

**NPS Comments – Pebble Project Preliminary Draft EIS, Section 4.9 - Subsistence**

<b>Agency</b>	<b>Comment No.</b>	<b>Section, Paragraph, and Page #</b>	<b>Text where comment bubble was placed in Section 4.9</b>	<b>Cooperating Agency Comment (and Purpose of Comment)</b>	<b>Response</b>
NPS	1	4.9 Introduction	Changes in resource availability – construction and operation of project facilities may impact fish and wildlife habitat, and decrease or displace fish, wildlife, and vegetative resources used for subsistence.	Recommend replacing with “eliminate”	The conclusions in Sections 4.23, Wildlife and 4.24, Fish Values do not support this assertion.
NPS	2	4.9.2.1	During the 4-year construction phase , project activities would, in varying degrees, affect the availability and abundance of traditional and subsistence resources through habitat loss; mortality; behavioral disturbance and displacement	Workers and experts brought in over the life of the mine would be eligible after one year to subsistence rights available to Alaska citizens.	This would only be the case if employees became Alaska residents. The number of people expected to relocate to the state would be low.
NPS	3	4.9.2.1	the North and South Fork Koktuli Rivers directly affected by mine facilities, but given the limited number of fish observed in that area and	No scientifically defensible population analysis was done for the impact area. No quantitative estimate was attempted to determine how many salmon actually rear in the impact zone. Therefore, this is a subjective statement that gives the reader the unsubstantiated and biased impression that there are very few fish in the area. Recommend removing.	Statement is supported by the conclusions in Section 4.24, Fish Values.
NPS	4	4.9.2.1	in that area and the quality of fish habitat,	This statement is also not supported by quantifiable scientifically defensible information and should also be removed.	Statement is supported by the conclusions in Section 4.24, Fish Values.
NPS	5	4.9.2.1	that area and the quality of fish habitat, impacts would	See critique of Pebble EBD Escapement Index counts Woody 2012 provided.	This section draws conclusions based on Section 4.24, Fish Values, which incorporated the suggested reference.
NPS	6	4.9.2.1	and the quality of fish habitat, impacts would not be noticeable downstream from the affected	There is no scientifically defensible grounds for this statement. If rearing habitat for Chinook and Coho salmon are eliminated as well as habitat for	Statement is supported by the conclusions in Section 4.24, Fish Values.

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			channels	Dolly Varden, Rainbow Trout, other important subsistence fish species as well as the fish they feed on, then over time there may well be downstream effects.	
NPS	7	4.9.2.1	downstream from the affected channels	The assumption that impacts to water will not impact water downstream does not appear to be supported here and does not seem realistic.	Statement is supported by the conclusions in Section 4.24, Fish Values.
NPS	8	4.9.2.1	Similarly, there would be displacement of any moose, caribou, small land mammal, and upland birds that use the proposed mine site, but this would represent a small percentage of available habitat.	While the mine footprint may be relatively small, impacts likely will greatly exceed that area in regards to the disturbance which will displace wildlife. Displacement can be a greater impact than population decreases given associated travel costs and time commitments subsistence users experience.	Statement is supported by the conclusions in Section 4.23, Wildlife.
NPS	9	4.9.2.1	more productive, habitats are available.	This analysis should estimate probabilities for failure of water treatment systems every x years etc., or water containment systems every x years. Red Dog mine has had regular fish kills that impact fish up to 45 miles down river; there are likely going to be similar scenarios in this case.	An EIS is required to analyze impacts under normal operating conditions. For impacts related to spill scenarios, see Section 4.27, Spill Risk.
NPS	10	4.9.2.1	However, the facility footprint would be small with regard to the total habitat available, and culverts	See comments and provided citations regarding impacts of industrial roads on fish populations in sec. 4.24. Fish Values Woody.	This section draws conclusions based on Section 4.24, Fish Values.
NPS	11	4.9.2.1	would be required on the access road to allow for fish passage.	All culverts need to be constructed to ensure future fish passage regardless of whether anadromous fish are currently present.	Bridge and culvert design, will be reviewed and verified by ADF&G during the permitting process.
NPS	12	4.9.2.1	There would be some site specific	Road construction has impacted	This section draws conclusions

