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September 16, 2016

File: MV2005L2-0015

Angela Love
Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor, 4922 48th St.
PO Box 2130, Yellowknife, NT
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Dear Ms. Love:

Re: Responses to the Board request for Follow-up Information on the Mine Rock Placement Verification Program Report

I am pleased to provide the Board with the additional information requested in the August 25, 2016 letter titled '*Follow Up Information Requested – Rock Placement Verification Program Report De Beers Canada Inc. (De Beers) – Gahcho Kué Mine'*. Please find below the additional information as per the request.

Reviewer Comment Number: ENR -1 and MVLWB-7 **Topic: Verification of PAG Segregation and Placement**	
Information Requested	**De Beers Response**
From the period of Sept 2014 to Feb 2016, approximately 2/3rds of the total volume placed in Zone 2 is non-PAG. De Beers should confirm at which point PAG capacity may become a constraint on operations and what conditions might lead to this constraint. This includes compounding effects of larger PAG domains being moved to PAG storage as well as non-PAG domains due to insufficient analytical data turnaround time. De Beers responded that: "We have examined the remaining	There is a total of 44.9 Mt of storage capacity within the SMRP remaining, 39 Mt of which is available space for PAG. This equates to 87% of the dumps total capacity. In comparison, we are predicting a total PAG volume of 3.4 Mt to be encountered during the remaining life of the South Mine Rock Pile. In other words, we have ten times more capacity for PAG storage than we require within the pile. All calculations were created using GEOVIA GEMS 6.7.2.1, 2015. In order to calculate the volume of PAG storage remaining within the SMRP, a

potential capacity for PAG storage in SMRP and confirmed that there is sufficient capacity." Further clarification required: Please provide the details of those calculations, i.e. what is the remaining capacity for PAG storage?	dump shell was created by setting the parameters as follows: a) a 15 m offset inside the original design dump shell b) a minimum elevation for PAG at 421.5 (0.8 m higher than ordinary high water mark of 420.7 m) c) subtracting the volume already placed within the pile d) assuming no PAG in the final lift The expected volume of PAG to be encountered during the remainder of the life of the South Mine Rock Pile was calculated by taking the total volume of material expected and multiplying that by the 7.5%.
Reviewer Comment Number: MVLWB -2 **Topic: PAG Identification Pre-Excavation Sampling**	
Information Requested	**De Beers Response**
Further clarification required: Does the revised sampling method include a composite for the full length of the hole, or a composite for each 3-metre interval? It is expected that a composite across an entire hole length may result in dilution of smaller PAG zones.	As per Appendix A, Section A3 of the approved Geochemical Characterization Plan V.3 (De Beers, January 2015), samples consist of drill cuttings collected as composite grab samples from each hole. Samples are collected from the drill cuttings on surface around the drill collar at the end of drilling and before explosives are loaded into the hole. The sample is intended to represent the entire drill hole evenly. For further clarity, samples are not selected from specific increments within each hole, but rather from the hole as a single sampling unit. The purpose of the sampling is to representatively characterize the material slated for excavation, and not to identify individual fine pods of PAG material. The sampling program respects the limitations of the minimum mining units/bench sizes.
Reviewer Comment Number: MVLWB-4 and 6 **Topic: PAG Zones and Data Trends**	

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Information Requested	De Beers Response
Further clarification required: Please support your approach to not conducting step out sampling for non-PAG and how this approach provides the confidence that PAG zones are not being overlooked.	De Beers is confident that PAG zones are not being overlooked because 1) the samples collected from the south mine rock pile non-PAG zone were confirmed as non-PAG; 2) the samples taken from the infrastructure areas were confirmed as non-PAG, and 3) the step-out program provides additional cluster sampling around PAG zones to fully delineate those zones where they are encountered. 1) As part of the PAG Verification Study, 38 samples were collected from Zone 3 of the SMRP, which is to contain only non-PAG material. Thirty seven of the 38 samples contained less than 0.1 S% total Sulphur and were therefore classified as Non-PAG. Sample SMRPZ3-11 had a total Sulphur concentration of 0.1 S%. However, additional ABA data showed that this sample was Non-PAG based on the Sobek NPR value. Therefore all 38 samples were confirmed as Non-PAG. If PAG material had been overlooked then PAG samples would have been identified in the non-PAG zone of the SMRP. Additionally, as part of the Bi-Annual audit inspections, infrastructure components across the project site were sampled to confirm that Non-PAG material only was used in construction as intended. The results of that Bi-Annual Audit confirmed that all samples were in fact non-PAG. Again, if PAG material had been overlooked in the original sampling, PAG samples would have been identified in the bi-annual audit sampling.

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	Finally, additional sampling conducted through the step-out program ensures that PAG zones are fully delineated when encountered. The step-out sampling program is intended to ensure that PAG zones, when encountered through the general sampling program, are fully delineated, and also that non-PAG material in proximity to PAG material is not unnecessarily stored in PAG areas. It is a form of cluster sampling well suited to detect non-randomly distributed, or clustered material. If we were to also conduct a step-out program in non-PAG areas, this would be equivalent to increasing the sampling frequency everywhere, which would not be appropriate for a non-randomly distributed sample such as PAG. Given there is no evidence to indicate that PAG zones have been mis-classified (i.e. PAG has not been found in non-PAG deposition areas), there no reason to increase the overall general frequency of sampling beyond the 8 samples per 100,000 t of rock that we are currently required to conduct as per our approved Geochemical Characterization Plan (Section 6.4). De Beers is confident the current sampling program is sufficient to detect, delineate, and properly store PAG at site.
Reviewer Comment Number: MVLWB-11 **Topic: Sampling and Testing Methods of Blasted Rock**	
Information Requested	**De Beers Response**
Further clarification required: Please confirm whether or not grain size, specific to sampling or testing, was completed.	In accordance with the approved sampling program for the Bi-Annual Audit (Section 8.1, Geochemical Characterization Plan, V.3), samples of mine rock have been collected from construction material, mine roads, rock pads and mine rock piles. No specific particle size fraction was selected

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	for the sample collection or analysis, as this is not a component of the approved sampling program. Sample rock was selected at each location by examining rock fragments characteristics (colour, grain size, texture, visible minerals etc.) and selecting a sample representative of the dominant rock type at each location.

If you have any questions or comments please contact me directly at (403) 930-0991 ext. 2784 or at sarah.mclean@debeersgroup.com.

Sincerely,

Sarah McLean

Sarah McLean
Regulatory Specialist
Gahcho Kué Mine

Cc: Jen Potten, MVLWB

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