TOWN OF CALEDON

CBM-Caledon Quarry
CAART COMMENT SUMMARY TABLE RESPONSE #2 – [Hydrogeology]

Please accept the following as feedback from the Caledon Aggregate Review Team (CAART). Fully addressing each comment will expedite the potential for resolution of the consolidated CAART comments and individual agency objections. **Additional comments may be provided once a response has been prepared to the comments raised below and additional information provided**.

Colour Code	Description
	Resolved
	Resolved subject to additional information being provided to CAART Reviewers (e.g, Implementation Guide, Report Addendums)
(no colour)	Response provided, but no further action taken or required by Project Team

	Initial CAART Comments (Dec 31, 2025)	Page / Section	Applicant Response (May 29, 2026)	CAART Response (Date)	Applicant Response (Date)	CAART Response
1.	**Water Report Addendum** The additional cross-sections provided in Appendix C of the report improves the presentation of the site conceptual hydrogeological model and addresses, in part, the recommendation from the first phase of our peer review on behalf of the Town. However, groundwater level information is not provided in the cross-sections and wetland features in the area (including the Cataract PSW) are not shown. No isopach maps or geological surface structure maps were provided.	2	See response to Comment #1 and Comment #3 in CAART Comment Summary Table Response #1.			
2.	**Water Report Addendum** In November 2025, WSP provided a technical memorandum that included predicted surface water level changes at the study surface water monitoring stations …The results show essentially no change at any of the surface water monitoring stations either during operational stages of the pit/quarry operation or post-rehabilitation. Some of the data presented in Table 1 of the technical memorandum are unusual. For example, at	2	See response to Comment #4 in CAART Comment Summary Table Response #1.			

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	SW11 predicted change in operational water level is 0.00, whereas the percentage change is shown to be -12%.					
3.	**Water Report Addendum** As there are no onsite investigations to verify the locations and conditions of private wells in the Cataract area (to the east of the proposed pit/quarry South Area), a significant level of uncertainty exists with respect to potential adverse impacts to private wells. The operational plan indicates that the South Area is the last area to be extracted, so there should be many years of monitoring data available before extraction begins in the South Area.	3	The impact assessment presented in Section 9.3 of the Water Report (WSP 2023) is informed in the Water Well Information System (WWIS), maintained by the MECP and the numerical model results. An initial door-to-door private well survey was conducted in July 2021, however, there was no public response (as detailed in Section 9.3.3. of the Water Report (WSP 2023)). The Water Report includes a commitment to proactively perform a second private well survey prior to the commencement of operations. The survey will serve to confirm and refine data supporting the impact assessment on private well users. Where there is potential for an adverse impact and the property owner is in agreement, the private well can be added to the monitoring network. Aquifer conditions are further observed by the network of monitoring wells, which includes wells located between the extraction area and the private wells completed within the same aquifer. These wells have collected over five years of monitoring data at this time and will continue to monitor aquifer conditions prior, during, and following operations. They provide a robust basis for the identification of potential impacts to private water supplies and assessment of the models predicted changes to aquifer conditions. In the event of a complaint of well interference, an updated well complaint response procedure is proposed in Section 2.4 of the Water Report Addendum (WSP 2025a). This procedure provides a method to respond to any unanticipated impact and identifies potential mitigation measures. One of the potential mitigation options is to mitigate a potential unanticipated impact is to deepen the private well below the Cabot Head Formation aquitard, into the lower aquifer (composed of the Whirlpool and Manitoulin Formations). The MECP's WWIS shows that water supplies are successfully completed in this aquifer in the area. In conclusion, the assessment of potential impacts presented in the Water Report is supported by information from the WWIS, numerical model predictions, extensive monitoring data, and in the event of an unanticipated impact a well complaint response procedure is in place to mitigate any adverse impact to a private well.			
4.	**Water Report Addendum** In the section on Potential for Groundwater Contamination, WSP notes that nitrogen-based residuals from blasting activities associated with the quarry are a potential contaminant of concern. The discussion indicates that anaerobic conditions occur below the water table, leading to nitrate	3	Regarding the potential for contamination of the shallow aquifer with nitrogen species, Section 2.5 of the Water Report Addendum (WSP 2025a), comments on a range of possible causes of groundwater contamination, however blast residuals are considered a possible but unlikely source of contamination. During operations, groundwater will flow toward the quarry where it will report to the sumps, then to the settling pond, before being discharged to the irrigation system at the golf course. During Phases 1 to 3, under typical operating conditions there is no infiltration of water associated with quarry operations. Beginning in Phase 4, water from the settling pond will supply the infiltration trenches. Water quality objectives			

