rock or sediment that yields useful amounts of water from an aquifer. The volume of groundwater below us dwarfs the volume of water stored in glaciers, lakes, wetlands, and rivers.

Groundwater and surface water are one connected water system. Water wells can intercept groundwater that may be on its way to springs that feed streams and rivers. In southern Alberta, oil and gas drilling has shown that groundwater is found to depths of four kilometers or more. However, most of this groundwater is very salty. Only shallow ground water is able to drink.

Most people do not even know that they drink some groundwater everyday. Groundwater under the river feeds the river & provides more water for the river.

Fertilizers and pesticides are hazards to groundwater. People are becoming more aware and government regulations are in place to control this. As a community we can help keep our ground water clean by not using these hazards on our lawns and gardens.

U.E.S Student Writers: Lexi, Willy, Abdullah

We are like those living upstream from the future and if we don't take care of the water now then down stream in the future it will be hard, the water will be sparse." Mitchell

Special People, Special Experts! With Thanks!

The Calgary Zoo Staff

Danielle Droitsch ~ Bow River Keepers

Tracey Franks ~ CAPES artist

Sherri Rinkel-MacKay & Sharron Friesen ~ Galileo Educational Network

Laurie Montemurro ~ CAPES artist

Linda Easthope ~ U.E.S technical support

Gord & Erika ~ AISI support

Chris Beauchamp ~ Editor of the Gauntlet newspaper

Heather Ellwood ~ Agriculture expert

Carrie ~ (University of Calgary) Calgary Flood expert

Heather Dempsey ~ Parks Canada (Banff)

Mike Murray ~ Bow River Basin Council

Amanda ~ Cows and Fish and Cattle Dogs

Catherine Bouree ~ Editor extraordinaire

Neil Warner ~ Scientific editor extraordinaire

"My vessel is telling you that the Bow River travels through Calgary. You see nice ducks travel on the beautiful Bow River. You can see the pretty scenery and the beautiful city of Calgary." ~Lexi

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"When I first saw that I was going to do this (Publisher) I thought, "Whoa, how can I ever do some of this amazing stuff". But you know I learned more than the technology. We are really looking so carefully at the Bow River."
~Madison & Kristina