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June 24, 2015

Dear Safe Drinking Water Foundation:

The grade 8 students at Tofield School and Allan Johnstone School, would like to thank you for your generous donations of water testing kits. We teamed up with the Battle River Watershed Alliance, who assisted us with our water testing.

Testing our local water was the springboard for our project based unit on Fresh and Saltwater Systems. We proposed the driving question of how to make improvements in water usage during oil extraction and processing. The intention of the project is to foster student interest in the oil industry, environment and related careers, while focusing on environmental stewardship to become informed and responsible citizens.

We invited industry, environmental and government organizations to take part in our Town Hall meetings to hear suggestions, in order to have a real world audience representing all groups related to this area of study. Unfortunately, those groups were unable to attend, but students shared their ideas with grade 5 students and digitally with your organization and with the Battle River Watershed Alliance.

We want to thank you for all your support, resources and encouragement. You provided us with authentic real world hands on learning which will be a memorable part of this unit.

Sincerely,

Grade 8 Students from Tofield and Allan Johnstone Schools
with Mrs. Danielle Nicolaescu and Ms. Jennifer Heather





Driving Question:

How can we improve water usage in the extraction and processing of oil in Canada?



The following are the students' ideas. They may require some follow up research and consideration, however, they are thinking in the right direction: ☺

- We could use water that has already been used by humans like dishwasher water. After if any water remains in the ground that we get out for consumption we can always filter the water to get rid of any bacteria or unnecessary materials. If we took water from already contaminated sources like ocean or lake water it could potentially harm the ecosystem so that's not an option.
We could also improve water use by using liquids or materials that are not as valuable as water.
Water may not be expensive but it's easily the most valuable liquid on earth, it keeps us alive. We need to find a new liquid to use in fracking and drilling for oil.

- We could stop the dumping of water into tailings ponds or lakes and instead of sealing the leftover chemicals back into the fracking hole we could take the water and clean it so that there is no chance in it getting to our water source or natural sources. Take better care of how we take oil out of the ground so that it does not spill and runs into underground water sources.
- Only use the amount of water that we need to extract oil. Contain the gases that are released during extraction and processing of oil.

- Use less water in the processes of extracting oil and stop drilling close to small towns and large sources of water to prevent pollution of water in small towns in the area.

- Fracking uses chemicals that enter into water which pollutes and kills organisms. Our group was thinking that we could make a solution to replace the chemicals in fracking, if the chemicals used in the fracking contaminate the water, this solution will protect the water from being contaminated, which will also protect the wildlife and animals in and around the lakes and rivers.

- We can make machines that don't need as much oil so we don't have to use as much water.

- No more oil sands mining should be permitted until the cumulative impacts are clearly understood and managed, and a wetlands policy has been implemented.



Driving Question:

How can we improve water usage in the extraction and processing of oil in Canada?



- Clear expectations for tailings management must be established. Alberta Environment must strictly enforce new policy that requires companies to seek alternatives before applying for fresh water allocations for conventional oil production.

- Water use targets must be established for the oil sector, as proposed in the Water for Life strategy.

- The oil industry should pay fees for their use of fresh water. That money must be used for alternative energy and water resource preservation research.

- Make use of the new Filter Press Project, which includes a two stage chemical process which keeps the fluid fine tailings from sticking to the filter, allowing the press to squeeze water out of the mature fine tailings (MFT). The thickened MFT is then deposited in thin layers on shallow slopes specifically constructed for drying and dewatering. The water is returned to the tailings ponds where it can be reused in the bitumen extraction process or evaporate. The resulting material can be reclaimed in the same location where it was dried or transported to another location for final reclamation. The environmental benefits are that more water is released from tailings to be used as processed recycled water, reducing the need to make up that volume of water from other sources. The residual clay fine cakes meet the Alberta government's regulatory requirement for density and strength of tailings materials that can be used in reclamation. Over the long term reduces the size of tailings ponds, the need for additional water, and increases the speed by which companies can reclaim disturbed lands on their mine sites.

- We can improve water usage, specifically in oil usage by recycling previously used fracking water. Due to public concerns about the high volume of water used in fracking, oil and gas drilling companies have started reusing and recycling the wastewater. The natural-gas industry uses a number of methods to recycle drilling waste. Some drillers have used recycling equipment at the well site or trucked the water to a recycling facility where the wastewater is filtered, evaporated, and then distilled, to be used again at the well. Other companies add fresh water to the wastewater, to dilute the salts and other contaminants, before pumping it back in the ground for more hydrofracking. Some of it sold for use as dust suppression or to melt ice on roads, because the brine wastewater tends to be extremely salty. Any fracking sludge that settles from these various processes is taken to landfills or is sent to injection disposal wells.



Driving Question:

How can we improve water usage in the extraction and processing of oil in Canada?



- Instead of pouring the leftover water used in the process of extraction and separation into our ecosystems making the water we drink and use dangerous, they could reuse the water by filtering it from a giant container and putting it through a gigantic filtering system that would be ongoing and would be run by wind and environmental power. Instead of pouring the leftover water used in the process of extraction and separation into our ecosystems making the water we drink and use dangerous, they could reuse the water by filtering it from a giant container and putting it through a gigantic filtering system that would be ongoing and would be run by wind and environmental power.

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- Re Using the Fracking water from previous Fracking sites. Through a process of letting the water settle and separate out the sand, dirt and chemicals so that the water would be on the surface. To speed this process up, Oil Companies could use a filter system that would allow them to separate the sand, dirt and chemicals out of the water. Oil Companies could work with LifeSaver Technology to build a filtration system that would filter out chemicals instead of bacteria and viruses in the water.

- There are plenty of ways we could fix this, technology now a days could help us solve these problems and help the pollution going on in the environment and the amount of water we taking out of each environment. For example it is said that oil industries have to use clean fresh water, so instead of using new amounts of it and draining away our fresh water supply we could reuse the water already used by filtering it and cleansing it instead of using new amounts each time. We could also figure out some sort of cleaning process that moves relatively quickly to filter groundwater, saltwater, and slue water which we could then use instead of our freshwater drinking supply
