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| 1. Explain the advantages and disadvantages of large dams and reservoirs.​ |

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| 2. Explain how soil erosion, associated with poor agricultural practices, can lead to a decrease in dissolved oxygen in bodies of water.​ |

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| 3. List at least five things you are willing to do to help eliminate water waste. As part of your answer explain why these things are important.​ |

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| 4. Explain what causes an oxygen sag curve and how this can impact natural populations in that ecosystem.​ |

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| 5. Discuss the major issues associated with freshwater resources in the United States.​ |

**Answer Key**

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| 1. Advantages:  -provides irrigation water  -provides drinking water  -useful for fishing and recreation  -produces cheap electricity  -reduces downstream flooding  ​  Disadvantages  -flood land under the reservoir displaces people and destroys croplands and forests  -large amounts of water are lost from the surface of the reservoir through evaporation  -deprives downstream areas of nutrient-rich silt  -risk of failure and devastating downstream floods  -disrupts migration and spawning of fish |

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| 2. Poor agricultural practices that result in soil erosion allow for increased levels of silt to enter into bodies of water. This silt can result in increasing levels of turbidity (cloudiness) in the water column. This then prevents sunlight from penetrating the depths of the water and limits photosynthesis. In this way it can result in declining levels of dissolved oxygen in the water.  ​  Answers may also address how runoff from over-fertilization causes algal blooms, which consume oxygen leading to hypoxic and anoxic waters. |

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| 3. The answers to the first part of this question will be variable, but will likely come from this list:  -Use water-saving showerheads, toilets, and faucet aerators.  -Take short showers, and shower rather than take baths.  -Repair household water leaks.  -Turn off sink faucets when brushing teeth or shaving.  -Wash only full loads, or use lowest possible load setting for small loads.  -Use gray water for yard and plant watering.  -Wash cars using a bucket of soapy water and spray from hose only to rinse.  -Only use commercial carwashes that recycle water.  -Replace lawn with native plants that use little water.  -Water lawns only in early a.m. or evening.  -Use drip irrigation and mulch for gardens and flowerbeds.  ​  These actions are all important because in the United States about half of water that is drawn from surface or groundwater for our use is wasted. |

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| 4. If there are high quantities of organic materials added into a body of water, these materials will be broken down by bacteria. This process can deplete dissolved oxygen in a region of a river, creating an oxygen sag curve. This can reduce or eliminate populations of organisms with high oxygen requirements. The depletion of oxygen could also be caused by the addition of thermal pollution.​ |

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| 5. Answers will vary somewhat, but will contain some of the following information:  ​  The United States has more than enough renewable freshwater to meet its needs, however it is unevenly distributed and much of it is contaminated by agricultural and industrial practices. The eastern states usually have ample precipitation, whereas many western and southwestern states have little.  ​  Water tables in many water-short areas, especially in the dry western states, are dropping quickly as farmers and rapidly growing urban areas deplete many aquifers faster than they can be recharged. The USGS and the U.S. Department of the Interior projected that areas of at least 36 states are likely to face freshwater shortages by 2025 because of a combination of drought, rising temperatures, population growth, urban sprawl, and increased per capita water use. |