Nondalton Tribal Council Comments – Pebble Project Preliminary Draft EIS Section 4.18 - Water and Sediment Quality

Agency	Comment Number	Section, Paragraph, and Page #	Relevant Text/Subject	Comment	Response
Nondalton Tribal Council	1	Section 4.18	Water and Sediment Quality - General	Given the critical nature of this section in terms of evaluating the potential impacts of the proposed Pebble Project, we have attempted to evaluate this section in the same manner that we would expect to review the draft environmental impact statement (EIS), starting with the review of the associated Appendix. Where necessary to obtain information not contained in the Appendix or main body of the EIS, we would rely on the information referenced in either the EIS or Appendix. However, in this case, the first document referenced in Appendix K4.18 Water and Sediment Quality is Knight Piésold (2018a), which is not listed in the references provided in Section 9 of the EIS and could not be located on the USACE project website. As a result, the ability of the cooperating agencies to provide a substantive and meaningful review of this section is highly compromised. Initial review of Section 4.18 found that it relies heavily on Appendix K4.18, and that Appendix K4.18 relies heavily on Knight Piésold 2018a and other references. It is also notable that the section identifies other key information such as geochemistry contained in Section 3.18 and the basis for the estimated water flows in Section 4.16. This results in the presentation of information in Section 4.18 that is very difficult to follow and ultimately to comprehend. Consideration should be given to using an approach that incorporates a Conceptual Site Model (CSM) into the discussion as well as a	Knight Piésold 2018a (Operations Water Management Plan) has been added to the EIS references and is uploaded on the public website. It is acknowledged that there is a large amount of detailed information relevant to the characterization of affected environment and evaluation of potential environmental consequences for water and sediment quality. The main body (chapters) of the EIS provide focused discussions while the technical appendices (and cross-references to other EIS sections and references) provide additional discussion and more highly technical information to support the focused discussions within the main chapters. The technical appendices and cross-references to other EIS sections provide additional information used to develop the main narratives in each chapter. Organization of the EIS is in accordance with direction provided by USACE and cooperating agencies. A CSM would typically be used as an overall summary view of interactions between various environmental and project elements to assist in identifying connectivity and potential effects, but is not typically part of an EIS.

Nondalton Tribal Council Comments – Pebble Project Preliminary Draft EIS Section 4.18 - Water and Sediment Quality

Agency	Comment Number	Section, Paragraph, and Page #	Relevant Text/Subject	Comment	Response
				summary of the results that is more comprehensible and focused on the outcome of the analysis in terms of impacts and proposed mitigation. *If a CSM is not provided, it will be necessary to develop a CSM or something similar to support a substantive and meaningful review of this section and provide comments on the results.*	
Nondalton Tribal Council	2	Section K4.18.1.1	Operations	According to the EIS, *"The mine plan module estimates the amount of water to be managed at the mine site during the operations phase of the mine under a full range of historic climate conditions. Climate variability is incorporated in the model using a 76-year synthetic time series of monthly temperature and precipitation values to simulate the cyclical nature of the climate record. The model generated 76 unique sets of monthly water flow and storage results for each year. Three of these model runs were selected to represent dry, average, and wet climate conditions and illustrate the range of potential flows for the mine site under these varying conditions."* The Appendix and EIS need to address the following questions: 1. What were the historic climate conditions that were used as input to the model (i.e., location, duration, periodicity, data quality)? 2. How are the data treated? Were the data averaged or maintained as individual daily data values in the model? 3. What is the basis for the 76-year synthetic time series? How does it account for future	Analysis and discussion of the climate variability and effects of long-term climate change have been expanded and/or revised in the DEIS including portions of Section 3.16, Surface Water Hydrology (Chapter 3, Affected Environment), Section 4.16, Surface Water Hydrology (Chapter 4, Environmental Consequences), and Technical Appendices K3.16 and K4.18. These discussions address the questions noted in the comment.

