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Mr. Chuck Hubert
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PO Box 938
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31 July 2015

Re: Jay Project Environmental Assessment (EA1314-10)
DDMI Technical Report

Please find attached the Diavik Diamond Mines (2012) Inc. (DDMI) technical report for the Dominion Diamond Ekati Corporation Jay Project environmental assessment.

DDMI looks forward to participating in the public and community hearings in September 2015.

Please let me know if you require any additional clarification.

Regards,



Gord Macdonald

Attached: DDMI Technical Report

Technical Report – Jay Project Environmental Assessment

Diavik Diamond Mines (2012) Inc.

July 31, 2015

Non-Technical Summary

Diavik Diamond Mines (2012) Inc. (DDMI) is the operator of the Diavik Mine. The proposed Jay Project is within close proximity to the Diavik Mine site. The environmental impacts resulting from the Jay Project are predicted to extend spatially to include the area surrounding the Diavik Mine. The Jay Project, if approved, would operate concurrent with Diavik which is anticipated to continue operations until 2023 with mine closure activities anticipated to extend from 2024 to 2030.

Water quality in Lac de Gras is currently elevated relative to background and this condition is expected to continue until 2023. Without the Jay Project, Lac de Gras water quality is expected to begin to recover starting in 2023. This recovery will not occur with the Jay Project. Water quality in Lac de Gras is expected to worsen with the Jay Project, particularly from 2023 to 2033. With worsened water quality in Lac de Gras, DDMI's ability to demonstrate acceptable closure performance will be adversely impacted.

Caribou movement is currently affected by an existing mine zone of influence resulting in fewer numbers of caribou using the Diavik mine site. With the development of the Jay Project the number of caribou using the Diavik mine site will continue to be reduced. Without the Jay Project caribou use of the mine site is expected to increase after 2023. With fewer caribou using the reclaimed Diavik mine site as a result of the Jay Project, DDMI's ability to demonstrate acceptable closure performance for caribou will be adversely impacted.

DDMI's environmental performance is a key aspect governing the mine site licenses to operate and close and the expectations of communities. DDMI continues to make significant investment into the ongoing development and operation of the Diavik Mine with a reasonable expectation for a level of certainty that it can operate without impact from new developments. The Government of the Northwest Territories holds financial guarantees in excess of \$150 million that will not be fully relinquished until closure environmental performance can be demonstrated. DDMI is seeking to ensure that environmental effects from the Jay Project would not adversely affect DDMI's ability to operate or close the Diavik Mine site.

Introduction

Diavik Diamond Mines (2012) Inc. (DDMI) is the operator of the Diavik Mine. The proposed Jay Project is within close proximity to the Diavik Mine site. The environmental impacts resulting from the Jay Project are predicted to extend spatially to include the area surrounding the Diavik Mine.

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Specific Comments

1. Water Quality

The Diavik Mine is downstream of the Jay Project. As such changes to water quality from the Jay Project will also result in changes to water quality in Lac de Gras at the Diavik mine site. Lac de Gras water quality at the Diavik mine site is currently a key regulatory and community measure of DDMI's operational environmental performance and is expected to be equally important measure of closure performance. The Proponent has assessed water quality impacts to Diavik during operations (i.e. before 2023) but not during closure (2023-2030).

2. Caribou

The movement of caribou into the Diavik Mine area is affected by the Jay Project. Caribou occurrence and use of the reclaimed Diavik mine site is expected to be a key regulatory and community closure performance measure of DDMI. The Proponent has not assessed the impacts to Diavik of changes to caribou movement that would result from development of the Jay Project.

Developer's Conclusion

Dominion Diamond (Proponent) submitted an assessment of impacts on downstream industrial and domestic uses of water on July 24, 2015: *DAR-MVEIRB-IR2-32 – Assessment endpoints – downstream industrial and domestic uses of water in Lac de Gras*. In this assessment the Proponent concludes:

- “The level of protection for the environment and human consumption used as a screening in the effects assessment for the Jay Project (Project) is greater than what would be required for industrial uses.”
- “Diavik back-flooding would not occur concurrently with Jay and Misery pit back-flooding at closure, which takes place from 2030 to 2033.”
- “A large-scale sediment loading event to Lac du Sauvage is considered a low-likelihood event, primarily due to planned mitigation that will be implemented for the Jay dike construction.”
- “The Jay Project mine water discharges to Lac du Sauvage are planned to occur over the last five years of mine operations (2024 to 2029), and after discharge from the Diavik Mine has stopped. Therefore, it is expected that there will be no effect of mine water discharge from the Project on operational limits imposed on Diavik Mine. Dominion Diamond will monitor receiving water quality relative to benchmarks set for the Jay Project, which would occur in parallel with DDMI’s closure monitoring.”
- “The approach for monitoring cumulative effects in Lac de Gras, if necessary, will be finalized through engagement with DDMI.”
- “Dominion Diamond is willing to work collaboratively with other operators (i.e. DDMI) on regional or cumulative effects monitoring programs and to minimize potential effects from overlapping activities as appropriate (i.e. pit back-flooding).”

