

Review Comment Table

Board:	WLWB
Review Item:	Diavik - Spillway Modification Request and Revised Freeboard Limit Re-submission (W2015L2-0001)
File(s):	W2015L2-0001
Proponent:	Diavik Diamond Mines Inc.
Document(s):	PKC Spillway Modification and Freeboard Limit Re-submission (1 MB) Conformance Table - PKC Spillway Mod and Freeboard Limit Re-submission (114 kb)
Item For Review Distributed On:	Aug 26 at 12:00 Distribution List
Reviewer Comments Due By:	Oct 14, 2016
Proponent Responses Due By:	Oct 21, 2016
Item Description:	<p>On December 9, 2015, the Wek'eezhii Land and Water Board received a request from Diavik Diamond Mines (2012) Inc. (DDMI) for approval for modification of the Processed Kimberlite Containment (PKC) spillway design and freeboard limit. The Board met on May 18, 2016 to consider DDMI's proposed modification and decided to not approve the modification as outlined in the May 30, 2016 Directive and Reasons for Decision. The Board decided to not approve the proposed modification because DDMI did not demonstrate that the 1 in 100 year storm was an appropriate basis for the environmental design flood (EDF) or that Pond 3 would be able to contain the EDF. However, within the Reasons for Decision, the Board stated that if DDMI wishes to re-submit the modification for the Board's consideration, the following information should be provided:</p> <ol style="list-style-type: none"> 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); and 2. additional information regarding water management, specifically: <ul style="list-style-type: none"> • 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;

- 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, the North Inlet, and any other relevant ponds;
- 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;
- 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;
- 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;
- a stage-volume curve for Pond 3;
- confirmation that DDMI has verified the PKC facility catchment areas used by Golder in the spillway design; and
- any other relevant information that demonstrates that Pond 3 can hold the EDF.

The Board received the revised modification request on August 15, 2016.

UPDATE (September 27, 2016): At Board staff's request, DDMI submitted a [conformance table](#) that explains how the company's revised modification request (August 15, 2016) meets the Board's directive (May 30, 2016). DDMI's conformance table includes new information. The public comment deadline has been extended from October 5 to October 14, and the proponent deadline has been extended to October 21, 2016. We apologize for any inconvenience this may cause.

General Reviewer Information:

The Board invites reviewers to provide comments and recommendations to the Board on the requested modification and freeboard limit via the WLWB Online Review System.

Contact Information:

Anneli Jokela 867-765-4588
 Jessica Pacunayen 867-765-4591
 Patty Ewaschuk 905-852-1516
 Sarah Elsasser 867-765-4583

Comment Summary

Diavik Diamond Mines Inc. (Proponent)				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
1	General File	Comment (doc) Cover letter with pdf version of responses Recommendation		
GNWT - ENR: Central Email GNWT				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
3	General File	Comment (doc) ENR Letter with Comments and Recommendations Recommendation		
1	Topic 1: Environmental Design Flow (EDF)	Comment DDMI has submitted a memo from Golder Associates (8 August 2016) that provides Environmental Design Flows (EDFs) that could be conveyed and retained in Pond 3 located downstream of the PKC Facility. Section 3 of the memo confirms that there is sufficient capacity in Pond 3 to contain 1:100 24 hour, 30 day and 60 day events as well as 1:500 24 hour and 30 day events. 1:500 60 day events would be in excess of Pond 3 capacity and would require pumping to the North Inlet. ENR understands that the capacity of Pond 3 considers the reduction in volume resulting from 120,000 m3 of solids deposited into Pond 3 during A21 construction. In previous comments on this topic, ENR noted that it was not clear which return period (1:100	Oct 20: The WLWB Reasons for Decision (May 30, 2016) provided an indication of the type of information that would be required to change the event frequency from the currently approved 1:500, 24-hr to the Engineer of Record recommended 1:100 year event. DDMI elected to retain the previously-approved 1:500 year event (refer to WLWB approval of PKC Dam Raise Phase VI Design Report - Mar 12, 2013) as the PKC Spillway design event for the spillway modification. With regard to using "longer term wet periods" as the basis for the spillway design, DDMI previously provided that "longer-term wet events would provide a larger flow volume, but a smaller peak design flow, which would not be appropriate to use for designing the PKC spillway" (DDMI	

