

**Nondalton Tribal Council Comments – Pebble Project Preliminary Draft EIS Section 4.16 - Surface Water Hydrology**

Agency	Comment Number	Section, Paragraph, and Page #	Relevant Text/Subject	Comment	Response
Nondalton Tribal Council	1	Section 4.16	Figures 4.16-1 to 4.16-6	The text in these figures is difficult to read and should be larger and clearer. Please revise these figures as necessary.	Figures have been revised in the DEIS.
Nondalton Tribal Council	2	Section 4.16.2, 4.16.2.1	Alternative 1- Applicants proposed Alternative, Mine Site, Construction, Water Management	Much of the information in this section is not related to the element of the environment that this section is supposed to address, and other sections do not contain enough information on surface water hydrology. Management of stormwater runoff is already discussed in the surface water quality section and other sections and does not need to be described here. The focus of this section should be on impacts and changes to baseline surface water hydrology.	The narrative about impacts to surface water hydrology has been expanded and more detail provided in the DEIS, particularly regarding impacts to baseline streamflow. This information is supported by additional reference documents developed since the date of the PDEIS (e.g., AECOM 2019b, Knight Piésold 2018k). Information regarding water management plans (including stormwater) is a key component to the understanding of the cause of impacts to surface water hydrology and should be included in the narrative. Respectfully decline removing discussion of water management.
Nondalton Tribal Council	3	Section 4.16	Streamflow Effects	This subsection provides a very limited discussion of surface water hydrology impacts during construction. Given the time construction may take, a more quantitative estimate should be provided. For example, how much of the surface water flows will be diverted, and from where to where? How much will groundwater drawdown affect surface water flows? To what extent will this cause flows in specific reaches of surface water bodies to fall below those required to support fish and other aquatic life? It is not enough to say that there will be an impact—the what, how much, where, when, and how substantial these impacts will be should be stated in this section.	The magnitude of the impact on average monthly flow in the NFK, SFK, and UTC has not been estimated for the construction period. However, estimates of the impact during operations and post-closure are discussed and it is anticipated that the magnitude of the impact during construction would be no greater than the magnitude of the impact during operations. The greatest impacts to surface water flows would occur during operations. More details regarding water management during the construction phase would be further developed in a Stormwater Pollution Prevention Plan required for mine permitting.
Nondalton Tribal Council	4	Section 4.16	Operations Water Balance	Past climate variability has been incorporated, but projected climate change has not. Please include a discussion of climate change in any section or appendix dealing with surface water and aquatic life, separately and as part of cumulative	Results of analysis and discussion of long-term climate change is provided in the DEIS: Section 3.16, Surface Water Hydrology (Chapter 3, Affected Environment), Section 4.16, Surface Water Hydrology (Chapter 4, Environmental Consequences), and Technical Appendix K3.16 of the DEIS. Framework for

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				impacts. Because the operational lifetime of the mine is expected to be more than 20 years, and the closure phase would be more than 50 years, climate change is relevant to water balance models. A model realization should be selected that incorporates climate conditions expected to occur at that time under current projections.	climate change discussion is provided in Section 3.1, Introduction to Affected Environment. This revised and additional narrative in the DEIS addresses various “realizations.”
Nondalton Tribal Council	5	Section 4.16	Water Management	<p>This section should again be more quantitative about which reaches will be affected at what times of year and how that will affect aquatic life. If the mine structures will include excess capacity for high-rainfall years or periods, then this will further decrease average flows in the streams by sequestering higher flows that would normally flow into the streams. Please discuss this added impact in the same quantitative terms.</p> <p>Please provide more detail on the way water will be discharged to optimize downstream fish and aquatic habitat, particularly since the periods when the mine will need the water, and the periods when the fish will need the water may be the same (i.e., low-rainfall periods).</p>	<p>Expanded and more detailed discussion regarding affects to specific stream reaches has been added in the DEIS and in referenced recent documents including the Technical Memo (AECOM 2019b) and Knight Piésold 2018k. References are available on the public project website. Effects on aquatic life are addressed in other sections of the DEIS (e.g., Section 4.24, Fish Values; Section 4.22, Wetlands and Other Waters/Special Aquatic Sites).</p> <p>Section 4.24, Fish Values, of the DEIS addresses water treatment plant discharge and optimization of downstream habitat.</p>
Nondalton Tribal Council	6	Section 4.16	Streamflow, Table 4.16-2	This table is a start in providing information needed; however, it appears to provide annual averages and skips all operational years but the last one. Seasonal stream flows are most important to aquatic life and are not addressed here. An annual average may mask greater changes in surface water flows that occur during seasons in which critical spawning or life stages occur.	<p>The DEIS expands the discussion of streamflow impacts and provides changes in monthly streamflow by reach. AECOM 2019b, referenced in the DEIS, presents the results of evaluation of streamflow changes likely to occur during operations and post-closure. The “Operations” last year represents end of mining in the pit when the maximum impacts on streamflow would be expected to occur.</p> <p>Effects on aquatic life are addressed in other sections of</p>