Nondalton Tribal Council Comments – Pebble Project Preliminary Draft EIS Section 4.18 - Water and Sediment Quality

Agency	Comment Number	Section, Paragraph, and Page #	Relevant Text/Subject	Comment	Response
				climate variability? What do the dry, average, and wet climate conditions represent (e.g. 20-year expected high and low)? Does the model address back-to-back wet years and or back-to-back dry years? 4. What if future conditions do not mimic past conditions? What evidence is there that past climate cycles over the past 100 or more years will not be severely impacted by climate change such that they no longer are useful for predicting future climate? 5. In the same paragraph the term "relatively" is used to describe dry, average, and wet climate conditions. Are the "relative" conditions the same as those named, but not described, previously in the same paragraph?	
Nondalton Tribal Council	3	Section K4.18.1.1	Operations	According to the EIS, *"Table K4.18-2 provides the predicted water quality from various geochemical sources at the mine site that were used as inputs to the water quality model."* No discussion is provided identifying the source of the data used. For example, were the data collected from geochemical characterization tests such as Humidity Cell Tests? How were values (such as peak values and average values) selected from tests? The table notes suggest 95th percentile terms, but no discussion is provided on the results.	Discussion of the source term inputs for the water quality model that generated the predicted values presented in Table K4.18-2 are included in Appendix K4.18, Section 4.18.1 of the DEIS.
Nondalton Tribal Council	4	Section 4.18	Water and Sediment Quality - General	While the potential impacts listed at the beginning of this section are important mechanisms to consider, much greater risks to surface water and sediment would occur due to spills or catastrophic failures of dams or tailings impoundments due to geohazards. The potential effects of these	The effects of large spills are described in Section 4.27, Spill Risk, of the DEIS. References have been updated to include Knight Piésold 2018a. See response to prior comment regarding analysis of affected environment and environmental effects, including relevance of a CSM.

Nondalton Tribal Council Comments – Pebble Project Preliminary Draft EIS Section 4.18 - Water and Sediment Quality

Agency	Comment Number	Section, Paragraph, and Page #	Relevant Text/Subject	Comment	Response
				events on surface water bodies should be described in this section. Given the critical nature of this section in terms of evaluating the potential impacts of the proposed Pebble Project, we have attempted to evaluate this section in the same manner that we would expect to review the Draft EIS, starting with the review of the associated Appendix. Where necessary to obtain information not contained in the Appendix or main body of the EIS, we would rely on the information referenced in either the EIS or Appendix. However, in this case, the first document referenced in Appendix K4.18 WATER AND SEDIMENT QUALITY is Knight Piésold (2018a), which is not listed in the references provided in Section 9 of the PDEIS and could not be located on the USACE project website. As a result, the ability of the cooperating agencies to provide a substantive and meaningful review of this section is highly compromised. Initial review of Section 4.18 found that it relies heavily on Appendix K4.18, and that Appendix K4.18 relies heavily on Knight Piésold 2018a and other references. It is also notable that the section identifies other key information such as geochemistry contained in Section 3.18 and the basis for the estimated water flows in Section 4.16. This results in the presentation of information in Section 4.18 that is very difficult to follow and comprehend. Consideration	

Nondalton Tribal Council Comments – Pebble Project Preliminary Draft EIS Section 4.18 - Water and Sediment Quality

Agency	Comment Number	Section, Paragraph, and Page #	Relevant Text/Subject	Comment	Response
				should be given to using an approach that incorporates a Conceptual Site Model (CSM) into the discussion as well as a summary of the results that is more comprehensible and focused on the outcome of the analysis in terms of impacts and proposed mitigation. If a CSM is not provided, it will be necessary to develop a CSM or similar tool to support a substantive and meaningful review of this section and provide comments on the results.	
Nondalton Tribal Council	5	Section 4.18.2.1	Mine Site. Surface Water Quality. Effects of Dewatering Water Discharge in Construction	In all cases where water is treated and discharged into surface water, discuss the resulting water quality compared to the current water quality. This analysis should include metals, sediments, dissolved oxygen, temperature, and other important water quality features. Simply meeting APDES stormwater permit limits does not ensure that there is no degradation from current baseline conditions. This section is very general and contains many unsupported assumptions. For example, it is assumed that a modular water treatment system will successfully meet permit requirements. What would the backup plan be if the modular treatment plant fails or if there are performance issues resulting in effluent from the water treatment system that does not meet permit requirements? How frequently will monitoring be conducted during construction and operation phases?	Section 4.18.3 of the DEIS includes a more detailed discussion (as compared to the PDEIS) of the water treatment and discharge effects, relative to baseline conditions, during construction, operations, and closure phases. The reference to APDES Mine Site General Permit for Stormwater only relates to non-contact runoff. All contact water would be captured and treated prior to discharge under an APDES Individual Permit for point source discharge. In the event that discharged water quality does not meet permit conditions and is detected prior to discharge, the water would be recycled back through the water treatment plant for treatment to meet permit standards. In the event that discharged water quality does not meet the permit standards and is detected after discharge, PLP would be subject to corrective action in accordance with the permit conditions. The permit would specify the frequency of monitoring.
Nondalton Tribal Council	6	Section 4.18.2.1	Effects of Waste Rock/Tailings Storage and Water	All discussions that affect a given element of the environment should be included in one section, so that the reader does not have to page through several different sections to get a complete picture of the	The organization of environmental effects discussions is intended to efficiently and logically address potential impacts by resource, and follows USACE direction and cooperating agency input.

