

Calgary



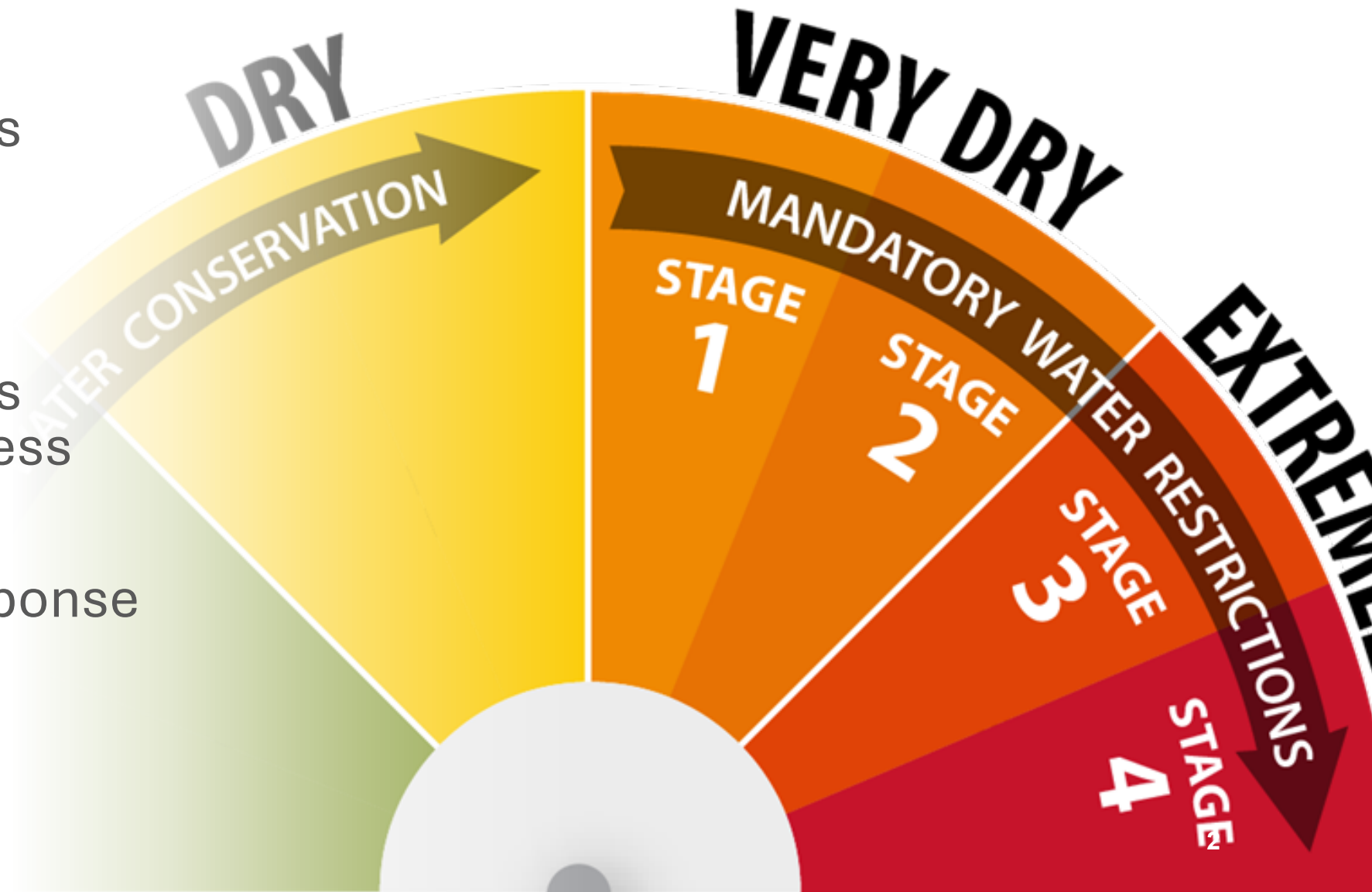
A **WATER**balancing Act


Drought Readiness and Response in Calgary

CWWA - National Water and Wastewater Conference. November 2024

Nicole Newton, Manager Natural Environment & Adaptation

- The City of Calgary's Drought Resilience Planning
- The City of Calgary's Drought Preparedness
- Water shortage response



A wide-angle photograph of a grassy field with a stone path leading towards a city skyline in the distance under a clear blue sky.

