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Program Manager/Pebble DEIS
US Army Corps of Engineers
645 G St.
Suite 100-921
Anchorage, AK 99501
drafteis@comments.pebbleprojecteis.com

Re: Comments from International Association for Bear Research and Management on Pebble Project DEIS

Dear Program Manager,

The International Association for Bear Research and Management (https://www.bearbiology.org) is the professional organization of bear researchers and managers involved with the world's 8 bear species. We have 500+ members from all continents with bears, publish the peer-reviewed journal *Ursus* and *International Bear News*, fund research and conservation projects, and hold scientific conferences worldwide (including twice in Alaska). Two components of our mission statement are to "Support sound stewardship of the world's bears through scientifically-based population and habitat management" and, "Provide professional counsel and advice on issues of natural resource policy related to bear management and conservation." **We offer the following comments on the Draft Environmental Impact Statement (DEIS) for the Pebble Project in Alaska in support of our position that the "No-Action" alternative be adopted.**

Our overall scientific assessment is that the proposed project will likely have severe negative impacts on important natural resources, including native salmon (*Oncorhynchus* spp.) water quality, many terrestrial wildlife species, and the long-term ecological health of the impacted area. For example, salmon anchor the productivity of this region and any impact to salmon will have cascading effects on a suite of plants, insects, birds, mammals, and people (Terborgh and Estes (eds.) 2010, Estes et al. 2011, Ripple et al. 2014). Fisheries scientists and the Alaska fishing industry are justifiably concerned about potential impacts of the Pebble Mine on the Bristol Bay salmon fishery, the largest and most productive wild salmon fishery in the world. Some of the habitat modifications and their effects are described as long-term or permanent. The DEIS states under "3.1.2.3 Subsistence" and "Action Alternatives and Variants", Page 31 (35 in the pdf): "Impacts to fish and wildlife would not be expected to impact harvest levels, because there would be no decrease in resources and abundance." We disagree. For an open-pit mine project of this scale, there is ample scientific evidence that it can decrease the abundance of both salmon and bears in the region (e.g., Saunders and Sprague 1967, Dube et al. 2005, Boulanger and Stenhouse 2014). Such population impacts have been documented for a wide variety of ecosystems and environmental contexts. For example, a study of mined lands in Australia showed that density and richness of mammalian species on reclaimed mines were generally lower than in neighboring, undisturbed areas (Cristescu 2012).

Our specific comments focus on impacts to brown bears (*Ursus arctos*) given that the proposed mine, transport corridors, ferry terminals, and port occur in an area of international significance for this species. This significance is based on high brown bear density, ecological significance, relatively undisturbed habitat, and the presence of the best-known, high-density brown bear viewing areas in the world. The proposed mine would drastically disturb sites with a complex array of features including active and inactive pits, haul roads used by heavy machinery, processing plant(s), offices, and tailings ponds (Cristescu et al. 2016). The primary impacts of the project to brown bears will likely be through ecosystem effects, specifically 1) direct habitat loss and habitat and genetic fragmentation due to the size and scope of the mine development and associated infrastructure (e.g., Chruszcz et al. 2003, Mace 2004, Apps, et al. 2009, Proctor et al. 2012, Cristescu et al. 2016); 2) functional habitat loss due to bears avoiding the noise, lights, and people associated with mine activities (e.g., construction, operations) and infrastructure (roads, vehicles, ports, employee housing, etc.) (e.g., Wakkinen and Kasworm 1997, Cristescu et al. 2016); and 3) most importantly, impacts to regional salmon populations and subsequent impacts to salmon-dependent ecosystems and the high densities of bears supported by them (Hilderbrand et al. 1999, 2004, 2018). The DEIS coverage of these impacts is inadequate. Furthermore, the DEIS does not address the impacts of unplanned disasters such as spilling from a tailings pond or a major spill at transfer sites. These have the potential to have significant impacts on bears, salmon, and other wildlife.

Potential ecological impacts of mining include loss of forest cover, habitat fragmentation, changes in topographic complexity and associated alteration of soil, carbon sequestration potential and biodiversity (Wickham et al. 2013). Although actual disturbance by the mine would occupy a smaller geographic range, influences of the mining will occur at the landscape-level and broad geographic scales (Bridge 2004). Large portions of the project region support high densities of brown bears, some of which are among the most protected and globally known populations of brown bears in the world. Home ranges of brown bears in this area are hundreds of square kilometers and bears move great distances to concentrated food sources such as salmon runs (e.g., Schwartz et al. 2003, Mangipane et al. 2017b). The affected area considered in the DEIS is small and does not account for the large spatial requirements of bears. The analysis area should be expanded to a scale appropriate to bears and the ecosystem processes that support them.

