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Shelly Jones, Acting District Manager  
Arctic Field Office  
Bureau of Land Management  
222 University Ave.  
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Sent to: blm\_ak\_coastal\_plain\_seismic\_ea@blm.gov

Dear Ms Jones,

I find it inexplicable why and how BLM is rushing forward with a review of the 3D seismic permit application for the entire Coastal Plain “1002 area” of the Arctic National Wildlife Refuge proposed by SAE and partners Arctic Slope Regional Corporation and Kaktovik Inupiat Corporation.

BLM is already rushing the Coastal Plain oil and gas leasing EIS and now spins even faster by jumping ahead by preparing a separate EA for this 3-D seismic exploration. Such pre-leasing seismic will provide private information to corporations to advance their private interests for the broader program of oil and gas leasing and development in the refuge as authorized by the Tax Bill of 2017. BLM should reject the SAE application outright.

BLM has made public statements that it believes seismic exploration in the Arctic Refuge will not be significant and therefore an EIS is not necessary. This ungrounded statement belies common sense for many reasons especially that the Coastal Plain of the Arctic Refuge was protected for the purposes of preserving wilderness, wildlife, and recreation for more than 50 years. The Coastal Plain was recommended for Wilderness designation at the conclusion of a long public conservation plan and EIS process in 2015. The abrupt reversal of the national commitment for protection by the Tax Act with nary a hearing on its provisions in December 2017 requires true public involvement and consideration of the full range of impacts, not a slippery and opaque process like oil seeping on water.

BLM must not separate this NEPA review and potentially allow destructive activities like SAE’s proposal without first preparing an EIS that examines the full range of potential impacts from all phases of oil and gas activities. An EIS would need, among other things, to examine how the potential impacts of seismic exploration would combine with those of all other reasonably foreseeable oil and gas related activities in the Refuge—including leasing, exploration, development, production, transportation, and dismantling and restoration—in a single EIS to ensure that BLM will protect the resources of the Arctic Refuge.

In the Arctic Refuge Coastal Plain, significant, long-term impacts to vegetation, including changes in plant species diversity, and permafrost melt lasting decades were documented by the rigorous monitoring studies for the 2D seismic surveys in 1984-85 for the 1002h studies as summarized by the National Research Council (2003)<sup>1</sup> and subsequent scientific studies.

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<sup>1</sup> NRC 2003, Cumulative Environmental Effects of Oil and Gas Development on Alaska’s North Slope.

As a wildlife biologist and seismic monitor as part of the 1002 studies, I witnessed during winter and summer the seismic trails and “cattrain” camp and fuel hauling moves that pressed and rutted into the tundra. I measured snow at -50F in blowing snow and dark and observed and participated in the operational challenges out there and saw how next to impossible it is to avoid sensitive habitats when the program comprises straight lines going east to west across the dozens of rivers flowing from the foothills of the Brooks Range northward to the shorelines of the Beaufort Sea in a complex hydrology. If the mobile camps “cattrains” were routed around windswept Dryas River terraces, riparian willows, or creek and river bluffs by going through deep snow along rivers, they often got stuck. Moreover, the deep snowbanks of rivers, lakes, and the coastline are critical denning habitat for polar bears (despite technology for finding bear dens, not all bear dens will be found). The proposed 3D seismic grid will be far more intensive with the tight grid of 660’ wide sources lines on this intricate landscape.

Based on my experience, I am concerned about the impacts on overwintering fish and their habitats including lakes, streams, lagoons, rivers along with associated icings, springs, taliks, groundwater flows above or through permafrost and other hydrology; unique areas like the Sadlerochit Springs area; proposed activities on all fish and wildlife and their habitats, including migratory, resident, and overwintering species, and direct effects on those animals which may be present on or in the vicinity of the Coastal Plain during the timeframe of the proposed activities, including impacts that may result from damage to the Coastal Plain’s vegetation and hydrological systems. Major impacts could result to migratory birds, caribou and other wildlife, subsistence, recreation and the environment during the time period outside the window described for the actual seismic surveys (not addressed by SAE). This includes aircraft take-off and landings and overflights and ground work for associated activities such as trash removal “stick-picking,” spill response / cleanup, scientific baseline studies and monitoring, inspections, restoration and rehabilitation activities. BLM also should consider impacts to subsistence resources and users, human health, environmental justice, cultural resources, and archeological sites.

I am concerned about the impacts on existing and long-term scientific research including natural (undisturbed) study plots, inventory and monitoring; the impacts to recreation including long-term visual impacts from seismic lines; how rapidly increasing climate change influences seismic operations in the Coastal Plain area such as tundra travel period, snow cover, and heavy vehicle movements across tundra, rivers, and sea ice and the potential significant adverse impacts to fish, wildlife, and the environment, given that the last environmental impact analysis of 2D seismic in this region was done over 30 years ago.

At the onset of the surveys in 1984, inadequate snow cover was documented, but the surveys proceeded nonetheless. At this time, it is important to evaluate assumptions about the adequacy of protective snow. I offer some important considerations: What standards for determining adequate protective snow cover, and studies that document their effectiveness in preventing disturbance to vegetation, soils and permafrost?

- With criteria for opening and closing dates and standards for adequate protective snow cover in NPRA and State lands, what has been the outcome? What long-term studies show how well the standards work in protecting tundra vegetation, permafrost, river, lake and coastal banks? What real-time field monitoring has been done? When operating under the standards, there will always be some impact, was it acceptable or not?
- While there have been improvements in many seismic vehicle types and treads (e.g. from metal to rubber tracks), what tests have been done on vehicle and snow interactions, and for different slopes of terrain?

- In the Coastal Plain of the refuge there is generally thin snow cover-- this is not terrain like Prudhoe Bay or the NPRA - and it is very heterogeneous in this narrow band immediately North of the Brooks Range to the Beaufort Sea. The type of snow, density and hardness matters as much as the amount of snow. A stipulation based solely on snow depth not adequate, given that there can be significant differences in quality of protective cover given amount of air and ice.
- How will you determine if there is adequate protective snow cover? What is the protocol for sampling?
- How will the locations where snow measurements are taken be scientifically determined? What is the starting point, how many measurements, what is a sufficient number to get a reliable mean? What geographic unit of the Coastal Plain does each set of measurements cover?
- Depth criteria alone is insufficient, despite being convenient. Whether the snow is new or old affects the density which is a different factor for protection of the tundra. What is the mass of snow that will be between the tundra and the vehicles as it gets packed down? While density is easy to measure, there are not studies of depth and density.

In conclusion, the proposed SAE seismic permit should be rejected because the impacts from the proposed activities will be significant and the grid of heavy vehicles trails that will scar the tundra for my life time will forever degrade the integrity of this remarkable naturally intact ecosystem.

Sincerely,

Pamela A. Miller