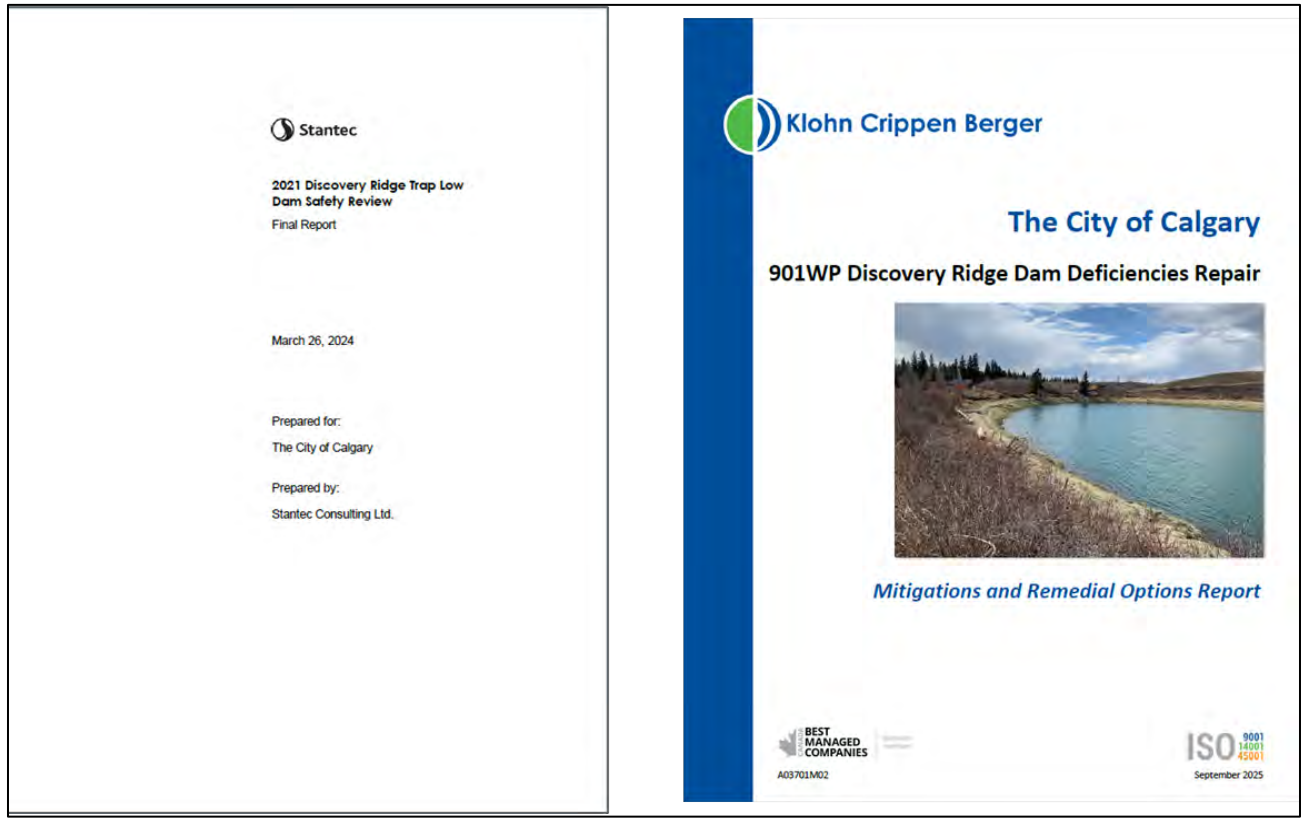
Discovery Ridge Dam Safety Technical Overview
January 29, 2026

Agenda

1. Background
2. Stantec DSR
3. 2024 Remedial Work
4. KCB Mitigations & Remedial Options Report
5. Next Steps



Stantec

2021 Discovery Ridge Trap Low Dam Safety Review

Final Report

March 26, 2024

Prepared for:

The City of Calgary

Prepared by:

Stantec Consulting Ltd.

