

# Shall We Gather at the River ?

Irrigation and the Future of Southern Alberta's Rivers

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Passing water for a  
hundred years.

St. Mary River Irrigation Project

100th Anniversary Celebration ~ September 4, 2000  
Lethbridge Exhibition Park

Irrigation 101





Waterton Reservoir



Bassano Diversion-Bow River



Little Bow Diversion-High River









Irrigation has “re-plumbed” the landscape



15 reservoirs (Province of Ab)  
41 reservoirs (Irrigation Districts)  
8000 kms of canals

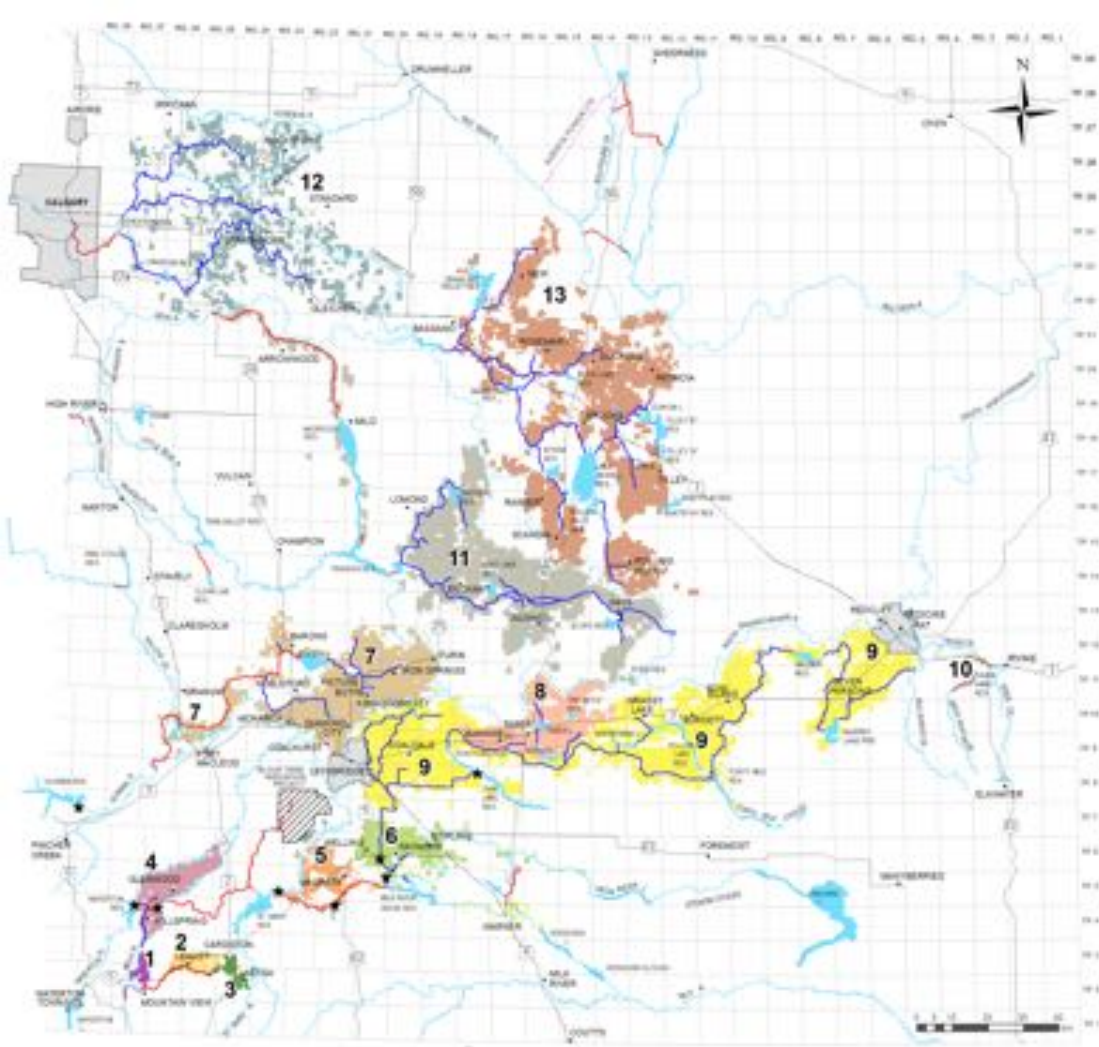












- 1 Mountain View Irrigation District
- 2 Leavitt Irrigation District
- 3 Aetna Irrigation District
- 4 United Irrigation District
- 5 Magrath Irrigation District
- 6 Raymond Irrigation District
- 7 Lethbridge Northern Irrigation District
- 8 Taber Irrigation District
- 9 St. Mary River Irrigation District
- 10 Ross Creek Irrigation District
- 11 Bow River Irrigation District
- 12 Western Irrigation District
- 13 Eastern Irrigation District

- ★ Hydroelectric Plants Associated with Water Distribution Works
- Headworks Owned and Operated by Alberta Environment and Parks
- Major Canals (District Owned and Operated)

There are 13 irrigation districts in Alberta providing water to 1,476,306 assessed acres of land. The infrastructure that provides water to the irrigation districts is comprised of approximately 7,973 kilometers of conveyance system, of which 339 kilometers are owned and operated by Alberta Environment and Parks\*.