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			habitat fragmentation from project facilities, causing behavioral disturbance to terrestrial wildlife and birds and localized changes in distribution.	migration of caribou in association with the Red Dog Mine road. These could have population level impacts as they delay migration which effectively alters available habitat. (see file:///C:/Users/BMerrell/Downloads/Effects_of_roads_on_individual_caribou_movements_d.pdf)	based on Section 4.23, Wildlife.
NPS	13	4.9.2.1	occur within 35 feet	Please provide citation.	Section refers the reader to Section 4.26, Vegetation.
NPS	14	4.9.2.1	Some localized impacts of dust settlement in stream channels where fishing occurs may be noticeable	<p>Normally, vegetation impacts from crustal element road dust is expected 50 meters from the road bed. This is the standard used on the Denali Park Road and Dalton Highway.</p> <p>However, if fugitive dust with heavy metals is present, the area of impact is considerably greater, and could range up to 4,000 meters. Please consider the following sources:</p> <p>Neitlich, P. N., et al. 2017. Trends in spatial patterns of heavy metal deposition on national park service lands along the Red Dog Mine haul road, Alaska, 2001–2006  <a href="https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0177936">https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0177936</a></p> <p>Exponent. 2007a. DMTS Fugitive Dust Risk Assessment Volume I – Report. November. Prepared for Teck Cominco Alaska Incorporated, 3105 Lakeshore Drive, Building A, Suite 101, Anchorage, AK 99517. Exponent, 15375 SE 30th Place, Suite 250, Bellevue, WA 98007. November 2007.  <a href="https://dec.alaska.gov/spar/csp/docs/re">https://dec.alaska.gov/spar/csp/docs/re</a></p>	This section draws conclusions based on Section 4.26, Vegetation.

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				ddog/rafinal/1_dmts_ra_text.pdf <a href="https://dec.alaska.gov/spar/csp/sites/red-dog/bibliography">https://dec.alaska.gov/spar/csp/sites/red-dog/bibliography</a> Exponent. 2007b. DMTS Fugitive Dust Risk Assessment Volume II – Appendices. Prepared for Teck Cominco Alaska Incorporated, 3105 Lakeshore Drive, Building A, Suite 101, Anchorage, AK 99517. Exponent, 15375 SE 30th Place, Suite 250, Bellevue, WA 98007. November 2007. Please see also three provided sources on fugitive dust.	
NPS	15	4.9.2.1	but implementation of dust suppression and enforcement of slow speed limits at all stream crossings would minimize dust-related impacts to aquatic ecosystems.	Precipitation events will be a primary factor introducing sediment to watersheds and stream crossings from roads, and the >8,000 acres of disturbed area at mine site. If reactive rock is used in road construction this can also introduce heavy metals and acid drainage into watersheds and impact subsistence species and aquatic life.	This section draws conclusions based on Section 4.26, Vegetation.
NPS	16	4.9.2.1	Subsistence users also may avoid harvesting waterfowl because of concerns about birds becoming contaminated from landing on and using open water at mine site facilities.	How will waterfowl and other subsistence species be discouraged from using the tailings reservoir? Will it be fenced? Will the communities that use this region be educated regarding toxic areas?	Measures would be taken in accordance with a Wildlife Management Plan, as discussed in Section 4.23, Wildlife.
NPS	17	4.9.2.1	as the potential impact on fish is small.	This section should acknowledge assumption of best case scenario conditions e.g. tailings dam does not fail; pollution collection, containment, and treatment systems work perfectly throughout Alaska's harsh floods and winters.	An EIS is required to analyze impacts under normal operating conditions. For impacts related to spill scenarios, see Section 4.27, Spill Risk.

