

## **Aquatics - 2010 Learning Objectives**

### **The students will be able to:**

1. Identify the processes and phases for each part of the water cycle.
2. Describe the chemical and physical properties of water and explain their implications for freshwater and saltwater ecosystems.
3. Understand the purpose of a stream buffer.
4. Briefly describe the benefits of wetlands, including both function and value.
5. Discuss methods of conserving water and reducing point and non-point source pollution.
6. Analyze the interaction of competing demands for finite water resources and propose solutions for wise use.
7. Identify common aquatic organisms through the use of a key.
8. Delineate the watershed boundary for a small water body and describe how characteristics of the watershed would affect management approaches.
9. Explain the different types of aquifers and how each type relates to water quality and quantity.
10. Describe how land use practices impact aquatic ecosystems.
11. Describe methods (e.g. sampling techniques, water quality evaluation parameters - physical, chemical and biological, point and non-point source pollution monitoring) used to assess aquatic environments, and how the information obtained might be utilized to manage the quality of a given body of water.
12. Discuss major methods and laws used to protect water quality (surface and ground water) and how these might be applied to manage water quality in a given situation.

### **Application/Analysis**

1. Describe how an understanding of the biological, physical and chemical components of an aquatic ecosystem can support and direct wise land and water use decisions.
2. Describe how land and water use management and conservation techniques can be used to promote ecosystem and watershed protection.

3. Explain the concept of carrying capacity for a given aquatic system, and how the interaction of competing uses (hydropower, wildlife, etc) may affect the ability of the system to sustain basic ecological capacities.

**Groundwater specific**

1. Understand why groundwater is important for freshwater ecosystems.
2. Identify common organisms and discuss adaptations of species living in subsurface systems.
3. Interpret flow diagrams, describe discharge patterns.
4. Discuss the exploration, exploitation, development and sustainability of aquifers.
5. Evaluate the status of groundwater permitting in Canada.