

Honourable Greg Ottenbreit
Minister Responsible for Saskatchewan Water Security Agency
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May 22, 2020

Dear Minister Ottenbreit:

Recommended Information and Research for Ongoing Management of the Quill Lakes

Following your April 6th meeting with representatives of the SAWS group, I am writing to provide suggestions on scientific and management topics for the next meetings that you proposed. We are hoping the planned future meetings provide the opportunity to examine these Quill Lakes scientific and management topics in a depth that will lead to a shared information gathering program.

We are also interested in discussing water quality concerns and research on the Qu'Appelle River watershed, and in particular with relevance to protection of Last Mountain Lake and the Calling Lakes.

We would also like to confirm that WSA will be sending information to SAWS on WSA's Quill watershed drainage compliance actions.

Flooding of the Quill Lakes over about a decade of above-normal moisture conditions, we suggest, provides a valuable and necessary opportunity to do the following:

- Determine the level of contributions to historically high lake levels from agricultural and other land use practices;
- Evaluate the accuracy of other estimates of these contributions; and
- Determine the effectiveness of alternate agricultural drainage and other water management practices, including retention and restoration of wetlands for future lake flood reduction, overflow prevention and mitigation.
- In addition to evaluating and substantiating existing studies of Quill Lakes water levels, we suggest using existing water monitoring data in the watershed to assess any changes to stream flows and water quality, (nutrients, salinity, etc.), from increased drainage activities. We recommend follow up monitoring to enable existing databases to be used to assess temporal and spatial changes. Use of lake paleolimnology should also be considered.
- One other area of interest is the potential application of the U of S's Prairie Hydrological Model to assess the impacts of agricultural (and other) drainage, and flood risk reduction potential of various levels of natural wetland and drainage restoration. The overall purpose of the suggested drainage assessment topics is the quantification (including costs and benefits) of managing drainage to avoid repeat of recent Quills flooding.

Suggested Topics:

Compliance and Research to Better Manage Drainage in the Quills Watershed

1. Update on number of Quill Lake watershed drainages closed, including wetland consolidation projects and number of quarters, acres and wetlands by RFA;
2. Update on compliance with requirement to licence existing drainage works in the watershed;
3. Proposals, technical data, and any other information to substantiate the irrigation potential in the Quills watershed;
4. What projects are underway or planned in the Quills to demonstrate management practices to reduce flooding risk to the Lakes?
5. Discussion of the Paleoenvironmental and Paleolimnological Reconstruction of the Big Quill Lake, SK study and its implications for future Quill Lake flood management, and any follow up studies needed to substantiate these results;
6. Information if any on agricultural (and regional/municipal government) drainage contributions to Quill Lakes water levels, in addition to that provided by the KGS November 2016 Flood Mitigation Study/Concept design Report;

7. Application of University of Saskatchewan (John Pomeroy) Prairie Hydrological Model or other models to evaluating the significance of agricultural drainage effects; and
8. Other studies or information sources on which to assess and better manage the risk of Quill Lakes flooding, and to prevent spillage or transfer to the Qu'Appelle watershed.

Assessment of Water Quality Changes in the Quills Watershed

1. Summary of water quality and stream flow data on Quill Lakes tributary streams, including comparison with any historical data that can indicate the effects of agricultural drainage effects by tributary stream;
2. What future monitoring should be done to evaluate water management practices in the Quills watershed?

Application of Other Research to Water Quality in Last Mountain Lake and the Calling Lakes

1. The results of the Global Institute of Water Security 2018 study "Qu'Appelle Watershed Land-Use and Water Quality", and follow-up studies to identify improved agricultural management practices in the Qu'Appelle River watershed; and
2. Completion of the "Qu'Appelle River Mass Balance Project" that will apply the 2014-2017 tributary monitoring data to establish nutrient objectives for the Qu'Appelle lakes, and to enable additional management needs to be identified.

Examination of Alternative Agricultural Practices

1. Conserving & restoring wetlands, improving water quality, and increasing water storage (vs. drainage) can be done alongside improvements in agricultural and other livelihood practices, especially with new technologies (ex. robotic automation/autonomous equipment) and planting processes (ex. companion planting).
2. Canada has committed to the 17 UN Sustainable Development Goals (2015-2030), including those around water (SDG 6), responsible consumption and production (SDG 12), and climate change (SDG 13). Is the Saskatchewan government considering applying any of these sustainability goals to agricultural operations? In what areas of agricultural practice?

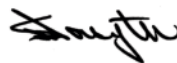
We appreciate your comments on our topic suggestions for future meetings. Please provide your suggestions as well.

Thank you for these ongoing opportunities to discuss ways to reduce Quill Lakes flooding, and to contribute to better water management practices throughout the Quill and Qu'Appelle watersheds.

Sincerely,



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