\* based on 2019 data.

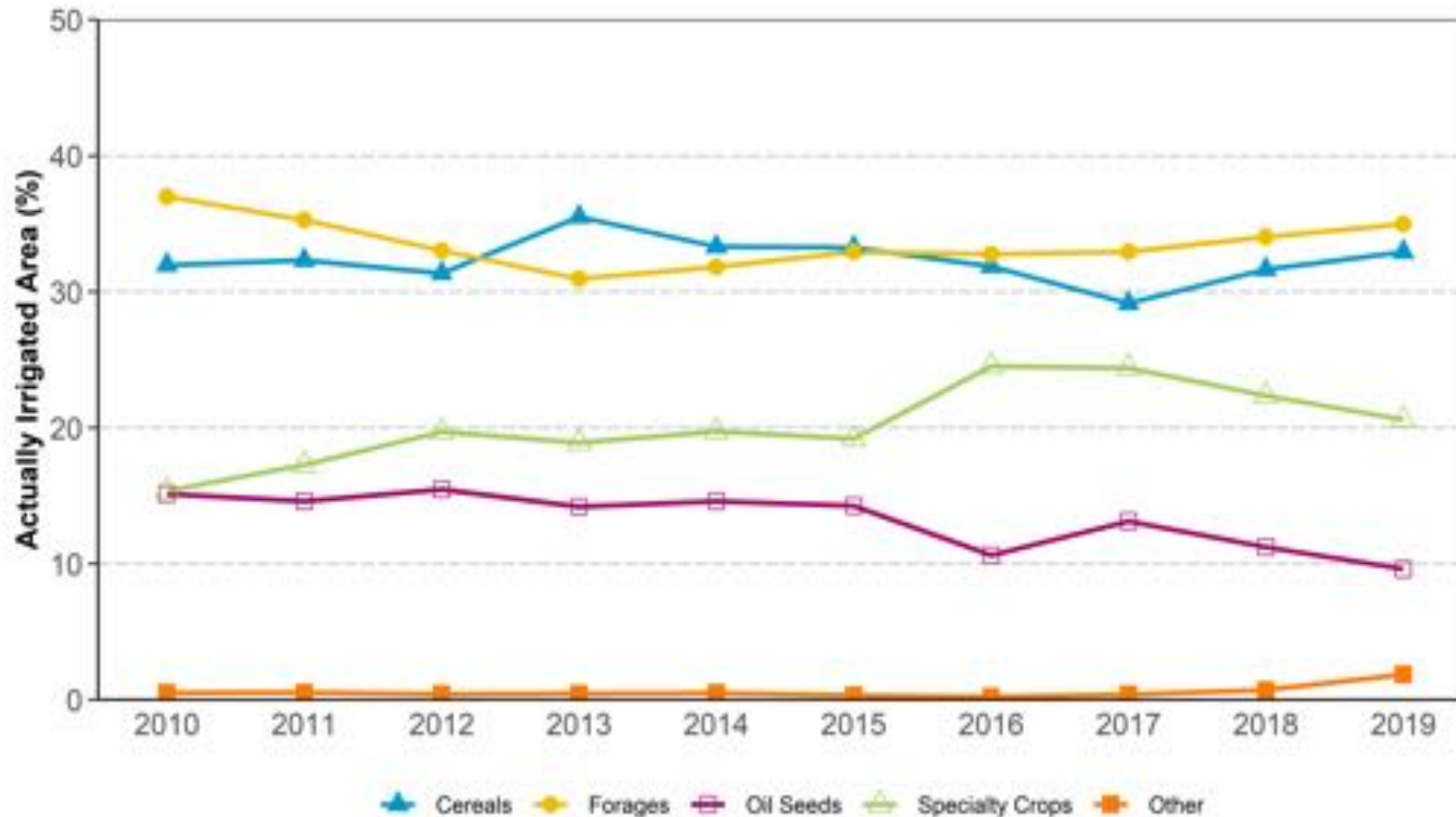
## • Irrigation Districts

- AID – Aetna Irrigation District
- BRID – Bow River Irrigation District
- EID – Eastern Irrigation District
- LID – Leavitt Irrigation District
- LNID – Lethbridge Northern Irrigation District
- MID – Magrath Irrigation District
- MVID – Mountain View Irrigation District
- RID – Raymond Irrigation District
- RCID – Ross Creek Irrigation District
- SMRID – St. Mary River Irrigation District
- TID – Taber Irrigation District
- UID – United Irrigation District
- WID – Western Irrigation District

1.8 million acres under irrigation



# Crops under irrigation



Cereals 33%  
Forages 35%  
Oil seeds 10%  
Specialty crops 20%  
Other 2%





“Irrigation is a reliable prevention for famine”  
“...feeding a hungry world.”

