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May 25, 2020

Shannon Allerston  
Regulatory Specialist  
Mackenzie Valley Land and Water Board  
7th Floor, 4910-50th Avenue  
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Yellowknife, NT X1A 2P6

**RE: Giant Mine Remediation Project – MV2007L8-0031 and MV2019X007– Response to Information Requests Issued May 15, 2020**

Dear Ms. Allerston,

Crown-Indigenous Relations and Northern Affairs Canada, on behalf of the Giant Mine Remediation Project (GMRP) Team is pleased to submit the following response to Information Requests #1 through 4, as requested in your letter dated May 15, 2020.

Should you require any further information or require clarification, please contact the undersigned by telephone at (867) 669-2823 or by email at [Natalie.Plato@Canada.ca](mailto:Natalie.Plato@Canada.ca).

Sincerely,

*Natalie Plato*

Natalie Plato  
Deputy Director  
Crown-Indigenous Relations and Northern Affairs Canada  
Giant Mine Remediation Project

Encl.



# GIANT MINE REMEDIATION PROJECT

## Draft Water Licence Review – Information Requests Issued May 15, 2020

**Information Request 1:** The GMRP is to provide a list of Engineered Structures for the Project that could be listed in the definition of Engineered Structures. If unable to do so, please explain why?

**Response:**

Please see Table 1, a list of Engineered Structures for the Giant Mine Remediation Project (GMRP).

**Table 1. List of Engineered Structures for GMRP**

Engineered Structure
Underground mine workings
Freeze system
Pit fill and cover(s)
Soil cover(s)
Nearshore sediment cover
Surface water management sumps/pond/channels/culverts
Baker Creek channel/banks
Tailings Containment Area (TCA) covers
TCA spillways
Foreshore tailings cover
Dams
Water Treatment Plant and outfall system
Water crossings
Non-hazardous waste landfill and associated stormwater management pond
Effluent Treatment Plant



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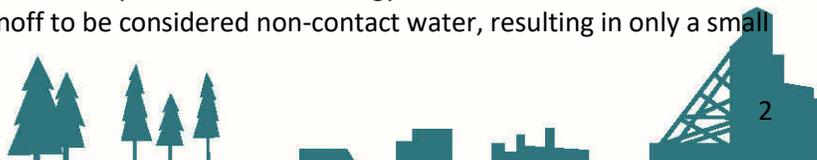
**Information Request 2:** With respect to Contact Water, can the GMRP explain why this definition must be limited to “within the developed areas” in addition to Engineered Structures? Are there specific Engineered Structures outside of the developed areas to which the definition of Contact Water should not apply? Also, if the definition of Engineered Structures does not include non-engineered components of the Project, such as areas of removed contaminated soils (i.e. the South Pond relocation), does the definition of Contact Water apply to those?

**Response:**

- 1) The reason the definition of Contact Water must include ‘within the Developed Areas’ is to provide clarity on a spatial boundary for management of Contact Water. Both the Closure and Reclamation Plan (CRP) and the Water Management and Monitoring Plan outline that contact water in the developed areas will be managed to the extent practical. Specifically, the Water Management and Monitoring Plan stated that one of the objectives of the plan is to ‘manage contact water (i.e., water in contact with Developed Areas as defined in the CRP) and non-contact water (i.e., water not in contact with Developed Areas and runoff from remediated areas) separately to the extent practical’. This is also consistent with Environment and Climate Change Canada (ECCC) comments from September 3, 2019 and follow-up to Tech Session 1: Information Request 2 from ECCC.
- 2) Yes, there are Engineered Structures outside the Developed Areas (for example, a water crossing for Baker Creek).
- 3) Yes, the definition of Contact Water was intended to include areas that came in contact with Waste. This includes contaminated soils, prior to remediation.

Based on questions and responses to Question 2 and 3, the GMRP realizes that the introduction of the term ‘Engineered Component’ and then ‘Engineered Structure’ in the revised definitions of Contact Water that were proposed through the draft Water License review (see Table 1) may have complicated the interpretation. The GMRP suggests the following edit: *Contact Water - Runoff or Seepage ~~from Engineered Structure(s)~~ that has encountered Wastewater and/or Waste within the Developed areas as defined in the Closure and Reclamation Plan.*

Additionally, the GMRP would like to provide clarification regarding the management of Contact Water. The Project agrees with Board staff’s use of “Runoff” as a general term to include the overland flow of Water or Wastewater that occurs when precipitation, meltwater, or other Water is not absorbed by the land. The water management concept described in the Water Management and Monitoring Plan is that the existing water management system, which collects and treats runoff from the majority of the Developed Areas will remain in place as remediation begins. As areas are remediated, natural drainage patterns will be restored and runoff will transition from contact water to non-contact water, allowing for runoff to drain to Baker Creek and Yellowknife Bay. The GMRP’s strategy is that remediation efforts will transition more and more of the site runoff to be considered non-contact water, resulting in only a small



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area of runoff that will require collection and treatment in the long-term.

