



**Calgary**



# Flood Resilience 2018

## CRCAG AGM

Jun 20, 2018

**Frank Frigo, P.Eng.  
Watershed Analysis  
The City of Calgary  
Water Services**

ISC: Unrestricted



- Overview of Council Endorsed Flood Plan
- Progress since 2013
- 2018 Flood Preparedness
- Current Watershed Conditions



# Calgary's Flood Resilience

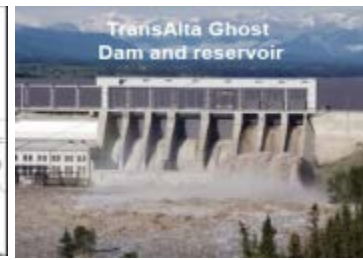
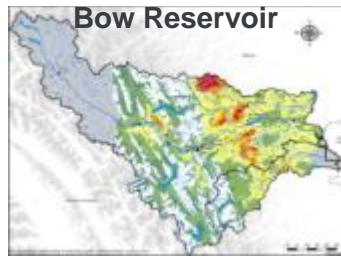
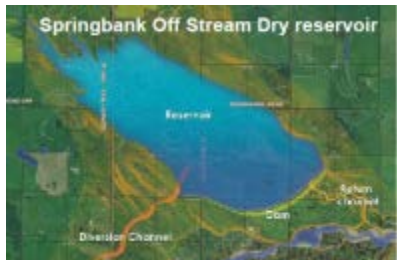
## A 'Backbone' of Structural Mitigation

### Elbow River

Springbank Reservoir  
+ new Glenmore gates

### Bow River

New upstream reservoir (BRWG)  
+ TransAlta / GoA agreement  
+ Local barriers

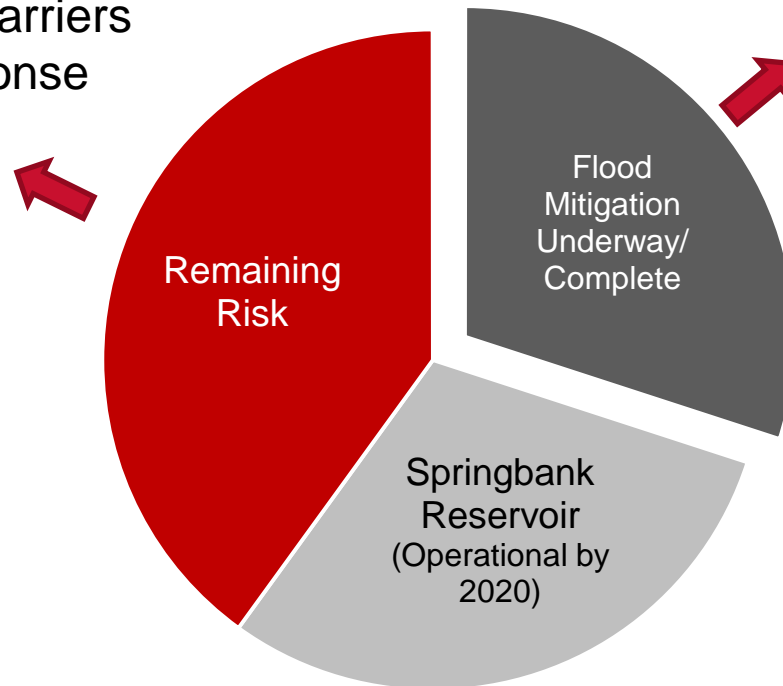


- + Gravel bars
- + Land use policy and building regulations
- + Education and awareness
- + Emergency preparedness, response, forecasting



## Calgary River Flood Risk

- Bow upstream reservoir
- Enhanced Operations with TAU
- Complementary barriers
- Emergency Response



- Glenmore Dam gates (protects all downstream communities)
- River bank strengthening (~20 sites on Elbow)
- Stormwater gates (13 gates on Elbow)
- Lift stations (e.g., Roxboro)
- Barriers (e.g., Deane House, Stampede)
- Replacement of 3 pedestrian bridges on Elbow
- Riparian restoration (e.g., Lindsay Park, 25<sup>th</sup> Ave.)