Klohn Crippen Berger

The City of Calgary

901WP Discovery Ridge Dam Deficiencies Repair

Mitigations and Remedial Options Report

BEST MANAGED COMPANIES

A03701M02

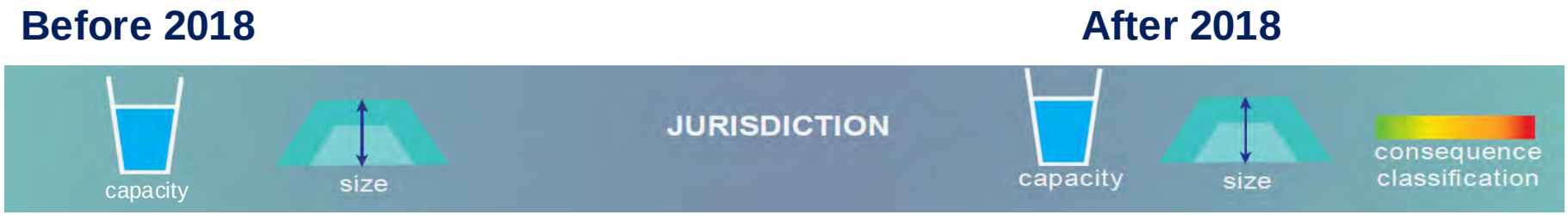
ISO 9001 14001 45001

September 2025

Land Acknowledgement

Regulatory Background

- Province's Dam Safety **Directive** replaced older **Guidelines** in Dec 2018.



- Dams re-defined on **Risk-basis,** not just height and volume
- Requirements tie to **incremental consequences** of dam failure
- City **Dam Safety Policy** issued **March 2021,** after structure inventory
- Risk classifications used to prioritize / sequence dam safety work

Discovery Ridge Dam - Timeline

1957:	Dam Constructed
1999-2000:	Community Developed
December 2018:	Alberta Dam Safety Directive released
April 2021:	City Dam Safety Policy released
November 2022:	Consequence Assessment completed
March 2024:	**Stantec Dam Safety Review Report**
April 2024:	Notified Regulator, Pond level lowered
April 2024:	Community meeting held
September 2025:	**KCB Mitigations and Remedial Options Report**

Report Information Context / Sensitivity

- Reports rely on hydrotechnical, geotechnical, hydrogeological and structural engineering information/interpretation.
- Reports provide layout and structural details that give insight to possible failure mechanisms.
- Information relates to perceptions of public safety, emergency response, asset operation which could be misinterpreted without relevant engineering and technical disciplines.
- Inundation mapping is for hypothetical dam failure, as reasonable worst case for dam consequence classification. It does not indicate probability of failure.
- Hypothetical inundation zone includes private property, public infrastructure and culturally significant locations.
- Geotechnical, hydrologic and hydrogeological conditions vary spatially / temporally.