Irrigated crops in Alberta produce:

- Forage for cows
- Potatoes for chips
- Wheat for cookies
- Sugar beets to flavor Coke



# Water diversion licenses:

- 13 Irrigation Districts are licensed to withdraw 50% of mean natural, annual flow
- 50% of flow to SK
- ½ of the years allocation volume exceeds the amount needed to meet commitment with SK



*Discussing Water Rights, A Western Pastime*

# Impacts of Irrigation Diversions:

- SSRB Water Management Plan (2006) – rivers below major irrigation dams and diversions are stressed, significantly degraded and predicted a continued decline in river health
- Aquatic and Riparian Conditions Assessment (2007) – confirmed these findings
- State of the Watershed Reports for Bow & Oldman R. basins (2010) - agreed that flows do not meet the needs of the aquatic environment

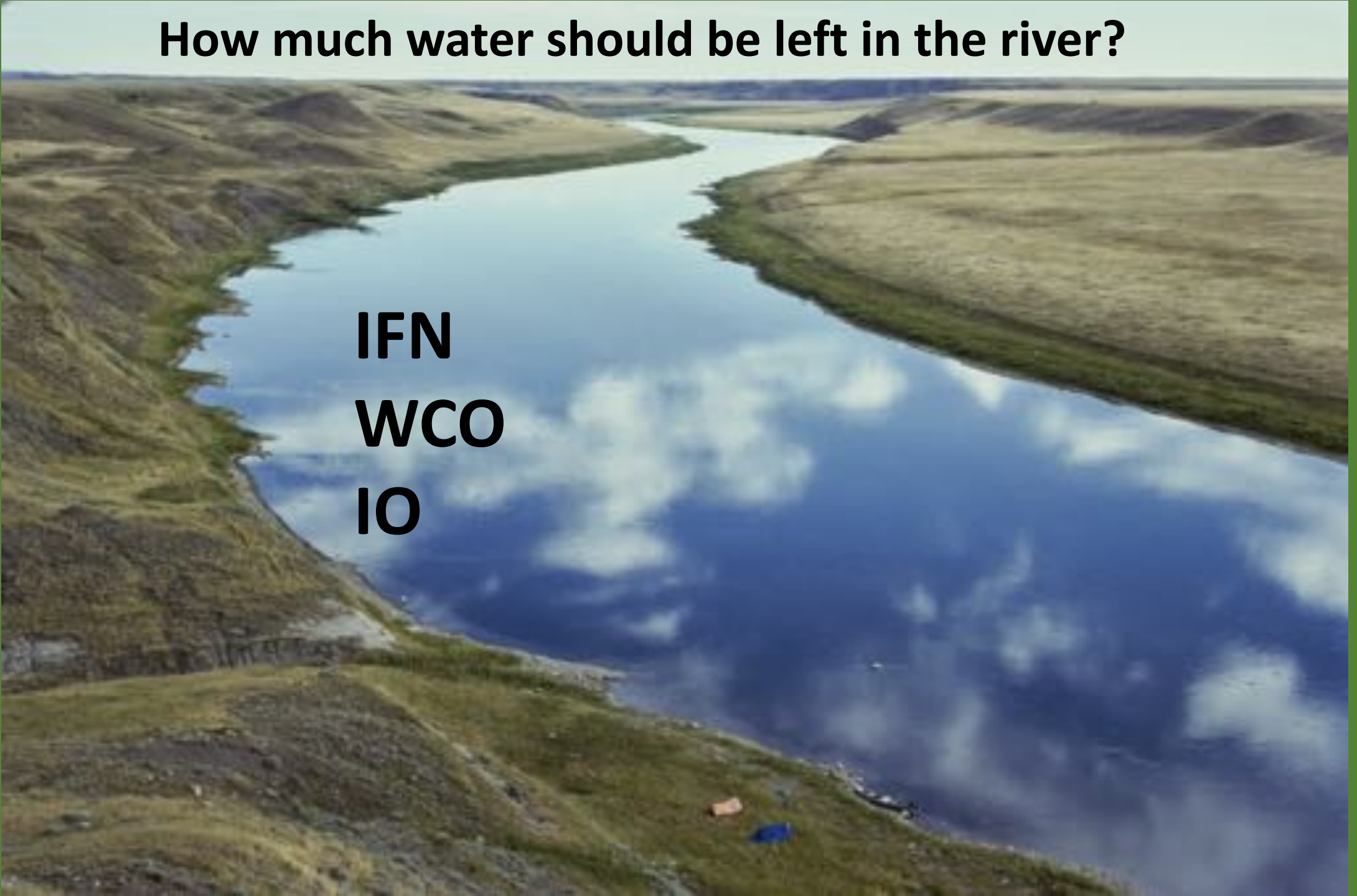


**How much water should be left in the river?**

**IFN**

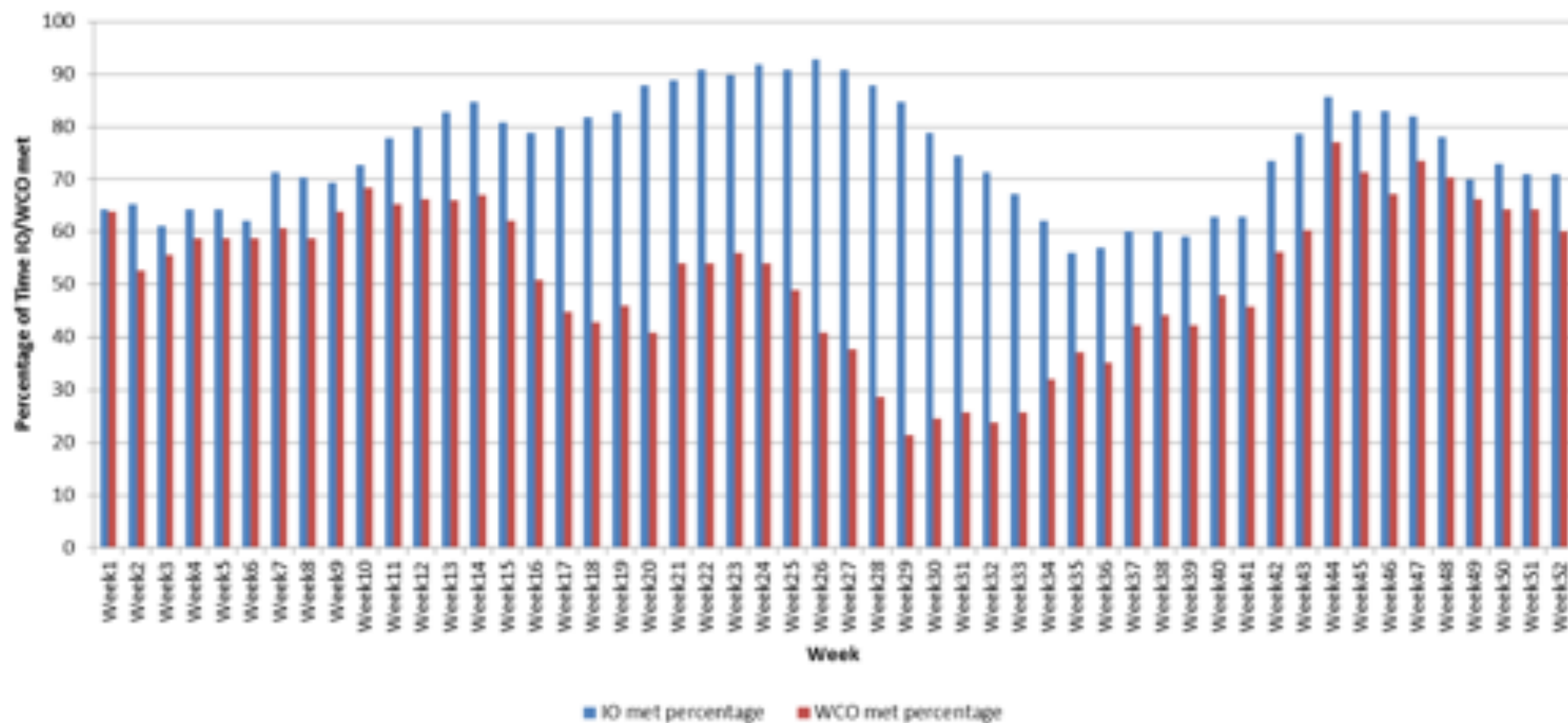
**WCO**

**IO**



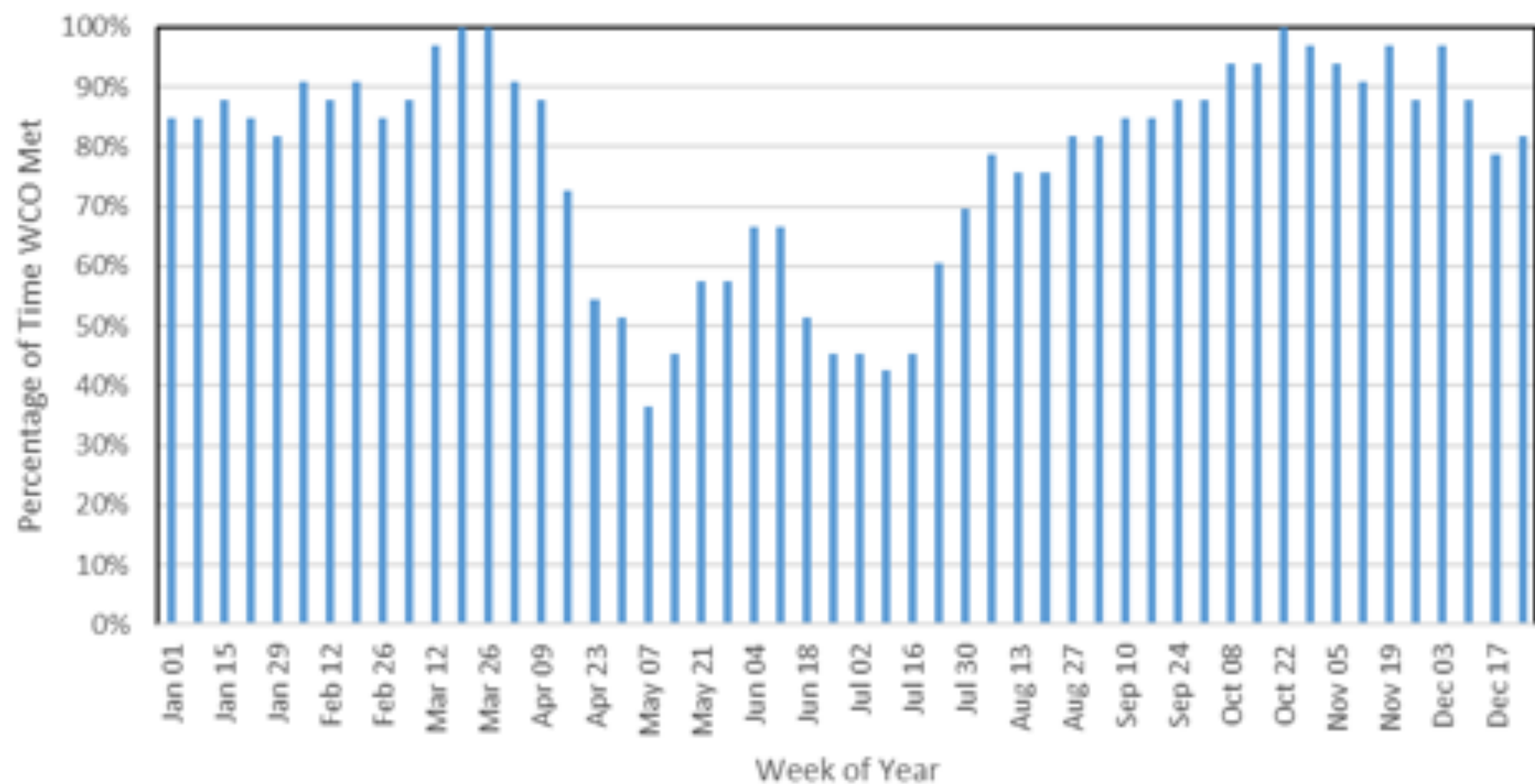
# 05AE006 (ST. MARY RIVER NEAR LETHBRIDGE)

