

September 6, 2022

Grand River Conservation Authority
400 Clyde Road, P.O. Box 720
Cambridge, ON N1R 5W6

Attention: Trevor Heywood
Resource Planner

Dear Mr. Heywood,

**Re: Response to 3rd Preliminary Servicing Submission
556 and 576 Conservation Drive
City of Waterloo**

In response to your comments dated July 8, 2021, we offer the following:

Stormwater Management

1. *The Beaver Creek Meadows Communal Stormwater Management (SWM) Facility is proposed to service post-development subcatchment 3107 for this subdivision. The GRCA has been providing comments to MTE regarding this facility, and all contributing developments must demonstrate meeting and exceeding their respective infiltration targets. The high-level calculations provided are insufficient to confirm that the proposed post-development infiltration volumes are achievable.*

a. *For draft plan approval, please provide a monthly water balance that clearly demonstrates that this subdivision's infiltration target is met with an appropriate factor of safety.*

The NWSSS requires confirmation of annual volumes, not broken into monthly contributions. The average annual post-development water balance components (runoff, infiltration, and evapotranspiration) are provided by the NWSSS and referenced in the "Simplified Water Balance Calculations" provided in Appendix C of the SWM report. The calculations are summarized in the "Water Balance" section of the SWM report. Pre-development infiltration rates are exceeded by $\pm 20\%$. Confirmation that annual targets are met will be further confirmed in the continuous model during the detailed design phase.

b. *Please provide the monthly water balance for each catchment (east and west) in the pre-development, post development and post-development with mitigation conditions.*

Please refer to Table 6 in the revised SWM report. As described on page 5.3 of the December 2021 Hydrogeological Assessment, "...since there is no apparent permanent groundwater divide present on the Site, this infiltration can occur within either the East or West Catchment post-development stormwater drainage

areas ... as all water entering the subsurface and recharging AFB1 will ultimately flow to the southwest towards Beaver Creek.”

- c. *Please include the post-development infiltration volumes for the east and west catchments separately, to confirm that the infiltration rates specified for the communal SWM facility and the North Waterloo Scoped Subwatershed Study (NWSSS) are being met, respectively.*

The two major surface drainage areas identified in the SWM report are located within the same groundwater catchment according to the Hydrogeological Assessment completed by Stantec (2021). This means that the recharge to groundwater volumes for both surface catchments can be combined for pre-development and post-development modelling purposes. Please refer to the detailed calculations in Appendix C of the revised SWM report; a conclusion was also added below Table 6.

2. *In a letter to the Beaver Creek Meadows Developers Group dated December 11, 2020, the City of Waterloo advised that it "does not support private subsurface engineered [low impact development] approaches for lands not held in municipal ownership within the Beaver Creek District Plan area that would count towards overall sub-catchment and catchment SWM infiltration goals," with some exceptions noted. The GRCA supports the City's position and will analyze proposed infiltration in the same manner.*

It is proposed that a portion of the post-development infiltration deficit is mitigated through lot levels controls. While we are supportive of additional infiltration measures, we will be unable to support a water balance relying on lot-level infiltration on private property, and we request that proposed infiltration mitigation calculations do not include amended topsoil and disconnected downspouts. Supporting information and details regarding infiltration facilities that will count towards meeting the infiltration targets should be provided, including seasonally high groundwater levels.

Amended topsoil and disconnected downspouts do not form part of the proposed infiltration strategy.

A complete water balance is achieved through the use of “municipally-controlled” infiltration systems and does not rely on private systems to achieve a balance. Private systems help to overachieve the required annual infiltration.

All infiltration facilities (lot-level, third pipe, and end-of-pipe) are separated from seasonally high groundwater. Further details will be provided in the detailed design stage. Lot-level galleries in rear yards were manually checked comparing the proposed grading to the groundwater contours provided by Stantec. The third pipe system, based on typical cross-section, is not lower than basement floor. As basements need to provide clearance to GWT, the third pipe system will have clearance as well.