		<p>or 1:500) had been used in the design and that using a longer term wet period instead of a single precipitation event would provide a more conservative basis for the design. As per Table 3 of Golder technical memo (2016) a 1:100 year longer duration event, 30 day or 60 day, would provide a more conservative design criteria than the 1: 500 24 hr event. Bullet 3 of DDMI's 12 August 2016 cover letter includes a request that the EDF remain at 1:500, 24hr flood to simplify the approval process.</p> <p>Recommendation 1) Given that the PKC facility has been assessed as having the capacity to contain the 1:500, 30 day return period event without release of water, ENR recommends that the 1:500 year, 30 day return period be considered as a more conservative, and appropriate, EDF design criteria than the 1:100 year, 24 hr return period.</p>	<p>Comment Responses, GNWT-1, March 1, 2016). The WLWB Reasons for Decision (May 30, 2016, page 5) acknowledged that DDMI's response to GNWT-1 addressed the spillway design.</p>	
2	None	<p>Comment None</p> <p>Recommendation 2) Consistent with Golder's recommendation (Section 4.0, Golder 2016), ENR recommends that the available storage volume in Pond 3 be confirmed after dredging of A21 is completed.</p>	<p>Oct 20: The survey is planned for 2017.</p>	
GNWT - Lands: Tracy Covey				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
1	Page 2, request to consider changing	Comment The current wording is clear and simple to determine compliance	Oct 20: In the WLWB Reasons for Decision (May 30, 2016), DDMI was requested to	

	wording of Part H (21) (a).	<p>with. The proposed wording also adds one more fact in issue to determine before compliance can be assessed (i.e., the Inspector would have to rely on DDMI's provision of "the normal operating water level" in addition to the lowest surveyed point of the dam crest liner.</p> <p>Recommendation Retain the current wording under Part H, Item 21 (a).</p>	<p>provide "...the specific regulatory wording that would be needed to authorize a change in the freeboard limit, as there is room for confusion about how the regulated freeboard should be described." The wording proposed by DDMI was intended to address this request. The DDMI proposed wording is more specific than the existing wording as it specifies where the lowest survey point is (i.e. the dam crest liner) rather than the existing wording that provides an option (i.e. the liner or the engineered emergency spillway, whichever is lower). DDMI's proposed wording also more specifically includes reference to the "normal operating water level" rather than the existing wording of "at all times". The existing wording of "at all times" does not differentiate between normal operating water levels and water levels that would occur during a rainfall/flood event. By design, a freeboard limit is not intended to apply during an event.</p>	
2	<p>Golder Technical Memorandum, section 3.3, p. 4. "Pond 3 currently has an installed pumping capacity of approximately 8,500 m3/day...to the North Inlet.</p>	<p>Comment No comment, but a question for clarification. Does this pumping capacity include the three pumps currently in place in Pond 3 (summer, 2016)?</p> <p>Recommendation Answer whether or not the listed pumping capacity is based on the 3 pumps which currently exist in Pond 3.</p>	<p>Oct 20: No, the stated operational pump capacity of 8,500 m3/day is for the the single pump installed at Pond 3. The additional pumps that were in place during the summer of 2016 for A21 construction have been removed and are available as backup for site dewatering activities.</p>	