## Percentage of Time IO&WCO met (by week)

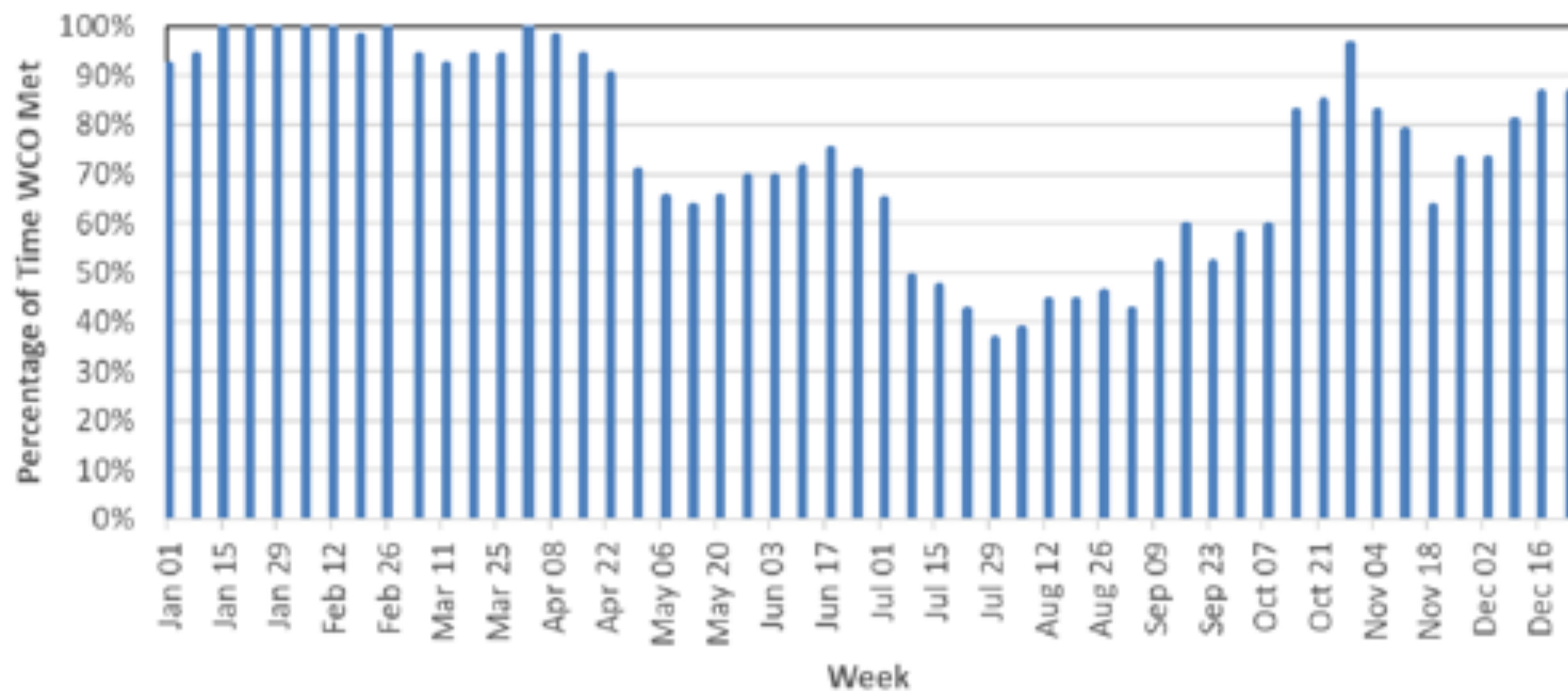




Station 05AG006 (Oldman River Near the Mouth)  
Percentage of Time WCO Met (by Week) 1983 - 2015