DDMI Conclusion

The assessment provided by the Proponent is incomplete and does not provide DDMI with the assurance that the Jay Project would not adversely affect DDMI’s ability to operate or close the Diavik Mine site.

DDMI Rationale/Evidence

Operation and closure of the Diavik Mine is primarily regulated through a Class A Water License; currently W2007L2-0003 with a pending renewal as W2015L2-0001. Additionally, DDMI entered into a formal Environmental Agreement (EA) with five Aboriginal Parties and the Governments of the Northwest Territories and Canada (Aboriginal Affairs and Northern Development Canada). The EA contains conditions specific to environmental monitoring, cumulative effects, mine closure and financial security.

Existing industrial developments should not be adversely impacted by environmental changes caused by new developments. For example this is specifically provided for under the *Water Act (NWT)* in particular Sections 26(5), 59 and 60. Section 26(5) provides:

26 (5) If an application for a licence is made, the Board shall not issue a licence unless the applicant satisfies the Board that:

(a) either

(i) the use of waters or the deposit of waste proposed by the applicant would not adversely affect, in a significant way, the use of waters, whether in or outside the water management area to which the application relates,

- (A) by any existing licensee who holds a licence issued under this Act or the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (Canada), or
- (B) by any other applicant whose proposed use of waters would take precedence over the applicant's proposed use by virtue of section 59, or
- (ii) a licensee and applicant to whom subparagraph (i) applies has entered into a compensation agreement with the applicant;

It is DDMI's position that the proposed Jay Project will likely cause changes to the environment that are predicted to extend spatially to include the area surrounding the Diavik Mine. These environmental changes may adversely affect DDMI as the operator of the Diavik Mine. Water quality and caribou are two key ecosystem components that we will use as evidence for our position.

Water Quality

Diavik's Water License (W2007L2-0001) authorizes Diavik to discharge waste streams and use Lac de Gras for waste assimilation. Many, but not all of these waste streams would cease soon after the completion of commercial production. For example, runoff from rain and snow melt on the reclaimed mine site, discharging to Lac de Gras, would continue forever.

The environmental performance of the Diavik Mine with regard to water quality is evaluated through a regulated Aquatic Effects Monitoring Program (AEMP) [link to AEMP](#). At its core this program involves measurements of water quality in Lac de Gras around the Diavik Mine site. Water quality results are analyzed for change relative to reference sites. Based on the level of change, DDMI is required to undertake predetermined actions that escalate with the level of change. In essence the AEMP is to confirm that the use of Lac de Gras for waste assimilation does not result in significant adverse effects.

Currently the largest cause of changes in water quality measured in the AEMP site has been the operational treated effluent discharge. These changes were predicted during Diavik's Environmental Assessment and are not expected to be significant [link to CSR](#). It was also predicted that following the completion of commercial operations (around 2023), that water quality would begin to recover. The AEMP will be a requirement through to 2030 to confirm this recovery [link to ICRP](#). The Diavik Closure Plan has approved closure objectives [link to ICRP](#) and in the near future will have closure criteria that define when a closure objective is achieved [link to LWB Guidelines](#). Water quality in Lac de Gras is expected to form at least one of the closure criteria.

The Proponent has made predictions of water quality in Lac de Gras without the Jay Project and with the Jay Project [link to DDC Report](#) that are summarized in Table 3-4. As an example DDMI will use predicted under-ice chloride concentrations at location LDG-P1. Chloride is a reasonable indicator of expected changes in water quality from mine effluent. LDG-P1 is near the Diavik mine site in Lac de Gras and is at the same location as one of the "exposure" AEMP monitoring locations.

In the scenario without the Jay Project (Table 1) the predicted chloride levels at LDG-P1 are expected to decline after 2023 when the mine water discharge from Diavik is assumed to end. By 2030-2033 levels are expected to decrease to 1.9 mg/L from a 2019-2023 high of 3.8 mg/L. This level and rate of recovery

was also predicted during the Diavik Environmental Assessment and it is the expected recovery condition for the AEMP and closure performance evaluation.

