

September 19, 2025
Project No. 2408081

VIA EMAIL: darren.mackenzie@notl.com

Darren MacKenzie
Director of Operations
Town of Niagara-on-the-Lake
1593 Four Mile Creek Road
Virgil, ON L0S 1T0

**Re: Review of Stormwater Management Pond on Sandalwood Crescent
Summary of Works to Date
Town of Niagara-on-the-Lake, ON
Scope Change Request**

Dear Mr. MacKenzie:

This letter has been prepared to summarize the findings to date in relation to the review of the stormwater management pond on Sandalwood Crescent, and to outline the next steps.

Tech Memo #1 (dated April 3, 2025)

- Background review of the flooding issues and the pond design was completed.
- Survey of the pond was completed to confirm the pond was constructed with the volume it was designed to have – this was confirmed.
- A base model was created to mimic the original design of the pond.
- The imperviousness of the contributing area was reviewed using aerial imagery. Although the pond was designed for a contributing area with an impervious level of 30%, we estimated the actual current impervious level of the catchment is 55%. This is due to densely built-up estate lots (including pools, patios, et.) as well as a couple of industrial/commercial properties that are fully built out.
- As such, the flows entering the pond, and discharging from the pond are higher than expected.
- Conclusion: The stormwater management pond appears to have been designed in a way that meets the standards of the time at which it was built. However, the increased imperviousness of the catchment area has changed the way the pond is functioning. The ponding on Sandalwood Crescent witnessed by the residents last summer does not appear to be related to a blockage or malfunction but rather aligns with what we can expect out of an intense storm event at this pond.

Tech Memo #2 (dated May 23, 2025)

- A model of the present-day situation was developed.
- Upon review of the DEM topography mapping, it was estimated that under current conditions approximately 27.5 ha of additional area (mostly external to the urban boundary) discharge to the pond, that were not accounted for in the original model.
- Under current conditions, the flows discharging from the pond are above the allowable levels, and storm events above the 5-year could result in ponding within Sandalwood Cres.
- If the drainage from the lands outside of the urban boundary were redirected, this would improve the water levels in the pond on Sandalwood Cres., and thus this should be pursued.
- However, further improvements are still required to the pond to deal with the increase in runoff from the increased impervious areas discharging to the pond.
- The culvert at 1225 Queenston Road was reviewed in this memo, and it was determined that the ponding at the downstream pond does not impact this culvert.
- Recommendations for future Stormwater Pond Planning:
 - Ensure pond design includes a minimum of 0.3m of freeboard to account for potential minor fluctuations in incoming peak flows (there was no freeboard included in the original pond design)
 - When calculating imperviousness of new developments, require the impervious calculations be done based on the allowable build up of the lot per the zoning by-law (to account for accessory buildings, pools, wider driveways, etc.), rather than the developer's lot plans.

Tech Memo #3 (dated June 19, 2025)

- This memo reviewed potential options for retrofitting the current pond to provide more storage volume.
- It was determined that the best way to maximize the pond storage volume would likely be to introduce retaining walls.
- However, the retrofitted pond would still not be able to provide enough storage volume to control the stormwater flows from the pond to the allowable levels.
- This memo recommended that conceptual design and costing be completed for this retrofit option.

Tech Memo #4 (dated September 18, 2025)

- This memo was built on the previous memo and looked at the conceptual design of a retrofitted pond with retaining walls, as well as the budget for doing this work.
- In addition, the option of adding a detention tank along with the retrofitted pond was reviewed, to see if that would provide enough storage to control the flows to allowable levels. However, this option was not able to achieve this goal.

- [REDACTED]
[REDACTED]
[REDACTED]

- Costing was completed for the options, [REDACTED]
[REDACTED]

Next Steps

The next step is to confirm which option the Town wishes to pursue, in terms of retrofitting/expanding the existing pond. Following that, detailed design will need to be completed, permits acquired, and construction drawings completed.

Closing

If you have any questions, please feel free to contact Sarah Primmer at 519.240.8653.

Sincerely,

GEI CONSULTANTS CANADA LTD.



Sarah Primmer, P.Eng.
Senior Project Manager

SP/

B:\Working\NIAGARA-ON-THE-LAKE, TOWN OF\2408081 Stormwater Catchment and Pond Review\Work in Progress\Summary Letter_2025-09-19.docx