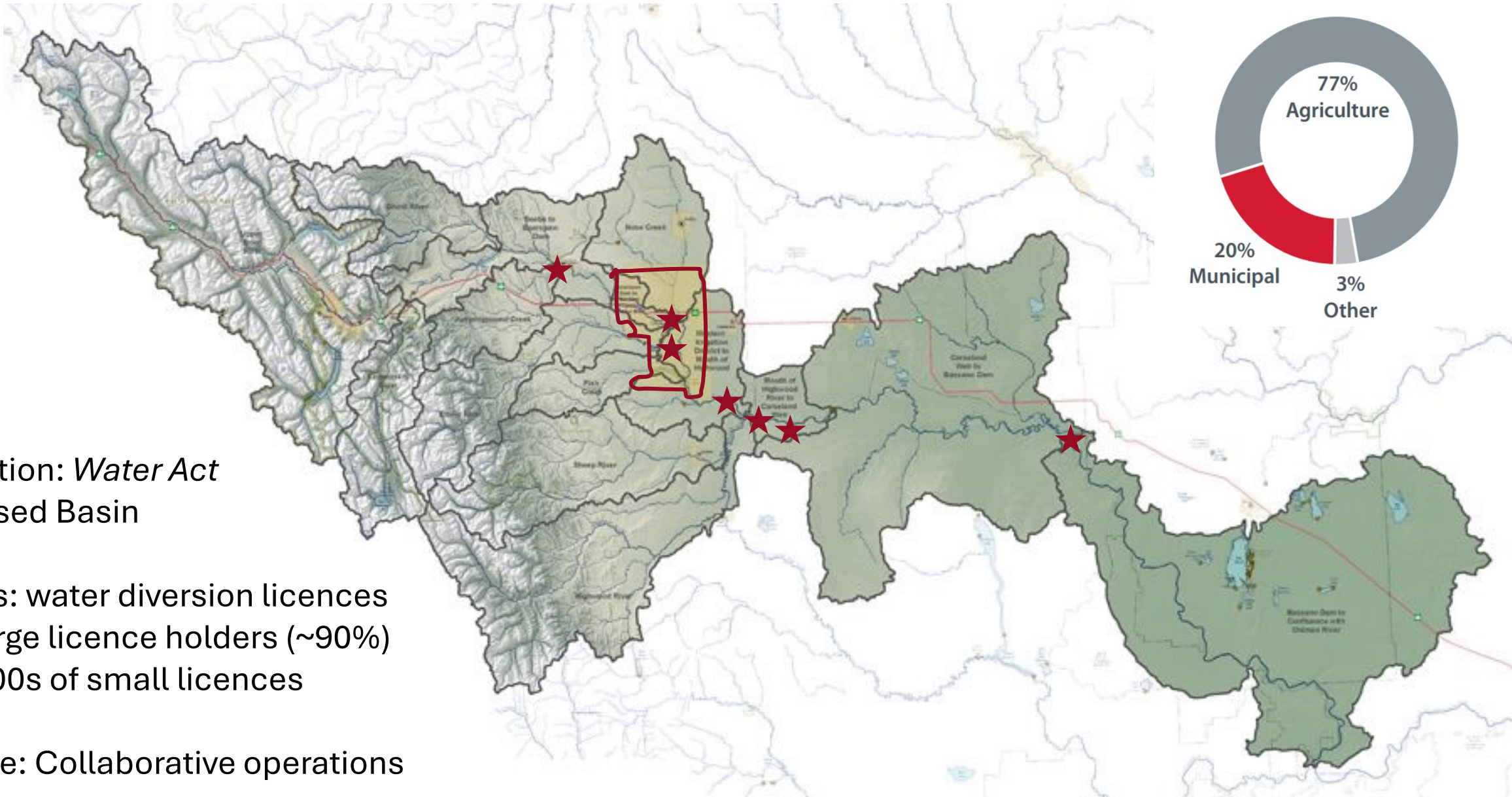
Let us honor the wisdom of Indigenous Peoples who have taken care of these lands for time immemorial, and their commitment to safeguarding this land for future generations.



