

Topic Session 3: Design, Safety and Risk

Opening Statement of Alberta Transportation

Introduction: Matthew Hebert

1. Mr. Chairman, I want to begin by assuring the Board that the safety of the SR1 System is the #1 priority for Alberta Transportation. This principle has dictated the design and formulation of the Project from the start.
2. Not only did the flood of 2013 cause enormous economic losses, we must never forget that five deaths have been attributed to the 2013 flood, as well as a variety of public health concerns. SR1 will provide a considerable reduction in flood risk and an improvement in public safety to downstream communities.
3. SR1 is designed in accordance with the Provincial standards and federal guidelines for dams. These standards are part of the regulatory requirements for the design of dams in Alberta and they specify the design requirements and factors of safety that need to be met for facilities of a given consequence classification. As an extreme consequence structure, the SR1 dam is designed to the highest standards set forth in the criteria.
4. While the extreme consequence classification of SR1 is notable, it is not unique. Currently, there are 87 extreme consequence dams in Alberta. These include facilities operated by Alberta Environment and Parks like the Dickson Dam, the Oldman Dam and the Travers Dam. There are also several dams with extreme consequence ratings located upstream of Calgary on the Bow River, including the Bearspaw Dam, the Ghost Dam, the Lake Minnewanka Dam, and the Canyon Dam at Kananaskis Lakes. Finally, the Glenmore Dam on the Elbow River in Calgary has an extreme consequence classification. Contrary to what has been implied by some of the Project's opponents, there is nothing unusual or unique about having such a facility located in proximity to a large population centre like the City of Calgary.
5. That said, Alberta Transportation acknowledges and accepts that this means that SR1 must be designed to the highest standards, must be operated safely, and must have a robust emergency management plan in place in the highly unlikely event that a problem

does occur at the Project. We are confident SR1 meets or exceeds all these requirements. I am now going to ask Mr. John Menninger of Stantec, who is the designer of record for the Project, to elaborate on how the design of SR1 is safe in both its design and planned operation.

John Menninger

6. Thank you, Matt.
7. Mr. Chairman, as Mr. Hebert stated, safety of the SR1 facility is of the utmost priority to Alberta Transportation and the design teams.
8. The Design has undergone and will continue to undergo a rigorous Quality Control process. The design has been reviewed by an experienced independent third party review board and will be reviewed by the Alberta Dam Safety regulator.
9. Failure modes of the individual components and the complete system have been considered in the design; and features and mechanisms have been implemented to mitigate potential risks. During design of a dam, we consider potential failures such as dam overtopping or erosion of the embankment, and then design to prevent these failures. For example: the Emergency Spillway is sized to pass the full Probable Maximum Flood event safely, without consideration of the ability to close the Diversion Inlet Gates. This provides a secondary level of protection against the dam from overtopping in the event the Diversion Inlet Gates do not close.
10. Further examples include the addition of resilient and redundant systems for the mechanical and operating components of the project, such as:
 - a. **Backup power** to ensure that gates can be operated even during situations where a storm has affected the electrical grid.
 - b. **Remote, local and manual control options** for the gate systems to be operated from the control building or the structure, and manually should computer systems fail.
 - c. **Multiple layers of debris management, which** begin with the debris deflection barrier that excludes large debris from being diverted into the reservoir. Further, the diversion structure has been designed to pass debris without hindering operations. Finally, the trash racks located on the low level outlet provides an additional layer of protection at the dam.

11. During construction, quality assurance and quality control programs will be in place to monitor compliance with the design. Instrumentation will monitor the performance of the dam earthworks and foundation.
12. Monitoring of instrumentation will continue after construction and through the life of the facility.
13. An Operations, Maintenance and Surveillance Program will direct routine operations for the structure and direct regular maintenance requirements.
14. Under the regulatory requirements in force in Alberta, the owners of dams need to undertake dam safety reviews at regular intervals to maintain their license to operate. As an extreme consequence structure, the dam safety review for SR1 will be once every 5 years. The dam safety reviews include a review of the hydrologic estimates made for the Inflow Design Flood (dam safety flood).
15. The Province of Alberta has a robust Emergency Management Program for all dams within the province. As the operator of SR1, Alberta Environment and Parks will prepare an Emergency Preparedness Plan, an Emergency Response Plan and a Flood Action Plan that meet the regulatory requirements for extreme consequence facilities as stipulated in the Alberta Dam and Canal Safety Directive and the Government of Alberta's Operational Plan for Dam Safety (2019). The preparation of these plans will involve consultation and coordination with downstream stakeholders in the same manner that is required at all their facilities.
16. The EMP, ERP and FAP will be prepared by AEP following regulatory approval of SR1, when construction procurement is complete and the project is closer to commissioning. This is because the plans require information on equipment models, construction records and other details of the facility that are not known at this time.
17. As you know, Mr. Chairman, the SR1 Concerned Landowners Group retained Austin Engineering to review the design and planned operation of SR1 to identify risks and recommend improvements in the dam safety aspects of the Project. Stantec carefully reviewed the Austin Engineering report and provided a detailed response in a technical

memorandum which was included as part of Alberta Transportation's Reply Submission. Our technical memorandum is in Exhibit 327, at Appendix E.

18. To summarize our response briefly, we disagree with the suggestion that the design of SR1 fails to meet any CDA Dam Safety Guidelines. With respect to the recommendations made by Austin Engineering, we have concluded that no changes to the design of the Project are necessary. However, we acknowledge the effort that Austin Engineering obviously put into their review and for that reason, on March 19, 2021 Alberta Transportation provided their report, together with Stantec's response, to the AEP Dam Safety team that is reviewing the SR1 design, for their information and consideration.

19. Thank you.