Nondalton Tribal Council Comments – Pebble Project Preliminary Draft EIS Section 4.18 - Water and Sediment Quality

Agency	Comment Number	Section, Paragraph, and Page #	Relevant Text/Subject	Comment	Response
			Management Ponds.	possible environmental impacts that may occur. What environmental impacts could result from discharge of excess water to streams, particularly if the water chemistry or conventional qualities are different from the naturally occurring conditions?	Effects of permitted discharge on surface water quality, relative to baseline conditions, are discussed in Section 4.18.
Nondalton Tribal Council	7	Section 4.18.2.1	Water Treatment during Construction.	USACE needs to define "non-contact" runoff water. Roads, buildings, and other structures and surfaces at the mine site are likely to accumulate fall- out dust, and roads would collect particulate matter tracked onto the roads by vehicles. The dust and particulate matter are likely to contain greater concentrations of metals than would otherwise be found in soils. Any stormwater from the mine site or roads should be routinely tested for metals and pH, at a minimum, and stormwater should be treated if necessary prior to discharge. Please provide more specificity on how wastewater would be "strategically discharged" to benefit downstream habitat.	Section 4.18 text has been revised to define non-contact water. Text has been revised to include analysis of impacts due to fugitive dust emissions on soils, as well as water and sediment quality. Assessment of Hazardous Air Pollutant (HAP) concentrations in dust is described in Section 4.14 and Technical Appendix K4.14 (Soils); Section 4.18 and Technical Appendix K4.18 (Water and Sediment Quality). Mitigation measures for dust emissions at the mine site and the transportation corridor are described in Chapter 5. A Storm Water Pollution Prevention Plan (SWPPP) would be developed and approved by the State of Alaska as part of permitting. Treated water would be discharged to optimize downstream habitat. The approach and methodology for determining discharge and timing of discharge (e.g., seasonality) is addressed in Section 4.24 (Fish Values).
Nondalton Tribal Council	8	Section 4.18.2.1	Effects of Discharge Water Temperature.	The first bullet item indicates that the summer average temperature does not fall within the range stated. Would any of these temperature changes cause a departure from optimal temperatures in the streams for fish or other wildlife?	Predicted temperature effects described in Section 4.18 have been corrected. The predicted average temperature effect shown now falls within the predicted range of temperature effects shown. Potential effects of temperature change on fish are discussed in Section 4.24, Fish Values.
Nondalton	9	Section 4.18.2.1	Effects of Treated Water Discharge on Spatial Trends	More specific estimates for these parameters should be provided similar to those for temperature above. Otherwise, it is not possible to determine or verify that the effect on nutrient levels "would be	The analysis of effects of treated water discharge on spatial trends is limited by the available detail on specific predicted parameters. Water quality of treated discharge water, including nutrient levels, would meet the ADEC water quality criteria for discharge and the most stringent

Nondalton Tribal Council Comments – Pebble Project Preliminary Draft EIS Section 4.18 - Water and Sediment Quality