Drought Resilience Planning



Water Management in the Bow River Basin



Regulation: *Water Act*

- Closed Basin

Permits: water diversion licences

- 7 large licence holders (~90%)
- 1,000s of small licences

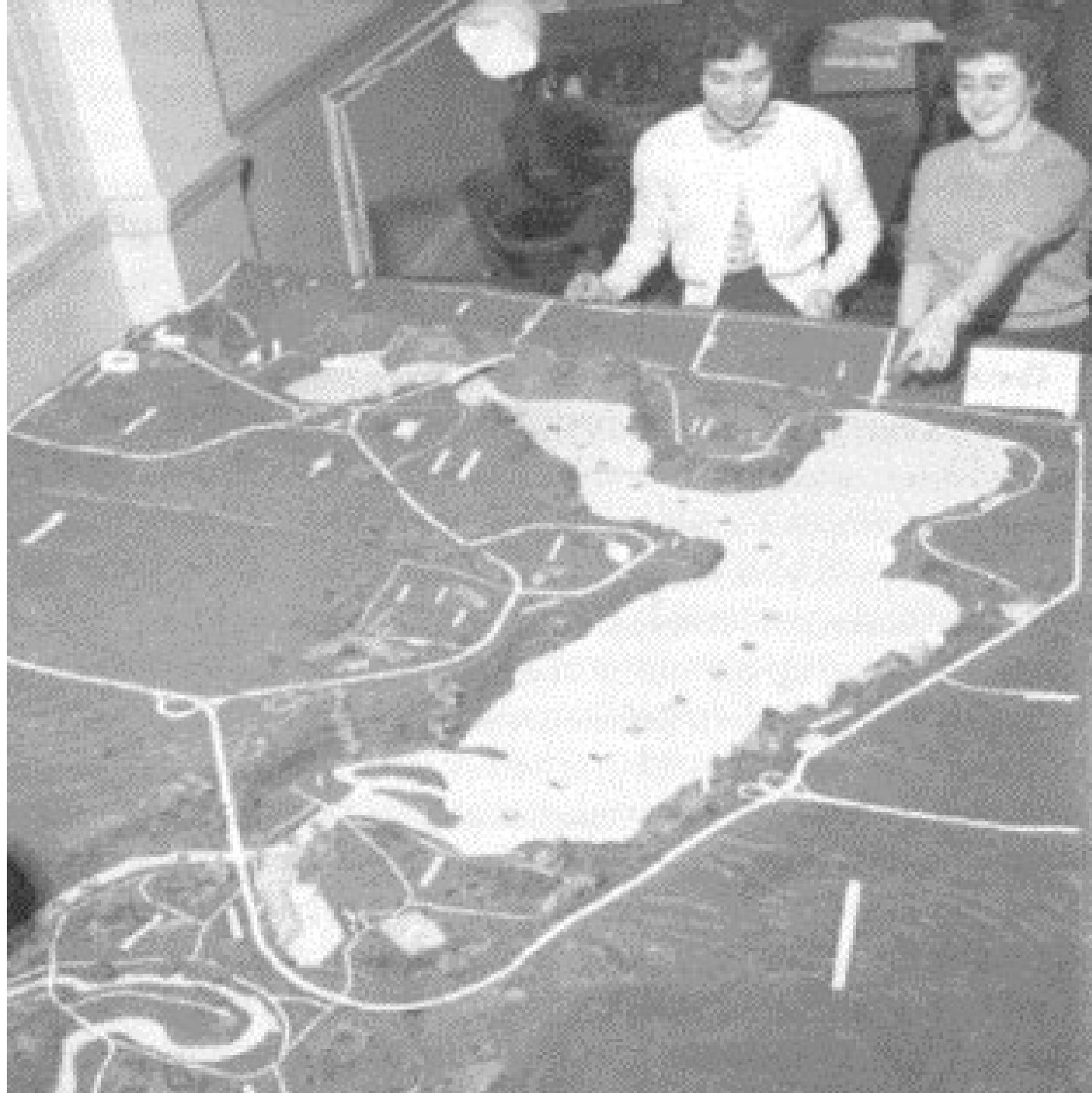
Practice: Collaborative operations

**Our region is
prone to
drought**

Calgary



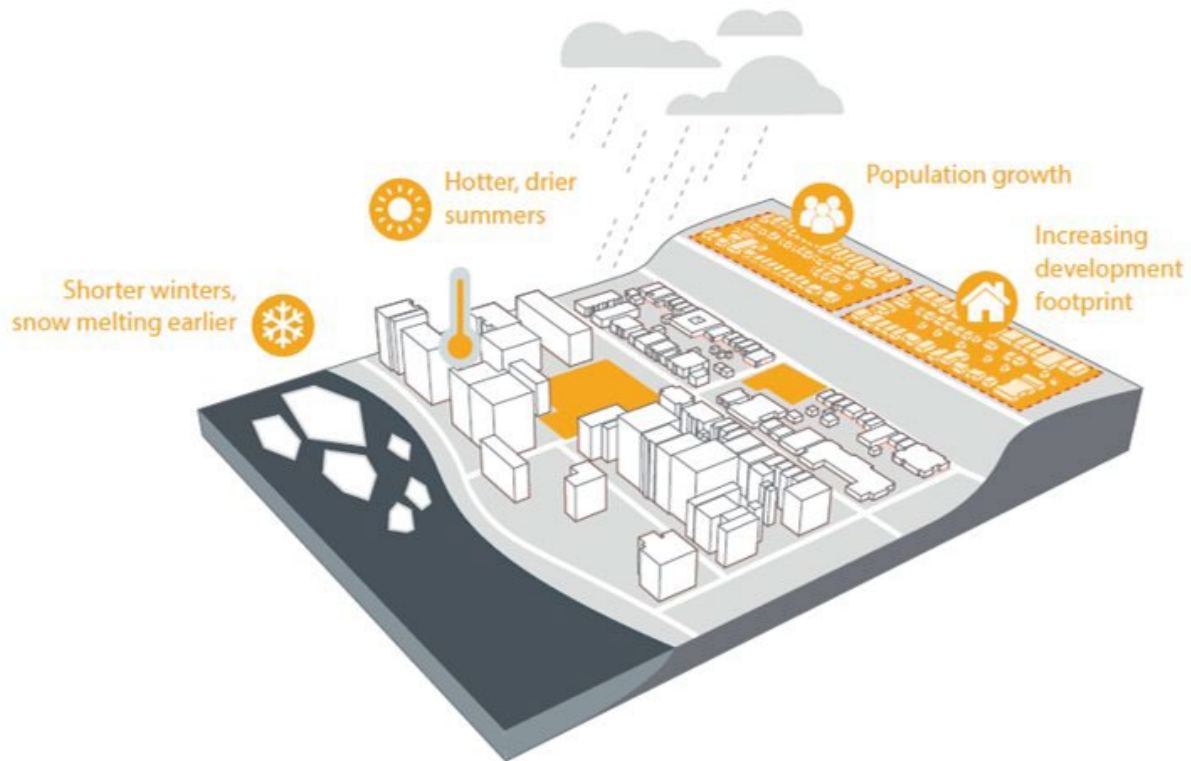
Water security through the decades



Calgary



Building drought resilience for the 21st Century



Calgary

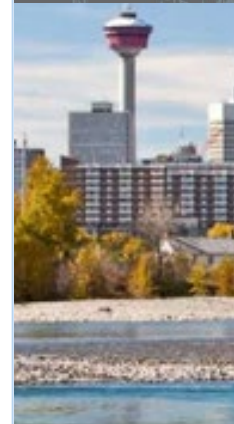


The City of Calgary Drought Resilience Plan

YardSmart

Planning & Design

A few planning and design tips can help you create a beautiful yard that's low maintenance, lower cost and easy on the environment.



Calgary Climate Strategy Pathways to 2050

The City of Calgary
**Drought
Resilience
Plan**

GOALS



Reduced Demand



Protected Water Supply



Drought Preparedness



Healthy Landscapes



Strong Relationships



Drought Preparedness

2024 + Beyond



Drought: Top of Mind Last Fall & Winter!