## *Glenmore Reservoir Construction*

- Glenmore Dam currently under construction
- Enables reliable drinking water supply and flood mitigation.
- Flood peaks up to 1:35 year can be managed to safe threshold
- During construction, reservoir level is lower

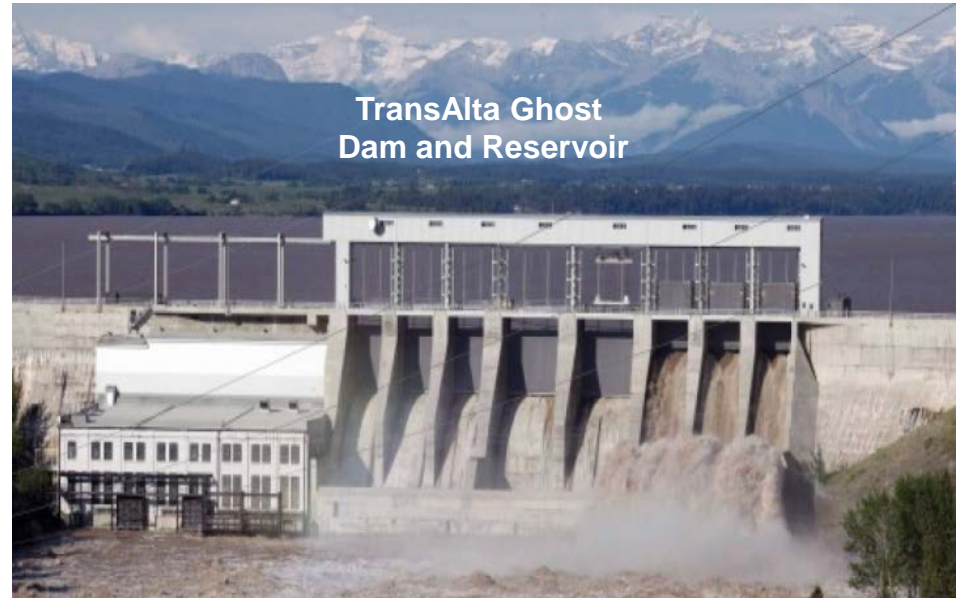


## *West Eau Claire Park / Eau Claire Promenade*



## *Government of Alberta and TransAlta operations*

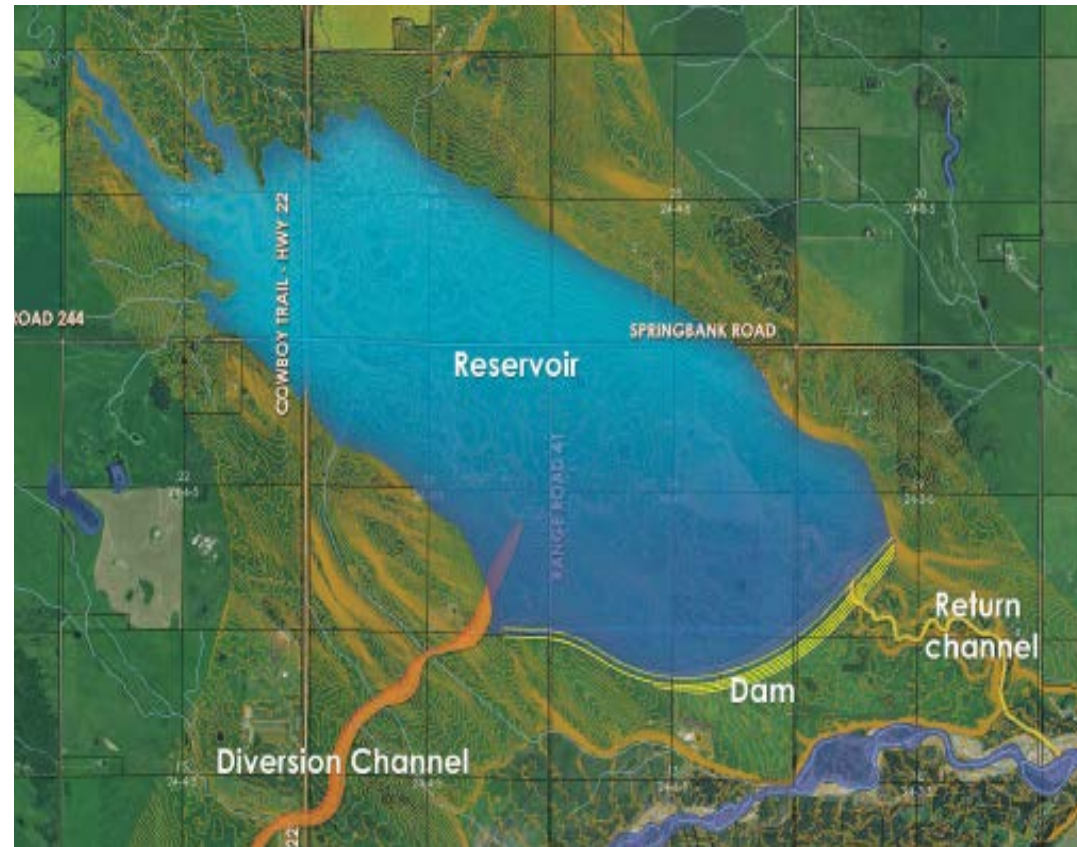
- Agreement put in place in 2016 for five years
- Sets reservoir levels and operations during flood season, to maximize potential flood mitigation
- Ghost Reservoir target elevation set already for 2018 – 1 m lower than last year. Reservoir will be kept low until snowpack melted off.