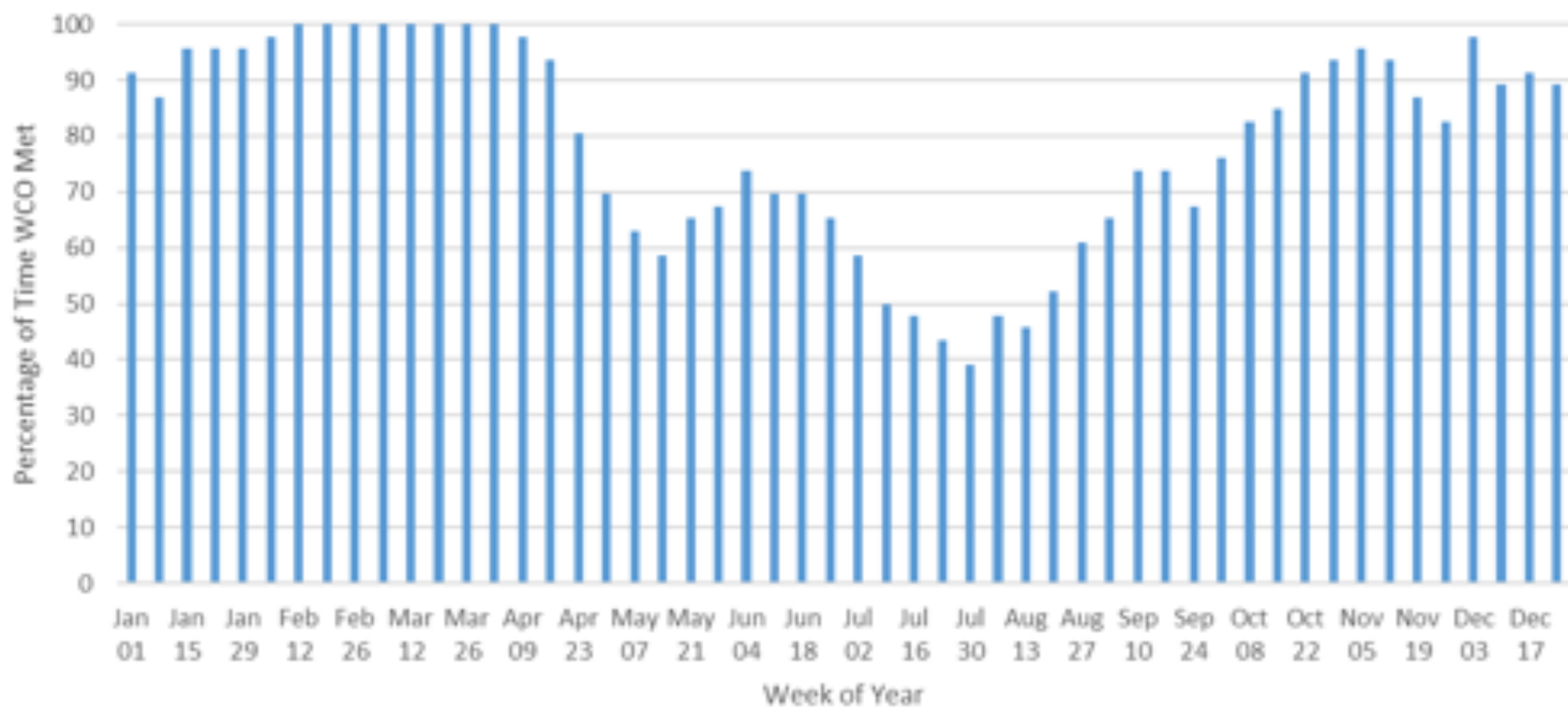


05BN012 (Bow River near the Mouth)  
Percentage of time WCO Met (by week) 1964-2015





