

**AAE / Econ / Env. St. 343
Environmental Economics**

**Homework #3
Due in class on Tuesday, October 14, 2008**

Please download the following outside article posted on the course website:
Mitchell, J.G. 2001. "Oil field or sanctuary?" *National Geographic*, 200 (2): 46-55.

Short answers please.

1. What are the opportunity costs of drilling for oil in the Alaska National Wildlife Refuge (ANWR)? What are the opportunity costs of preserving ANWR as wilderness?

In class, we discussed the range of benefits provided by the environment (see, also, section 3.2 of your textbook). Different terms to describe these benefits are *indirect benefits*, *direct benefits*, *use values*, *non-use values*, *existence values*, *option values*, *bequest values*, *market goods*, and *non-market goods*.

2. Consider the scenario in which ANWR is developed for oil drilling. Which indirect benefits would be increased? Which direct benefits would likely be reduced? Explain your answers.

3. For the direct benefits that are diminished, categorize these benefits using the remaining terms listed above (that is, terms other than indirect and direct benefits), noting that *more than one* term may apply. Justify your answers.

Suppose a contingent valuation method (CVM) survey is sent to a large sample of U.S. households to quantify the economic benefits of protecting ANWR as wilderness.

4. Using utility curves, graphically depict Willingness-to-Pay (WTP) and Willingness-to-Accept (WTAC) measures of economic value derived from this survey.

5. Discuss the property rights to preserving ANWR as wilderness that are implied by the WTP and WTAC measures from question #4.

Now suppose three versions of the survey are mailed out; each to one-third of the households in the sample. The first version asks willingness to pay to protect ANWR as wilderness. The second version asks willingness to pay to protect forestland in Montana as wilderness. The third version asks willingness to pay to protect *both* ANWR and the Montana forestland as wilderness. Suppose that the results obtained with each version of the survey are the same. For example, the average willingness to pay is the same for each survey version.

6. In class, we discussed a number of challenges that arise with designing CVM surveys. What potential problem with CVM do the results described above illustrate? Explain your answer.