

Diavik Diamond Mines (2012) Inc.
P.O. Box 2498
300, 5201 – 50th Avenue
Yellowknife, NT X1A 2P8
Canada
T (867) 669 6500
F 1-866-313-2754

Patty Ewaschuk
Wek'eezhii Land and Water Board
PO Box 32
Wekweeti, NT X1A 3S3
Canada

27 September 2016

Re: DDMI Spillway and Freeboard Limit Modification Conformance Table

Please find attached a conformance table that includes updated information on collection pond pumping arrangements, as requested under Diavik Diamond Mines (2012) Inc. (DDMI) re-submission for a modification to the Processed Kimberlite Containment (PKC) spillway and freeboard limit.

DDMI suggests that any approval of the freeboard limit modification could be conditional upon the approval of a revised PKC Operations Plan and Water Management Plan. It is anticipated that changes to both plans are likely to occur in mid-2017, pending the outcome of the ongoing CPK:FPK trial. DDMI would operate under the existing freeboard limit until such time as the revised plans were approved. As you are aware, there is no requirement for the modified freeboard limit to come into use immediately.

We trust that the re-submission of this conformance table satisfies your requirements and we look forward to the Board's decision on this matter.

Yours sincerely,



David Wells
Superintendent - Environment

cc: Anneli Jokela, WLWB

Attachment: Conformance Table

| DDMI Conformance Table | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------|---|---|---|--------|-----------|---|----|---|----|---|----|---|----------------|---|----|---|----|----|---------------------|----|---------------------|----|---------------------|----|----------------|-----|----|
| Section 3.1 | Potential Re-submission of the Proposed Modification | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Item No. | Sub-bullet | DDMI Should Provide: | Conformance source location | | | | | | | | | | | | | | | | | | | | | | | | |
| 1) | | more thorough supporting information of DDMI's proposed EDF, that addresses the considerations identified in the Canadian Dam Association's (CDA) Technical Bulletin: Application of Dam Safety Guidelines to Mining Dams, 2014 (pages 23 and 24); | Submission 12 Aug 2016, Attachment Golder (2016) Section 2.0 Environmental Design Flood. | | | | | | | | | | | | | | | | | | | | | | | | |
| 2) | | additional information regarding water management, specifically: | | | | | | | | | | | | | | | | | | | | | | | | | |
| | i | typical pumping arrangements for the collection ponds and the PKC pond once the normal operating water level reaches the spillway invert (El 464.6 m), with specific reference to the inputs and outputs for Ponds 3, 7, and 12, the north inlet, and any other relevant ponds; | <p>Current pumping arrangements have advanced from what is described in Golder (2015) Section 2.3. There is no longer a requirement to pump collection pond water to the PKC from Ponds 7 and 12. With addition of the A21 pipeline Pond 7 will now be able to pump directly to the NI. Pond 12 (along with Ponds 10 and 11) is now arranged with the option of pumping to the NI via either Pond 1 or Pond 5, with Pond 1 being the default.</p> <p>In summary the typical arrangements with PKC water level at El 464.6m would be:</p> <table border="0"> <tr> <td>Pond #</td> <td>Pumps to:</td> </tr> <tr> <td>1</td> <td>NI</td> </tr> <tr> <td>2</td> <td>NI</td> </tr> <tr> <td>3</td> <td>NI</td> </tr> <tr> <td>4</td> <td>Pond 3 then NI</td> </tr> <tr> <td>5</td> <td>NI</td> </tr> <tr> <td>7</td> <td>NI</td> </tr> <tr> <td>10</td> <td>Pond 1 or 5 then NI</td> </tr> <tr> <td>11</td> <td>Pond 1 or 5 then NI</td> </tr> <tr> <td>12</td> <td>Pond 1 or 5 then NI</td> </tr> <tr> <td>13</td> <td>Pond 1 then NI</td> </tr> <tr> <td>PKC</td> <td>NI</td> </tr> </table> | Pond # | Pumps to: | 1 | NI | 2 | NI | 3 | NI | 4 | Pond 3 then NI | 5 | NI | 7 | NI | 10 | Pond 1 or 5 then NI | 11 | Pond 1 or 5 then NI | 12 | Pond 1 or 5 then NI | 13 | Pond 1 then NI | PKC | NI |
| Pond # | Pumps to: | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | NI | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | NI | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | NI | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Pond 3 then NI | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | NI | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | NI | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Pond 1 or 5 then NI | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | Pond 1 or 5 then NI | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | Pond 1 or 5 then NI | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | Pond 1 then NI | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PKC | NI | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | ii | the pumping arrangements for the collection ponds and the PKC pond leading up to and during freshet (if these are different from those described in response to the previous bullet), with specific reference to the inputs and outputs for Ponds 3, 7, and 12, ¹¹ the north inlet, and any other relevant ponds | The pumping arrangement would be the same as for 2)i). | | | | | | | | | | | | | | | | | | | | | | | | |