2023

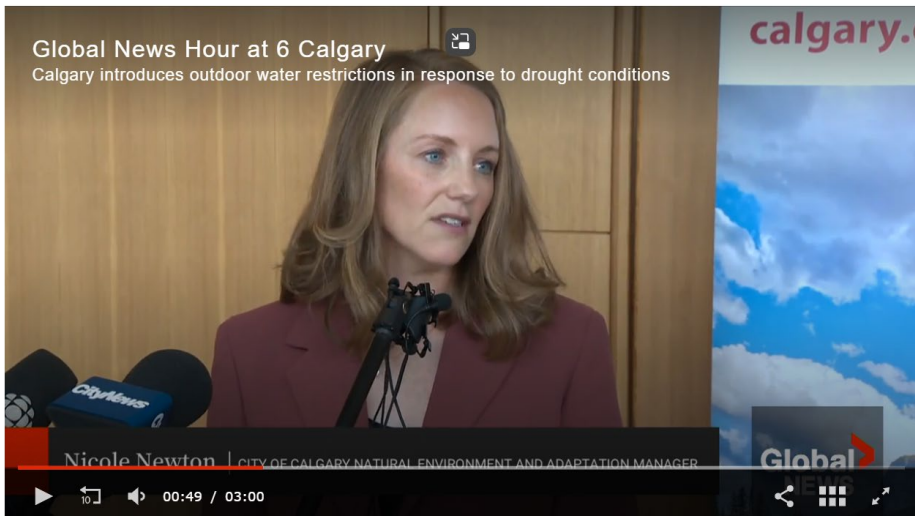
ENVIRONMENT

Calgary introduces outdoor water restrictions in response to drought conditions



By **Ryan White** & **Adam Toy** • Global News

Posted August 15, 2023 10:19 am • Updated August 16, 2023 6:54 am • 4 min read



WATCH: City officials are urging Calgarians to monitor water use as both the Bow and Elbow rivers see historically low flow rates for this time of year. Adam MacVicar reports. – Aug 15, 2023

2024

Drought-driven outdoor watering restrictions for Calgary eyed to begin this summer

Story by Bill Kaufmann • 4mo • 3 min read

'A societal issue': Drought-plagued Alberta braces for even worse conditions

Province will push 'water sharing.' Cities will restrict usage. This year could get drastic



Jason Markusoff • CBC News • Posted: Feb 01, 2024 2:00 AM MST | Last Updated: February 1

Below-average snowfall in southern Alberta not helping drought conditions: experts

News / Local News

'Every drop counts': Water restrictions in Calgary could come earlier, last longer as drought continues

Accelerating Drought Preparedness

Climate &
Environment

Water
Services

Emergency
Management

Drought Readiness &
Response
Implementation (DRRI):

