Oklahoma CTE

# Environmental Science and Natural Resources (2014)

Adopted 2014

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| **Environmental Safety and Regulations** | **a.** Handle chemicals and equipment in a safe and appropriate manner.<ul><li>fire extinguishers</li><li>biohazard waste/trash</li></ul> CS.07.04.02.A |
| | **a.** Identify laws associated with environmental service systems. ESS.02.01.01.A |
| | **b.** Identify the purposes of laws associated with environmental service systems. ESS.02.01.01.B |
| | **a.** Identify hazards associated with the outdoor environment. NRS.02.01.01.A |
| | **a.** Recognize biohazards associated with natural resources. NRS.02.01.02.A |
| | **a.** Identify laws associated with natural resource systems. NRS.02.05.01.A |
| | **b.** Identify the purposes of laws associated with natural resource systems. NRS.02.05.01.B |
| | **a.** Define mitigation. NRS.02.05.02.A |
| | **b.** Identify issues involving mitigation of natural resources. NRS.02.05.02.B |
| **Environmental Resource Management** | **a.** Describe different types of solid waste. ESS.04.02.01.A |
| | **b.** Evaluate environmental hazards created by different types of solid waste, solid waste accumulation and solid waste disposal. ESS.04.02.01.B |
| | **a.** Discuss practical management options for treating solid waste. ESS.04.02.02.A |
| | **a.** Define compost and composting. ESS.04.02.04.A |
| | **a.** Explain the importance of recycling. ESS.04.02.06.A |
| | **a.** Identify natural resources. NRS.01.01.01.A |
| | **b.** Differentiate between renewable and nonrenewable natural resources. NRS.01.01.01.B |
| | **a.** Define ecosystem and related terms. NRS.01.01.02.A |

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| | **b.** Describe the interdependence of organisms within an ecosystem. NRS.01.01.02.B |
| **Energy Conservation** | **a.** Identify conventional energy sources and list conservation measures to reduce energy consumption. ESS.05.01.01.A |
| | **b.** Identify advantages and disadvantages to conventional energy sources. ESS.05.01.01.B |
| | **c.** Evaluate the impact the burning of fossil fuels has on the environment. ESS.05.01.01.C |
| | **a.** Identify alternative energy sources. ESS.05.01.02.A |
| | **b.** Identify advantages and disadvantages to alternative energy sources. ESS.05.01.02.B |
| | **c.** Evaluate the impact of alternative energy sources on the environment. ESS.05.01.02.C |
| | **a.** Describe the value of minerals and ores to the economy. NRS.03.01.05.A |
| | **a.** Describe the value of fossil fuels to the economy. NRS.03.01.06.A |
| | **a.** Describe the benefits of hydroelectric generation. NRS.03.01.07.A |
| **Soil Conservation and Management** | **a.** Explain the process of soil formation through weathering. ESS.03.02.01.A |
| | **b.** Differentiate rock types and relate the chemical composition of mineral matter in soils to the parent material. ESS.03.02.01.B |
| | **a.** Describe the biodiversity found in soil and the contribution of biodiversity to the physical and chemical characteristics of soil. ESS.03.02.02.A |
| | **a.** Explain how the physical qualities of the soil influence the infiltration and percolation of water. ESS.03.02.03.A |
| | **c.** Conduct tests of soil to determine its use for environmental service systems. ESS.03.02.03.C |
| **Wetland Management** | **a.** Describe the functions of wetlands and differentiate types of wetlands. ESS.03.04.01.A |
| | **b.** Explain the criteria for classifying wetlands. ESS.03.04.01.B |
| | **a.** Identify the major types of living organisms that inhabit wetlands. ESS.03.04.02.A |
| | **a.** Explain the importance of wetland management, creation, enhancement and restoration programs. ESS.03.04.03.A |

