

2021-0713-10

July 17, 2024

Chris Lorenz, M.Sc.

Resource Planner

Grand River Conservation Authority

400 Clyde Rd, PO Box 729

Cambridge ON N1R 5W6

Dear Chris Lorenz:

**RE: 100 Eco Parkway – Southgate Renewables
Response to Township of Southgate SP13-20 – Second Submission**

Regarding the subject application, we provide below our responses to the comments made during your review.

Resubmission SP13-20 Comments	
1.	Provide a comment-response matrix/ letter detailing how each comment has been addressed
	Addressed
2.	As part of permit #602/19 (updated #822/21), the GRCA has previously accepted minor grading within the mapped floodplain through the submission of a cut/ fill balance. Since then, the site plans have changed significantly with increased grading within the mapped floodplain from the proposed SWM facility and spillway. Given grade changes, please demonstrate that the pre-development floodplain storage can be met and that there will be no adverse impacts on upstream and downstream floodplain elevations. Detailed plans clearly demonstrating the areas to be cut and filled will be required.
	A cut/fill balance design has been prepared and is described in Section 7.0. Drawing C6-1 displays the floodplain cut/fill analysis and balance.
3.	Please model and provide peak flow summary tables for all storm events (2-year, 5-year, 10-year, 25-year, 50-year, and 100-year) under both pre-development and post-development conditions to clearly demonstrate that quantity control requirements have been achieved for all storm events. Ensure to separate peak flow summaries based on outlet location, as applicable (e.g., flows attenuated via the SWM pond to the river, uncontrolled flows off-site, etc.).
	The modeling was updated to include the 2-year to 100-year storms, and the Regional event. Tables 5 and 7 in Appendix A provide peak flow results for all the catchments. Additional summary tables are included in the report text.
4.	It appears that the pre-development and post-development controlled condition (with mitigation measures) were modelled hydrologically. Please also include an analysis for the post-development uncontrolled condition (no mitigation measures) in the hydrologic modelling. Include a discussion and summary table in the report that compares the flows from each of these 3 conditions to demonstrate current site conditions, the extent to which flows are increased due to the proposed development, and the extent to which flows are increased due to the proposed development, and the extent to which flows are managed based on the proposed stormwater management measures.
	The modeling was updated for the 2-year to 100-year storms, and the Regional event. Tables 5 and 7 in Appendix A provide peak flow results for all the catchments. Additional summary tables are included in the report text which include the percent increase and/or reduction in total peak flow.

<p>5. GRCA regulates for the Regional Storm event. Please include the Regional Storm event (Hurricane Hazel) in the hydrologic modelling.</p>
<p>The Regional Storm event has been included in the hydrologic modeling.</p>
<p>6. A review of the existing contours shows that runoff from external areas to the east of property are contributing to the site. The hydrologic modelling and drainage area plan (Figure 2) does not appear to account for any external catchments. Please review and revise.</p>
<p>External drainage areas from the property to the east have been included in the updated modeling for both pre- and post-development conditions, and are shown on the drainage area plans (FIG 1 and FIG 2). The areas have been defined based on what will flow into the subject lands. The existing catchment 102 currently flows onto the property and will split into two catchments (301 and 302) in proposed conditions. External catchment 302 will flow onto the northern area of the property and directly into the 202 catchment, while external catchment 301 will flow onto catchment 201 and into the controlled stormwater pond discharge. A proposed berm along the edge of the property limit and around the containment area will divert any external runoff from potentially entering the containment area.</p>
<p>7. Please include a discussion in the report regarding the development of the hydrologic model. Please also clarify the storm distribution utilized in the hydrologic modelling. Please note that the GRCA generally accepts the 3-hour and 4-hour Chicago storm distributions, or the SCS 12-hour and 24-hour storm distributions. Please provide justification for the selection of the storm distribution used in the model, and comment on whether the most conservative distribution was selected in the design of the stormwater management facility.</p>
<p>A discussion is provided at the beginning of Section 6.0.</p>
<p>8. Please include in the report a summary of model parameters used for each subcatchment under pre-development and post-development conditions, as well as any associated calculations (e.g., time of concentration / time to peak, etc.).</p>
<p>A summary of hydrologic modeling catchment parameters for the pre- and post-development conditions are included in Table 2 and Table 3 in Appendix A.</p>
<p>9. Please include schematics ahead of the model output in the appendices showing each drainage catchment and the configuration. A schematic should be prepared for each condition (pre-development, post-development uncontrolled, post-development controlled).</p>
<p>Pre- and post-development model schematics are provided in Figures 3 and 4.</p>
<p>10. Within the report, please include a section to discuss the design and performance of the proposed SWM pond.</p>
<p>Additional commentary and tables are provided in Sections 6.2.1 and 6.3, as well as Table 6.</p>
<p>11. Please include details of the proposed SWM pond in the detailed engineering drawings, including a plan and profile of the SWM pond and outlet details. The profile of the proposed SWM pond must include linework delineating the groundwater table in that area.</p>
<p>Profile drawings of the pond have been included on drawing C2-2. Two cross-sections run through the pond as shown on drawing C2-1. These profiles include outlet information, ponding levels, and groundwater levels.</p>
<p>12. In Table 1 of Appendix A, there appears to be a 48-hour drawdown time provided. Please clarify which storm this is with reference to. Note that the SWM pond must have an extended detention of the 25 mm storm event with a drawdown period of 24 to 48 hours. Please clarify if this requirement is met.</p>
<p>Updated drawdown times for various storm events and volumes are provided in Table 8 of Appendix A. The report also includes a discussion regarding drawdown time; in summary, given the small drainage areas under consideration and the resulting smaller runoff volume, achieving a 24-48 hour drawdown time is not possible without an impractically small orifice. In such cases, the MECP recognizes that a minimum 12 hour drawdown is sufficient. The present design provides for a 22.8 hour drawdown of the 25 mm event.</p>
<p>13. Please include in the report the text definition of the “minor storm” and “major storm”.</p>
<p>A discussion of minor and major storms is included at the beginning of Section 6.0.</p>

