

Township of Southgate

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Staff Report CAO2021-081

Title of Report: Holstein Dam – 2004 Review of BM Ross Engineering Letter Report

Department: Administration

Council Date: December 1, 2021

Council Recommendation:

Be it resolved that Council receive Staff Report CAO2021-081 as information; and

That Council provide direction to Southgate staff (*Option 1* – to proceed or *Option 2* – to not proceed) with this report actions in relation to the time that has past and the historical performance of the dam structure over time since the 2004 report.

Background:

In 2003 & 2004 BM Ross Engineering completed a review of the Holstein Dam structure in response direction from Southgate Council in 2002 by approving the following resolution 425-02.

Moved by Furlong; **Seconded by** Harrison;

THAT Council retains the services of B. M. Ross and Associates Limited to complete a preliminary evaluation of dam and embankment modifications, including establishing a cost estimate for implementation of that work.

Carried. No. 2002-425

BM Ross reviewed the surfaces of the bridge and dam structure on February 13, 2003 in spite of the ice and snow buildup. The 2 main considerations of the work related to the dam to be assessed by BM Ross Engineering staff were:

1. To help reduce the potential for flooding at the regional storm; and
2. The potential during a regional storm event is the former railway embankment that still exists would be the flood water would overbank to the south of the bridge where the road enters by the park gates.

Based on their assessment of the entire structure the distance between the bridge and the dam overflow is not sufficient and would restrict the regional flow with this size of opening. The solution options would be to replace the bridge which is overdesigned for its present walking trail use, or a least cost solution would be to raise the present bridge deck. The cost estimate in 2003 dollar cost was \$41,400.00. To estimate what it would cost today would be impossible without a new quotation.

The assumption of the February 27th, 2003 letter report (Attachment 1) is if the bridge deck was raised it would maintain the pond level below lowest level of the present embankment elevation of 408.65 m to the north of the bridge.

To the south of the bridge the low point of the embankment is 408.0 m. It is recommended in the report that a concrete flood wall would be required from the south bridge abutment to park lane then turn east to the park's gates for a total wall length of 65 meters. The cost of this wall in 2003 dollars was estimated at \$37,800.00. The total cost of both solutions in 2003 dollars is \$79,200.00.

Not determined in the February 27th, 2003 letter report, is if the railway embankment must be raised. The final recommendation is the flow model should run again to confirm that the combination of the flood wall in place and the bridge deck raised is able to protect against a 100 year storm or regional flow event.

On October 5, 2004 the Township received a second letter report (Attachment #2) on the Holstein Dam. This letter reported that the modeling proposed earlier had not been completed. It further reported that an Environmental Assessment should be undertaken to consult with the public through a meeting and that approvals would likely be required from SVCA, Ministry of Natural Resources and Transport Canada Marine Division. This report provided quote for the following work:

1. Computer modeling of spillway with bridge raised.	Cost:	\$1,900.00
2. Design, approval apps, EA, contracts & tendering.	Cost:	\$5,500.00
3. Review Bridge construction & administration.	Cost:	\$3,400.00
4. Design Flood Wall	Cost:	\$4,100.00
5. Review Flood Wall construction & administration.	Cost:	\$2,700.00
Total Cost of Engineering Work		\$17,600.00

The final letter report received December 10, 2004 (Attachment #3) reports on several options and assesses the effectiveness of each of the 6 options. The following options would not solve the problems of managing flood condition flows:

- a) Leave the infrastructure in it existing state;
- b) Raising the Bridge Deck by 300 mm and no flood wall;
- c) Raising the Bridge Deck by 450 mm and no flood wall; and
- d) Removing the Bridge Deck only.

The following options would solve the problems of managing flood condition flows:

- e) No adjustments to the Bridge and construction of a flood wall; and
- f) Raising the Bridge Deck by 300 mm and construction of a flood wall.

Staff Comments:

Staff recommend the following options for Council to consider in relation BM Ross engineering recommendations for the flood mitigation at the Holstein Dam:

1. Request BM Ross review the project plan and update the report with the current costs to complete the Environmental Assessment, design, tendering and the construction costs of raising the bridge and installing the flood wall.
2. Not proceed with any flood mitigation work proposed.
3. Should Council wish to proceed with a solution to address flood issues at the regional storm or 100 year event, staff recommend option (e) above to construct the flood wall and not make adjustments to the bridge. This would be the least cost solution that addresses the flood mitigation issues.

Financial Impact or Long-Term Implications

The no financial impact to the 2021 Budget to the municipality that will impact ratepayer taxation at the present time.

Future budget costs from 2004 quoted numbers (changed construction pricing compared to the 2003) would need to be determine as current day project costs in 2022 dollars. Bridge work in 2004 was quoted at \$44,600.00 and floodwall costing at \$34,400. Total cost quoted in 2004 was \$96,600 plus taxes.

Communications & Community Action Plan Impact:

This report has been written and presented to Council to communicate accurate information to the public.

Goal 5 - Upgrading our "Hard Services"

Action 5: The residents and businesses of Southgate recognize our linear services - roads, bridges, water and sewer works, for example - to be a fundamental purpose of municipal government. This infrastructure needs to be serviceable and sustainable so that our businesses and communities can thrive and grow.

Concluding Comments

1. That Council receive staff report CAO2021-081 as information.
2. Council to provide direction to Southgate staff on how we proceed with this report in relation to the time that has past and the historical performance of the dam structure over time since 2004.
3. If Council provides direction to proceed with the Holstein Dam as a project, staff will take the action to refresh quotes and report back to Council.

Respectfully Submitted, **PW Manager approval:** Original Signed By

Jim Ellis – Public Works Manager

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Respectfully Submitted, **CAO approval:** Original Signed By

Dave Milliner – CAO

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Attachments:

- Attachment 1 – Holstein Dam – BM Ross Engineering Report Letter dated, February 27, 2003
- Attachment 2 – Holstein Dam – BM Ross Engineering Report Letter, dated October 5, 2004
- Attachment 3 – Holstein Flood Control Study Revised Hydraulic Modeling – BM Ross Engineering Summary Letter Report, dated December 10, 2004, which includes modeling data and mapping