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	biodegradation by denitrification. The comments do not appear to align with what the groundwater sampling data show nor what occurs at many sites in Southern Ontario where nitrate concentrations are high…If WSP believes that nitrogen loadings from blasting could potentially add to nitrate concentrations in groundwater at the site, a more detailed groundwater contaminant assessment should be undertaken to determine whether there will be an adverse impact to downgradient water supplies.		for the water infiltrating supplied to the trenches will be established as part of the Environmental Compliance Approval (ECA) process in consultation with the MECP and other stakeholders. Prior to the operation of the infiltration trench system, years of water quality sampling information will be available to characterize the settling pond as a source for the system and identify any potential impacts to private well users. Potential mitigation measures are identified in the Mitigation System Design Report (WSP 2025b) and include potential treatment of water prior to injection. Regarding denitrification processes in the aquifer, groundwater sampling results for wells along the infiltration trench alignment, screened >1m below the water table, can be compared to the thresholds presented by McMahon and Chapelle (2008) to identify redox processes in groundwater. When concentrations of nitrate, manganese, and iron are compared to the redox thresholds, groundwater conditions in most wells are consistent with nitrate reducing or manganese reducing conditions, with some samples reflecting a water quality in a transition zone from oxic to anoxic conditions.			
5.	**Mitigation System Design Report** On page 23 (third bullet), it is not clear on what this means, but it appears to be an important consideration that should be explained.	4	In Section 6.1 of the Mitigation System Design Report (WSP 2025b) the need to amend the design of the slurry wall/grout zone is identified in the context of the overall hydraulic performance of the barrier. In this context, the need for amendments is to modify the design of the slurry wall/grout zone to subsurface conditions to meet the hydraulic objectives of the slurry wall/grout zone.			
6.	**Mitigation System Design Report** In Section 7.3, the report provides a general timeline for construction of the hydraulic barrier, which includes both the slurry wall and grouting of the weathered bedrock zone, and construction/operation of the infiltration trenches. Later in Section 8.1 the report indicates that grouting of the upper bedrock will be optional and only undertaken “if required”. Further explanation should be provided regarding why the grouting is considered optional, and the process that will be used to determine whether or not it will be implemented.	4	As detailed in the Mitigation System Design Report (WSP 2025b), the purpose of the slurry wall, grout zone, and progressive rehabilitation of the quarry faces is to reduce the amount water infiltrated by the trenches backflowing into the quarry. Depending on the subsurface conditions encountered during construction of the slurry wall and the specific methods of construction selected, the slurry wall may be effectively “keyed into bedrock” and provide a more effective option than a grout zone would. The wording in the Mitigation System Design Report sets an operational objective for the system and allows flexibility to achieve it in a way that accommodates variable subsurface conditions. As discussed in Comment Responses #7, the effectiveness of the mitigation system is measured based on target water levels and therefore the control of backflow is not directly related to the system’s effectiveness.			
7.	**Mitigation System Design Report** A technical area of concern that does not appear to have been discussed in the reporting relates to the groundwater mitigation system and the potential for trench infiltration water to flow back into the quarry through the Gasport Formation (below the upper weathered bedrock zone and the overburden). If this were to occur, it could potentially	5/6	As detailed in the Mitigation System Design Report (WSP 2025b), the objective guiding the operation of the mitigation system is to maintain groundwater levels within their range of natural variations in the aquifer along the alignment of the system and therefore mitigate impacts (Section 8.1 of the Mitigation System Design Report and on Sheet 3 of the Site Plans). Section 7.2 details the operational target water levels for each zone of the mitigation system. Each zone of the infiltration trench is complimented with a well nest to observe pre-extraction conditions and observe the performance of the system. Where groundwater levels are maintained by the infiltration trenches, the system is effective and impacts are mitigated.			

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	undermine the effectiveness of the mitigation system in the current design.		In the event of greater than anticipated backflows to the quarry, an unanticipated change in observed water levels would fall below the target levels. This would identify a need for mitigation of a potential impact. Attachment 1 includes the Monitoring, Triggers, and Mitigation Report summarizes monitoring commitments, establishes trigger levels, including target levels for the Mitigation System,and identifies contingency mitigation options. Potential mitigation measures identified in the Mitigation System Design Report include increasing infiltration rates, supplemental grouting, supplemental slurry walls, and progressive rehabilitation of the quarry faces (WSP 2025b). Groundwater model results show that the infiltration trenches can infiltrate water to the aquifer at rates greater than those proposed, in the event this mitigation were needed (Appendix C, Section 4.2.5. to the Mitigation System Design Report (WSP 2025b)).			
8.	**Mitigation System Design Report** The pilot testing proposed during Phase 4 and 5 should provide important information on operational performance of the groundwater mitigation system. However, it is not clear what will happen should the groundwater mitigation system not perform as expected and, in a worst case scenario provide insufficient mitigation to prevent potential adverse impacts to natural features and groundwater users downgradient of the site.	5	See response to Comment #6 and Comment #7.			
9.	**Mitigation System Design Report** There is uncertainty in the model predictions and no way to know for sure that the groundwater mitigation system will work as intended until after extraction operations are wide-spread at the site. One way to address the uncertainty (and corresponding risk of adverse impacts on natural features and groundwater users) is to establish a contingency mechanism that includes setting target groundwater and surface water level conditions that are to be maintained at important monitoring stations during all phases of the pit/quarry operations. The target water levels would be supplemented by trigger levels (to be set above the target levels) to allow for remedial action prior to reaching (or going below) the target levels.	6	WSP concurs with the approach of setting target levels in the aquifer to measure the effectiveness of the Mitigation System and identifying mitigation measures in the event of water levels observed below the target levels, as identified in Section 7.2 of the Mitigation System Design Report and detailed in the Monitoring, Triggers, and Mitigation Plan (Attachment 1). See responses to Comment #6 and Comment #7.			