<p>14. Please include discussion in the report text with respect to how major flows will be handled, including the Regional Storm event.</p>
<p>The SWM facility has sufficient volume to contain runoff from the Regional event. The Regional event does not have peak flows as high as the other storm events. Due to the small areas under consideration, the flows in general are small and no special drainage infrastructure is required to convey these flows.</p>
<p>15. Please include cross sections through the proposed overland flow paths and comment on whether the Regional Storm can be safely conveyed through the proposed development.</p>
<p>Drainage from the external areas and within the site will be via sheet flow. The areas under consideration are small and the resulting peak flows are small. No special drainage infrastructure is required to convey these flows.</p>
<p>16. A site-specific water balance must be carried out for the site. Please include this in the next submission and ensure that pre-development uncontrolled (no mitigation measures), and post-development controlled conditions (with mitigation measures) are considered. Refer to Section 6 and Appendix C & D or TRCA's Stormwater Management Criteria (August 2012) for Water Balance requirements.</p>
<p>A water balance has been completed by JLP Geotechnical & Environmental Consultants. The report has been included with this submission.</p>
<p>17. A feature-based water balance must be carried out for the PSW. Please include this in the next submission, and ensure that pre-development, post-development uncontrolled (no mitigation measures), and post-development controlled conditions (with mitigation measures) are considered. Refer to Section 6 and Appendix C & D of TRCA's Stormwater Management Criteria (August 2012) for Water Balance requirements.</p>
<p>A water balance has been completed by JLP Geotechnical & Environmental Consultants. The report has been included with this submission.</p>
<p>18. Please confirm the location at which the boreholes were taken and where monitoring wells were installed. Please submit the associated geotechnical report for review.</p>
<p>Please refer to the geotechnical report prepared by JLP Geotechnical & Environmental Consultants. The report has been included with this submission.</p>
<p>19. Is the proposed rip-rap spillway sized to withstand the Regional Storm? Please provide rip-rap sizing calculations to demonstrate that the rip-rap is adequately sized.</p>
<p>Rip-rap calculations have been prepared for the aprons at the storm sewer outlets and overflow embankment from the dry pond. The Regional storm will be contained with the dry pond. As such, the rip-rap for the overflow apron was sized based on the maximum pond outflow. See Appendix A for calculations.</p>
<p>20. Please include the existing contours on the erosion and sediment control plans.</p>
<p>The contours have been shown; see drawings C4-1 and C4-2.</p>
<p>21. Will material be stockpiled on site or hauled away? Please include temporary stockpile locations on the ESC drawings.</p>
<p>At this time stockpiling within the site is not anticipated.</p>
<p>22. The MECP Stormwater Management Planning and Design Manual does not indicate that a dry pond is able to achieve 80% TSS removal. Based on recommended design parameters, a dry pond can achieve, at most, 60% TSS removal, regardless of its size. Please refer to Table 3.2 in this manual. It is recommended that section 6.3 of the Servicing and Stormwater Management Report (WalterFedy, 2023) be revised to indicate how 80% TSS removal will be achieved.</p>
<p>The water quality analysis has been revised and updated and is described in Section 6.4. Also, an additional OGS unit has been proposed to service the containment area when the valve is opened to release any impounded storm water.</p>

We trust that the responses provided herein will allow you to continue the approval process for our submission. Should you have any other questions or concerns, please do not hesitate to contact the undersigned.

All of which is respectfully submitted,

WALTERFEDY



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Enclosure