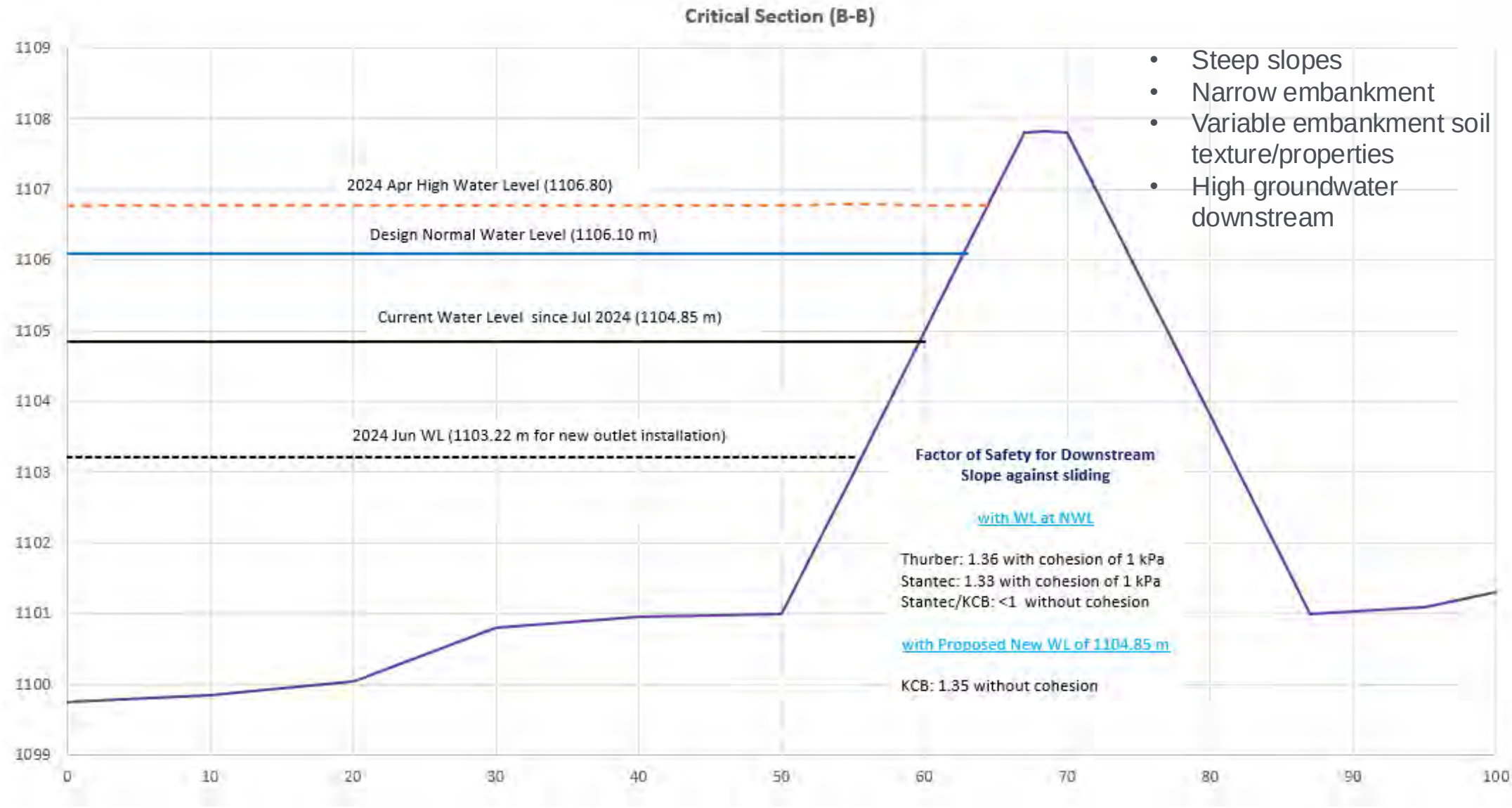
Stantec Dam Safety Review Scope

- Stantec was retained by competition to deliver a Dam Safety Review (DSR).
- Dam Safety Review (DSR) done parallel to consequence classification, Emergency Preparedness Plan, Emergency Response Plan, Dam Safety Management Plan and supporting processes.
- 1957 dam lacks original design/construction records. The DSR established baseline information and addressed gaps.
- DSR was conducted in accordance with Alberta DSD and CDA Guidelines:
  - evaluated hypothetical reasonable worst case breach conditions,
  - established appropriate extreme loading inflow and groundwater conditions,
  - analyzed the stability of the dam,
  - assessed adequacy of outlet/spillway capacity,
  - addressed documentation, monitoring and operations,
  - identified deficiencies and/or provincial Directive non-conformances.

Dam Safety Deficiencies

- Deficiencies and non-conformances should be interpretated in the context of the relevant sections of the report.
- Deficiencies were initially identified by the Stantec DSR Team in 2021 based on visual condition assessment and engineering assessment.
- Status of deficiencies is maintained in the master deficiencies register.
- The DSR report was finalized on March 26, 2024, and included two critical deficiencies:
  - Factor of Safety for downstream slope against sliding was insufficient for critical loading combination.
  - Spillway was identified to be insufficient to convey the inflow design flood.