Table 1. Predicted under-ice chloride concentration at LDG-P1 without the Jay Project (from Table 3-4)

- 3.8 mg/L (2019-2023)
- 3.2 mg/L (2024-2029)
- 1.9 mg/L (2030-2033)
- 1.3 mg/L (2034-2060)

Table 2 shows the DAR predictions with the Jay Project. In this case rather than recovering to 1.9 mg/L, as was shown in Table 1 without the Jay Project, chloride levels increase to 6.5 mg/L (2030-2033). The difference between chloride concentrations of 1.9 mg/L and 6.5 mg/L is fully attributed to the Jay Project in these predictions.

Table 2. Predicted under-ice chloride concentration at LDG-P1 with the Jay Project (from Table 3-4)

- 3.8 mg/L (2019-2023)
- 5.7 mg/L (2024-2029)
- 6.5 mg/L (2030-2033)
- 4.6 mg/L (2034-2060)

The use of Lac de Gras for waste assimilation is predicted to increase with development of the Jay Project. By comparison without the Jay Project the use of Lac de Gras for waste assimilation would be expected to decrease after 2023. Diavik's closure performance was expected to be evaluated during a period of recovering water quality from 2023 to 2030. With the proposed Jay Project water quality would instead degrade over the same period. It is not unreasonable to expect that DDMI would face increased pressures in regard to demonstrating closure performance. These pressures could adversely affect the scope of operations and/or closure activities and the relinquishment of financial security.

Caribou

Closure Plans are reviewed and approved through the Water License. This includes the reclamation of waste facilities like the waste rock piles and the processed kimberlite containment. The approved objectives for the Closure Plan include use of the reclaimed facilities by caribou. Specific closure criteria will be developed to define when the closure objectives are achieved. Monitoring of caribou movement and habitat use has been conducted since 2000 as part of the Wildlife Effects Monitoring Program (WEMP) and will continue until 2030. A cumulative zone of influence (ZOI) has resulted in a decrease in caribou use of the Diavik mine site. Post-closure the ZOI is expected to decrease and result in more caribou using the mine site.

The Proponent has evaluated the effects of the proposed Jay Project on caribou movement [link to DDC Report](#) . The evaluation looks specifically at effects on caribou movement without and with the Jay Project. The evaluation confirms that caribou use of the Diavik mine site is more likely to occur without

the Jay Project. With the Jay Project caribou movement would continue to be influenced by the Misery Road, reducing use of the Diavik mine site during 2023-2030 relative to use without the Jay Project.

“Closure of the Diavik and Ekati (without Jay Project) mines is predicted to reverse the effect of the mines on caribou movement from the West to East Islands and the eastern shoreline of Lac de Gras. Following closure of the Diavik Mine in 2023, reclaimed and undisturbed habitat on the East Island should become available for caribou. With the Jay Project However, the ZOI from the Jay Project could delay the reversibility of the effect to caribou movement across the West to East Islands and Lac de Gras and result in a the relative abundance (occurrence) of caribou along this route compared to reference conditions.”

It will be difficult for DDMI to demonstrate an increase in caribou use of the reclaimed mine areas if the Jay Project continues to affects caribou movement. Consequently it will be difficult to demonstrate closure performance, manage closure activities and successfully relinquish financial security.

Recommendation

It is DDMI’s position that the proposed Jay Project will likely cause changes to the environment that are predicted to extend spatially to include the area surrounding the Diavik Mine. These environmental changes may adversely affect DDMI as the operator of the Diavik Mine. As such DDMI recommends:

- That the MVEIRB confirm, through this Environmental Assessment process, DDMI’s position that the Jay Project is likely to cause adverse effects to DDMI as the operator of the Diavik Mine.
- That the MVEIRB require that the Proponent engage with DDMI to develop mutually acceptable monitoring and mitigation to effectively eliminate these effects to DDMI.
- That the MVEIRB specify that that monitoring and mitigation, specific to effect on Diavik, be included within the regulatory phase.
- That the Proponent commit to advancing these monitoring and mitigation measures, with any necessary revisions, for review and acceptance by the Land and Water Board.
- That the Proponent commit to advancing these monitoring and mitigation measures, with any necessary revisions, for review and acceptance by the Parties to the Environmental Agreement.
- That the Government of the Northwest Territories commit to fully recognize the impact of the Jay Project as monitored and mitigated by the Proponent, on Diavik’s closure performance when evaluating relinquishment of DDMI’s closure security.