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June 22, 2021

W2015L2-0001

Kofi Boa-Antwi  
Diavik Diamond Mines (2012) Inc.  
P.O Box 2498  
Suite 300, 5201-50<sup>th</sup> Avenue  
Yellowknife, NT X1A 2P8

Dear Kofi,

**Re: 2020 Seepage Survey Report**

The Wek'èezhìi Land and Water Board (WLWB) met on June 22, 2021 and considered Diavik Diamond Mines (2012) Inc.'s (DDMI's) 2020 Seepage Survey Report (the Report) submitted to the Board on March 31, 2021. DDMI's Water Licence (W2015L2-0001) requires a Seepage Survey Report on an annual basis (see Part G, Condition 12, and Schedule 6, Condition 7).

As detailed in the attached Reasons for Decision, the Board has decided to approve the 2020 Report and has required additional information in the next version.

Sincerely,

A handwritten signature in blue ink, appearing to read "Joseph Mackenzie".

Joseph Mackenzie  
Chair, Wek'èezhìi Land and Water Board

BCC: DDMI Distribution List



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## Reasons for Decision

<b>Reference/File Number:</b>	W2015L2-0001 (Type "A" Water Licence)
<b>Licensee:</b>	Diavik Diamond Mines (2012) Inc. (DDMI)
<b>Subject:</b>	2020 Seepage Survey Report

## Decision from the Wek'èezhìi Land and Water Board Meeting of June 22, 2021

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### 1.0 Decision

On June 22, 2021, the Wek'èezhìi Land and Water Board (WLWB or the Board) considered Diavik Diamond Mines (2012) Inc.'s (DDMI's) 2020 Seepage Survey Report (the Report).<sup>1</sup> In consideration of the submission, previous Board direction, reviewer comments, and proponent responses, the Board has made the following decisions:

1. The Board approved the 2020 Seepage Survey Report;
2. In future Seepage Survey Reports, the Board requires DDMI to provide a description of why the results of the QA/QC program relative to the dataset do/do not affect interpretation of the dataset, in support of Schedule 6, Condition 7. DDMI is to provide a brief summary of the unacceptable RPDs to support this description; and
3. The Board requires DDMI to include the following in the next Seepage Survey Report:
  - a. why the overflow bypassed the Drainage Control and Collection System (DCCS);
  - b. what changes are required to the current DCCS to prevent this overflow from bypassing E21 sump in the future (if none, provide the rationale for why not); and
  - c. if a new SNP station should be created for this depression, including the rationale for why or why not.

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<sup>1</sup> See WLWB ([www.wlwb.ca](http://www.wlwb.ca)) Online Registry for [Diavik - Seepage Survey Report - 2020 - Mar 31\\_ 21](#)

## 2.0 Background

Under Part G, Condition 12 of DDMI's Water Licence (W2015L2-0001),<sup>2</sup> "by March 31 each year, [DDMI] shall submit to the Board, for approval, a Seepage Survey Report". As per Schedule 6, Condition 7, the Seepage Survey Report "shall consist of the results of Seepage surveys of all mine components including: constructed rock piles, stockpiles of Reclamation rock, ore stockpiles, areas constructed with mined or quarried rock, and water retention dikes and dams". As per DDMI's Licence, Seepage is defined as "Water or Waste that drains through or escapes from any structure designed to contain, withhold, divert, or retain Water or Waste". The Board approved the 2019 Seepage Survey Report on July 28, 2020,<sup>3</sup> with no additional requirements for future reports.

DDMI submitted the 2020 Seepage Survey Report (the Report) on March 31, 2021. DDMI reported that there "was no seepage identified from [storage and containment] structures in 2020 except for observed flow, after a 1:100-year heavy rainfall event, from base of the South [Waste Rock Storage Area] to a small interior lake" (see Attachment 1 for the location).<sup>4</sup> DDMI also reported that "after the same heavy rainfall event, there was observed flow from Location 6 located in the infield of the A21 pit area that reported to the pit sump and did not report to the receiving environment".

The Report was distributed for public review on May 17, 2021 and reviewer comments were due by June 7, 2021. The Government of the Northwest Territories – Environment and Natural Resources (GNWT-ENR) provided a comment on the submission; Board staff also submitted a question. Environment and Climate Change Canada, and Fisheries and Oceans Canada indicated they had no comments. Proponent responses were submitted prior to the deadline of June 14, 2020. Reviewer comments and recommendations, as well as the proponent's responses are available on the WLWB Online Registry.<sup>5</sup>

## 3.0 Reasons for Decision

The Board has reviewed the 2020 Seepage Survey Report for conformity to Part G, Condition 12, and Schedule 6, Condition 7 of the Licence, and to previous Board direction on past Seepage Survey Reports.<sup>6</sup> The Board also reviewed reviewer comments and proponent responses submitted during the public review period. Based on the review, the Board has decided to approve the 2020 Seepage Survey Report.