Post remediation, runoff from a sub-set of Engineered Structures will be tested to confirm the water is not in contact with waste (i.e. has become non-contact water) and is suitable for direct discharge to the receiving environment: TCA Covers, Pit Covers, Landfill, South Pond. This will be confirmed by applying the Surface Water Runoff Criteria. The use of the ‘surface runoff criteria’ language was therefore deliberate here as this would no longer be considered contact water. It would therefore not be appropriate to accept the language ‘Discharge criteria for Contact Water’ as is proposed in the draft Water Licence. Potential changes to the Water Licence conditions related to contact water are proposed in Table 3.

In conclusion the GMRP proposes a refined definition of Contact Water (see Table 2) and further clarification regarding terminology in the MVLWB Draft Water Licence as provided in Table 2.

**Table 2: Changes in definition of Contact Water and Wastewater through the draft Water Licence review**

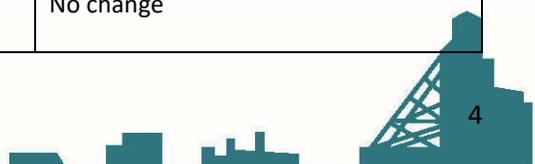
Original Definition from GMRP (January 2019)	Draft Water Licence definition (March 2020)	GMRP Revision 1 (April 2020)	GMRP Revision 2 (May 2020)
Contact Water: water in contact with Developed Areas as defined in the CRP (Water Management and Monitoring Plan pg 1-3)	Contact Water: Runoff or seepage from Engineered Components that have or may have encountered wastewater and/or waste	<i>Runoff or Seepage from Engineered Structure(s) that has encountered Wastewater and/or Waste within the Developed areas as defined in the Closure and Reclamation Plan.</i>	<i>Runoff or Seepage <del>from Engineered Structure(s)</del> that has encountered Wastewater and/or Waste within the Developed areas as defined in the Closure and Reclamation Plan.</i>
Non-Contact Water: water not in contact with Developed Areas and runoff from remediated areas	No change		
Wastewater: any Water that is generated by GMRP activities or originates within the GMRP boundary and requires treatment or management, including Seepage, Minewater, and Effluent	Wastewater: any Water that is generated by GMRP activities or originates within the GMRP boundary and requires treatment or management, including but not limited to Seepage, Contact Water, Minewater, Sewage, Greywater and Effluent	No change	No change



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**Table 3. Draft Water Licence conditions related to Contact Water and consequences for definition changes**

Water Licence Conditions referring to Contact Water	Original Condition	Change to Water Licence condition
Part F, 16.	<p>The Licensee shall construct, operate, and maintain all Engineered Components to the design specifications and engineering standards, such that: ...</p> <p>b) Any Seepage or Contact Water from the facility to the Receiving Environment that does not meet the Discharge criteria for Contact Water, as specified in the <b>Water Management and Monitoring Plan</b> shall be collected and returned for treatment;</p>	<p>b) Any Seepage or Contact Water from the facility to the Receiving Environment that does not meet the <del>Discharge criteria for Contact Water</del> <b>Surface Runoff Criteria</b>, as specified in the <b>Water Management and Monitoring Plan</b> shall be collected and returned for treatment;</p>
Part F, 32.	<p>The Licensee shall ensure that Seepage and Contact Water are managed in accordance with the approved <b>Water Management and Monitoring Plan</b>.</p>	<p>No change needed</p>
Part F, 33.	<p>The Licensee shall ensure that Discharges of Contact Water to the Receiving Environment are not acutely toxic to aquatic life as described in the <b>Water Management and Monitoring Plan</b> and determined at SNP 43-26a, 43-26b, 43-26c, 43-34, 43-35, 43-36, 43-37, 43-38, 43-39, 43-40, 43-41, 43-42, 43-43, and 43-44.</p>	<p>The GMRP proposes the condition be revised as follows: "The Licensee shall ensure that Discharges <del>of Contact Water</del> to the Receiving Environment are not acutely toxic to aquatic life as described in the Water Management and Monitoring Plan."</p>
Part F, 34.	<p>A minimum of five days prior to commencing Discharge of Contact Water to the Receiving Environment, the Licensee shall submit the Surveillance Network Program Water quality data to the Board and an Inspector to confirm Discharge criteria for Contact Water specified in <b>Water Management and Monitoring Plan</b>, can be met.</p>	<p>A minimum of five days prior to commencing Discharge of <del>Contact Water</del> to the Receiving Environment <b>(at SNP stations identified in Part F, 33)</b>, the Licensee shall submit the Surveillance Network Program Water quality data to the Board and an Inspector to confirm <del>Discharge criteria for Contact Water</del> <b>Surface Runoff Criteria</b> specified in <b>Water Management and Monitoring Plan</b>, can be met.</p>
Schedule 1, Condition 1 2. B)	<p>A summary of management and monitoring activities conducted in accordance with the</p>	<p>No change</p>