Slope Stability Analysis Overview



- Steep slopes
- Narrow embankment
- Variable embankment soil texture/properties
- High groundwater downstream

IDF and Spillway Capacity

Spillway capacity and erosion resistance are insufficient:

Design IDF = 7.75 m^3/s
Peak Outflow = 5.4 m^3/s
Chute velocity = 9.6 m/s (very high)

1:100-year inflow = 1.95 m^3/s

Low Level Outlet Capacity = 0.025 m^3/s
At 1104.85 m Pond Level

Picture shows spillway bedding erosion with 0.025 m^3/s flow.

Picture: May 2024

Actions for Critical Deficiencies

- Notified Regulator April 5, 2024
- Remedial actions:
  - Lowered water level (<1105.00 m) until permanent mitigation made.
  - Hired independent consultant to address critical deficiencies.
  - Conducted daily engineering inspections.
  - Installed real time water level monitoring system.
  - Communicated risks to downstream communities.
  - Conducted a risk assessment workshop to build options to mitigate and/or reduce risks.

Remedial Work

- Initially pumped, lowering the water level to 1104.85 m.
- Low-Level Outlet was modified to maintain level.
- 450 mm x 4 m long PVC pipe inserted in outlet riser.
- Inlet fully submerged (avoiding debris), riser insulated to avoid ice obstruction in winter.
- Factor of Safety against sliding increased to 1.35 (no cohesion).
- Conduct ongoing engineering inspections, monitoring and surveillance, especially during high rainfall and ice generation periods.

KCB Options Study

Option	Description	Factor of Safety Downstream Slope	Target Factor of Safety	Comments
Existing	Existing Dam with Lower Water Level	1.35	1.50	Lowering WL will not meet slope stability target
1	Reduce Dam height by 0.5 m and flatten upstream slope	1.38	1.35	Flatten upstream slope to 2.6H:1V
2	Reduce Dam height by 3.25 m	1.80	1.50	
3	Reduce Dam height by 2.25 m and flatten upstream slope	1.55	1.50	Flatten upstream slope to 2.75H:1V
4	Remove Dam	Eliminates all risk of dam failure.		

Why we're doing this project

- The City is prioritizing keeping everyone safe by building on the steps taken in Spring 2024 and advancing this project to remove the dam and create a new natural community space.
  - Technical recommendation: dam removal be taken forward as this option removes all failure risks and is most cost-beneficial over the long-term.
  - Grading, landscaping and place-making be built into this option, so it is a benefit to the community.

Next Steps

- Availability of Stantec and KCB Reports
  - o Follow up questions
- Concept Design (underway)
  - o Engineering and Landscaping scopes
- Community engagement
- Reminder of sensitivities of the information and context shared

Access to Reports

- Those in attendance:
  - Have received a digital copy to their email address
- Those who couldn’t attend:
  - Please send an email to request a digital copy
- Further questions on the reports can be submitted by email

Email address: DiscoveryRidgeDamSafety1@calgary.ca


Q&A

Discovery Ridge Dam Safety Project – Technical Information Session

January 29, 2026

Start time: 6:02pm

End time: 8:07pm

Attendees: 38

Summary of questions asked during Q&A:

1. Of all of the options presented in the report, it seems The City chose to select the option that removes all risk. What are the criteria used when making these decisions?
2. The dam has been there since 1957 and it is an established environment for birds and other wildlife. How is this being considered, has an environmental impact assessment been completed, and how will the habitat be protected?
3. When does a dam stop being a dam?
4. How many dams are there in Calgary? How many of these dams are going through this process and fall in the same classification?
5. The City took over maintenance of this dam in 1999, what has been done to maintain the dam? As a resident I have seen it slowly degrade and there has been a lack of City response/maintenance over the years. These problems were created due to City inaction over the years. Will you take responsibility for that? Beavers have eroded the banks of the pond and The City did nothing to mitigate this. We were told it was a natural space and nothing could be done.
6. This appears to be a done deal with the dam removal. What is the project timeline?
7. In 2024 when The City completed work on the dam, the outlet pipe was altered and it completely stopped the water flow downstream to Griffith Woods killing fish within hours. This is a spawning area for Brown Trout and there used to be large trout in these waters. Is fisheries involved? How will we protect the environment and make sure there is continuous flow? There were no fish for one year but they are coming back.
8. After the 2024 work, the spillway completely silted up.
9. The KCB Report says you can remove the danger without removing the dam. The City has opted for the least expensive option.