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| | iii | the pumping arrangements for the collection ponds and the PKC pond during the 1 in 100 year, 24-hr rainfall event, with specific reference to the inputs and outputs for Ponds 3, 7, and 12, the north inlet and any other relevant ponds | The typical pumping arrangements during the 1 in 100 year, 24-hr rainfall event where the PKC water level remains <El 464.6m would be the same as for 2)i). |
| | iv | a description of how DDMI will distinguish the 1 in 100 year, 24-hr rainfall event from lesser events, including triggers or action levels, if appropriate. | Triggers or action are based on water levels rather than type of event. The size of an event would not be known until it was over and then it would be determined from meteorological monitoring and monitoring records. With regard to the stated action of not expecting to pump from collection ponds to the PKC during a 1:100 year 24-hour event – the actual action trigger will be when water levels in the PKC are at or above the normal operating level of El 464.6m. It is recommended that this requirement be added to the next update of both the PKC Facility Plan (Part H Item 4) and Water Management Plan (Part H Item 2) |
| | v | a discussion about whether prolonged wet periods prior to the environmental design flood may compromise the pumping arrangements described above, and how DDMI plans to address this possibility | The installed pumping capacity for the collection pond system is sufficient to keep ponds pumped down during typical prolonged wet periods. As such it is unlikely that prolonged wet periods would compromise the pumping arrangements described above. |
| | vi | a stage-volume curve for Pond 3 | Submission 12 Aug 2016, Attachment Golder (2016), Figure 2. |
| | vii | confirmation that DDMI has verified the PKC facility catchment areas used by Golder in the spillway design | DDMI confirms the 1.50 km ² PKC catchment area. |
| | viii | any other relevant information that demonstrates that Pond 3 can hold the EDF | Submission 12Aug2016, Attachment Golder (2016), Section 3.0 Pond 3 Storage Capacity and Figure 2. |
| | | In addition to including the information above, <u>the company should clearly describe the minimum freeboard limit that it is requesting</u> . The Golder memo does not address the specific regulatory wording that would be needed to authorize a change in the freeboard limit, and there is room for confusion about how the regulated freeboard should be described. Golder discusses a 0.2 m minimum freeboard (e.g., page 4, Table 4 and | Submission cover letter August 20, 2016. Submission 12 Aug 2016, page 2, 3rd and 4th paragraph. |

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| | | Figure 2) and in other locations in the memo, describes a 0.4 m minimum freeboard (e.g., updated drawing 14111-41D1-6123, entitled “Phase 6 Spillway Plan, Profile and Cross-sections”) | |
| | | It is understood from the Golder memo that the larger freeboard (0.4 m) is the sum of the allowance for a water level increase during the inflow design flood and the allowance made for wind and wave runup. As such, the Board believes it is most likely that DDMI is proposing that the Board approve a 0.4 m freeboard from the normal operating water level to the effective water containment crest of the PKC dam. <u>DDMI should confirm what minimum freeboard it is proposing so that if the Board approves a resubmitted modification request,</u> the Board, DDMI, the Inspector, and all other parties will share the same understanding of the minimum freeboard limit | Submission cover letter August 20, 2016. Submission 12 Aug 2016, page 2, 3rd and 4th paragraph. |

References:

Golder. 2015. Processed Kimberlite Containment Facility Operations Spillway Review. Prepared for Diavik Diamond Mines (2012) Inc. Submitted October 2, 2015. Document No. 1521339-1419-TM-Rev0-4000

Golder. 2016. Processed Kimberlite Containment Facility Operations Spillway Design – Support to DDMI on Resubmission of Proposed Modification. Prepared for Diavik Diamond Mines (2012) Inc. Submitted August 8, 2016. Document No. 1648001-1518-TM-Rev)-2000.