### ➤ ***Decision #1: The Board approved the 2020 Seepage Survey Report.***

The reasons for this approval are that the Report meets the Board's direction for previous Seepage Survey Reports and generally meets the Water Licence requirements. The Board requires additional information in future Seepage Survey Reports, as discussed below.

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<sup>2</sup> See WLWB Online Registry for [Diavik - WL Amendment - PKMW - Updated Licence - Jun 8 21](#).

<sup>3</sup> See WLWB Online Registry for [Diavik - Seepage Survey Report - 2019 - Reasons for Decision - Jul 28 20](#)

<sup>4</sup> See WLWB Online Registry for [Diavik - Seepage Survey Report - 2020 - Mar 31 21](#)

<sup>5</sup> See WLWB Online Registry for [Diavik - Seepage Survey Report - 2020 - Review Summary and Attachments - Jun 14 21](#)

<sup>6</sup> See WLWB Online Registry for [Diavik - Seepage Survey Report - 2018 - Reasons for Decision - Oct 16 19](#), and [Diavik - 2015 and 2016 Seepage Survey Reports - Board Directive and Reasons for Decision - Dec 21 17](#)

### 3.1 Quality Assurance/Quality Control (QA/QC)

Section 1.3 of the Seepage Survey Report outlines the Quality Assurance/Quality Control (QA/QC) procedures for duplicate samples. In this section, DDMI states “if the [Relative Percent Difference] RPD exceeds 40% when concentrations are greater than or equal to ( $\geq$ ) 5 times the detection limit (DL), the data will be flagged and both sampling and analytical methods will be reviewed.”<sup>7</sup> DDMI also stated that it “may request the external laboratory for reanalyses of duplicate samples that exceed the RPD”. In Sections 3.2.2, 3.3.2 and 3.4.2 of the Seepage Report, DDMI stated that the RPDs between duplicates and samples “were acceptable for most parameters”. DDMI also stated in these sections that it “followed up with the external lab for parameters outside RPD and results were confirmed”. DDMI also stated the results of the “QA/QC program in 2020 did not justify a need for DDMI to adjust or re-interpret the reported analytical data”.

GNWT-ENR commented that it wasn’t “clear which parameters had unacceptable RPDs” and commented that “Schedule 6, Condition 6(d) requires DDMI to provide a description of how the results have been interpreted relative to the results of the QA/QC program” (comment 1).<sup>8</sup> GNWT-ENR recommended that “DDMI specify which parameters did not have acceptable relative percent difference and how these unacceptable QA/QC results were addressed within the dataset” (comment 1). DDMI responded that the results are reported in monthly SNP reports and provided a list of the parameters with unacceptable RPDs. DDMI also stated that Sections 1.3, 3.2.2, 3.3.2, and 3.4.2 indicate “how QA/QC results are addressed in the dataset”.

A similar question was asked during the review of the 2019 Seepage Survey Report. DDMI responded that “Occasionally RPD values in 2019 for 1-3 parameters (out of ~100 parameters per sample) exceed the 40% threshold, however exceedances do not span all parameters which may indicate a more significant QA/QC concern with the sample”.<sup>9</sup> In the Board’s Reasons for Decision on the 2019 Seepage Survey Report, the Board noted that DDMI had addressed the question with its response.<sup>10</sup> This response provided the rationale for why the results of the QA/QC program did not require re-interpretation of the dataset. While DDMI did state in the 2020 Seepage Survey Report that results of the “QA/QC program in 2020 did not justify a need for DDMI to adjust or re-interpret the reported analytical data”, DDMI did not provide the rationale for how it arrived at that conclusion. In future Seepage Survey Reports, the Board requires DDMI to provide a description of why the results of the QA/QC program relative to the dataset do/do not affect the interpretation of the dataset. DDMI is to provide a brief summary of the unacceptable RPDs (as it provided in response to GNWT-ENR’s comment 1), in order to support the required description of how the results have been interpreted relative to the results of the QA/QC program (i.e., Schedule 6, Condition 7 requirement).

