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Discussion topics/questions for GK Closure Criteria
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- 1) There are several areas where De Beers proposes that closure criteria are to be to the “satisfaction” of the engineer related to visual inspections. There are various areas of the site where the above is proposed including drainage pathways, rock piles, dams, confirmation of geotech stability, etc.. ENR remains concerned about how this will be measured and/or reported back to parties with the intent of demonstrating performance post-closure. ENR expects that the engineer would have specific criteria to develop the closure design. . These criteria are then measured post-closure to ensure the design meets the closure objectives. These criteria are to be the “closure criteria”. What are the closure design criteria for the various components of the mine site and what research is to occur to inform these closure design criteria?
- 2) As previously discussed, ENR has some concern with the methodology proposed for closure water quality criteria related to Kennady Lake. While ENR supports De Beers position that site-specific criteria may be developed for Kennady Lake, De Beers continues to propose that this criteria will be driven by water quality predictions and the water quality results once the lake begins to refill. ENR notes that acceptable closure criteria must be developed now based on the closure objectives (and intent) for Kennady Lake post-closure. These criteria should not be dependent on the water that is observed after refilling. ENR believes that this approach will ensure that the closure objectives and criteria will dictate closure options and actions and would allow for a more proactive approach in managing water on site to ensure post-closure water quality meets expectations of stakeholders. As such, ENR requests De Beers commit to a process and timeline for the establishment of water and sediment closure criteria.
- 3) The Board had requested additional information related to closure criteria for the stability of the meromixis. In response, De Beer mentioned reclamation research will be completed to establish numerical closure criteria for the mixolimnion. ENR does not believe this is an adequate response to the Board’s inquiry. If meromixis is the proposed closure strategy, then criteria to determine stability is required. The criteria need to be measurable and must demonstrate some form of stability (e.g. X%

change in water quality over Xyrs). Further, should meromixis occur the mixolimnion will be the top layer, as such ENR does agree that this area requires separate closure criteria as this area will be representative of the aquatic environment and must be similar to lake-wide closure criteria to support aquatic life. Current understanding suggests that the stability of the meromictic layer is dependant on the ratio of the mixolimnion to the monimolimnion, i.e. the higher the ratio of the monimolimnion to mixolimnion, the less likely that the layers will mix. Reclamation research should be focused on defining the ratio of the layers. De Beers has noted that additional metrics will be developed to confirm meromixis. ENR would be interested in a brief overview of what these metrics would be.

- 4) De Beers has provided additional information regarding closure criteria for returning Kennady Lake to a state that will support functioning habitat. Of note, there is significant overlap with requirements of the *Fisheries Act* Authorization. For example, De Beers notes that the Authorization references return of fish “populations” while the closure criteria references “the return of lake trout, northern pike, Arctic grayling through a minimum of two years.” The Authorization also references “sufficient number of fish.” ENR requests clarification on how sufficient numbers of fish may be determined (e.g. population ratio, number of total fish, etc). If there are specific requirements from the *Fisheries Act* authorization these should be brought forward.
- 5) Regarding OP1, De Beers notes that aquatic monitoring will include sediment quality, water quality and lower trophic levels. As mentioned previously, there are requirements for the establishment of fisheries populations under the *Fisheries Act* Authorization. Can De Beers confirm that fisheries monitoring will also be included as a component of aquatic monitoring and be a closure criteria for Kennady Lake ?
- 6) Regarding chemical stability of mine rock and processed kimberlite areas, De Beers references that water quality criteria for these areas falls under the objective of KL1. ENR disagrees as KL1 refers to closure water criteria from a lake-wide perspective related to the return of Kennady Lake to functioning habitat. Localized closure criteria related to mine rock and processed kimberlite storage areas should be developed to ensure that impacts related to seepage water from these areas are minimized within Kennady Lake and avoid these areas from contaminating and degrading the quality of Kennady Lake post-closure.