Natural Heritage

3. *Wetland boundaries on this site were last verified by the GRCA in 2015. Given the amount of buffer encroachment proposed within the vicinity of the on-site SWM facility, we request that this section of the wetland be delineated and, if necessary, resurveyed.*

The wetland buffer was reviewed on-site and re-flagged in 2021 to provide an update to the existing condition. The boundary flagging was confirmed in the field with GRCA ecologist (T. Zammit) on July 30, 2021. The updated boundary was surveyed with a GPS pole (Trimble R10) and the new boundary is shown on the updated Draft Plan and other plans.

4. *With respect to areas of minor buffer encroachment, detailed grading and landscaping plans are required at detailed design to demonstrate how buffer functions within these areas will be maintained or enhanced. All plans must clearly illustrate a 15-metre minimum grading setback from all wetland areas.*

Figure 8 in the revised Preliminary SWM report shows the 15m wetland buffer, and that the proposed grading does not infringe upon it. Detailed grading and landscaping plans for all areas of buffer encroachment will be prepared at the Detailed Design stage and will maintain this approach.

5. *The environmental impact study (EIS) suggests that measures will be implemented in order to meet or exceed the post-development infiltration target recommended by the NWSSS. However, further detail was lacking in the EIS. It appears the modelling information presented in the SWM report was not interpreted. The additional infiltration and water balance details (as requested in comment 1) should be reviewed as part of the EIS.*

Please note that the Hydrological Assessment was finalized (Stantec, 2021) and the design of the SWM facility updated after this comment was issued. The updated water balance calculations indicate that the proposed infiltration measures exceed the target established by the NWSSS. Please refer to the updated SWM report for details.

6. *We note that the hydrogeology assessment is undergoing updates. We request that a final assessment report be submitted to the GRCA at the detailed design stage.*

The Hydrogeology Assessment was finalized by Stantec in December 2021, and it is included in the submission package accompanying this letter.

Advisory Comments

7. *A treed section of the 30-metre wetland buffer will be directly impacted by grading for the on-site SWM facility, and while the limit of grading respects the 15-metre setback from the surveyed wetland limit, it may impact the contiguous woodland. The woodland was last surveyed in 2016. Given the presence of several regionally significant species within the woodland, we recommend that this section of the woodland be reviewed by the Region and resurveyed if necessary.*

We understand that Jane Gurney sent you an email on August 3, 2021 confirming that Regional staff attended the site in 2018, "and at that time it was determined that the woodland projection, as shown in the attached figure from NRSI, did not meet the criteria for considering it as part of the feature, but that we did want to see as many trees as possible be retained. I believe that this is consistent with the City's

determination, and there are no trees proposed to be removed at this time." No further action is required.

8. *We recommend that no vegetation be removed during the active bat season and the breeding bird season.*

The timing windows for breeding birds and the active bat season will be adhered to for any vegetation removal. The timing windows are provided in the EIS and are as follows:

- **Breeding Birds:** To protect birds and their nests, during the time period from May 1 to July 31 it is recommended that no clearing of trees and vegetation occur within the subject property. If clearing must occur within this time frame, a nest search must be carried out by a qualified biologist within 48 hrs of clearing.
- **Bats:** Targeted bat surveys of the isolated landscape trees are not required, as determined through MNRFC consultation, as long as tree removal avoids the key roosting period for regulated SAR bats (May 1 – August 31).

These considerations will be noted during the preparation of detailed Erosion & Sediment Control drawings and earthworks notes, which will be submitted to the GRCA in support of permit.

9. *According to Meritech, "as the surface receiver of the SWM facility is also Beaver Creek, a winter bypass is potentially unneeded." Given the past evidence of trout spawning along Laurel Creek (per NWSSS) and the potential for salmonids to inhabit the lower reaches of Beaver Creek, a winter bypass is recommended. We understand that a bypass will be proposed in upcoming revisions to the SWM facility. Please provide additional details regarding its proposed location / outlet and operation.*

A proposed winter bypass is now shown on Figure 8 of the SWM report, described in the report, and shown on the Preliminary Servicing Plan.