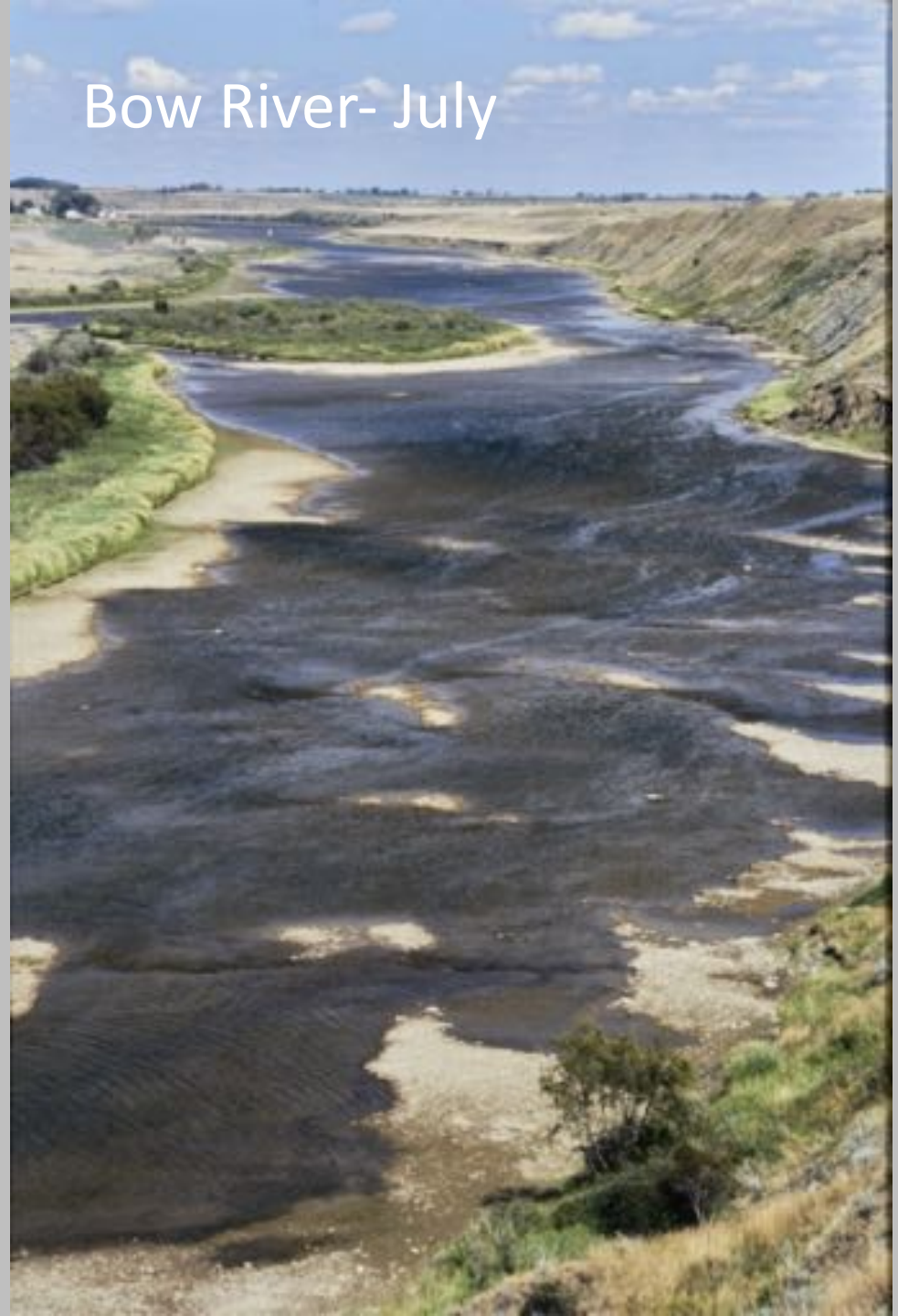
Station 05AJ001 (South Sask. River at Medicine Hat)  
 Percentage of Time WCO Met (by week) 1970 - 2015