## Springbank Off-Stream Reservoir

- About 4 times the storage at Glenmore
- 80% of mitigation needed for Elbow
- with Glenmore gates, protects Elbow to 2013 level
- Large catchment area
- Off-stream – limited impact on normal streamflow, habitat and function



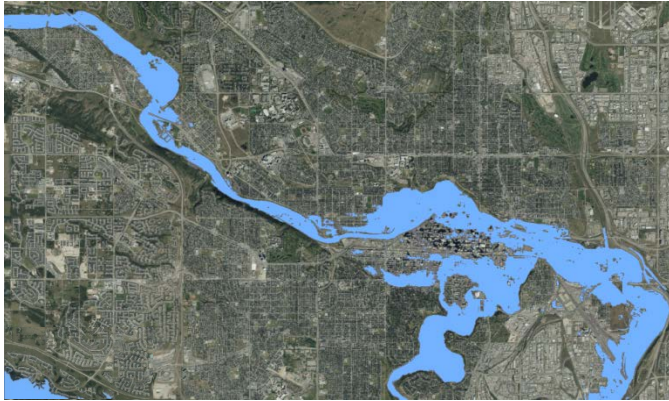
- **Together with Glenmore gates** eliminates need for other structural protection on Elbow
- **Cannot reasonably be replaced by local barriers** on lower Elbow
- Less expensive than buy-out, barriers or Diversion tunnel



# New Upstream Reservoir on the Bow River

- A Bow River reservoir is necessary to manage flooding
- GoA announced \$1.9M for feasibility studies for a new reservoir on the Bow River upstream of Calgary.
- With Provincial funding, TransAlta is investigating how quickly Ghost Reservoir can be lowered, to improve potential flood mitigation





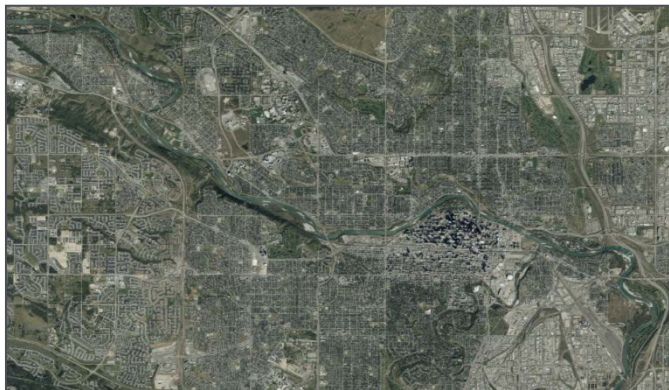
## 2013 flood unmitigated

(what would have happened if no action was taken)



## 2013 FLOOD ACTUAL

(City and TransAlta operations, emergency response)