WLWB: Patty Ewaschuk

ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
1	Review and approval process	<p>Comment A number of DDMI's submissions are currently under review by the WLWB, and the Board may wish to prioritize when it considers these submissions. It is understood that the revised freeboard limit and modified spillway design do not need to be implemented for several years.</p> <p>Recommendation Are there any time restrictions that the WLWB should consider when deciding when to make a decision on DDMI's proposed spillway modification?</p>	<p>Oct 20: While the WLWB is correct that the revised freeboard limit will not need to be implemented for several years, DDMI has requested this change so that it can effectively conduct long-term storage and deposition planning for the facility. This planning must align with regulatory requirements, including freeboard limits. Early in 2017, in conjunction with the CPK:FPK trials, DDMI expects to begin revising its long-term storage and deposition plans. To facilitate this planning, DDMI requests that this submission be considered by early 2017.</p>	
2	Proposed conditional approval	<p>Comment In DDMI's conformance table (September 27, 2016), DDMI proposes that the Board could make the approval of the modification and the implementation of the freeboard limit conditional on approval of a revised Water Management Plan and PKC Facility Plan.</p> <p>Recommendation Please confirm the earliest possible time that DDMI might wish to implement the revised freeboard limit and spillway modification.</p>	<p>Oct 20: The earliest DDMI might want to operate to the revised freeboard limit would be late 2018. The existing spillway conforms to the spillway modification.</p>	
3	North Inlet Capacity	<p>Comment In response to the Board's directive (Item 3.1.2i) DDMI presented pumping arrangement information. Ultimately, the north inlet can receive water from all ponds (directly or</p>	<p>Oct 20: The North Inlet water levels are maintained to a current target elevation of 414.5 m (Water Management Plan V13 pg 27). The maximum operating level is 421.0 m. At the maximum operating level,</p>	

		<p>indirectly) to ensure water above EQC will not be discharged to the environment. The proposed modification and freeboard limit change means that less water can be diverted to the PKC Facility and Pond 3 during a storm, which means that more water will need to be held in the north inlet.</p> <p>Recommendation Would the proposed spillway modification and freeboard limit jeopardize the north inlet's ability to contain water in events up to the 1:500 year event?</p>	<p>a freeboard of 1.5 m still exists below the spillway invert of 422.5 m to contain the design event (North Inlet Water Treatment Plant (NIWTP) Operations Manual - September 2010 - Figure 3.2). DDMI has never operated the North Inlet at levels that approach 421.0 m and is unlikely to do so in the future. Between the normal operating level (414.5 m) and the maximum operating level (421.0 m) there is 2.5 Mm3 of available storage capacity to contain a storm event. This is in addition to storage capacity provided by the 1.5 m design freeboard limit. Under the existing normal operating levels for the North Inlet, the proposed PKC spillway modification and freeboard limit would not jeopardize the ability of the North Inlet to contain water in events up to the 1:500 year event.</p>	
4	North Inlet Capacity	<p>Comment DDMI indicated in its re-submitted modification proposal (August 12, 2016) "Pond 3 has sufficient available storage capacity to also store the 1:100-year 24-hour, 30-day, and 60-day, and 1:500-year 24-hour and 30-day EDF inflows without pumping to the North Inlet." DDMI also indicated that approximately 76,000 m3 of water would need to be pumped to the North Inlet to store the 1:500-year 60-day EDF flows.</p> <p>Recommendation Please comment on the north inlet's ability to receive 76,000 m3 during a 1:500 60-day event, given that</p>	<p>Oct 20: The live surge capacity of the North Inlet is 2.5 million m3 (Water Management Plan V13 - Page 13). The referenced event volume to be pumped from Pond 3 of 76,000m3 represents 0.3% of the North Inlet surge capacity. Additionally, the NIWTP currently has unused treatment capacity of around 45,000 m3/d (based on total contingency capacity of 90,000 m3/d, less the current inflows of around 45,000 m3/d). The referenced event volume of 76,000 m3 over a 60 day period is equivalent to a daily inflow of 1,267 m3/d. This</p>	