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| **Pasture and Rangeland Management** | **a.** Describe morphological characteristics used to identify herbaceous plants. NRS.01.02.02.A |
| | **a.** Identify characteristics of healthy rangeland. NRS.02.04.04.A |
| | **b.** Identify methods of rangeland improvement. NRS.02.04.04.B |
| | **a.** Define invasive species. NRS.02.06.07.A |
| **Forest Ecology** | **a.** Describe morphological characteristics used to identify trees and other woody plants. NRS.01.02.01.A |
| | **b.** Identify trees and other woody plants. NRS.01.02.01.B |
| | **a.** Identify characteristics of a healthy forest. NRS.02.04.02.A |
| | **a.** Define invasive species. NRS.02.06.07.A |
| | **a.** Describe forest harvesting methods. NRS.03.01.01.A |
| | **a.** Differentiate between desirable and undesirable fires and prepare a report on the role fire plays in a healthy ecosystem. NRS.04.01.01.A |
| | **a.** Identify causes of diseases in plants. NRS.04.02.01.A |
| | **a.** Identify harmful and beneficial insects and signs of insect damage to natural resources. NRS.04.03.01.A |
| **Wildlife Ecology** | **a.** Describe morphological characteristics used to identify wildlife species. NRS.01.02.03.A |
| | **a.** Identify characteristics of a healthy wildlife habitat. NRS.02.04.03.A |
| | **b.** Identify methods of wildlife habitat improvement. NRS.02.04.03.B |
| | **a.** Explain population ecology, population density and population dispersion. NRS.02.06.06.A |
| | **a.** Define invasive species. NRS.02.06.07.A |
| | **a.** Identify wildlife species that can be sustainably harvested. NRS.03.01.03.A |
| | **a.** Identify products obtained from wildlife species. NRS.03.01.04.A |
| | **a.** Identify causes of diseases in wildlife. NRS.04.02.02.A |
| **Hydrologic Principles** | **a.** Describe the world's water supplies and discuss the many uses of water. ESS.03.03.01.A |

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| | **b.** Describe characteristics of water that influence the biosphere and sustain life. ESS.03.03.01.B |
| | **a.** Demonstrate knowledge of hydrogeology by differentiating between groundwater and surface water. ESS.03.03.02.A |
| | **b.** Describe interactions between groundwater and surface water. ESS.03.03.02.B |
| | **a.** Identify environmental hazards associated with groundwater supplies. ESS.03.03.04.A |
| | **b.** Describe precautions taken to prevent/reduce contamination of groundwater supplies. ESS.03.03.04.B |
| | **a.** Identify types of pollution and distinguish between point source and nonpoint source pollution. ESS.04.01.01.A |
| | **b.** Give examples of how industrial and nonindustrial pollution has damaged the environment. ESS.04.01.01.B |
| | **a.** Describe ways in which pollution can be managed and prevented. ESS.04.01.02.A |
| | **a.** Identify biogeochemical cycles. NRS.02.06.01.A |
| | **b.** Diagram biogeochemical cycles and explain the processes. NRS.02.06.01.B |
| | **a.** Describe properties of watersheds and identify the boundaries of local watersheds. NRS.02.06.02.A |
| | **b.** Relate the function of watersheds to natural resources. NRS.02.06.02.B |
| | **a.** Define riparian zones and riparian buffers, and explain their functions. NRS.02.06.04.A |
| | **a.** Describe sources of pollution and delineate between point and nonpoint source pollution. NRS.02.06.08.A |
| | **b.** Describe the impact of pollution on natural resources. NRS.02.06.08.B |
| **Aquatic Ecology** | **a.** Describe morphological characteristics used to identify aquatic species. NRS.01.02.04.A |
| | **a.** Identify the different kinds of streams. NRS.02.04.01.A |
| | **b.** Identify indicators of the biological health of a stream. NRS.02.04.01.B |
| | **a.** Define invasive species. NRS.02.06.07.A |
| | **a.** Define source water quality. ESS.04.03.02.A |

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| **Air Pollution Management** | **a.** Identify components and structural layers of the earth's atmosphere. ESS.03.01.01.A |
| | **b.** Differentiate the types of weather systems and weather patterns. ESS.03.01.01.B |
| | **a.** Explain how meteorological conditions influence air quality. ESS.03.01.02.A |
| | **b.** Illustrate the formation of acid precipitation and explain its impact on the environment. ESS.03.01.02.B |
| | **a.** Explain climate change and recognize signs of climate change. ESS.03.01.03.A |
| | **a.** Describe ways in which pollution can be managed and prevented. ESS.04.01.02.A |
| **Recreational Resources** | **a.** Identify natural resource characteristics desirable for recreational purposes. NRS.02.04.05.A |
| | **b.** Identify natural resource management techniques for improving recreation opportunities. NRS.02.04.05.B |
| | **a.** Describe the processes associated with ecological succession. NRS.02.06.05.A |
| | **a.** Identify recreational uses of natural resources. NRS.03.01.08.A |