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<sup>7</sup> See WLWB Online Registry for [Diavik - Seepage Survey Report - 2020 - Mar 31\\_21](#)

<sup>8</sup> In the previous Licence, the Seepage Survey requirements were contained within Schedule 6, Condition 6(d); a Water Licence Amendment was approved after the item was distributed for review and the Schedule condition changed to Schedule 6, Condition 7(d).

<sup>9</sup> See WLWB Online Registry for [Diavik - Seepage Survey Report - 2019 - Review Summary and Attachments - Jul 20\\_20.pdf \(mvlwb.ca\)](#), DDMI response to WLWB comment 1.

<sup>10</sup> See WLWB Online Registry for [Diavik - Seepage Survey Report - 2019 - Reasons for Decision - Jul 28\\_20](#)

- ***Decision #2: The Board requires DDMI to provide a description of why the results of the QA/QC program relative to the dataset do/do not affect interpretation of the dataset, in support of Schedule 6, Condition 7. DDMI is to provide a brief summary of the unacceptable RPDs to support this description.***

### **3.2 South Waste Rock Storage Area Seepage**

In Section 3.7 of the Seepage Report, DDMI indicated that “overflow” from the South Waste Rock Storage Area (South WRSA) was collecting in a small interior lake in July 2020.<sup>11</sup> DDMI stated that the overflow was attributed to excess precipitation, and a pump was deployed to remove the water. Samples were collected from the overflow and the water quality results were below Effluent Quality Criteria (EQC).

DDMI was asked to “comment on any potential mitigation measures to prevent overflow from this area in the future” (WLWB staff comment 1). DDMI responded that it was “making changes to the pipe and pump set-up in the shallow natural depression by relocating this equipment to improve mobilization and response time to pumping down accumulated meltwater and/or run-off in the depression during spring snowmelt and rainfall events” (response to WLWB staff comment 1). DDMI also commented that “DDMI has an established collection sump (E21; SNP 1645-87) as part of the [Drainage Control and Collection System] (DCCS) to capture drainage from the South [WRSA]”; however, the Board notes, the overflow bypassed this sump and therefore, would have been outside the DCCS. It appears DDMI has followed its Water Management Plan, which requires Seepage and runoff bypassing collection systems to be “sampled and reported to the Inspector” and “management efforts... undertaken to stop, re-route or collect the flow of water prior to reaching Lac de Gras”.<sup>12</sup>

While DDMI did respond to Board staff’s question on mitigation measures, DDMI did not specifically discuss how this overflow could be prevented in the future. It is unclear why the overflow was not collected by the E21 sump given that DDMI’s Waste Rock Management Plan (WRMP) states “All seepage and runoff water derived from the [South WRSA] is anticipated to flow into Sump E21, as the natural drainage basin for lake e21 encompasses the entire [South WRSA] design footprint”.<sup>13</sup> DDMI also states in the WRMP that “DDMI will monitor the [South WRSA] to determine if any additional runoff or seepage pathways develop over time; should this occur, DDMI would amend the SNP accordingly”. In response to Board staff’s question, DDMI did not specifically comment on proposing changes to the SNP. Given that the runoff from the South WRSA did not flow into the E21 Sump and that DDMI committed in the WRMP to “amend the SNP accordingly” for “any additional runoff or seepage pathways”, the Board requires additional information related to this overflow. The Board requires DDMI to include the following in the next Seepage Survey Report (i.e., 2021 Seepage Survey Report): (a) why the overflow bypassed the DCCS; (b) what changes are required to the current DCCS to prevent this overflow from bypassing E21 Sump in the future (if none, provide the rationale for why not); and (c) if a new SNP station should be created for this depression, including the rationale for why or why not.

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<sup>11</sup> See WLWB Online Registry for [Diavik - Seepage Survey Report - 2020 - Mar 31 21](#)

<sup>12</sup> See WLWB Online Registry for [Diavik - Water Management Plan – Version 15 – Jan 15 20](#)

<sup>13</sup> See WLWB online Registry for [Diavik - WRMP – Version 10.1 – Nov 5 20](#).

➤ **Decision #3: The Board requires DDMI to include the following in the next Seepage Survey Report:**

- (a) why the overflow bypassed the DCCS;
- (b) what changes are required to the current DCCS to prevent this overflow from bypassing E21 sump in the future (if none, provide the rationale for why not); and
- (c) if a new SNP station should be created for this depression, including the rationale for why or why not.

Signed the 22<sup>nd</sup> day of June 2021, on behalf of the Wek'èezhii Land and Water Board



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Witness



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Joe Mackenzie  
Chair, Wek'èezhii Land and Water Board