10. *Continued surface water quality monitoring along Beaver Creek and at the stormwater outfall is recommended in order to assess overall conditions, to verify whether or not mitigation measures are adequate, and determine if surface discharge from the SWM facility is a source of adverse water quality impacts to the creek.*

A detailed monitoring plan will be advanced at the detailed design stage.

Fees

11. *We wish to acknowledge receipt of a cheque in the amount of \$17,500.00. Subdivision fees for applications filed prior to 2018 were capped at \$25,000.00, so this covers the required 70% of the required total review fees. Prior to issuance of conditions of draft plan approval, we will require the remaining fees of \$7,500.00. Additional fees will be required for clearance, and a separate fee will be required for any GRCA permits.*

The remaining fees will be provided by others.

Please provide a comment-response matrix with all subsequent submissions outlining how all GRCA comments have been addressed.

In addition to this response letter, we have also prepared a response matrix.

We are confident that we have addressed all your comments to advance the approval. Should you require anything further, please contact the undersigned.

Yours very truly,

MERITECH ENGINEERING



Chris H. Togeretz, P.Eng.
Manager, Design Services

on behalf of
Abraham Barrios, P.Eng.
Project Manager

CHT/sb
Enclosures (Response matrix)

cc

**556, 560 and 576 Conservation Drive
Draft Plan of Subdivision 30T-16402
Response to GRCA circulation comments (dated July 8, 2021)**

No	Comment	Response
Stormwater Management		
1.	<p>The Beaver Creek Meadows Communal Stormwater Management (SWM) Facility is proposed to service post-development subcatchment 3107 for this subdivision. The GRCA has been providing comments to MTE regarding this facility, and all contributing developments must demonstrate meeting and exceeding their respective infiltration targets. The high-level calculations provided are insufficient to confirm that the proposed post-development infiltration volumes are achievable.</p> <p>a. For draft plan approval, please provide a monthly water balance that clearly demonstrates that this subdivision's infiltration target is met with an appropriate factor of safety.</p> <p>b. Please provide the monthly water balance for each catchment (east and west) in the pre-development, post-development and post-development with mitigation conditions.</p> <p>c. Please include the post-development infiltration volumes for the east and west catchments separately, to confirm that the infiltration rates specified for the communal SWM facility and the North Waterloo Scoped Subwatershed Study (NWSSS) are being met, respectively.</p>	<p>a. The NWSSS requires confirmation of annual volumes, not broken into monthly contributions. The average annual post-development water balance components (runoff, infiltration, and evapotranspiration) are provided by the NWSSS and referenced in the "Simplified Water Balance Calculations" provided in Appendix C of the SWM report. The calculations are summarized in the "Water Balance" section of the SWM report. Pre-development infiltration rates are exceeded by $\pm 20\%$. Confirmation that annual targets are met will be further confirmed in the continuous model during the detailed design phase.</p> <p>b. Please refer to Table 6 in the revised SWM report. As described on page 5.3 of the December 2021 Hydrogeological Assessment, "...since there is no apparent permanent groundwater divide present on the Site, this infiltration can occur within either the East or West Catchment post-development stormwater drainage areas ... as all water entering the subsurface and recharging AFB1 will ultimately flow to the southwest towards Beaver Creek."</p> <p>c. The two major surface drainage areas identified in the SWM report are located within the same groundwater catchment according to the Hydrogeological Assessment completed by Stantec (2021). This means that the recharge to groundwater volumes for both surface catchments can be combined for pre- and post-development modelling purposes. Please refer to the detailed calculations in Appendix C of the revised SWM report; a conclusion was also added below Table 6.</p>
2.	<p>In a letter to the Beaver Creek Meadows Developers Group dated December 11, 2020, the City of Waterloo advised that it "does not support private subsurface</p>	<p>Amended topsoil and disconnected downspouts do not form part of the infiltration strategy.</p>

