November 20, 2020

Ms. Laura Friend

Manager, Board Reviews

laura.friend@nrcb.ca

Dear Ms. Friend:

Re: Springbank Off-Stream Reservoir Proposal

We appreciate the opportunity to participate in the Pre-Hearing Conference and provide our issues and concerns regarding the Springbank Off-Stream Reservoir Proposal.

Water is the most vital and valuable resource of any country and therefore the public have trust that our governments and regulators will ensure our water resources are managed in the most effective, sophisticated and responsible way in order to serve the public interest.

After reading information provided by the proponent and Stantec to the various Regulatory Boards, we have very serious concerns about the **SAFETY** of the proposed earthern dam to be built just 11 km from Calgary.

The proponent has reported that "The off-stream dam has been classified as an **'EXTREME' CONSEQUENCE DAM** and the floodplain berm is classified as a **'VERY HIGH' CONSEQUENCE DAM**. As such, the system elements are designed to safely pass the required dam safety design flows; the probable maximum flood (PMF) for the off-stream dam and 1/3 between the 1:1000 year and PMF for the floodplain berm. The PMF is defined as the flood that may be expected to result from the most severe combination of critical meteorological and hydrologic conditions that are REASONABLY POSSIBLE in the drainage basin …"

The proponent also reports:	Design Flood	1,240 m3/s
	Probable Maximum Flood (PMF)	2,770 m3/s

"The project will provide 77,771,000 m3 of active flood storage that can be diverted from the Elbow River …. Which is below the 170 m3/s for floods up to the 2013 flood or equivalent. That flood had an ESTIMATED peak flow of 1240 m3/s and a 7 day volume of 149,600,000 m3. It is estimated to be **SLIGHTLY GREATER THAN A 1:200 YEAR FLOOD."** See www.iaac-aeic.gc.ca/050/documents/p80123/122410E.pdf.) Pages 63 -64/263.

ALBERTA RECORDS SHOW THAT IN 1879 AND 1897 THERE WERE TWO FLOODS 30% LARGER THAN THE 'ESTIMATED' PEAK FLOW OF 1240 m3/s OF THE "DESIGN FLOOD" OF 2013. THESE FLOODS WERE ONLY EIGHTEEN YEARS APART AND THE 1897 FLOOD WAS ONLY 123 YEARS AGO – WELL WITHIN THE 1:200 YEAR PERIOD. THE REQUIRED "EXTREME" HAZARD RATING IS THEREFORE BEING IGNORED WITH THE DESIGN FLOOD CAPACITY OF SR1.

See also Submission www.iaac-aeic.gc.ca/050/documents/p80123/124337E.pdf. Regarding:

. Springbank Off-Stream Reservoir Project Hydrology Flood Frequency Analysis. Memo Rev. 1.0. Dec. 14, 2015

. Springbank Off-Stream Reservoir Project Probable Maximum Flood Analysis Memo August 7, 2015.

On Page 8/196 under 2.1 it is stated:

“Several large historically observed floods occurred in 1879, 1897 and 1902 on the Bow **AND ELBOW** Rivers prior to the beginning of systemic hydrometric monitoring. ……Notice that incorporating historic flood records increases the magnitude of the 100-year to 1000 year flood peaks by 26% to 34%”.”

On Page 11/196

2.4 Conclusions. It is stated:

“The review of past studies identified gaps in available information required for the design of SR1. None of the above referenced studies provided comprehensive analyses for both flood peak and flood volume for the Elbow River at Glenmore Dam and at Bragg Creek as required to estimate flood recurrence intervals and characteristics at the SR1 diversion site.”

This submission was dated December 14, 2015. In April 2020, Stantec were still responding to questions regarding the safety of the design capacity of SR1. See Subject: Climate Change – Information Gap: See www.nrcb/20200407-at-sir-to-aep-re-sir2-response-questions-1-and-27. Pages 77-78.

“The revised EIS provides one paragraph to indicate that the climate variability has been accounted for. The EIS does not, however, adequately demonstrate this accounting. This is particularly relevant given that academic literature on future frequency suggests that past return periods are not predictors of future return periods and, in particular, larger and more frequent floods are likely. Without flood returns calculated based on future expectations for flood frequency and volume, the **EIS MUST BE CONSIDERED DEFICIENT.**

The response given by Stantec in Response 2-28 does not inspire confidence. In part it reads “The design basis for the project is to provide flood protection for a flood **EQUAL TO OR LESS SEVERE** than the 2013 flood; the design is **NOT** based on a specific flood recurrence interval. In Alberta the flood standard is the one in 100-year flood **OR THE FLOOD OF RECORD, WHICHEVER IS GREATER”.**

Engineers must build for “worst case scenario” and the evidence provided to the Regulators shows clearly that SR1 would not fit into this category. APEGA – the Alberta Engineering and Geoscience Association, are presently updating the Engineering and Geoscience Professions Act. They advise “For more than 100 years APEGA has been the authority on ethical, professional and technical competency to **ENSURE THAT ALBERTANS ARE PROTECTED.** This is why we’ve moved forward in making more than 160 recommended revisions to the Engineering and Geoscience Professions Act. This updated version of the Act will support **ONGOING PUBLIC SAFETY,** improve transparency and accountability, as well as **PROVIDE MEANINGFUL CONSEQUENCES FOR THOSE WHO FAIL TO MEET THESE STANDARDS**…….. We expect to see the revised legislation tabled and voted on in the 2021 sitting of the Alberta Legislature. The time is now to modernize this important legislation.” See www.howofwow.ca.

Summary:

. SR1 has an “Extreme” hazard rating

. The design capacity of SR1 is far below the required “Probable Maximum Flood” or largest “Flood of Record” capacity.

. According to the Alberta Dam and Canal Safety Directive, approval for a new dam or canal must be obtained from the Director, Water Infrastructure and Operations, Government of Alberta, Has SR1 received this Approval from the Director?

. Considering that SR1 has an “Extreme” hazard rating and the design capacity is far below what this rating demands, is there any possibility that any Professional Engineer or Government Regulator would add their Stamped, Signed Signature of Approval for this SR1 project and accept responsibility for the consequences of dam failure?

For the reasons given in the above summary, we believe that the Springbank Off-Stream Reservoir would place the city it is supposed to protect, Calgary, in more danger from a flood as large, or larger than the 2013 flood, than if it was never built.

According to the Consultant Deltares in remarks under “Additional Comments”, SR1 could be overcome by a flood as large, or larger than the 2013 flood and “the awareness of the people in the floodplain will further decline, making them (and society at large) EVEN MORE VULNERABLE”.

WE BELIEVE THE SPRINGBANK OFF-STREAM RESERVOIR WOULD NOT SERVE THE PUBLIC INTEREST BECAUSE A RESERVOIR BUILT CLOSE TO CALGARY, AND IN THE MIDST OF COMMUNITIES, MUST BE BUILT TO THE “EXTREME” HAZARD RATING TO BE ABLE TO WITHSTAND A POSSIBLE MAXIMUM FLOOD. THE CHOSEN LOCATION, WITH THE DESIGN CAPACITY AVAILABLE, IS NOT ABLE TO FULFILL THIS VITAL SAFETY REQUIREMENT. THEREFORE SR1 CANNOT RECEIVE APPROVAL FROM THE REGULATORS.

Sincerely,

David and Noelle Read,

On behalf of the Flood and Water Management Council

And all citizens who will be adversely affected if SR1 were to go forward.