

Proposed Milton Quarry East Extension
JART COMMENT SUMMARY TABLE – Adaptive Management Plan

Please accept the following as feedback from the Milton Quarry Joint Agency Review Team (JART). Fully addressing each comment below will help expedite the potential for resolutions of the consolidated JART objections and individual agency objections. **Additional, new comments may be provided once a response has been prepared to the comments raised below and additional information provided.**

| | JART Comments (December, 2022) | Reference | Source of Comment | Applicant Response | JART Response |
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| Report/Date: Addendum to Updated Adaptive Environmental Management and Protection Plan (AMP) December 2021 Author: Goodban Ecological Consulting | | | | | |
| 1. | Standard 1.2.28 under Operations requires "any recommendations and/or monitoring program(s) identified in the technical reports." While the AMP and WMS are referenced on the Site Plans (page 2 of 4) and specific direction is provided in Section D (D1 and D2) to implement the AMP, monitoring locations, frequency and parameters are not incorporated into the Site Plans. | Standard 1.2.28 (Page 2 of 4) | Daryl W. Cowell | | |
| 2. | The WMS is described in the AMP Addendum and is noted as having "been in place and operating successfully since 2007" (page 2) with regard to groundwater recharge (injection wells) and diffuse wetland water augmentation in the license areas of the West and East cells. I have not confirmed this statement, however, if successful, newly planned injection wells for the MQEE should mitigate at least some groundwater impact during extraction. It is understood that recharge via the injection wells will continue beyond extraction until groundwater monitoring targets are met. These targets have not yet been established (see comment #2 in Progressive and Final Rehabilitation table. | Addendum to Updated AMP | Daryl W. Cowell | | |
| 3. | The AMP does not include water quality/chemistry sampling and monitoring other than that currently underway for recharge water taken from the existing reservoir. The Water Resources Assessment Report specifically notes potential contamination during excavation in the form of elevated turbidity, suspended solids ammonia and bacteria (Geology and Water Resources Report, Section 10.3.4) which would warrant on-going groundwater monitoring in monitoring wells adjacent to the MQEE extraction area. | Geology and Water Resources Report, Section 10.3.4 | Daryl W. Cowell | | |
| 4. | The AMP provides a map showing the proposed locations of groundwater and surface water monitoring locations, including background monitoring (Figures 4 and 7, Part I). No minimum levels or trigger levels are provided in the AMP but it commits to including these following "minimum 3-year baseline water level monitoring". Trigger well 83.21 will actually be a minimum of 2-years (page 4, footnote). | Addendum to Updated AMP | Daryl W. Cowell | | |

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| 5. | The AMP does not refer to the presence of karst nor directly provide contingencies should karst be encountered. However, the Response Action Plan (Part II, Section C), in the case of a trigger well water level below the target level (Yellow Zone, Section 2.2.2), includes potential actions relating to discharges into the excavation. Responses could include quarry wall buttressing, grouting and/or the creation of an hydraulic dam (Footnote 11, page 4, Part II, Section C). This would cover problematical karst fractures/conduits. Similar responses are proposed in the case of continued low surface water levels in wetlands (Part II, Section C, page 6). | Addendum to Updated AMP | Daryl W. Cowell | | |
| 6. | It is noted in Section 2.4.1 that “the watermain will generally be installed within a 10 m wide disturbance zone which will not encroach into the buffers for Significant Woodlands or Significant Wetlands”. The combined width of the buffer and the disturbance zone should be clarified for the significant woodland on the southeast side of the study area. The use of the word “generally” implies that there are some areas where the watermain may be installed within the buffer. Any reduction in buffer width should be explicitly shown and justification provided. The location of the access road in this area should also be clarified. | Section 2.4.1 | Sarah Mainguy, NSE | | |
| 7. | Section 2.3 states that groundwater levels are likely to be kept at higher levels than prior to extraction. Target levels should be set so as to maintain habitat for Black Ash and other wetland tree species, in addition to breeding habitat for amphibians. | Section 2.3 | Sarah Mainguy, NSE | | |
| 8. | Section 4.5.1: Wetland W41 should also include monitoring of Black Ash, a Species at Risk. | Section 4.5.1 | Sarah Mainguy, NSE | | |
| 9. | Section 4.5.2.: Monitoring of vegetation should be conducted in all restored areas, including those around recharge well and feeder line installation areas. | Section 4.5.2. | Sarah Mainguy, NSE | | |
| 10. | <i>“The target water levels will be established based upon existing groundwater levels prior to extraction below the water table within the MQEE. The targets will be based on representative long-term baseline average water table conditions consistent with the target level approach for the existing quarry under the AMP. If less than 3 years of monitoring data is available, the target level determination will combine recent water level data with older data from background and other monitoring well data to develop surrogate historical baseline data similar to that derived for the existing quarry.’ (AMP Addendum Part II Section B, page 4, section 2.3)</i> | Page 4, Part II, Section B, Establishment and Monitoring of Target Levels, Section 2.3, 1 st paragraph -Target Levels, (Issues list item 2.1) | Norbert M. Woerns | | |

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| | <p>It is not clear how historical groundwater levels will be integrated with more recent groundwater levels to establish target groundwater levels. It is also not clear to what extent water levels at the recently installed trigger wells have been impacted by the existing quarry operations and whether these are appropriate for use as baseline conditions for rehabilitation purposes. It is also not clear what effect the existing Water Management System has had on lessening the impact from the existing quarry on the MQEE area. A question remains, what role the historical pre-excavation water levels will play in establishing target groundwater levels for the MQEE. Clarification is required. See Comment 20 in <i>Geology and Water Resources Table</i> (Issues list item 1.6).</p> <p>Water quality sampling should be continued and augmented as required during site operations and a post-closure period. Water quality targets/triggers should be established.</p> | | | | |
| 11. | The response action plan for groundwater and surface water is focused on meeting target water levels when water levels drop below target levels. There is no discussion on addressing the impact of major storm events and excessively high groundwater and surface water levels. Stormwater management issues in the broader sense are pertinent to the MQEE operation as the MQEE is considered an extension of the existing quarry operations. | Part II – Section C, Response Action Plan, (Issues list item2.2) | Norbert M. Woerns | | |
| 12. | The response actions and contingency measures within the supplementary monitoring plan should include proposed surface water target levels for wetlands W41, W46a, W46b, W46d and W56 to ensure effective mitigation measures are in place in the event of an undesirable influence on wetland hydroperiods and impact on wetland ecological functions during and post quarry operations. Update the contingency measures to include target levels for wetlands W41, W46a, W46b, W46d and W56. | AMP Addendum Part II Supplemental Information and Implementation Details | CH | | |
| 13. | Understanding that wetlands W41 and W46a are identified as significant wildlife habitat (SWH) and confirmed breeding pools for Jefferson Salamander (JESA), CH recommends that wetland monitoring be conducted annually during final rehabilitation and lake filling to ensure there is no impact on the hydrological form and function of the wetlands. | AMP Addendum Part II Supplemental Information and Implementation Details Section 4.5.3, Monitoring Frequency (Page 10) | CH | | |
| 14. | Considering that the information from the AMP has been integrated into the natural environment and the geology and water resources reports, all CH comments on these reports, should also be updated in the AMP in a revised submission to the satisfaction of CH. | General | CH | | |