- ✓ Proactive
- ✓ Accelerate + coordinate
- ✓ Projects + actions



DRRI Program Design: Core Team



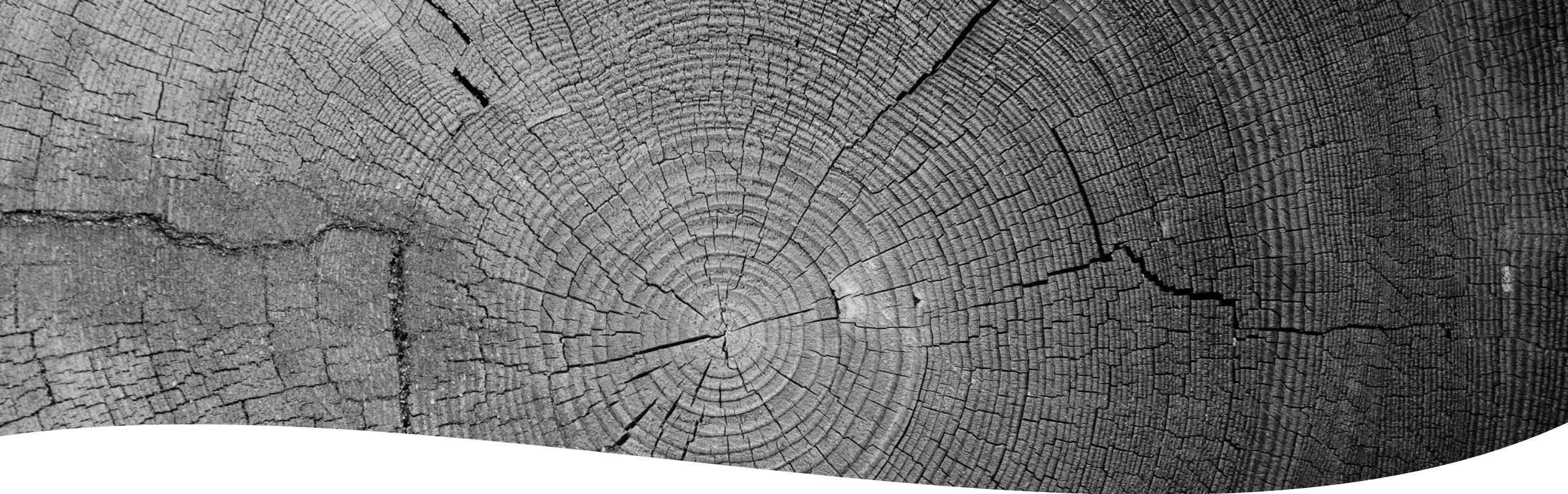
DRRI Program Design: Key Outcomes

- Reduce water use in 2024
- Enhance drought readiness + response
- Maintain & enhance The City's reputation

***Watershed
steward***



***Water service
provider***



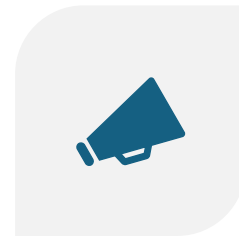
WATER SHORTAGE
PRINCIPLES



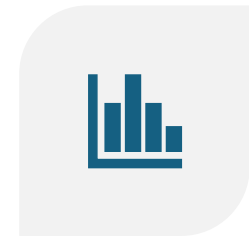
BASIN SHARING



CITY OPERATIONS



PUBLIC
AWARENESS



INDICATORS &
TRIGGERS

1. Drought & Water Shortage Principles

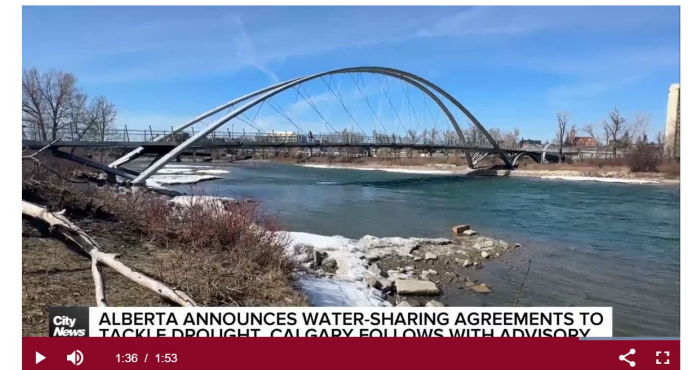


2. Water Sharing Agreements & Regional Coordination

- Signed Water Sharing Agreement MOU (inactive) with other major licensees in the Bow River Basin
- City of Calgary committed to a 5-10% reduction in demand if activated
- Coordination with: Regional Customers, Calgary Metropolitan Region Board, Other Municipalities



Alberta makes historic move on water-sharing amidst drought



The City of Calgary has implemented a water reduction advisory while the province has announced new water-sharing agreements, both initiatives aimed at tackling severe drought conditions. Henna Saeed reports.

3. City Operations: Leading by Example

Proactive Drought Response Plans

- New Drought Response Plans for n Business Units created in 2024

City parks & facilities examples

- Reducing outdoor watering at City buildings & parks
- Adjusting mowing heights to turf to reduce watering needs
- Use of drought tolerant plants
- More efficiently watering new trees and shrubs to help them establish
- Reducing the number of planters and hanging baskets
- Keeping decorative fountains & features off or on reduced schedules

City golf course examples

- If outdoor water restrictions are enacted, rough areas not watered
- Using stormwater to irrigate golf courses where available



3. City Operations: Leading by Example

Water Services

- Acceleration of efforts to detect and fix leaks
- Reduce response times for breaks and repairs
- Wastewater recycling from Bonnybrook to Enmax for cooling

Street Sweeping

- Scheduled street sweeping prior to peak drought season

City Vehicles/Fleet

- Limiting vehicle washing to only if necessary for health & safety





4. Public Awareness Campaigns

01

Increase
Awareness

Communicate **early and often** with key target audiences through a variety of channels.