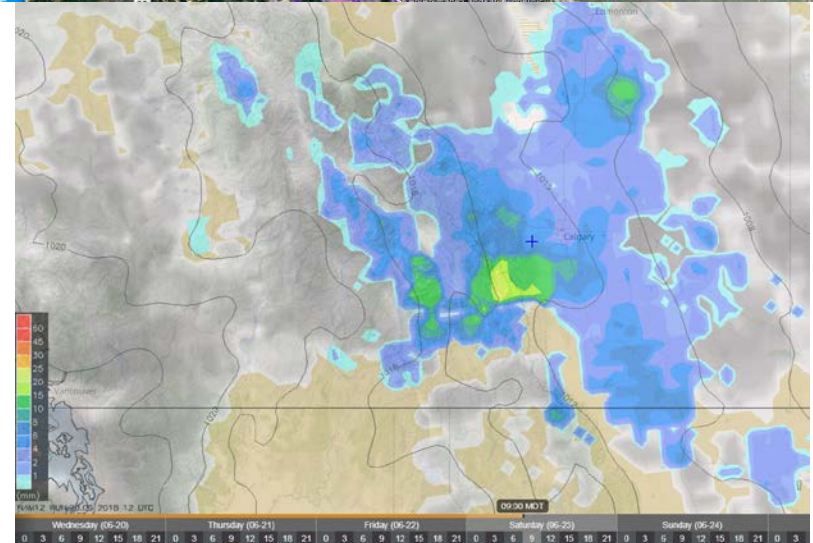
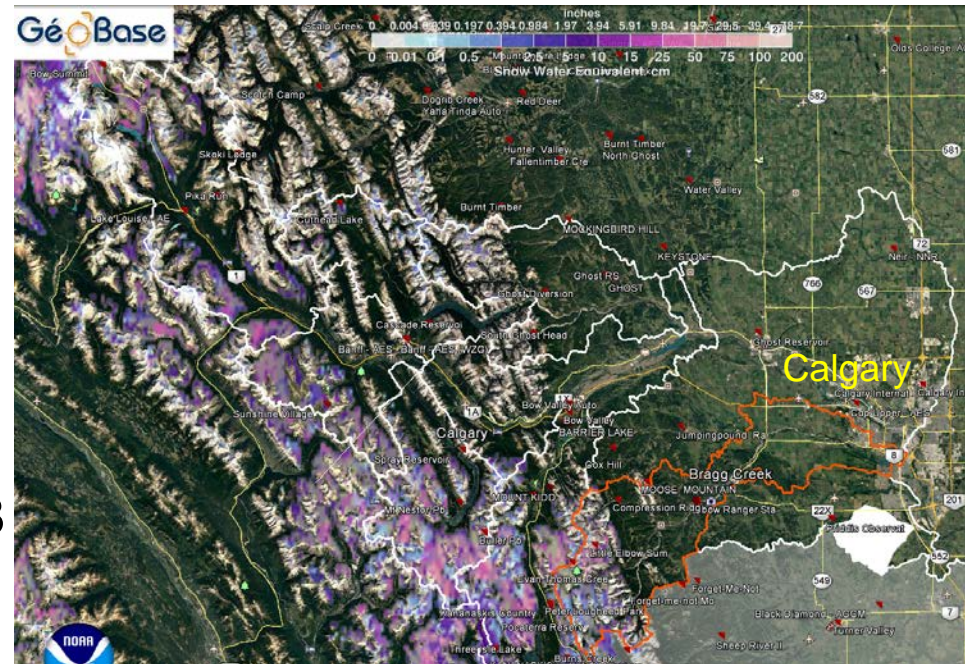
## 2013 flood with full flood management plan in place

(New upstream reservoirs, enhanced operations, community barriers, emergency response)



# 2018 Flood Preparedness: Forecasting

- Year-round forecasting and monitoring
- 24/7 monitoring May to July (weather and river flows) – already underway for 2018
- Increased team capacity and training
- Share modelling and forecast information with CEMA and Alberta Environment and Parks





# 2018 Flood Preparedness: Infrastructure and Response

- Bow River:
  - GoA-TransAlta operating agreement in place
  - Ghost Reservoir is lowered
- Elbow River:
  - Glenmore Reservoir is lowered
- Field Readiness – test valves, pre-position pumps and other emergency supplies
- Annual updates to Flood Emergency Reference Manual
- The Province announced \$10M for flood preparedness in Alberta