		the north inlet will be receiving runoff and water from many other sources.	represents around 3% of the current unused treatment plant capacity.	
5	North Inlet Capacity	<p>Comment In DDMI's approved Water Management Plan (Version 14) DDMI identifies Pond 3 and the PKC Facility as a contingency for holding water from the north inlet (page 14): "In case of a sustained shutdown NIWTP water could be transferred to Pond 3 and/or the PKC. There is currently 3.8 million cubic meters of excess capacity in the North Inlet and Pond 3, which represents approximately 4 months of dewatering from the underground mine."</p> <p>Recommendation If there were a temporary shutdown and a large storm event, what will the contingency plan for the north inlet (given that Pond 3 and the PKC Facility won't be available)?</p>	<p>Oct 20: Eliminating Pond 3 and the PKC as additional event surge capacity reduces the available contingency capacity from 3.8 Mm3 to 2.5 Mm3. Even at this lesser capacity, this still represents approximately 3 months of capacity for underground dewatering to occur with no operation of the NIWTP. It is very unlikely that the NIWTP would have a mechanical failure that would result in a shutdown of this duration. It is even less likely that a 1:500 year storm event would occur at the same time as a 3 month shutdown of the NIWTP. Regardless, in this highly unlikely scenario, the contingency option would most likely be to cease underground dewatering.</p>	

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Violet Camsell-Blondin, Chair
Wek'eezhii Land and Water Board
PO Box 32
Wekweeti, NT X1A 3S3
Canada

20 October 2016

Dear Ms. Camsell-Blondin:

Subject: DDMI Comment Responses - Spillway and Freeboard Limit Modification Re-Submission

Diavik Diamond Mines (2012) Inc. (DDMI) received seven comments/recommendations regarding our request to modify the spillway design and freeboard limit for the Processed Kimberlite Containment Facility (PKC). Attached please find DDMI's complete responses, which have also been submitted to the On-Line Review System (ORS).

DDMI appreciates that the Wek'eezhii Land and Water Board (WLWB) has a number of submissions under review and may need to prioritize. While the requested modifications would not be implemented for some time, DDMI expects to begin the process of revising its long-term storage and deposition plans for the PKC early in 2017. These plans will need to align with regulatory requirements, so we ask that the Board consider this potential restriction when establishing review priorities.

We trust that these responses are clear and complete. We look forward to your decision on this matter.

Yours sincerely



David Wells
Superintendent - Environment

cc: Anneli Jokela, WLWB
Patty Ewaschuk, WLWB

Attach: DDMI Comment Responses – PKC Spillway and Freeboard Modification

GENERAL INSTRUCTIONS FOR EXCEL TEMPLATE:

1. Do not leave blank rows above or between comments.
2. Do not modify the instructions or the column headings (i.e. the top three rows).
3. Each comment must have a response.
4. All formatting will be lost when this file is uploaded to the Online Comment Table.
5. If necessary, adjust the cell width and height in order to view all text.