02

Maintain Public
Confidence

Keep Council informed and prepared

03

Empower
Calgarians

4. Public Awareness Campaigns

- Key Messages developed & regularly updated
- Ongoing website updates & design
- Mayor's press conference March 19th
- 6 news releases, >75 Media Interviews on drought
- Spring: social media, radio ads, YouTube ads, multicultural radio, bill inserts & coordination with annual leak campaign, YardSmart campaign, rain barrel sales
- Campaign Tagline: **“Together we can make every drop count.”**





Communication Tactics



Drought conditions/forecast updates



Good news stories



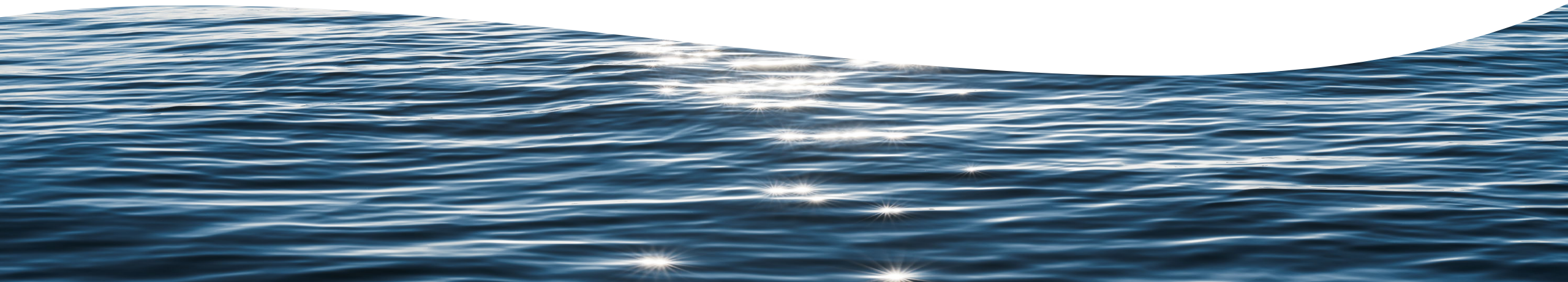
Leveraging and amplifying existing annual campaigns



Water conservation campaign



Targeted messaging



Together, we can make a difference at home

Take action to prepare your yard for dry conditions and make it as water efficient as possible.



Choose water-wise plants

Choose drought-tolerant native plants; consider lawn removal.



Add mulch to your garden

Mulch retains moisture and keeps an even soil temperature.



Install a rain barrel

Capture and reuse any rain we get this season.

>2400 rain barrels were distributed through City partners in 2024

Together, we can make a difference at home

Be efficient with outdoor water use.



Water when it's coolest

Early in the morning or later in the evening.



Water low and slow

Use a watering can, soaker hose or drip irrigation.



Check irrigation systems for leaks

Schedule annual maintenance with an irrigation professional and check often for leaks.

Together, we can make a difference at home

Conserve water outdoors



**Keep your lawn longer,
mow less often**

Deeper root systems develop,
retaining more moisture.



**Direct your downspouts to
your garden**

Also a stormwater
management best practice!



Sweep up debris

Avoid using a hose to
clean your garage,
driveway or sidewalk.

Together, we can make a difference at home

Every time you use water inside the home, there's an opportunity to conserve water



Take shorter showers



Run full loads in your washing machine and dishwasher



Turn off water when brushing teeth and shaving



Fix leaky taps and toilets

Together, we can make a difference at home

Every time you use water inside the home, there's an opportunity to conserve water



Scrape your plate



Fill bathtub halfway or less



Install low flow faucets and showerheads



Invest in high efficiency appliances

Together, we can make a difference at work



Review your water use

Identify areas of your business where water consumption is highest to see if there are potential water saving opportunities.



Identify potential water-saving opportunities

- Check your plumbing system for leaks.
- Consider installing water-efficient fixtures and equipment.
- Remind your staff about using water wisely.

- **Printable posters with QR code developed**
- **Custom tips & resources for: restaurants, hotels, commercial buildings**

e.g., BOMA Calgary event May 21st:

- Conduct a water audit
- Set air conditioners at 24 C
- Optimize cooling systems
- Appoint a water champion, have “Water Moments” at meetings

- **Irrigation & landscaping:**

- Use water-smart irrigation & landscape practices
- Prepare for restrictions if they are needed
- Consider certification as a ‘Water Managed Site’ (uses min. 25% less water)

