



March 17, 2023

Our File: 411009

Grand River Conservation Authority
400 Clyde Road, P.O. Box 729
Cambridge, ON N1R 5W6

Attention: Beth Brown

Re: Ainley Farm Property
6545 & 6560 Gerrie Road, Elora

Dear Ms. Brown,

In response to the comments dated September 27, 2019 regarding the proposed Zoning Bylaw Amendment and Plan of Subdivision for the Ainley Farm Property, we offer the following responses for your review and consideration:

Comments to be Addressed Prior to Consideration of Draft Plan Conditions

Comment 1: Groundwater Recharge under existing conditions appears to be significantly underestimated. The recharge rate for native silt tills is estimated to be 87 mm. MOE 2003 SWMPD Manual Table 3.1 (which this report references) indicates 145 mm of groundwater recharge as the lowest value for clay soils in shallow rooted crops. Please provide further discussion of how 87 mm/yr has been determined as the infiltration rate.

Response: *Infiltration rates were an estimate from the MOE 2003 water balance table after applying the infiltration factors (separating actual infiltration from baseflow). The soil on site consists of silt tills and vegetation is agricultural, equivalent to clay soils with shallow rooted crops, noted as 145 in the infiltration column prior to removal of baseflow. The topography is flat (0.3), soils are medium combinations of clay and loam (0.2), and cover is cultivated (0.1), resulting in an infiltration factor of 0.6. After applying the infiltration factor of 0.6 to 145mm, the result is the 87 mm used in the provided water balance.*

Comment 2: Please provide supporting calculations/modelling and discussion of how the analysis was completed for the results presented in Table 2 (Monthly ponding depth based on runoff events less than the 1:2 year of the Ainley Farm Environmental Impact Study: Addendum (North-South Environmental Inc, 24 July 2019).

Response: *The pre-development and post-development volumes were taken from the monthly water balance results of the Stormwater Management Design Report (GM BluePlan Engineering, dated July 2019). There was a calculation error in the post-development volume which has been revised and the revised Table 2 is attached to this letter. The pre-development and post-development depths are extrapolated from the Stage-Storage Table in the Stormwater Management Design Report (GM BluePlan Engineering, dated July 2022). For instance, the pre-development runoff volume in*

January is 1,887 m³. Per the wetland stage-storage table (see the attached), this volume results in a ponding depth between 409.75 m (402.2 m³) and 410.00 m (2,187.9 m³).

$$\frac{2,187.9 \text{ m}^3 - 402.2 \text{ m}^3}{410.0\text{m} - 409.75\text{m}} = \frac{2,187.9 \text{ m}^3 - 1,894 \text{ m}^3}{410.0\text{m} - X}$$

$$7,142.8 \text{ m}^2 = \frac{293.9 \text{ m}^3}{410\text{m} - X}$$

$$X = 409.96 \text{ m}$$

$$\text{Depth of Ponding} = 409.96 \text{ m} - 409.63 \text{ m} = 0.33 \text{ m}$$

Advisory Comments to the Municipality

Comment 3: The area of proposed development that will drain uncontrolled to Walser St will result in post-development runoff rates that are greater than the pre-development flow rates. Cumulative impacts of potential future development in the area should be assessed to determine if the increase in flows will be acceptable and that municipal infrastructure has enough capacity.

Response: *Per Township comments, the stormwater management design has been revised to reduce post-development runoff rates on Walser Street to pre-development flow rates.*

Advisory Comments for Detailed Design

Comment 4: Table No. 8 Post-Development Uncontrolled Flow Rate and Runoff Volume. This Table is the same as Table. No. 16: Summary of Post-Development Flow Rates and Runoff Volumes from the Site. Please update Table No. 8 to reflect the uncontrolled runoff rates.

Response: *Table 8 has been updated in the revised Preliminary Servicing and Stormwater Management Design Report.*

Comment 5: Please provide drawdown time calculations for the proposed SWM facilities.

Response: *Drawdown time calculations have been included in the revised Preliminary Servicing and Stormwater Management Design Report.*

Comment 6: The Stormwater pond should have multiple outlets and or a level spreader in order to effectively distribute the discharge throughout the wetland features and to prevent erosion.

Response: *The design opportunities for multiple outlets and/or a level spreader will be assessed as part of the detailed design.*

Comment 7: The location and design of the outlet(s) should be provided through the permit process.

Response: *Acknowledged, further information on the outlets will be provided as part of the detailed design.*

We trust this is the information you require at this time. If you have any questions or require additional information, please do not hesitate to call or write.

Yours truly,

GM BLUEPLAN ENGINEERING LIMITED

Per:

A handwritten signature in blue ink, appearing to read 'Glenn Anderson'.

Glenn Anderson, C.E.T.

cc: Ashley Rye, GRCA
Nancy Shoemaker, J.D. Barnes
Tom Keating, James Keating Construction

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