10. Do you think this is consultation? You have brought the community in far too late and this is disappointing.
11. There are more options than we have been presented today or that are included in this report. There is a 5th option missing from the KCB report where a stormwater function can be designed. You say that the pond serves no functional purpose, can we change this? Can the pond be altered to become a storm pond? This is an important feature to the community and we're not convinced this is a done deal.
12. If this work is urgent, why wait years until this work can begin or be included in the budget?
13. There is a sedimentation pond in Discovery Ridge that was recently dredged – is this pond also in the list/inventory for dam safety? When other ponds in the area were established, like the change to the Elbow Valley Wetland, there was no engagement and it has received no attention. We need a community-wide, integrated approach to pond management.
14. If a new stream concept moves forward, will it be able to handle the flow rates? Can we ensure houses don't get flooded with the new design?
15. The area is currently not being maintained because it is considered naturalized. The thistle and willows have overrun everything. The pond is the only thing stopping these invasive plants from going into more properties.
16. We have lost a lot of trust with The City, but being here tonight is a good first step in rebuilding trust. You need to breakdown silos in The City to ensure we do not have a monoculture outcome. There needs to be community benefit from Parks landscape architecture, planning, delivery, and maintenance with the goal of designing the right thing for the community.
17. Communications to date has been lacking around this project and everything The City is doing in Discovery Ridge. How will you work with us instead of "delivering" things to us after they are done? I encourage you to talk to us before you make decisions.
18. Does the report consider upstream slope stability? Will there be compensation for those who have impacts to their property values?
19. Is the consultant being indemnified by The City?
20. Has anyone considered building a notch in the dam?
21. The options in the report only consider height. What about removing material, adding concrete side walls to reinforce the dam?
22. Has the consequence classification been reviewed since the water level was dropped in 2024?

23. Why is the current 1.35 factor of safety considered acceptable?
24. The dam survived the 2005, 2007, 2013 floods, so why is there an issue?
25. Are all of the assumptions input into the process in the reports? How is risk being framed? Are we framing this issue appropriately without considering probability?
26. This is a highly valued space in the community. Going forward, can The City make a commitment to a more collaborative process? Can we have direct input? If this is going to change, can we have early input? What you need is our buy-in and what we need is to be more engaged.
27. These are some of the most expensive homes in Calgary and there is an impact to property value and we need consultation.
28. Happy to see Ward 6 Councilor's office representation here.
29. This is a regional issue and we need a commitment to the larger area of Discovery Ridge. We want Alberta Transportation, Elbow Valley wetlands, wildfire considerations, pathways, Parks, and ponds all part of one conversation. We would like to see a holistic approach with all departments. We want a net benefit to the community and inclusive engagement.
30. The design options are just beginning. What does this look like? Will there be an organic co-design approach going forward or will we just be asked to select features?
31. Is it possible to reinforce rebuilding the dam?
32. Is there a volume of water that we can keep the dam at that is low enough that not be considered a dam? Can the new space still have water there as long as it falls below the criteria?
33. The HOA has contributed $8 million over 20 years to improve the community. Green spaces mean a lot to this community. When it comes to redesigning, this creates a lot of anxiety.
34. Have you been to the community and walked around the pond? We have lots of meandering channels. The pond is unique. The consultant may not have the same perspective as the community. The new space needs to include water where birds can land.
35. We would like to see a what we heard report coming out of this so everyone can see and has a record of our feedback and questions.