Agency	Comment Number	Section, Paragraph, and Page #	Relevant Text/Subject	Comment	Response
				expected to be minimal." A naturally nutrient-rich stream might not benefit from having additional nutrients added to its waters.	water quality criteria (Table K3.18-1).
Nondalton Tribal Council	10	Section 4.18.2.1	Effects during Closure/Post-Closure	Maintaining water quality in surrounding streams depends on drawing down and treating water from the pit lake in perpetuity to maintain a hydraulic sink for groundwater. This does not seem remotely realistic. At some point the lake will overflow, or the WTP will fail, financial assurances will run out, or no one will be available to continue the post-closure monitoring and maintenance work. A projection and prediction of the effect on surrounding surface waters in that eventuality should be included in the EIS to quantify and evaluate the magnitude of this potential impact. While it may be far in the future, it is likely that Alaska Natives will still be living in this area and maintaining their traditional ways of life, as they have for millennia; therefore, it's important to identify and evaluate impacts that could occur decades into the future. Any proposed project alternative that relies on pit lake pumping and treatment in perpetuity should be rejected, since this is a recipe for eventual disaster.	As described in DEIS Chapter 2 (Alternatives), closure of the project would be conducted in accordance with the Alaska Reclamation Act (Alaska Statute 27.19) under the jurisdiction of ADNR and ADEC. A detailed closure cost model required by the State would be developed following ADNR guidance as part of Reclamation and Closure Plan to address all costs required for funding of post-closure monitoring and water treatment. The estimate would include the costs of capital and sustaining capital; operating costs for water treatment, monitoring, and other ongoing activities over the long-term post-closure period; identification of the design life of the water treatment plant facilities and provisions for their periodic replacement; indirect costs and contingencies; and bonding requirements. Reclamation and Closure Plan approval and associated financial assurance mechanisms would be in place prior to commencing project construction; and the plan, cost model, and financial obligations would be updated on a 5-year cycle in accordance with State regulatory requirements to address any changes in post-closure requirements and costs. Long-term pumping and water treatment is a common closure design established for other open pit mines in Alaska and worldwide; would effectively prevent contaminated pit lake water from flowing away from the site; and would be paid for through State-required financial instruments established in the Reclamation and Closure Plan.
Nondalton Tribal Council	11	Section 4.18.2.1	Groundwater Quality. Effects from TSF Seepage.	The second paragraph of this subsection describes another project element that apparently requires pumping and treating of mine impacted water in perpetuity to avoid adverse surface water quality impacts. The history of mining sites in the North America	Noted and see response to previous comment.

Nondalton Tribal Council Comments – Pebble Project Preliminary Draft EIS Section 4.18 - Water and Sediment Quality

Agency	Comment Number	Section, Paragraph, and Page #	Relevant Text/Subject	Comment	Response
				does not suggest that such an outcome is likely, particularly with multi-national backers. Rather, the mine will probably be abandoned at some point, and the State of Alaska will inherit the risk and the responsibility for continuing damage to the once- productive salmon-bearing streams. The surrounding communities and downstream communities will experience these ongoing adverse impacts for many generations in the future.	
Nondalton Tribal Council	12	Section 4.18.2.1	Effects on Seeps	Figure 3.18-1 shows several seeps to the southeast of the proposed mine site footprint that discharge to surface waters. How might the water quality in these seeps be affected by impacts to groundwater at the proposed mine site?	Text has been added to the DEIS to address potential effects on seeps in greater detail. Most overburden with seeps overlying the open pit would be removed, and seeps present in the footprints of the TSFs and mine facilities would be covered. Although seeps could impact groundwater, any impacted groundwater would be captured by the seepage collection systems or contained within the open pit cone of depression, and would not be expected to surface as seeps within the mine site. However, should seeps occur downgradient of mine facilities, surface water runoff controls would be used to capture and route it to the appropriate collection ponds for treatment and subsequent discharge. Monitoring would also be conducted to recognize new seeps that may form, measure their water quality, and ensure that the seepage is captured and routed to the appropriate seepage control pond; or if water quality is satisfactory, discharged to the environment.
Nondalton Tribal Council	13	Section 4.18.2.1	Summary of Effects on Mine Site Groundwater Quality	If there would be impacts to groundwater quality beneath the NFK west and east drainages, wouldn't impacts to surface water quality in those drainage areas be expected? Address these potential impacts.	While there are acknowledged uncertainties in the groundwater model, it is unlikely that affected groundwater beneath project facilities in the NFK tributaries would reach downgradient surface water based on SCP containment, downgradient pumpback wells, and additional capture systems that would be installed downstream if necessary as determined by monitored water quality. Text has been added to this

