lesson 2 | **Your Great Lake**

Background:
Our drinking water comes from nearby lakes (or wells) that are protected to keep our tap water clean and safe. The CBRM Water Utility choses the best nearby lakes and ground water wells to use for our tap water. The water is then pumped to a water treatment plant (to make sure the water is clean) and then pumped to your home or school.

You might drive by your tap water everyday or it may be hidden in forests around your community. You share this water with your school and your town. Where does this water come from? How much water is there? How can we protect the lake, too?

Curriculum Objectives:
- Environmental issues (grade 5: life science)
- Movement of air and water (5: earth and space science)
- Sensitivity towards natural and built environment (5:visual arts)
- Cooperation between individuals, communities, countries to maintain environmental health (6: health education)
- Understanding environmental citizenship (6: physical education)
- Effects of human activity on the environment (6: physical education)
- Measurement (6: math)

Activities:
Time line: This lesson should be completed over two days to complete the take-home portions (Questions 4 &5 and Questions 12 to 14)

Supplies:
- Class set of rulers
- Appropriate Lake Diagram (one per student)
- CBRM Source Waters Map

This activity is intended to increase student awareness of local public water sources. Basic mean and volume calculations are done to find their local lake's water volume (with practice in their own bathtub). Learning about a watershed leads into considerations of the natural surroundings of the lake as well as what things should and shouldn't be found in or near the student's great lake. Civic responsibility can be made into a broader, longer term activity with Question 14.

Students may need a background on wells. Ground water can be described as "secret water" that is hidden from the eye but very important for drinking water, especially for residents in Sydney and area. Wells are deep holes that allow people to access this underground water source.

Treatment Plant Tour:

For a tie-in with technology, tours of municipal water treatment plants are available. Please contact the Public Education department at ACAP Cape Breton for more information or to book a tour: 567-1628 or acapcb@acapcb.ns.ca

Notes

Community	Communites also served	Water source
Sydney	Coxheath, Westmount, Sydney River, Grand Lake Road, Mira Road, Prime Brook	Sydney Well Field, Old Sydney Reservoir*
Glace Bay	Dominion, Reserve Mines, Tower Road, Donkin, Birch Grove	MacAskill's Brook Dam
New Waterford	Scotchtown, River Ryan, New Victoria, Lingan	Waterford Lake, Kilkenny Lake**
Northside	North Sydney, Sydney Mines, Northside rural area	Pottle Lake
Louisbourg	Louisbourg	Kelly Lake
Port Morien	Port Morien	Sand Lake
Pine Tree Park	Former Radar Base	Well
Floral Heights	Floral Heights	Well
Gardiner Mines	Gardiner Mines	Well

*The Old Sydney Reservoir was historically used as a water source but is not part of Sydney's current public water source. It is used in this activity as it is easier to imagine for children than a well field for this activity.

** During low-water seasons, Kilkenny Lake drains into Waterford Lake via underground pipe.

The true area and volume for the lakes are:

Lake	Surface Area (m^2)	Volume (m^3)
Pottle Lake	3 024 330	9 815 816
Waterford Lake	493 000	1 145 000
Old Sydney Resevoir	353 611	865 363
Kelly Lake	269 625	734 964
MacAskill Brook Dam Reservoir	3 411 428	16 083 656

The calculated values may not be near these accurate values due to means and rounding. However, the important part of the lesson is to understand the calculations and a general idea of how much water the lakes hold.

Resources:

Google maps/Google Earth

* Useful website/program to see satellite images of Our Great Lakes

maps.google.ca

earth.google.com

References:

http://www.mathsisfun.com/definitions/average.html

Spooner, I. (2010) Bathymetric models and volume estimates for Pottle Lake, Old Sydney Reservoir and pond and MacAskill Brook Reservoir, CBRM, Cape Breton, NS

Watershed image: http://www.watershedatlas.org