ID	Reviewer	Topic	Comment	Recommendation	Proponent Response
			DDMI has submitted a memo from Golder Associates (8 August 2016) that provides Environmental Design Flows (EDFs) that could be conveyed and retained in Pond 3 located downstream of the PKC Facility. Section 3 of the memo confirms that there is sufficient capacity in Pond 3 to contain 1:100 24 hour, 30 day and 60 day events as well as 1:500 24 hour and 30 day events. 1:500 60 day events would be in excess of Pond 3 capacity and would require pumping to the North Inlet. ENR understands that the capacity of Pond 3 considers the reduction in volume resulting from 120,000 m3 of solids deposited into Pond 3 during A21 construction.		The WLWB Reasons for Decision (May 30, 2016) provided an indication of the type of information that would be required to change the event frequency from the currently approved 1:500, 24-hr to the Engineer of Record recommended 1:100 year event. DDMI elected to retain the previously-approved 1:500 year event (refer to WLWB approval of PKC Dam Raise Phase VI Design Report - Mar 12, 2013) as the PKC Spillway design event for the spillway modification. With regard to using "longer term wet periods" as the basis for the spillway design, DDMI previously provided that "longer-term wet events would provide a larger flow volume, but a smaller peak design flow, which would not be appropriate to use for designing the PKC spillway" (DDMI Comment Responses, GNWT-1, March 1, 2016). The WLWB Reasons for Decision (May 30, 2016, page 5) acknowledged that DDMI's response to GNWT-1 addressed the spillway design.
1	GNWT - ENR: Central Email GNWT	Topic 1: Environmental Design Flow (EDF)	In previous comments on this topic, ENR noted that it was not clear which return period (1:100 or 1:500) had been used in the design and that using a longer term wet period instead of a single precipitation event would provide a more conservative basis for the design. As per Table 3 of Golder technical memo (2016) a 1:100 year longer duration event, 30 day or 60 day, would provide a more conservative design criteria than the 1:500 24 hr event.	1) Given that the PKC facility has been assessed as having the capacity to contain the 1:500, 30 day return period event without release of water, ENR recommends that the 1:500 year, 30 day return period be considered as a more conservative, and appropriate, EDF design criteria than the 1:100 year, 24 hr return period.	
2	GNWT - ENR: Central Email GNWT	None	Bullet 3 of DDMI's 12 August 2016 cover letter includes a request that the EDF remain at 1:500, 24hr flood to simplify the approval process.	2) Consistent with Golder's recommendation (Section 4.0, Golder 2016), ENR recommends that the available storage volume in Pond 3 be confirmed after dredging of A21 is completed.	The survey is planned for 2017.
1	GNWT - Lands: Tracy Covey	Page 2, request to consider changing wording of Part H (21) (a). Golder Technical Memorandum, section 3.3, p. 4. "Pond 3 currently has an installed pumping capacity of approximately 8,500 m3/day...to the North Inlet.	<p>The current wording is clear and simple to determine compliance with. The proposed wording also adds one more fact in issue to determine before compliance can be assessed (i.e., the Inspector would have to rely on DDMI's provision of "the normal operating water level" in addition to the lowest surveyed point of the dam crest liner.</p>	<p>Retain the current wording under Part H, Item 21 (a).</p>	In the WLWB Reasons for Decision (May 30, 2016), DDMI was requested to provide "...the specific regulatory wording that would be needed to authorize a change in the freeboard limit, as there is room for confusion about how the regulated freeboard should be described." The wording proposed by DDMI was intended to address this request. The DDMI proposed wording is more specific than the existing wording as it specifies where the lowest survey point is (i.e. the dam crest liner) rather than the existing wording that provides an option (i.e. the liner or the engineered emergency spillway, whichever is lower). DDMI's proposed wording also more specifically includes reference to the "normal operating water level" rather than the existing wording of "at all times". The existing wording of "at all times" does not differentiate between normal operating water levels and water levels that would occur during a rainfall/flood event. By design, a freeboard limit is not intended to apply during an event.
2	GNWT - Lands: Tracy Covey		<p>No comment, but a question for clarification. Does this pumping capacity include the three pumps currently in place in Pond 3 (summer, 2016)?</p>	<p>Answer whether or not the listed pumping capacity is based on the 3 pumps which currently exist in Pond 3.</p>	No, the stated operational pump capacity of 8,500 m3/day is for the single pump installed at Pond 3. The additional pumps that were in place during the summer of 2016 for A21 construction have been removed and are available as backup for site dewatering activities.

