BRITISH COLUMBIA
Ministry of Education

BIG IDEAS

Global Water Systems	**Global Warming and Climate Change**	**Land Use and Sustainability**	**Global Environmental Changes**
Human actions affect the quality of water and its ability to sustain life.	Human activities have caused changes in the global climate system.	Sustainable land use and food production will meet the needs of a growing population.	Living sustainably supports the well-being of self, community, and Earth.

Learning Standards

Curricular Competencies	Content
Students are expected to be able to do the following:	*Students are expected to know the following:*
Questioning and predicting	**Global Water Systems**

• Demonstrate a sustained intellectual curiosity about a scientific topic or problem of personal, local, or global interest	• water quality:
	   – chemical and physical **parameters**
	   – **bio-indicators and indices**

• Make observations aimed at identifying their own questions, including increasingly abstract ones, about the natural world	• **availability** and **water use**
• Formulate multiple hypotheses and predict multiple outcomes	• **conservation** and **personal choices**
Planning and conducting	**Global Warming and Climate Change**

• Collaboratively and individually plan, select, and use appropriate investigation methods, including field work and lab experiments, to collect reliable data (qualitative and quantitative)	• global changes to Earth's climate **system**:
	   – greenhouse gases and Earth's **energy balance**
	   – **sinks and sources**

• Assess risks and address ethical, cultural, and/or environmental issues associated with their proposed methods	• **impacts** on society
• Use appropriate SI units and appropriate equipment, including digital technologies, to systematically and accurately collect and record data	• **mitigation** and **personal choices**

• Apply the concepts of accuracy and precision to experimental procedures and data:
   – significant figures
   – uncertainty
   – scientific notation
	Land Use and Sustainability
	 • soil **quality**
	 • **land use** practices
	 • global **food security** and **technologies**
	 • **land management** and **personal choices**

Learning Standards (continued)

Curricular Competencies	Content
Processing and analyzing data and information - Experience and interpret the local environment - Apply First Peoples perspectives and knowledge, other ways of knowing, and local knowledge as sources of information - Seek and analyze patterns, trends, and connections in data, including describing relationships between variables, performing calculations, and identifying inconsistencies - Construct, analyze, and interpret graphs, models, and/or diagrams - Use knowledge of scientific concepts to draw conclusions that are consistent with evidence - Analyze cause-and-effect relationships **Evaluating** - Evaluate their methods and experimental conditions, including identifying sources of error or uncertainty, confounding variables, and possible alternative explanations and conclusions - Describe specific ways to improve their investigation methods and the quality of the data - Evaluate the validity and limitations of a model or analogy in relation to the phenomenon modelled - Demonstrate an awareness of assumptions, question information given, and identify bias in their own work and in primary and secondary sources - Consider the changes in knowledge over time as tools and technologies have developed - Connect scientific explorations to careers in science - Exercise a healthy, informed skepticism and use scientific knowledge and findings to form their own investigations to evaluate claims in primary and secondary sources - Consider social, ethical, and environmental implications of the findings from their own and others' investigations - Critically analyze the validity of information in primary and secondary sources and evaluate the approaches used to solve problems - Assess risks in the context of personal safety and social responsibility	**Global Environmental Changes** - human **health and environmental impacts** of population growth - **environmental ethics** - First Peoples **perspectives**, **philosophies**, and responsibilities

Learning Standards (continued)

Curricular Competencies	Content
Applying and innovating • Contribute to care for self, others, community, and world through individual or collaborative approaches • Co-operatively design projects with local and/or global connections and applications • Contribute to finding solutions to problems at a local and/or global level through inquiry • Implement multiple strategies to solve problems in real-life, applied, and conceptual situations • Consider the role of scientists in innovation **Communicating** • Formulate physical or mental theoretical models to describe a phenomenon • Communicate scientific ideas, information, and perhaps a suggested course of action, for a specific purpose and audience, constructing evidence-based arguments and using appropriate scientific language, conventions, and representations • Express and reflect on a variety of experiences, perspectives, and worldviews through place	