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iv.	<p>approved <b>Water Management and Monitoring Plan</b> as required in Part F, condition 4 of this Licence, undertaken during the previous calendar year, including</p> <p>.....</p> <p>The monthly and annual quantities in cubic metres of any <b>Contact Water</b> collected or managed and its source;</p>	
Schedule 1, Condition 1 2. E) iii.	<p>A summary of management and monitoring activities conducted in accordance with the approved <b>Tailings Management and Monitoring Plan</b>, required in Part F, condition 10 of this Licence, undertaken during the previous calendar year, including:</p> <p>i. A summary of any activity-specific updates to the Tailings Management and Monitoring Plan;</p> <p>ii. A report on the annual review of quantifiable performance objectives and criteria for any Dams, identified by the Engineer of Record;</p> <p>iii. A summary and interpretation of monitoring results, including cover performance, monitoring for Contact Water quantity and criteria, comparisons between Contact Water quality/quantity and expectations; and</p> <p>iv. A summary of Action Level exceedances and a description of actions taken in response to Action Level exceedances including any response or corrective action taken to verify Part F, condition 1 of this Licence is met.</p>	<p>iii. A summary and interpretation of monitoring results, including cover performance, monitoring for <b>runoff quality</b> <del>Contact Water quantity and criteria</del>, and comparisons <b>to the surface runoff criteria from the Water Management and Monitoring Plan</b> <del>between Contact Water quality/quantity and expectations</del></p>
Schedule 3, Condition 1 d) ii. A.	<p>Relevant background information used to inform the design, including, as is relevant</p> <p>.....</p> <p>ii. A description of the results or recommendations from any site-specific or Engineered Component-specific studies, modelling or testing and how they are addressed by the proposed design including, but not limited to:</p> <p>a. The results of programs to characterize soil, rock, geochemistry, Groundwater, ground ice, and ground temperature conditions to the depth expected to be affected by the proposed activity, beneath the footprint of all containment and</p>	No change, this refers to current conditions



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	Contact Water control structures, as deemed adequate by the Professional Engineer responsible for the design.	
<b>Schedule 4, Condition 2</b>	<p>The <b>Water Management and Monitoring Plan</b> referred to in Part F, condition 4 and 5 of this Licence shall include, but not be limited to, the following:</p> <p>a) Information regarding Water, Wastewater and Contact Water management, including:</p> <p>i. A summary, with appropriate maps or diagrams, of the components of the Water management system, including monitoring locations, at key stages of Remediation and at post-closure including all the Water and Wastewater streams that report to and from it at each stage;</p> <p>ii. A description of the Closure Activities that will influence the Water management system at the site;</p> <p>iii. A description of the process and facilities, including duration of use, intended for the purposes of:</p> <p>a. Obtaining Water from Yellowknife Bay;</p> <p>b. Managing and maintaining Minewater levels;</p> <p>c. Collecting, storing, and managing Contact Water, including a description of how surface Water management will change at key stages as site Remediation progresses;</p> <p>d. Collecting, storing, and managing any Wastewater resulting from the Project including a description of how Wastewater management will change at key stages as site Reclamation progresses; and</p> <p>e. The management of Sewage.</p> <p>iv. A description of the process and facilities for the treatment and Discharge of Wastewater to the Receiving Environment, including:</p> <p>a. A description of the Effluent Treatment Plant;</p> <p>b. A description of the Water Treatment Plant and outfall;</p> <p>c. Plans for disposal of treatment residuals and reference to plans in the Waste Management and Monitoring Plan for disposal of treatment residuals;</p>	No changes required