1	WLWB: Patty Ewaschuk	Review and approval process	<p>A number of DDMI's submissions are currently under review by the WLWB, and the Board may wish to prioritize when it considers these submissions. It is understood that the revised freeboard limit and modified spillway design do not need to be implemented for several years.</p>	<p>Are there any time restrictions that the WLWB should consider when deciding when to make a decision on DDMI's proposed spillway modification?</p>	<p>While the WLWB is correct that the revised freeboard limit will not need to be implemented for several years, DDMI has requested this change so that it can effectively conduct long-term storage and deposition planning for the facility. This planning must align with regulatory requirements, including freeboard limits. Early in 2017, in conjunction with the CPK:FPK trials, DDMI expects to begin revising its long-term storage and deposition plans. To facilitate this planning, DDMI requests that this submission be considered by early 2017.</p>
2	WLWB: Patty Ewaschuk	Proposed conditional approval	<p>In DDMI's conformance table (September 27, 2016), DDMI proposes that the Board could make the approval of the modification and the implementation of the freeboard limit conditional on approval of a revised Water Management Plan and PKC Facility Plan.</p>	<p>Please confirm the earliest possible time that DDMI might wish to implement the revised freeboard limit and spillway modification.</p>	<p>The earliest DDMI might want to operate to the revised freeboard limit would be late 2018. The existing spillway conforms to the spillway modification.</p>
3	WLWB: Patty Ewaschuk	North Inlet Capacity	<p>In response to the Board's directive (Item 3.1.2i) DDMI presented pumping arrangement information. Ultimately, the north inlet can receive water from all ponds (directly or indirectly) to ensure water above EQC will not be discharged to the environment. The proposed modification and freeboard limit change means that less water can be diverted to the PKC Facility and Pond 3 during a storm, which means that more water will need to be held in the north inlet.</p>	<p>Would the proposed spillway modification and freeboard limit jeopardize the north inlet's ability to contain water in events up to the 1:500 year event?</p>	<p>The North Inlet water levels are maintained to a current target elevation of 414.5 m (Water Management Plan V13 pg 27). The maximum operating level is 421.0 m. At the maximum operating level, a freeboard of 1.5 m still exists below the spillway invert of 422.5 m to contain the design event (North Inlet Water Treatment Plant (NIWTP) Operations Manual - September 2010 - Figure 3.2). DDMI has never operated the North Inlet at levels that approach 421.0 m and is unlikely to do so in the future. Between the normal operating level (414.5 m) and the maximum operating level (421.0 m) there is 2.5 Mm³ of available storage capacity to contain a storm event. This is in addition to storage capacity provided by the 1.5 m design freeboard limit. Under the existing normal operating levels for the North Inlet, the proposed PKC spillway modification and freeboard limit would not jeopardize the ability of the North Inlet to contain water in events up to the 1:500 year event.</p>
4	WLWB: Patty Ewaschuk	North Inlet Capacity	<p>DDMI indicated in its re-submitted modification proposal (August 12, 2016) "Pond 3 has sufficient available storage capacity to also store the 1:100-year 24-hour, 30-day, and 60-day, and 1:500-year 24-hour and 30-day EDF inflows without pumping to the North Inlet." DDMI also indicated that approximately 76,000 m³ of water would need to be pumped to the North Inlet to store the 1:500-year 60-day EDF flows.</p>	<p>Please comment on the north inlet's ability to receive 76,000 m³ during a 1:500 60-day event, given that the north inlet will be receiving runoff and water from many other sources.</p>	<p>The live surge capacity of the North Inlet is 2.5 million m³ (Water Management Plan V13 - Page 13). The referenced event volume to be pumped from Pond 3 of 76,000m³ represents 0.3% of the North Inlet surge capacity. Additionally, the NIWTP currently has unused treatment capacity of around 45,000 m³/d (based on total contingency capacity of 90,000 m³/d, less the current inflows of around 45,000 m³/d). The referenced event volume of 76,000 m³ over a 60 day period is equivalent to a daily inflow of 1,267 m³/d. This represents around 3% of the current unused treatment plant capacity.</p>
5	WLWB: Patty Ewaschuk	North Inlet Capacity	<p>In DDMI's approved Water Management Plan (Version 14) DDMI identifies Pond 3 and the PKC Facility as a contingency for holding water from the north inlet (page 14): "In case of a sustained shutdown NIWTP water could be transferred to Pond 3 and/or the PKC. There is currently 3.8 million cubic meters of excess capacity in the North Inlet and Pond 3, which represents approximately 4 months of dewatering from the underground mine."</p>	<p>If there were a temporary shutdown and a large storm event, what will the contingency plan for the north inlet (given that Pond 3 and the PKC Facility won't be available)?</p>	<p>Eliminating Pond 3 and the PKC as additional event surge capacity reduces the available contingency capacity from 3.8 Mm³ to 2.5 Mm³. Even at this lesser capacity, this still represents approximately 3 months of capacity for underground dewatering to occur with no operation of the NIWTP. It is very unlikely that the NIWTP would have a mechanical failure that would result in a shutdown of this duration. It is even less likely that a 1:500 year storm event would occur at the same time as a 3 month shutdown of the NIWTP. Regardless, in this highly unlikely scenario, the contingency option would most likely be to cease underground dewatering.</p>



