

Reducing Calgary's flood risk

A guide to The City's Flood Resilience Plan

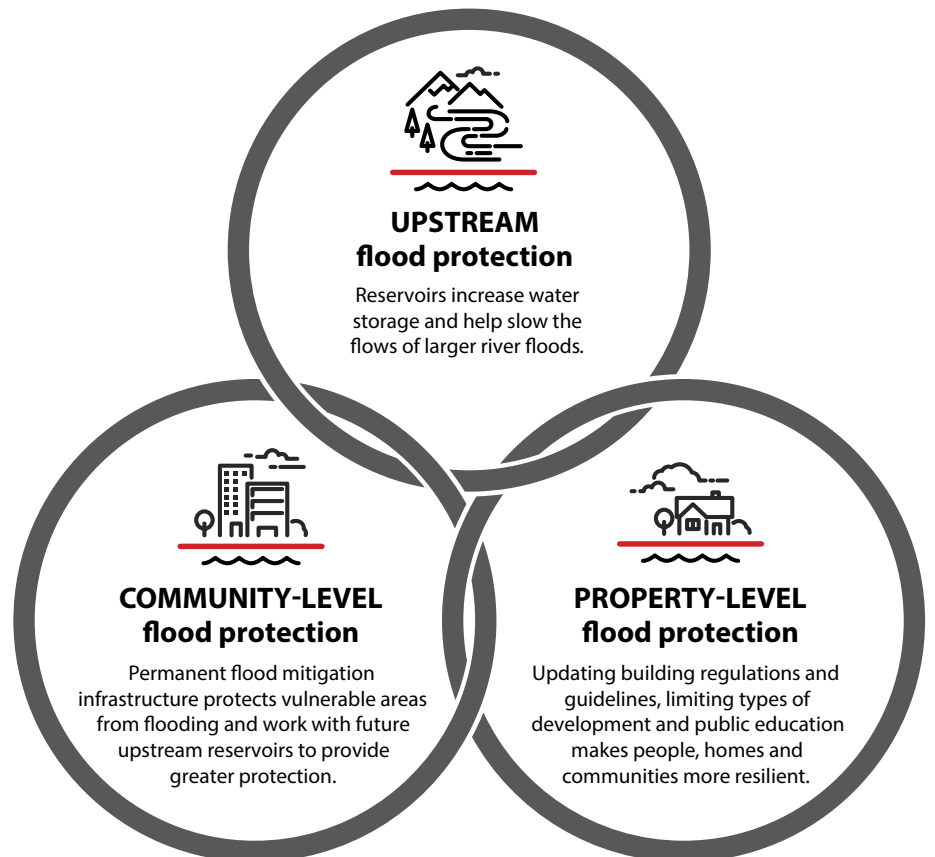
The June 2013 flood experienced in Calgary was catastrophic. Sadly, one Calgarian's life was lost and 80,000 residents were forced to evacuate their homes. Many whose homes were flooded faced trauma as they coped with the challenge of rebuilding or the permanent loss of their home.

The 2013 flood remains one of Canada's costliest disasters with an estimated \$5 billion in damages across Alberta and an estimated \$400 million to City of Calgary infrastructure alone.

As a river city, there will always be a need to prepare, respond and adapt to floods. That's why building resilience to flooding is one of our top priorities. And while we can't prevent future floods, we have a plan to reduce their impact.

Elements of the flood resilience plan

The City's Flood Resilience Plan is grounded in the results from several technical studies and public engagement, including the Flood Mitigation Measures Assessment and the recommendations from the 2014 Report from the Expert Management Panel on River Flood Mitigation. It uses a three-layered approach where each element works together to manage our flood risk in Calgary. Together, these measures will make Calgary resilient to at least a future 2013-level flood and significantly reduce our flood risk.





Building flood resiliency on the Elbow River

The Elbow River is a significantly smaller river compared to the Bow River, with lower riverbanks, which makes it more prone to flooding. After exploring multiple options, the best solution for protecting the thousands of residents that live and work along the Elbow River and downtown Calgary is a combination of an upstream reservoir along with new gates on The City's Glenmore Dam. Together, these projects will work together to reduce potential flood damages by over \$3 billion through the next century.

UPSTREAM flood protection



COMMUNITY-LEVEL flood protection



Springbank Reservoir (SR1)

This Government of Alberta project will be located about 18 km upstream of Calgary.

During a flood, some water would be diverted from the Elbow River into the reservoir where it would be temporarily stored and released slowly back into the Elbow River towards Calgary to the Glenmore Reservoir.

