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## **Martha Raynolds**

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Ms. Nicole Hayes

cc. Acting State Director Karen Mouritsen

Arctic NWR Coastal Plain Oil and Gas Leasing Program EIS

Bureau of Land Management

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10 May 2018

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Dear Ms. Hayes and Ms. Mouritsen,

I am writing to comment on the Notice of Intent to Prepare an Environmental impact Statement for the Coastal Plain Oil and Gas Leasing Program, Alaska. I will divide my comments into several sections: 1) seismic exploration, 2) climate change, 3) wilderness values, 4) Gwich'in Nation rights. The order is not based on the importance of these topics, but rather reflects my decreasing level of expertise.

1. I have spent a number of summers on the Coastal Plain of the Arctic National Wildlife Refuge. Most of this time was spent documenting the effects of the winter seismic exploration carried out in 1982-1984. Our studies found that 15% of the trails caused permanent changes in the vegetation. This was despite regulations limiting the seismic season to times with at least 15 cm of snow and 15 cm of frozen ground. That seismic program was two dimensional, or 2-D, spaced in a 5 km x 10 km grid, resulting in vertical slices of information that geologists could use to interpret the sedimentary layers.

Current seismic exploration uses the same equipment as that used in the 1980s, so a similar level of impact (15% of trails resulting in permanent changes to vegetation) should be expected. However, there are two important differences. These days, thanks to increased computing power that can process more data, seismic exploration trail as spaced much, much closer, at 150 m x 600 m (about 20-times denser spacing), to create 3-D models. As a result, there are about 50 times the amount of trails in the same area. In addition, winter travel on tundra is restricted to when the soil is frozen and snow-covered, and due to climate change, the season for winter exploration has gotten much shorter.

The effects of these changes would create a much more intense seismic exploration effort than that carried out in the 1980s, with correspondingly more intense impacts. There will be pressure to get a bigger job done in a shorter time, a situation that leads to short-cutting around regulations designed to minimize impacts.

Based on ground studies I have participated in, the vegetation in the Prudhoe Bay area has changed dramatically since oil was found there. This is in areas away from roads, where the only impacts have been from seismic exploration. The vegetation communities have lost their lichen component (the most fragile), and have become much less diverse.

The effects of having seismic exploration cover a large portion of the Arctic National Wildlife Refuge Coastal Plain is likely to be similar - a reduction in the diversity of the plant communities, and loss of lichen cover. Caribou are well-known to depend on lichen and a diverse array of forbs for their

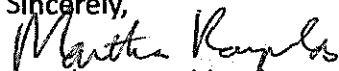
diet. This is especially important in the early spring, when forage is limited and demands on calving females is at its peak.

2. The Arctic is warming much more rapidly than the Earth as a whole. As a result of this warming, the permafrost on the Arctic National Wildlife Refuge Coastal Plain is thawing deeper every year, changing landscapes. Areas that were smooth low-centered polygons have now become pitted with thermokarst ponds. This and other changes in vegetation show how vulnerable this area is. It cannot meet its primary purpose as a part of an intact ecosystem, stretching from the Brooks Range to the Beaufort Sea if its resilience is compromised. The oil which might found by exploration, and burned if drilled and pumped, would only accelerate global warming. If we are to meet the Paris Climate Accord goal of 2.5 °C warming, we will need to keep much of the current known oil and gas reserves in the ground. We certainly do not need to explore for additional resources.

3. The aspect of the Arctic National Wildlife Refuge Coastal Plain that speaks most strongly to my soul is its intact wilderness values. I have spent many evenings soaking up its quiet, expansive landscapes. I have flown over it, marveling at the miles and miles of untrammelled wilderness. However, as soon as you cross the Canning River to the west, the land is scarred and criss-crossed with trails, old roads, scattered camps and other signs of human activities; including unnecessary, heedless, permanent damage caused by people who were only there for a very short time. The thought that this type of impact will occur across the Arctic National Wildlife Refuge Coastal Plain is truly horrifying. As Senator Ted Stevens once said, oil development in the Arctic Refuge would be like a slash across the face of the Mona Lisa (or in this case, many slashes).

4. Last, but not at all least, I stand behind the Gwich'in Nation and their people both in Alaska and in Canada, in their fight to protect their way of life. They cannot survive in their villages without the Porcupine Caribou Herd that calves on the Coastal Plain of the Arctic National Wildlife Refuge every spring. They have treaty rights that protect their life subsistence style. They and the caribou have been part of the landscape for over 10,000 years. It is unconscionable that their lifestyle would be destroyed for the profits of a few oil companies. Especially given that these activities are not in the interest of the people of the rest of the United States or the world, as described in points 1-3. As the Gwich'in have said, oil and gas activities on the Coastal Plain of the Arctic National Wildlife Refuge are a threat to their physical, spiritual, and cultural survival.

Sincerely,



Martha Reynolds, Ph.D.

Arctic plant ecologist