

## Video 1 (Bow River Water Nexus) – Teaching Resource

This resource is intended for teachers. It outlines how the Canada WaterPortal’s video *Bow River Water Nexus* aligns with the curriculum presented in Alberta Education’s Programs of Study.

<p><b>Curriculum Links</b></p> <p>What courses from Alberta Education’s Program of Studies are applicable to this video?</p>	<ul style="list-style-type: none"> <li>• Grade 8 Science – Freshwater and Saltwater Systems</li> <li>• Grade 9 Science – Environmental chemistry</li> <li>• Science 20 – Unit B – Ecosystems and Population Change</li> <li>• Science 30 – Unit B – Chemistry and the Environment</li> <li>• Social Studies 10</li> <li>• ENS 115: Resource Management</li> <li>• ENS 1040: Living with the Environment</li> <li>• ENS 1115: Resource Management</li> <li>• ENS 2010: Water Management 1</li> <li>• ENS 2030: Ecological Economics</li> <li>• ENS 2040: Environmental Health and Safety</li> <li>• ENS 3040: Energy &amp; the Environment</li> <li>• ENS 3110: Integrated Resource Management</li> <li>• ENS 3120: Water management 2</li> <li>• Sci 9 Environmental Chemistry</li> <li>• Sci 10: Energy Flow in Global Systems</li> </ul>
<p><b>Key Concepts</b></p>	<ul style="list-style-type: none"> <li>• Habitat destruction, reclamation</li> <li>• Balancing energy use with sustainable development</li> <li>• Nuclear, wind, hydro, biomass, tidal, solar, fuel cell and geothermal alternative energy technologies</li> <li>• Human interventions in biogeochemical (nitrogen, carbon, water) cycles</li> <li>• Understand the basic functionality of a watershed: a watershed is an area having a common outlet for its surface water runoff. The land area within a basin/watershed drains water to a single body of water, such as a stream, river, or lake.</li> <li>• Understand the geography of a watershed, using the example of the Bow River Watershed.</li> </ul>

	<ul style="list-style-type: none"> <li>• Understand that there are different user groups within a watershed. The quantity of water in the Bow River Watershed is a continuous balancing act between the natural water available, and allocating water for human use.</li> <li>• Water use, food and energy production is a complex interconnected system called the Water Nexus.</li> <li>• Humans can balance their water use to support sustainable human activity and healthy ecosystems.</li> </ul>
<p><b>Objectives</b></p>	<ul style="list-style-type: none"> <li>• Students will gather a greater understanding of the role of a watershed in our daily lives.</li> <li>• Students will gather a greater understanding of the Bow River Watershed.</li> <li>• Students will be introduced to the key components of the Water Nexus.</li> <li>• Student will be introduced to the importance of water to the food and energy industries as well as human activities and the environment.</li> <li>• Students will look at the impact of water conservation efforts on a local and global scale.</li> </ul>
<p><b>Glossary of Terms</b></p>	<p><b>Watershed:</b> An area having a common outlet for its surface water runoff. The land area within a basin/watershed drains water to a single body of water, such as a stream, river, or lake.</p> <p><b>Headwaters:</b> Upper tributaries of a stream or river, considered the source of that stream/river.</p> <p><b>Tributary:</b> A river or stream flowing into a larger river or lake.</p> <p><b>Canal:</b> A man-made structure used to direct the course of water on a specific path. Canals are typically used for transportation or irrigation.</p> <p><b>Irrigation:</b> The supply of water to land or crops to help growth, typically by means of channels.</p>

	<p><b>Groundwater:</b> Water that is stored underground and is able to flow through porous soil and rocks.</p> <p><b>Reservoir:</b> A man-made structure used to store water for use when needed. Reservoirs are typically created on rivers by constructing a hydroelectric dam.</p> <p><b>Hydroelectric dam:</b> A dam that uses flowing water to rotate turbines which create electricity.</p> <p><b>Turbine:</b> A machine for producing continuous power in which a wheel or rotor is made to revolve by a fast-moving flow of water, steam, gas, air, or other fluid.</p> <p><b>Municipal drinking water:</b> Water that is withdrawn from a natural source and treated before it is distributed by an underground pipe network throughout a municipality. This water is typically used for drinking, personal hygiene and cleaning.</p> <p><b>Ecosystem:</b> A biological community of interacting organisms and their physical environment.</p> <p><b>Water Nexus:</b> The interconnected dependence on shared water sources between people, food, energy producers and the environment.</p>
<p><b>Classroom and Online Activity Suggestions</b></p>	<ul style="list-style-type: none"> <li>• Brainstorm a list of natural water sources within a watershed.</li> <li>• Brainstorm a list of various users within a watershed. Think about how these users might share the same water sources.</li> <li>• Reflect on all the ways we use water on a daily basis in both a direct and indirect manner.</li> <li>• Research how much water is used by each user group within the Bow River.</li> <li>• Compare Canada’s per-capita energy consumption with developed and developing countries and identify factors that affect consumption; e.g., economy, lifestyle, level of technology, geography, and climate*.</li> </ul>

	<ul style="list-style-type: none"><li>• Discuss the use of water by society, the impact such use has on water quality and quantity in ecosystems, and the need for water purification and conservation, considering such things as manufacturing, the oil industry, agricultural systems, the mining industry and domestic daily water consumption*.</li></ul>
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\*Indicates Activity was amended from the CBE Program of Studies.