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NPS	18	4.9.2.1	In contrast, communities in the Nushagak River drainage and in the Kvichak River drainage below Igiugig would experience little to no impact on resource availability as the potential impact on fish is small.	Please provide evidence supporting limited impact on fish. Potential downstream impacts from changes in streamflow would affect populations supporting communities in both drainages. Please refer to NPS comments on Subsistence in the draft Fish Resource section.	This section draws conclusions based on Section 4.24, Fish Values.
NPS	19	4.9.2.1	During construction and operations, the effects of project activities on resource availability would be primarily localized in the vicinity of project facilities and activities	Workers and experts brought in over the life of the mine will be eligible after one year to subsistence and hunting rights available to Alaska citizens therefore potentially competing for the limited big game resources in the area.	This would only be the case if employees became Alaska residents. The number of people expected to relocate to the state would be low.
NPS	20	4.9.2.1	five communities, it provides relatively poor fish and wildlife	Review of the Pebble EBD indicates no scientifically defensible estimates were made of the actual number and species of fish that will be eliminated by this proposed project footprint. The Chinook and Coho Salmon rearing habitat within the proposed Tailings facility is good habitat based on survey parameters (ADFG AWC 2018). Small fish find refuge from larger fish predators in these small headwaters, and is unclear why the habitat is suggested to be "poor" here. These same upper headwaters are the nursery for Chinook and Coho Salmon.	This section draws conclusions based on Sections 4.23, Wildlife, and 4.24, Fish Values.
	21	4.9.2.1	These adaptive approaches would likely sustain harvest levels for affected communities, but may increase the expenses and time needed to harvest subsistence resources.	In section 3.9, it is already acknowledged that individuals have needed to adapt to changing distributions of subsistence resources which have had negative consequences. Knowing that significant disturbance and development will occur in some core use areas guarantees	Text edited to replace "may" with "would likely"

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				increases in time and expense to find/harvest subsistence resources. Resources are not going to be displaced closer to villages.	
NPS	22	4.9.2.1	This would introduce a new standing waterbody, and concern about contamination of waterfowl was expressed during scoping.	Due to the type of ore body Pebble is, (Seal 2018) the pit lake will likely be acidic with high concentrations of dissolved copper, zinc, and other heavy metals that are highly toxic to aquatic life and important subsistence fish species. The pit lake water has a relatively high potential to contaminate the documented aquifers and groundwater resources under the ore body (EBD) and that likely feed into the North Fork Koktuli, South Fork Koktuli and Upper Talarik Creek	This section draws conclusions based on Section 4.23, Wildlife.
NPS	23	4.9.2.1	since the pit lake is anticipated to not support habitat that is attractive to many species of waterfowl	Please provide supporting evidence of this statement (NPS recognizes that this information may be contained in the wildlife section). Water bodies of similar size and depth in the area of the proposed project should be studied to determine what waterfowl and other wildlife may use the pit lake. NPS staff have observed swans, teal, mallards, goldeneye and other species on many of the small ponds throughout that region.  Examples impacts to birds of pit lakes at copper sulfide mine are available (see <a href="https://www.fws.gov/mountain-prairie/contaminants/contaminants8.html">https://www.fws.gov/mountain-prairie/contaminants/contaminants8.html</a> ) and should be considered in this analysis.	Section includes reference to Section 4.23, Wildlife, where this topic is discussed.
NPS	24	4.9.2.1	Some project facilities, including the pipeline, power plant, limited	Mines like this generally require perpetual water treatment	This project will also have perpetual water treatment, which is why some