Nondalton Tribal Council Comments – Pebble Project Preliminary Draft EIS Section 4.18 - Water and Sediment Quality

Agency	Comment Number	Section, Paragraph, and Page #	Relevant Text/Subject	Comment	Response
					section of the DEIS to further describe these protections.
Nondalton Tribal Council	14	Section 4.18.2.1	Effects of Erosion on Physical Substrate.	If high precipitation and runoff could overwhelm BMPs, how often would this be expected to occur and what magnitude of runoff could result? Not only would particles escape, potentially increasing turbidity, but the particles would contain metals contamination affecting sediment quality.	Analysis of potential precipitation and the probably of high precipitation events is discussed in Section 4.16, Surface Water Hydrology. BMPs would be designed to manage anticipated maximum precipitation events. Text has been modified to provide explanation.
Nondalton Tribal Council	15	Section 4.18.2.1	Effects on Sediment Quality during Closure.	If areas of sediment contamination remain after closure that could contribute contaminants downstream for decades. Additional testing is not significant enough mitigation unless it would lead to excavation and cleanup of these areas.	Text has been added to Section 4.18 to clarify that any impacted material exceeding applicable regulatory cleanup criteria would be removed and either treated or placed in the open pit, depending on the circumstance.
Nondalton Tribal Council	16	Section 4.18.2.1	Ferry Construction and Operations.	What would the stormwater treatment systems at the ferry terminals consist of?	A Storm Water Pollution Prevention Plan (SWPPP) would be developed and approved by the State of Alaska as part of permitting and would define the treatment systems, as necessary
Nondalton Tribal Council	17	Section 4.18.2.1	Placement of Fill Material.	Identify the stream and river crossings that have the greatest potential for impacts during construction or from vehicle traffic, identify those impacts, and describe what mitigation measures will be taken to avoid these impacts.	Potential impacts (e.g. erosion) from stream crossings (e.g., culverts, bridges) are addressed in Section 4.16, Surface Water Hydrology. The areas and lengths of streams affected are quantified in Section 4.22, Wetlands and Other Waters/Special Aquatic Sites Mitigation measures are described in Chapter 5.
Nondalton Tribal Council	18	Section 4.18.2.1	Sediment Contamination.	These streams are currently largely pristine. Please estimate the increases in PAHs and metals concentrations in water and sediment that may occur at stream crossings due to decades of vehicle traffic, as was done for the mine site . Will vehicles be washed prior to leaving the mining site to prevent contaminants from being distributed onto the roadway, as is proposed for the Port site?	Potential impacts related to sediment contamination would be reduced by following BMPs and fuel handling requirements, and would extend throughout the life of the mine and into post-closure. Section 4.27, Spill Risk, addresses impacts from potential major spills along the transportation corridor. Washing vehicles prior to leaving the mine site as a mitigation measure would be considered and included in Appendix M, as appropriate.
Nondalton	19	Section	Impacts	The main flaw in this PDEIS is the failure to	Comment noted. NEPA requires evaluation of a

Nondalton Tribal Council Comments – Pebble Project Preliminary Draft EIS Section 4.18 - Water and Sediment Quality

Agency	Comment Number	Section, Paragraph, and Page #	Relevant Text/Subject	Comment	Response
Tribal Council		4.18.5, Table 4.18-1	Summary Table. Table 4.18-1	provide any alternatives that meaningfully avoid the major impacts of the proposed mining project. Here, the main impacts are related to surface water and groundwater contamination at and surrounding the mining site, and the need to pump and treat the pit lake and other affected areas in perpetuity to prevent more substantial impacts decades in the future. This just isn't realistic, and no alternative that would avoid these impacts has been developed and proposed. An alternative that allows clean closure without the need for substantial long-term monitoring and maintenance and decades of adverse impacts to surrounding water quality should be included. Since all the alternatives in the table describe potential impacts that are generally similar to the potential impacts of Alternative 1, there are no meaningful alternatives being presented in this PDEIS.	reasonable range of reasonable alternatives. Appendix B details the process used to develop and screen a reasonable range of action alternatives for analysis in the EIS. See Appendix B for a detailed explanation of the screening criteria applied, and an explanation of why each of the many project options that were evaluated were either included as a component of one of the action alternatives evaluated in detail in the DEIS, or eliminated from detailed analysis.