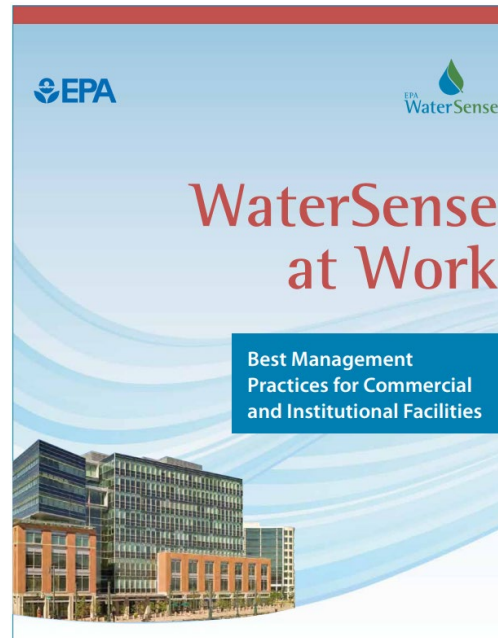
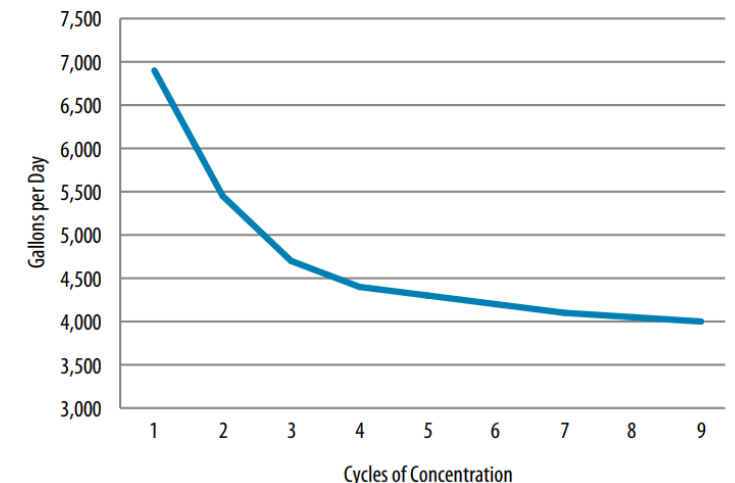


Figure 6-3. Cooling Tower Water Usage at Various Cycles of Concentration for a 100-Ton Tower



Source: USEPA (2017)



5. Drought Indicators & Triggers



Rain & Snow

Reservoir storage

Mountain snowpack

River flows



City Return Flows

Soil Moisture (provincial reports)

Canadian Drought Monitor

10-day forecasts & seasonal outlook



Provincial Water Supply Outlook

Seasonal Bow Basin Water Balance

Water Demand

Operational Considerations





New Indicator for 2024: Bow Basin Water Balance

	Period Start	Period End			
	27-Aug	30-Sep			
Volumetric Forecast	Forecast Likelihood	75% Chance Less Than	50 % Chance Less Than	25% Change Less Than	10% Chance Less Than
(dam ³)	Bow Basin	491,323	423,638	361,593	304,009

Seasonal Bow Basin Water Balance (Aug. 27)

Water Supply Forecast

- Irrigation Demand
- Municipal Demand
- + Municipal Return
- +/- Storage Demand/Supply
- Environmental Flows

Net Water Balance for Bow Basin (dam ³)	● 119,467	● 51,782	◆ -10,263	◆ -67,847
Basin Demand Variance	24%	12%	-3%	-22%

Drought Monitoring Decision Process for Drought Response

- Drought Monitoring Meetings review conditions for all indicators
- Discussion on appropriate drought level & City response, to reduce risks to downstream water users & the aquatic environment
- Consensus must be reached by The City's Drought Leadership Team



2024 Drought Preparedness: Outcomes

- ✓ Reduced water use in 2024 (as needed)
- ✓ Enhanced drought/**water shortage** readiness + response
- ✓ Maintained & enhanced The City's reputation?

Watershed steward



Water service provider



Drought Outlook

Drought is one of Calgary's top climate hazards.

We are preparing for a future where...

‘Calgary’s people, ecosystems, and businesses are prepared to withstand, recover from and adapt to the impacts of drought.’





Responding to a water shortage

Lessons Learned.

Save Water 	Save Water 	Save Water
-----------------------	-----------------------	-----------------------

Calgary



Together we can
make every drop count

calgary.ca/drought



Calgary



All water
restrictions lifted



Thank you, Calgary!