

# Cumulative Environmental Effects of Oil and Gas on Alaska's North Slope

**Comprehension Questions (for use with *Cumulative Environmental Effects of Oil and Gas on Alaska's North Slope* report brief):**

1. How does this study by the National Academies committee differ from previous research on the effects of oil and gas activities on Alaska's North Slope?
2. What are some of the special ways that the petroleum industry has had to adapt its infrastructure to the conditions in the North Slope?
3. What are some of the damaging effects that have accumulated on the North Slope because of roads and off-road activities?
4. How have drilling activities in the North Slope indirectly affected the numbers of some bird species in the area, such as snow geese and eiders?



# Answer Key

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1. How does this study by the National Academies committee differ from previous research on the effects of oil and gas activities on Alaska's North Slope? (Contrast) [*anno: Possible response: Previous studies examined actual and potential effects, but none made an integrated, comprehensive analysis of the cumulative effects on the North Slope. This study examined a collection of actions taking place over a long period of time in the entire area.*]
2. What are some of the special ways that the petroleum industry has had to adapt its infrastructure to the conditions in the North Slope? (Synthesize) [*anno: Possible response: The petroleum industry has had to elevate pipelines and roads instead of bury them. This minimizes disruption of the ground surface over the permafrost. North Slope conditions allow the industry to use ice roads and pads which are friendly to that environment.*]
3. What are some of the damaging effects that have accumulated on the North Slope because of roads and off-road activities? (Identify) [*annos: Possible responses: Roads have caused effects from dust, roadside flooding and snow accumulation, and thawing of permafrost. They also have affected animal behaviors and habitats and brought in more hunters and tourists to the region. Off-road travel has had an effect on surface erosion, water flow, and vegetation on the tundra.*]
4. How have drilling activities in the North Slope indirectly affected the numbers of some bird species in the area, such as snow geese and eiders? (Analyze) [*anno: Possible response: Garbage and human food brought more predators, such as brown bears and arctic foxes, that preyed on the eggs, nestlings, and fledglings of these bird species.*]

## Comprehension Questions Answer Key (for use with *Cumulative Environmental Effects of Oil and Gas on Alaska's North Slope* report brief), continued:

5. Why do you think recent warming trends have been particularly rapid in the North Slope over the past several decades? Use your knowledge of human activities that contribute to climate changes to help you answer the question. (Apply) *[annos: Possible response: Global concentrations of greenhouse gases have increased in recent decades, and the warming produced by greenhouse gases is most pronounced in the higher latitudes.]*
6. What are the differences between the effect of oil drilling on the subsistence activities of the Inupiat Eskimos and the effect on the activities of the Gwich'in Indians? (Contrast) *[annos: Possible responses: Both the Inupiat and Gwich'in have cultural and nutritional relationships with animals that are threatened by oil drilling activities. However, the Inupiat rely mainly on marine mammals, especially bowhead whales, which have already been affected by offshore oil drilling and seismic activity. This activity has caused the whales and their Inupiat hunters to travel farther, but oil companies have reached agreements with the Inupiat to reduce the effects on the whales. Gwich'in Indians rely mainly on caribou, whose calving grounds could be affected by drilling activities. Although so far, oil industry activities have not directly affected the caribou herd the Gwich'in rely on the most, development of any areas used by the herd could be a threat.]*
7. Consider the social, cultural, and aesthetic effects of oil drilling on the North Slope. Do you think the benefits to the local communities outweigh the drawbacks? Explain your answer. (Evaluate) *[anno: Possible response: There are advantages and disadvantages that the students should be able to articulate.]*
8. In general, what situation do North Slope communities face in the future, both in terms of their cultures and the landscape? (Generalize) *[anno: Possible response: The situation North Slope communities face in the future is that the oil companies will pull out and leave the local people with reduced financial resources and a landscape marred by an abandoned infrastructure. They also face the same situation in new areas that have yet to be developed by the oil companies.]*
9. In the last section of the report, the committee convened by the National Academies makes some recommendations about the cumulative effects of oil drilling on the North Slope. The report suggests that federal and local governments should conduct more studies into the effects and come up with a comprehensive plan for future activities. From these recommendations, what can you infer is the committee's opinion about the way governments are currently handling drilling on the North Slope? (Infer) *[anno: Possible response: The committee thinks that federal and local governments have not adequately planned activities including the research needed to understand and manage the effects of drilling on the North Slope.]*