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	<p>d. A specific chloride and sulphate management and monitoring plan for the Water Treatment Plant, including frequency of monitoring and specific Actions Levels and response plans; ...</p>	
<p>Schedule 4, Condition 2, Item a) iv. e.</p>	<p>e. A Contact Water management and monitoring plan, including, but not limited to:</p> <ul style="list-style-type: none"> <li>i. Identification and evaluation of site-specific Contact Water Discharge criteria (parameters and concentrations) in alignment with the Board's <i>Water and Effluent Quality Management Policy</i>;</li> <li>ii. Details of toxicity testing for Contact Water, including a procedure for follow up Water chemistry monitoring and additional toxicity tests if necessary;</li> <li>iii. Identification of Surveillance Network Program sites that will monitor compliance for Contact Water Discharge prior to release to the Receiving Environment;</li> <li>iv. A protocol for determining how Contact Water is deemed appropriate for Discharge to the Receiving Environment including duration, frequency, and analysis of testing;</li> <li>v. A protocol for continued monitoring of <del>Contact Water</del> runoff from Engineered Components, once Discharged, and determination that Discharge criteria continue to be met;</li> <li>vi. Contingency measures if Contact Water does not meet Discharge criteria;</li> </ul>	<p>In addition to the comments submitted in the GMRP Comments on the MVLWB Draft Water Licence, the GMRP recommend that the Contact Water management plan be re-titled Contact Water Transition Plan as the intent is provide the MVLWB with a clear process by which the GMRP will confirm that runoff from a sub-set of Engineered Structures is not in contact with waste and can therefore be transition to non-contact water. We believe this provides more specificity as to the intent of the plan. We also recommend adopting the term runoff quality criteria as it too is more accurate.</p> <p>e. A Contact Water <b>Transition management and monitoring</b> Plan, including, but not limited to:</p> <ul style="list-style-type: none"> <li>i. Identification and evaluation of <del>site-specific Contact Water Discharge</del> <b>runoff quality</b> criteria (parameters and concentrations) in alignment with the Board's <i>Water and Effluent Quality Management Policy</i>;</li> <li>ii. Details of toxicity testing for Contact Water, including a procedure for follow up Water chemistry monitoring and additional toxicity tests if necessary;</li> <li>iii. Identification of Surveillance Network Program sites that will monitor compliance for <del>Contact Water</del> Discharge prior to release to the Receiving Environment;</li> </ul>



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		<p>iv. A protocol for determining how Contact Water is deemed appropriate for Discharge to the Receiving Environment including duration, frequency, and analysis of testing;</p> <p>v. A protocol for continued monitoring of <del>Contact Water</del> runoff from Engineered Components, once Discharged, and determination that Discharge criteria continue to be met;</p> <p>vi. Contingency measures if Contact Water does not meet <del>Discharge-runoff</del> <b>quality</b> criteria;</p>
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**Information Request 3:** Do the “parts” GMRP refers to in their response equate to Engineered Structures that comprise the larger Project Component from their proposed definitions? If not, how could the “parts” be defined? What does the GMRP see as the possible benefit to the overall activities and management of the proposed water licence by submitting the Closure and Reclamation Completion Reports in a piece-wise manner?

**Response:**

The Project Components of the GMRP are very large and include multiple facilities and/or Engineered Structures and will be remediated over multiple years. The “parts” to which the GMRP refers are the sub-components of a Project-Component such as a pit or a TCA. For example, the Tailings Project Component comprises the South Pond, North Pond, Central Pond, Northwest Pond and Polishing and Settling Ponds and Foreshore Tailings. The work on the Tailings Project Component will likely take the majority of active remediation. The remediation will be completed for different facilities or TCAs at different times during active remediation. The GMRP submits that it is more efficient and more relevant to provide Closure and Reclamation Completion Reports for each facility/sub-component directly after remediation is complete rather than waiting until the very end of all remediation to submit one very large, and less timely report. This will allow for review at a more relevant time.

**Information Request 4:** Does the GMRP propose that the Post-Closure Monitoring and Maintenance Plan be considered for approval during the term of this Water Licence? If yes, how does this align with the Scope of this Licence being limited to Phase 1 and Phase 2 of the Project?

**Response:**

As stated in GMRP’s comments on the MVLWB Draft Water Licence, the GMRP does not support limiting the scope of this Licence to Phase 1 and Phase 2 of the Project. Referring to phases of the project is



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unnecessary and could lead to confusion. The GMRP would like to elaborate on the proposed submission of a Post Closure Monitoring and Maintenance Plan. The submission would be a compilation of all the Post Closure Monitoring and Maintenance approved in the Design Plans. The GMRP suggests it may be appropriate to call this an Interim Post Closure Monitoring and Maintenance Plan. As these details will have been approved in the Design Plans, it is not recommended this submission be for approval under the current Water Licence. The recommendation was intended to facilitate the documentation of any possible changes or updates to Post-Construction/Post-Closure Monitoring and Maintenance recommended in the Closure and Reclamation Completion Reports (MVLWB Draft Water Licence Part D, Condition 8), as the GMRP disagreed with the concept of revising the CRP to contain these details.

Over 10 plus years of active remediation, as well as the continued work on the Perpetual Care Plan the final Post Closure Monitoring and Maintenance Plan will evolve from the Interim Post Closure Monitoring and Maintenance Plan. The more complete and refined Post-Closure Monitoring and Maintenance Plan would most likely be submitted for approval under a separate Water Licence application