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					the DEIS (e.g., Section 4.24, Fish Values; Section 4.22, Wetlands and Other Waters/Special Aquatic Sites).
Nondalton Tribal Council	7	Section 4.16	Table 4.16-3	See comments on Table 4.16-2, above. Combined with seasonal effects and climate change, these reductions could be much lower than those shown in Table 4.16-3 at critical times of year.	AECOM 2019b addresses seasonal effects and results of analysis of long-term climate change is now provided in Section 3.16, Surface Water Hydrology (Chapter 3, Affected Environment), Section 4.16, Surface Water Hydrology (Chapter 4, Environmental Consequences), and Technical Appendix K3.16 of the DEIS.
Nondalton Tribal Council	8	Section 4.16	Table 4.16-4	Monthly estimates like those that appear in this table should be provided for the operational period.  Commentary on seasonal variations in stream flow and the effect on aquatic life should be included as part of the discussion of impacts.	Section 4.24, Fish Values, of the DEIS addresses water treatment plant discharge and optimization of downstream habitat during operations.  Seasonal variations on streamflow are described in the DEIS. Effects on aquatic life are addressed in other sections of the DEIS (e.g., Section 4.24, Fish Values; Section 4.22, Wetlands and Other Waters/Special Aquatic Sites).
Nondalton Tribal Council	9	Section 4.16.2.2	Transportation Corridor	Any assumptions being made regarding probability of occurrence, engineering design, and/or planned mitigation need to be clearly stated.  Surely culverts and placement of roads across streams will have some impact on stream hydrology.  It has been stated in other sections that access to the flood plain may be cut off for some streams. Please describe these impacts in more detail.  Bridge footings, embankments, and supports would certainly have an impact on stream hydrology. Please describe these impacts in more detail.  Culverts will be designed to handle specific	Comment noted. Please also see Chapter 5, Mitigation.  Impacts that may be a result of constructed stream crossings (e.g., culverts, bridges, pipeline crossings) are described in Section 4.16 of the DEIS in greater detail than in the PDEIS. The evaluation of impacts from construction of roads, bridges, culverts, and pipelines on surface water hydrology is based on an understanding of planned mitigation in the form of engineering design, and the planned maintenance that can significantly reduce impacts.  Regarding cut off to floodplains, this comment refers to the PDEIS Section 4.24, Fish Values, under "Transportation Corridor." The DEIS describes impacts that could occur if connectivity is not maintained; but impact evaluation considers proper application of BMPs and design and construction as per ADOT&PF and ADF&G requirements and permits. (See DEIS Section 4.22, Fish Values).

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				flow volumes but could certainly restrict stream flows during flood events. Please be more specific regarding the level of flooding that the culverts will be designed for and how events exceeding that size may be affected by the culverts.	Specific culvert design details would vary depending on stream size, hydrologic properties, fish presence, and permit requirements. The DEIS provides more detail about types of impacts to the stream that could occur if culverts are not properly sized and installed (under "Transportation Corridor").
Nondalton Tribal Council	10	Section 4.16	Surface Water Extraction	<p>This is a large amount of water to be extracted from a limited number of streams. It is insufficient to state that extraction of water would be conducted in accordance with a permit, as it is unclear to the reader that this amount of water can be extracted in a manner that would be protective of in-stream flows, fish and other aquatic life, and therefore in accordance with any permit. Please be more specific about where water is expected to be extracted from, what percentage of the streamflow that represents (considering the season), and what impacts this may have on aquatic life.</p> <p>In addition, it is stated in other sections that dust suppression may be required in perpetuity along the roads to prevent sedimentation and chemical impacts to streams at crossings. The amount and origin of the dust suppression water is not described and should be discussed here and factored into any stream flows that it may affect.</p>	<p>The permitted volume and frequency of maximum water withdrawals at specific locations would be determined by State permitting agencies to protect in-stream flows, fish, and other aquatic life. As part of permit stipulations, regular reporting to the State of water withdrawal volumes would be required. It is the State's responsibility to review water withdrawal requests. Permit stipulations would address the seasonality of water withdrawal and frequency to protect flows at certain locations, if necessary.</p> <p>The specific water uses (e.g., dust suppression) are not "linked" to specific water withdrawal sources. Records of withdrawal are maintained for each permitted source throughout the permit period and would be monitored to avoid exceeding permitted withdrawals and impact to streamflow.</p>
Nondalton Tribal Council	11	Section 4.16.2.4	Iliamna Lake. Ferry Terminals.	Is the design of the ferry known? Many ferries have powerful propellers that are directed toward the shoreline during arrival	Information currently available regarding the Iliamna Lake ferry design is provided in PLP 2018-RFI 013, PLP 2018-RFI 029, and PLP 2018- RFI 052. The reference to

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			Vessel Operations	(for braking) and departure (for accelerating). An ice-breaking ferry would be expected to have relatively powerful engines and propellers capable of disturbing the lake bottom in the vicinity of the terminals.	these RFI responses has been added to the PDEIS.  The PDEIS includes discussions about impacts to the lakebed from ferry propwash and impacts to the seabed from tug propwash.
Nondalton Tribal Council	12	Section 4.16.6	Cumulative Effects	Particularly for surface water hydrology, this subsection, as well as the entire section, needs to consider the cumulative effects of climate change with respect to the proposed project and other reasonably foreseeable future actions. The discussion in this section is not nearly quantitative enough to conclude that adverse effects on surface water bodies would be prevented outside the expanded mining area. In addition, there would certainly be adverse effects within the mining footprint under a larger build-out scenario. The discussions of cumulative impacts provided in this section are so vague as to be relatively useless. Enough information exists from the previous project proposal to do a better job with this preliminary draft environmental impact statement.	The cumulative impacts narrative in Section 4.16, Surface Water Hydrology, has been expanded for the DEIS and specifically addresses the Pebble project buildout as based on the possible scenario described in PLP 2018-RFI 062. There is no defined project for the mine buildout; therefore, no quantitative impacts analysis was conducted.  Results of analysis and discussion of long-term climate change is provided in the DEIS: Section 3.16, Surface Water Hydrology (Chapter 3, Affected Environment), Section 4.16, Surface Water Hydrology (Chapter 4, Environmental Consequences), and Technical Appendix K3.16 of the DEIS. Framework for climate change discussion is provided in Section 3.1, Introduction to Affected Environment.