October 14, 2016

Violet Camsell-Blondin
Chair
Wekeezhii Land and Water Board
#1-4905 48th Street
Yellowknife, NT
X1A 3S3

Dear Ms. Camsell-Blondin,

**Re: Diavik Diamond Mine Inc. (DDMI)
Water Licence – W2015L2-0001
Spillway Modification Request and Revised Freeboard Limit
Re-submission
Request for Comment**

The Department of Environment and Natural Resources (ENR), Government of the Northwest Territories has reviewed the report at reference based on its mandated responsibilities under the Environmental Protection Act, the Forest Management Act, the Forest Protection Act, the Species at Risk (NWT) Act, the Waters Act and the Wildlife Act and provides the following comments and recommendations for the consideration of the Board.

Topic 1: Environmental Design Flow (EDF)

Comment(s):

DDMI has submitted a memo from Golder Associates (8 August 2016) that provides Environmental Design Flows (EDFs) that could be conveyed and retained in Pond 3 located downstream of the PKC Facility. Section 3 of the memo confirms that there is sufficient capacity in Pond 3 to contain 1:100 24 hour, 30 day and 60 day events as well as 1:500 24 hour and 30 day events. 1:500 60 day events would be in excess of Pond 3 capacity and would require pumping to the North Inlet. ENR understands that the capacity of Pond 3 considers the reduction in volume resulting from 120,000 m³ of solids deposited into Pond 3 during A21 construction.

In previous comments on this topic, ENR noted that it was not clear which return period (1:100 or 1:500) had been used in the design and that using a longer term

wet period instead of a single precipitation event would provide a more conservative basis for the design. As per Table 3 of Golder technical memo (2016) a 1:100 year longer duration event, 30 day or 60 day, would provide a more conservative design criteria than the 1: 500 24 hr event.

Bullet 3 of DDMI's 12 August 2016 cover letter includes a request that the EDF remain at 1:500, 24hr flood to simplify the approval process.

Recommendation(s):

- 1) Given that the PKC facility has been assessed as having the capacity to contain the 1:500, 30 day return period event without release of water, ENR recommends that the 1:500 year, 30 day return period be considered as a more conservative, and appropriate, EDF design criteria than the 1:100 year, 24 hr return period.
- 2) Consistent with Golder's recommendation (Section 4.0, Golder 2016), ENR recommends that the available storage volume in Pond 3 be confirmed after dredging of A21 is completed.

Comments and recommendations were provided by ENR technical experts in the Water Resources Division and the North Slave Region and were coordinated and collated by the Environmental Impact Assessment Section, Conservation, Assessment and Monitoring Division (CAM).

Should you have any questions or concerns, please do not hesitate to contact Patrick Clancy, Environmental Regulatory Analyst at (867) 767-9233 Ext: 53096 or email patrick.clancy@gov.nt.ca.

Sincerely,



Patrick Clancy
Environmental Regulatory Analyst
Environmental Impact Assessment
Conservation, Assessment and Monitoring Division
Department of Environment and Natural Resources
Government of the Northwest Territories