	<p>engineered [low impact development] approaches for lands not held in municipal ownership within the Beaver Creek District Plan area that would count towards overall sub-catchment and catchment SWM infiltration goals,” with some exceptions noted. The GRCA supports the City’s position and will analyze proposed infiltration in the same manner.</p> <p>It is proposed that a portion of the post-development infiltration deficit is mitigated through lot level controls. While we are supportive of additional infiltration measures, we will be unable to support a water balance relying on lot-level infiltration on private property, and we request that proposed infiltration mitigation calculations do not include amended topsoil and disconnected downspouts. Supporting information and details regarding infiltration facilities that will count towards meeting the infiltration targets should be provided, including seasonally high groundwater levels.</p>	<p>A complete water balance is achieved through the use of “municipally-controlled” infiltration systems and does not rely on private systems to achieve a balance. Private systems help to overachieve the required annual infiltration.</p> <p>All infiltration facilities (lot-level, third pipe, and end-of-pipe) are separated from seasonally high groundwater. Lot-level galleries in rear yards were manually checked comparing the proposed grading to the groundwater contours provided by Stantec. Further details will be provided in the detailed design stage. The third pipe system, based on typical cross-section, is not lower than basement floor. As basements need to provide clearance to GWT, the third pipe system will have clearance as well.</p>
Natural Heritage		
3.	<p>Wetland boundaries on this site were last verified by the GRCA in 2015. Given the amount of buffer encroachment proposed within the vicinity of the on-site SWM facility, we request that this section of the wetland be delineated and, if necessary, resurveyed.</p>	<p>The wetland buffer was reviewed on-site and re-flagged in 2021 to provide an update to the existing condition. The boundary flagging was confirmed in the field with GRCA ecologist (T. Zammit) on July 30, 2021. The updated boundary was surveyed with a GPS pole (Trimble R10) and the new boundary is shown on the updated Draft Plan and other plans.</p>
4.	<p>With respect to areas of minor buffer encroachment, detailed grading and landscaping plans are required at detailed design to demonstrate how buffer functions within these areas will be maintained or enhanced. All plans must clearly illustrate a 15-metre minimum grading setback from all wetland areas.</p>	<p>Figure 8 in the revised Preliminary SWM report shows the 15m wetland buffer, and that the proposed grading does not infringe upon it. Detailed grading and landscaping plans for all areas of buffer encroachment will be prepared at the Detailed Design stage and will maintain this approach.</p>
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	recommended by the NWSSS. However, further detail was lacking in the EIS. It appears the modelling information presented in the SWM report was not interpreted. The additional infiltration and water balance details (as requested in comment 1) should be reviewed as part of the EIS.	water balance calculations indicate that the proposed infiltration measures exceed the target established by the NWSSS. Please refer to the updated SWM report for details.
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8.	We recommend that no vegetation be removed during the active bat season and the breeding bird season.	<p>The timing windows for breeding birds and the active bat season will be adhered to for any vegetation removal. The timing windows are provided in the EIS and are as follows:</p> <ul style="list-style-type: none"> • Breeding Birds: To protect birds and their nests, during the time period from May 1 to July 31 it is recommended that no clearing of trees and vegetation occur within the subject property. If clearing must occur within this time frame, a nest search must be carried out by a qualified biologist within 48 hrs of clearing. • Bats: Targeted bat surveys of the isolated landscape trees are not required, as determined through MNRFC consultation, as long as tree removal avoids the key roosting period for regulated SAR bats (May 1 – August 31). <p>These considerations will be noted during the preparation of detailed Erosion & Sediment Control drawings and earthworks notes, which will be submitted to the GRCA in support of permit.</p>

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