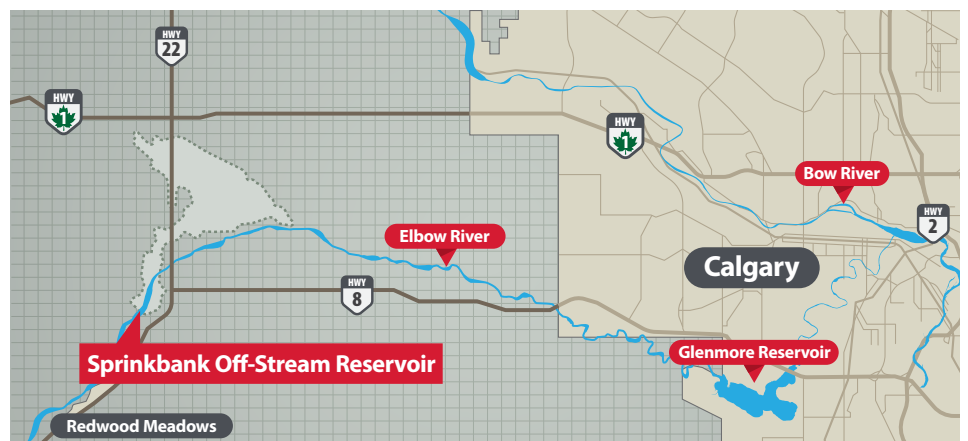
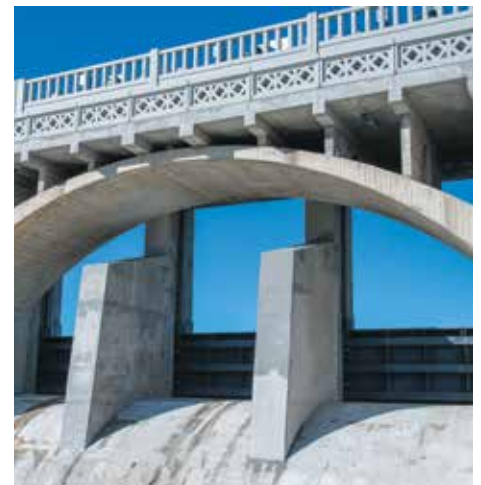
This project will reduce flood risk by 80% on the Elbow River.

Once all regulatory approvals are in place, the Province will begin construction and the reservoir will be fully operational after the third year of construction.

Glenmore Dam Gates

Completed in summer 2020, the installation of 2.5 metre high steel gates at the Glenmore Dam has doubled the Glenmore Reservoir's water storage capacity and enables us to better control high river flows in the spring on the Elbow River.

Once the Springbank Reservoir is completed upstream, it will work with the Glenmore Dam gates to manage a 2013-size flood.





West Eau Claire Flood Barrier
Photo courtesy of O2 Planning + Design

Building flood resiliency on the Bow River

The Bow River is a large river and most of the existing upstream reservoirs are used for power generation, not flood reduction. Due to the volume of water that would need to be managed on the Bow River in a major flood, upstream reservoirs are critical to slowing down the river. Permanent flood barriers are also still needed to protect low-lying communities closest to the river.

UPSTREAM flood protection



New upstream reservoir on the Bow River

A new upstream reservoir on the Bow River would capture more water from large floods and could provide an additional source of water in the face of climate uncertainty and risk of drought.

The Province is examining three options for a reservoir on the Bow River. If constructed, the reservoir would be a major component in flood mitigation and drought management for Calgary.

For details on the status of this project, visit alberta.ca/bow-basin-water-management-options

Modified operations at TransAlta's Ghost Reservoir

Keeping upstream reservoirs like TransAlta's Ghost Reservoir low during flood season also helps control the flow of water and significantly reduces Calgary's risk of flood damage.

An agreement between the Province and TransAlta to modify operations at Ghost Reservoir for flood mitigation purposes runs through 2021 with plans to extend.

COMMUNITY-LEVEL flood protection



Permanent flood barriers

The foothills west of Calgary make it unlikely that a large enough reservoir could be built to completely slow the river flow of a 2013- level flood without causing overland flooding in some Bow River communities.

Permanent flood barriers in low-lying areas would prevent overland flood water from damaging communities, roads and utilities, including:

- Downtown
- Sunnyside-Hillhurst
- Bowness
- Heritage Drive
- Inglewood
- Bonnybrook
- Wastewater Treatment Plant

Until a new upstream reservoir is built on the Bow River, community flood barriers would also protect the communities from smaller floods that are more likely to happen.

Work on the individual flood barrier projects are in various stages of design and community engagement. For the status of community flood barrier projects, visit calgary.ca/floodinfo

Once these projects are complete, together they will work together to reduce potential flood damages from a 1 in 200-year flood event on the Bow River.

The value of flood protection

With flooding projected to get even worse due to climate change, investing in a suite of flood protection measures is an investment in the safety of our citizens, community resilience, and for future generations of Calgarians.

Achieving flood resilience depends on us working together. It is a responsibility that lies with all orders of government as well as citizens. Flood mitigation infrastructure built within and outside of Calgary, along with individual preparedness, will make Calgary better equipped to face extreme weather events.

SINCE THE 2013 FLOOD OVER \$150 M HAS BEEN INVESTED IN FLOOD MITIGATION FOR CALGARY.

This has **REDUCED** our city's flood risk by about **50 PER CENT** and our risk of flood damages by **\$80 M** every year.

20+ 
PROJECTS

since 2013 have been **completed** or **are underway** to limit the impacts of future flooding.



PROPERTY-LEVEL flood protection



Many of Calgary's older communities were built where flooding is a known risk. Property-level measures, such as updates to building regulations, flood proofing, and limiting types of development in flood prone areas are an important part of making Calgary's communities flood resilient.

When combined with flood mitigation infrastructure like barriers and emergency response plans, these measures can effectively reduce flood risk in existing communities over time and limit new flood risk caused by growth and development.

Since the 2013 flood, changes have been made to the Municipal Development Plan and Land Use Bylaw to provide guidance and better regulate development within the Flood Hazard Area. We're currently exploring potential changes to land use and building regulations to further increase Calgary's flood resilience in all communities with heightened flood risk. Examining restriction of land uses and occupancy types in the floodplain, such as care facilities and schools, are part of this investigation.

Personal flood preparedness

Property owners also have an important role in flood resiliency. We offer several resources, including a Flood Readiness Guide, seasonal newsletter, web resources, and are exploring new programs to support residents in being prepared for potential flooding and flood-proofing their property.

Visit calgary.ca/floodinfo for more resources and a list of current and completed flood resilience projects.