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			camp and storage facilities, access roads, and mine water treatment plant, would remain in use after mine closure as		facilities would remain in use after mine closure.
NPS	25	4.9.2.1	magnitude based on lack of population-level effects to fish and	Please provide quantitative fisheries data	This section draws conclusions based on Section 4.24, Fish Values.
NPS	26	4.9.2.1	Impacts from the transportation corridor and associated uses would be intermittent to prolonged over the construction period and 20 year operations period.	Will the road be removed after the mine closes? Recommend including estimated failure rate of culverts based on an unusual weather event and other causes over a 20 year period. How frequently will culverts be replaced?	Culvert design and maintenance will be reviewed and verified by ADF&G during the permitting process. The road will remain in place as long as required by the project. Afterward, it would be up to the State, landowners, and the Lake and Peninsula Borough to determine if they will own and maintain the road or require reclamation.
NPS	27	4.9.2.1	extend beyond the life of the mine but would decrease in intensity after	The tailings dam will have to be maintained into perpetuity, and the pit will need to be monitored and potentially managed. This should be reflected in this discussion.	This section draws conclusions based on Section 4.23, Wildlife, where this topic is discussed.
NPS	28	4.9.2.2	The Iliamna Lake ice-breaking ferry would disrupt winter travel over the frozen lake by creating a corridor of open water and potentially adding to travel time and increasing fuel expenditures by subsistence users.	NPS is concerned that the open water channel through winter will have a widespread effect on lake ice due to wind and wake action, including creation of a wider channel than designed and shortened shoulder season in a large portion of the lake as ice takes longer to form and break up occurs at a faster rate.	The section addresses the safety and access concerns associated with open water from the ferry and draws conclusions from Section 4.12.
NPS	29	4.9.2.1	The project could reduce or eliminate the decline because of the increase in employment opportunities and indirect effects improving education and infrastructure.	It is unclear how mine development improves education and infrastructure.	This section draws conclusions based on Section 4.3, Needs and Welfare of the People -- Socioeconomics.

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NPS	30	4.9.2.1	would have adverse impacts on resource abundance	Please see NPS comments on subsistence resources in the Fish Resources chapter.	This section draws conclusions based on Section 4.24, Fish Values.
NPS	31	4.9.2.1	However, there could still be perceived concerns regarding potential contamination and the safety of subsistence resources in communities downriver from the project area.	Upriver as well. Contamination of migratory and anadromous resources would make the extension into upriver areas	This section draws conclusions based on Section 4.24, Fish Values.
NPS	32	4.9.2.4		The EIS states that the project would result in both beneficial and adverse effects on sociocultural dimensions of subsistence. The beneficial effects are economic: Increase in base income for local residents would lead to more money to use for subsistence equipment, supplies and operating costs. An adverse effect is that project-related employment may reduce the time available for subsistence hunting. The analysis minimizes or omits an important potential adverse effect of the project: Interruptions and discontinuations in the process of transmission of Traditional Ecological Knowledge (TEK).	The section acknowledges that full-time employment makes it difficult to pass subsistence skills and knowledge to the next generation.
NPS	33	4.9.2.4		In the last paragraph of p. 4.9-8, the EIS says that increased employment of adults would impact their time spent training young people to subsistence hunt and fish, thus impacting the amount and quality of traditional knowledge passed on to younger generations. This is the only mention of traditional knowledge in this section, and there is no definition of traditional knowledge. The next sentence is	Comment acknowledged. Refer to Section 3.9 for how the subsistence section has integrated TEK into the analysis.



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				“Households and communities would have to adjust to new roles of subsistence labor, changes in sharing networks, and possible changes in harvest levels.” There is no discussion of less tangible cultural aspect of the transmission of traditional knowledge, such as cultural continuity of beliefs and values connected with subsistence, as well as the younger generation’s confidence in the older generation.	
NPS	34	4.9.2.4		The NPS (2018) defines TEK as “...the ongoing accumulation of knowledge, practice and belief about relationships between living beings in a specific ecosystem that is acquired by indigenous people over hundreds or thousands of years through direct contact with the environment, handed down through generations.” Unlike Western science, TEK is inseparable from the social and spiritual context of the culture, and represents a tradition of interpreting relationships in the natural world, passed down from one generation to the next (Kimmerer, 2002).	Comment acknowledged. Refer to Section 3.9 for how the subsistence section has integrated TEK into the analysis.