Because salmon underpin much of the rich marine and terrestrial ecosystems of the area, the impacts of the project on the local fisheries are critically important. Any activity that reduces the availability of or access to salmon by wildlife will adversely affect wildlife populations and, indirectly, ecosystem-level processes (Hilderbrand et al. 1999). It is likely the area will experience a decline in salmon breeding and rearing habitat that will result in the degradation of the bear population (Hilderbrand et al. 1999, 2018; Mangipane et al. 2017a, 2018). The drainage where the proposed mine is sited is large. Any impacts to water quality and fish could ultimately affect bears throughout that drainage and in adjacent areas. This includes neighboring Lake Clark National Park & Preserve and elsewhere on the Alaska Peninsula and the Bristol Bay drainage where bears live part of the year and where salmon runs attract bears (Mowat and Heard 2006, Mangipane et al. 2017a, b). Also potentially affected will be Katmai National Park and Preserve, home to the highest documented annual brown bear density in world (550/1000 km^2; Miller et al. 1997). Katmai is <16 km from the proposed Port Access Route from Iliamna Lake to Amakdedori Port and <24 km from the Port itself. The DEIS makes virtually no effort to acknowledge the global uniqueness of the project area for brown bears. Furthermore, it makes little effort to evaluate the impacts of the proposed project on brown bears or on the areas that the people of Alaska and the nation have chosen to protect in perpetuity specifically for their pristine and unique ecology. This is a disservice to the DEIS process, and the significance of the natural resources put at risk by the proposed mine.

Under the preferred Alternative 1, the access road would be within 100 m of the McNeil River State Game Sanctuary and Refuge (MRSGSR) boundary and the proposed port at Amakdedori would be within 3.2 km of the Refuge boundary. The MRSGSR is the world's foremost brown bear viewing area. The highest seasonal population of brown bears (176/km^2) in the world was documented at McNeil Falls (Miller et al. 1997). This unique opportunity for viewing is supported by the high availability of multiple runs of salmon in the region of the proposed project. This area is potentially vulnerable to functional habitat loss and industrial shipping accidents or spills. The noise, artificial light, vehicle traffic, and human presence associated with the port and road can result in displacement of bears, leading to lower reproductive rates (Wakkinen and Kasworm 1997, Boulanger et al. 2013, Cristescu et al. 2016), elevated mortality risk from vehicle collisions, management kills when bears become food conditioned, and illegal mortality due to greater access to formerly undisturbed habitat (Schwartz et al. 2005, Nielsen et al. 2004, Benn and Herrero 2002). The DEIS contains no analysis of these types of effects on bears or the MRSGSR.

The project has potential to impact human viewing of brown bears in McNeil River Sanctuary and Refuge as well as at Funnel and Moraine Creeks in Katmai National Park and Preserve, possibly even at Brooks Camp in Katmai. Large numbers of wild bears fishing for salmon can be viewed at these sites by tourists attracted from around the world. McNeil River and Brooks Camp are the two most important bear viewing areas in the world, are of substantial international significance, and are major icons of the Alaska tourist industry. The relationship of Alaska tourism with salmon and brown bears and their contribution cannot be overstated (Clayton and Mendelsohn 1993). Brown bear viewing is more highly valued than viewing of other wildlife species in Alaska (Miller et al. 1998) and this value should be considered in a credible and complete DEIS. These sites are also important for scientific study. The impacts of the proposed project on viewing and scientific studies at these sites is completely missing from the DEIS. The project could have serious consequences to these activities but also to the long-term sustainability of this complex, interconnected, and important ecosystem. Proper design, planning, and operation of facilities and activities are essential to prevent bear-human conflicts. Without this, it is highly likely that some bears will become conditioned to human foods obtained at the industrial sites, ports, and access roads. Bears conditioned to obtain human food and garbage are more prone to engage in conflict behavior, often resulting in the death of the bear (e.g., Benn and Herrero 2002, Gibeau, et al. 2002, Schwartz et al. 2010). Food conditioning has the potential to affect bear behavior at the bear viewing areas at McNeil River and Brooks Camp where great efforts by managers of both sites have prevented such food-conditioning and risks. Measures to prevent this, such as bear proof garbage and food storage facilities, garbage management, and rules for on-site workers, are not addressed in the DEIS.

