

UNIT OF STUDY

Title: Renewable Resources	Subject/Course: Environmental Science	Length: 6 weeks
Topic: Ecosystem Capital	Grade: 11-12	Designer: D Wright
UNIT GOALS AND EXPECTATIONS		
<p>IMPORTANT CONCEPTS/UNDERSTANDINGS:</p> <ol style="list-style-type: none"> 1. Water is the basis of life. The water cycle moves water around and removes impurities. 2. Humans can adversely impact water purity and cycling by changing the surface of the Earth, introducing pollutants and removing water rapidly from different sources. 3. There are a number of factors that influence soil characteristics. The water and nutrient holding capacity of soil, along with its aeration, workability, salinity and pH, influence the survivorship of plants. 4. Subsistence agriculture can be environmentally benign if the number of people being supported is not excessive. 5. The precautionary principle states that the “lack of scientific certainty should not be used as a reason for failing to take measures to prevent potential damage” when the consequences for not acting could be serious or irreversible damage. 6. Biodiversity loss can be linked to humans altering habitats and species introduction. 	<p>ESSENTIAL QUESTIONS:</p> <p>What are the structure, origin, and evolution of the Earth’s components?</p> <p>What are the processes of the rock cycle?</p> <p>What are the processes of degradation by weathering and erosion?</p> <p>What are the physical and chemical properties of water?</p> <p>What are the processes for the cycling of materials and energy?</p> <p>What are the common problems related to water quality?</p> <p>Which federal and state agencies have responsibility for environmental monitoring and action?</p>	
<p>STUDENT LEARNING EXPECTATIONS:</p> <p>PD.1.ES.1-Describe the structure, origin, and evolution of the Earth’s components.</p> <p>PD.1.ES.2- Relate periods of Earth’s geological development.</p> <p>PD.1.ES.3- Determine ages of rocks.</p> <p>PD.1.ES.5- Explain the processes of the rock cycle.</p> <p>PD.1.ES.6- Describe the processes of degradation by weathering and erosion.</p> <p>PD.1.ES.11- Describe the physical and chemical properties of water.</p> <p>PD.1.ES.19- Describe the cycling of materials and energy.</p> <p>SP.3.ES.3- Explain common problems related to water quality.</p>	<p>PD.1.ES.4- Categorize various minerals.</p> <p>PD.1.ES.7/8- Describe tectonic forces.</p> <p>SP.3.ES.7-Investigate which federal and state agencies have responsibility for environmental monitoring and action.</p> <p>NS.6.ES.1- Research and evaluate science careers.</p> <p>PD.1.ES.9- Interpret a topographic map.</p> <p>PD.1.ES.10- Describe the natural divisions of Arkansas.</p> <p>PD.1.ES.12/13/14/15- Describe the role of oceans in the earth’s ecosystems.</p>	
<p>SPECIFIC DECLARATIVE KNOWLEDGE – What I know</p> <p>Define water quality and the water cycle and recognize these as environmental constants.</p> <p>Define soil categories and conservation strategies.</p> <p>Identify and understand the precautionary principle.</p> <p>Identify the ways humans affect biodiversity.</p>	<p>SPECIFIC PROCEDURAL KNOWLEDGE – What I need to do</p> <p>Make clear and unbiased observations.</p> <p>Make predictions according to a pattern.</p> <p>Identify correctly information found on graphs, tables and charts.</p> <p>Research skills will be used to gather information.</p>	

UNIT ASSESSMENTS (Include tasks related to Dimensions 3 and 4 and Bloom's Taxonomy)	
Discuss (in writing) the idea of a sustainable approach to the Earth's environment. Chapter Content Brainstorming	
Traditional Assessments: Unit test. Written quizzes. Chapter outline Activity analysis	Other Evidence of Learning: Daily notebook entries. LPS 4-step Vocabulary strategy

ACTIVITIES AND LEARNING EXPERIENCES	Resources
<p>Identify and define key words and vocabulary: (using LHS vocabulary format)</p> <p>Freshwater, hydrologic cycle, evaporation, relative humidity, condensation, infiltration, runoff, watershed, surface waters, evapotranspiration, percolation, gravitational water, water table, aquifer, spring, estuaries, saltwater intrusion, desalination, gray water, soil profile, sand, silt, clay, soil texture, workability, soil fertility, weathering, leaching, nutrient-holding capacity, fertilizer, transpiration, water-holding capacity, soil aeration, compaction, pH, soil structure, mycorrhizae, mineralization, erosion, desertification, , no-till agriculture, overgrazing, deforestation, sediments, Green Revolution, subsistence farmers, Doubly Green Revolution, precautionary principle, food security, global community, malnutrition, undernourishment, famine, biological wealth, intrinsic value, ecotourism, endangered species, threatened species, keystone species, , natural goods, natural services, natural resources, renewable resource, conservation, preservation, , carrying capacity, precautionary principle, restoration ecology, sustainable forest management, national parks, national wildlife refuges, ecosystem management</p> <p>Ecological Succession Lab Water quality lab Soil particle composition lab Soil chemical composition lab TI-83/CBL lab- "Like Moths Around a Flame" Population Lab</p>	<p>Environmental Science: Toward A Sustainable Future</p> <p>Media Center</p> <p>Internet</p> <p>Smartboard</p> <p>Power point</p> <p>Newspaper/Magazines</p> <p>Lab exercises</p> <p>TI-83 calculator w/ probes</p>
Career Connections	
<p>Politician Economist Sociologist Ecologist Environmentalist Lobbyist Environmental Engineer</p>	