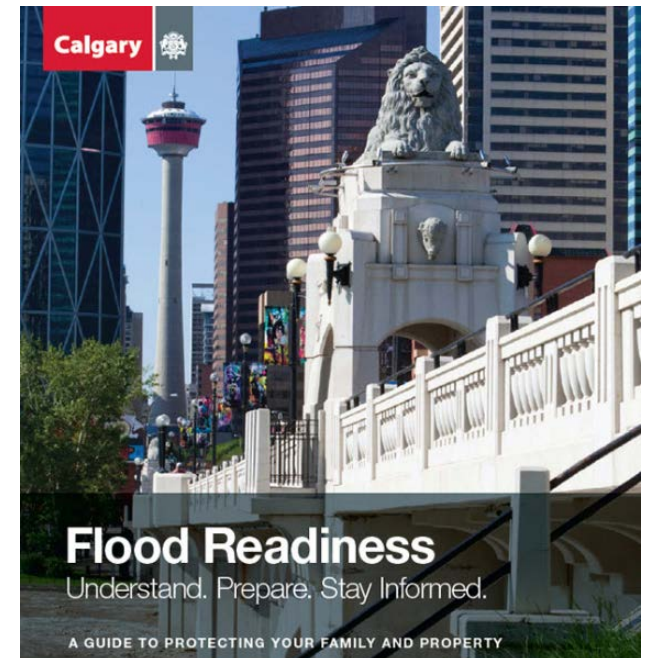
## 2018 Flood Preparedness: Temporary Barriers

- Temporary Barriers – reviewed plans, new materials, test barriers, quicker build times
- Revised and improved temporary pumping plan -





- Prepare your home or business
  - move valuables, electronics and documents to a safe place
  - Position downspouts 2m away from buildings
- Have an evacuation plan:
  - Know what to take with you
  - Know where you will go
  - Have a plan to communicate with your loved ones
  - Have a 72-hour kit
- Follow directions during a flood
  - A study after the 2013 flood found that 33 per cent of people in evacuated communities knew they were at risk but didn't evacuate.
  - Not following directions could put you, your loved ones, and emergency responders at risk
- Download a Flood Readiness Guide for more tips
  - [calgary.ca/floodinfo](https://calgary.ca/floodinfo)





Flooding occurs quickly and with little warning.  
Stay up to date on conditions and be prepared to act.

### Flooding in Calgary

Flooding can occur at any time with little to no warning. May 15 to July 15 is when we receive our largest rainfalls and are most likely to experience flooding.

Understand, prepare and stay informed by knowing your flood risk and how to prepare for flood conditions.

For a history of the 2013 flood, see [Calgary 2013 flood](#).

<h4>Understand</h4> <ul style="list-style-type: none"> <li>Types of flooding</li> <li>Flow rates</li> <li>Monitoring Calgary's rivers</li> </ul>	<h4>Prepare</h4> <ul style="list-style-type: none"> <li>Prepare ahead</li> <li>What to do during a flood</li> <li>Flood Readiness Guide</li> </ul>	<h4>Stay Informed</h4> <ul style="list-style-type: none"> <li>Understand emergency alerts</li> <li>Check current river flows</li> </ul>
<h4>Mapping</h4> <ul style="list-style-type: none"> <li>Check your flood risk</li> <li>Are you building or renovating? Check your regulatory flood zone</li> </ul>	<h4>Mitigation &amp; Resilience</h4> <ul style="list-style-type: none"> <li>The City's Flood Mitigation Strategy</li> <li>Flood protection: what we've done and what we're doing</li> </ul>	<h4>After Flooding</h4> <ul style="list-style-type: none"> <li>Returning home after a flood</li> <li>Cleaning up after a flood</li> <li>Health-related information</li> </ul>

**Join us in person:**

**Flood Preparedness Open House for Bow River Communities**  
Tuesday, May 15, 2018  
Start time: 7:00 p.m.  
[Foothills Academy](#)  
745 37th Street N.W.

**Councillor Farkas's Flood Readiness Town Hall for Elbow River Communities**  
Thursday, May 17, 2018  
Start time: 7:00 p.m.  
[Elbow Park Community Centre](#)  
800 34 Avenue S.W.

**Stay connected**

[Sign up for email updates](#) to receive news and notices related to flood.

**Current river status**

[Learn about river flow rates](#) and how they may impact you.

Check [Alberta's River Monitoring Centre](#) for Bow and Elbow River flow information.



**Alberta Rivers: Data and Advisories**

Monitor flood advisories, and obtain up-to-date station information for Alberta's rivers and lakes.

Links and information at [calgary.ca/floodinfo](http://calgary.ca/floodinfo)

## Understanding Current Conditions

- High Winter snowpack almost fully melted off
- Rainfall in mountains expected Jun 21-24 and ` Jun 30 but at modest and manageable rates
- Highest risk period is May 15 to July 15 with special emphasis on last 2 weeks of Jun





Stay Informed.

[www.calgary.ca/floodinfo](http://www.calgary.ca/floodinfo)

Sign up for our e-newsletter