Section 3.23, Wildlife Values, states: "Because the area has a high density of bears, some individuals would experience disturbance, but impacts would not be expected to result in population-level impacts." The adverse impacts of roads and industrial development on brown bears are well established in the scientific literature and <u>can be at the population level</u> (e.g., Boulanger and Stenhouse 2014; Can et al. 2014; Proctor et al. 2018, 2019). A principal factor in reducing grizzly bear populations in North America has been the facilitation of human access into grizzly bear habitat by roads built for resource extraction (Boulanger and Stenhouse 2014). Elevated and unstainable human-caused mortality is linked to the creation of access into prime bear range (Benn and Herrero 2002, Schwartz et al. 2005, Nielsen et al. 2004, Boulanger et al. 2013). Roads have the potential to act as a population sink if high-quality habitats occur along the road and bring bears into proximity to traffic and human activity (Waller and Servheen 2005). Roads have also affected bear movements and distribution (Graham et al. 2002,2010; Roever et al. 2008), changes in bear behavior relative to roads (Northrup et al. 2012), and changes in body condition and survival rates relative to roads (Boulanger et al. 2013), and have caused habitat and genetic fragmentation of bear populations (Chruszcz et al. 2003; Waller and Servheen 2005; Kendall et al. 2009, 2016; Proctor et al. 2005, 2012). Bear avoidance of noise from industrial activities and roads (Nachtigall et al. 2007, Owen and Bowles 2011, Owen et al. 2016) and the presence of humans results in displacement and functional habitat loss (Schwartz et al. 2005). Bear dens were confirmed within 1 km of the access road all along its length in 2018 (section 3.23_Wildlife values). Noise and other disturbance associated with roads and general mining activities have the potential to disturb denning bears and can cause den abandonment resulting in increased energy expenditure and increased cub mortality (Linnell et al. 1996, Swenson et al. 1997). Artificial light from mine activities operating continuously 24 hours/day for 365 days/year can also displace bears and can result in nocturnal phototaxic behavior in sub-yearling salmonids with the potential for increasing their predation risk (Tabor et al. 2017). A landfill dump is planned as part of this project. Such dumps frequently result in food conditioned and habituated bears (Herrero and Fleck 1990, Schwartz et al. 2010). Although only a very small percentage of food-conditioned, habituated bears attack humans, these bears are often responsible for a disproportionate number of human-bear conflicts (Haroldson et al. 2008). Proper planning and best management practices for roads and developed areas are essential for minimizing these impacts. This component, however, is absent from the DEIS.

In addition to considering the scientific evidence we present here, we urge that in the final assessment questions about the specific impacts of the proposed Pebble Project on brown bears are thoroughly addressed with rigorous, multi-year studies. Scientific studies using well-established techniques are needed to answer these questions – an approach used in the past to address mining impacts on wildlife, including bears in Alaska. For example, multi-year studies were conducted as part of the DEIS process to assess proposed mine development in northwestern Alaska (Ballard et al. 1993) and for the proposed Susitna Hydroelectric Project in south-central Alaska.

Some questions about the proposed Pebble Project that these studies must address are:

1. bear densities, daily and seasonal movements, and long-term sustainability within the potential zone of influence of industrial sites and the road corridor, not only from the immediate effects of the development, but also from the downstream effects of any impacts on salmon,
2. impacts of the road corridor and industrial sites/ports on bear movements to and from important salmon fishing sites and bear viewing areas at McNeil River Sanctuary and Refuge and Katmai and Lake Clark National Parks and Preserves,
3. a cumulative effects analysis that includes the interactions of stressors, including climate change, to bears and other wildlife including salmon, and
4. predicted impacts of a spill from tailings ponds or vessels on the aquatic ecosystems, particularly salmon, and consequent impacts on bear populations.

The potential impacts we present here are supported by scientific evidence but are not addressed or are incompletely covered in the DEIS. Therefore, the International Association for Bear Research and Management recommends adoption of the "No Action" alternative because the DEIS is inadequate on these issues.

Thank you for your consideration of these comments.

Signed,

Andreas Zedrosser
President, International Association for Bear Research and Management

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