Bow River- June



Bow River- July







Oldman River-October

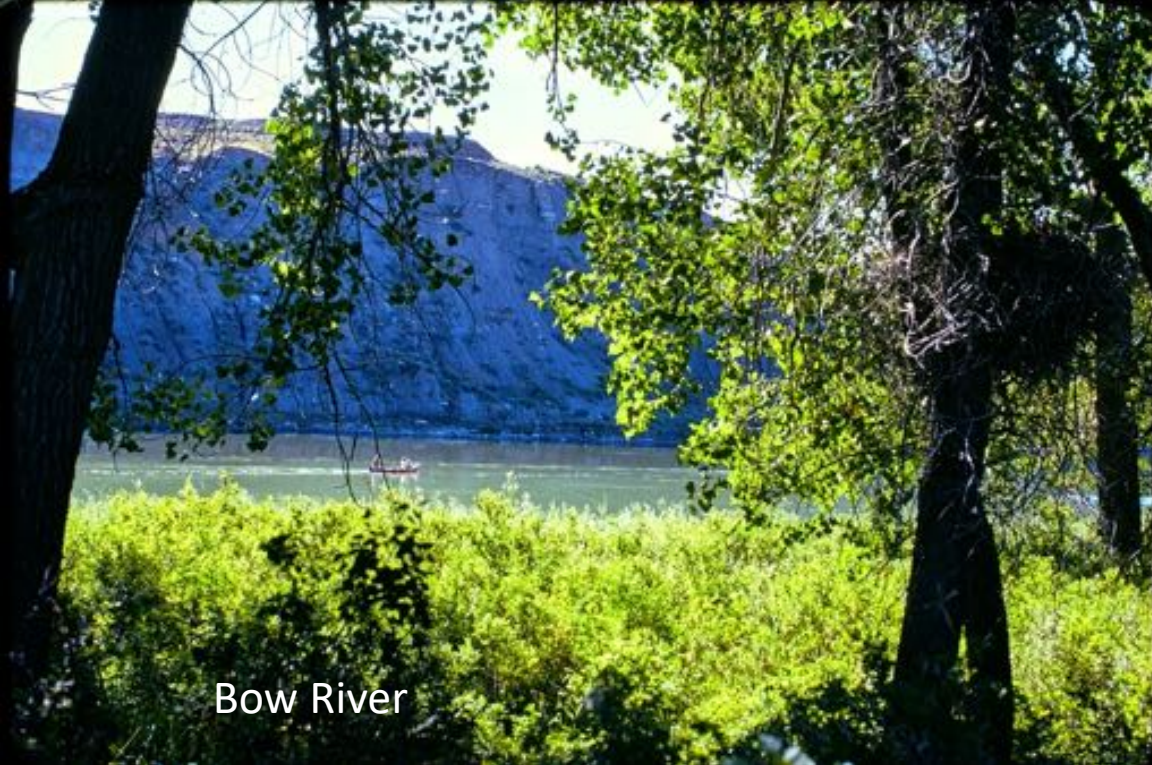


Oldman River- August



Oldman River- July





Bow River



St Mary River





## Lake Sturgeon- "Threatened"

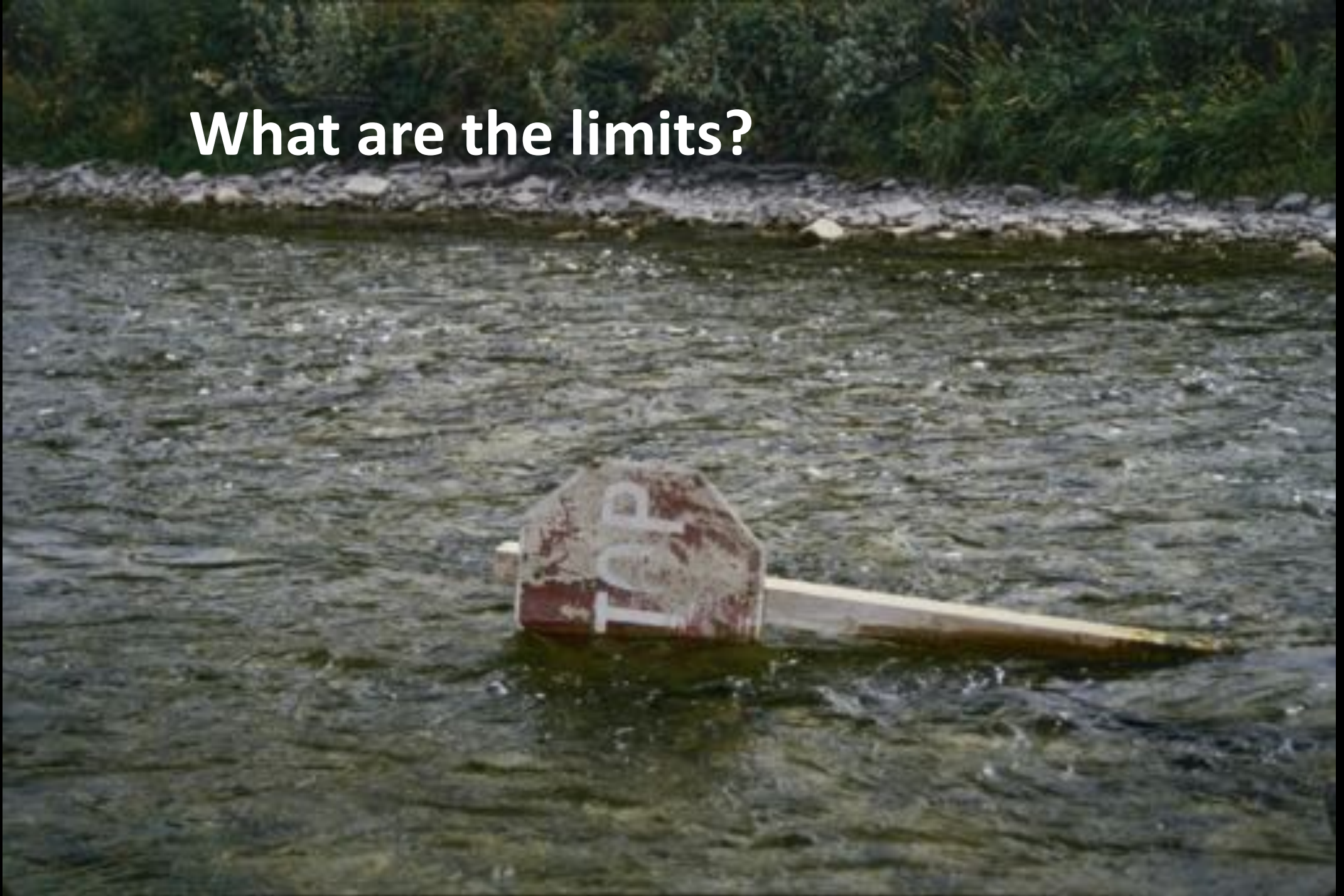






**Aquatic health declines as flows do**

**What are the limits?**









# Irrigation modernization/expansion initiative

- “Save” water
- Build more storage
- “Not an expansion project”
- \$933 million
- 70% funded by Irrigation Districts
- Loan from Canada Development Bank
- 30% funding by GOA
- Potential for irrigation expansion of 230,000 acres



## 86 Modernization Activities

- Canal rehabilitation
- Canal to pipeline conversions
- New pipelines

## 4 Off-stream Reservoirs

- Chin (SMRID) - expansion
- Snake Lake (EID) - expansion
- Deadhorse Coulee (BRID) - new
- Undisclosed



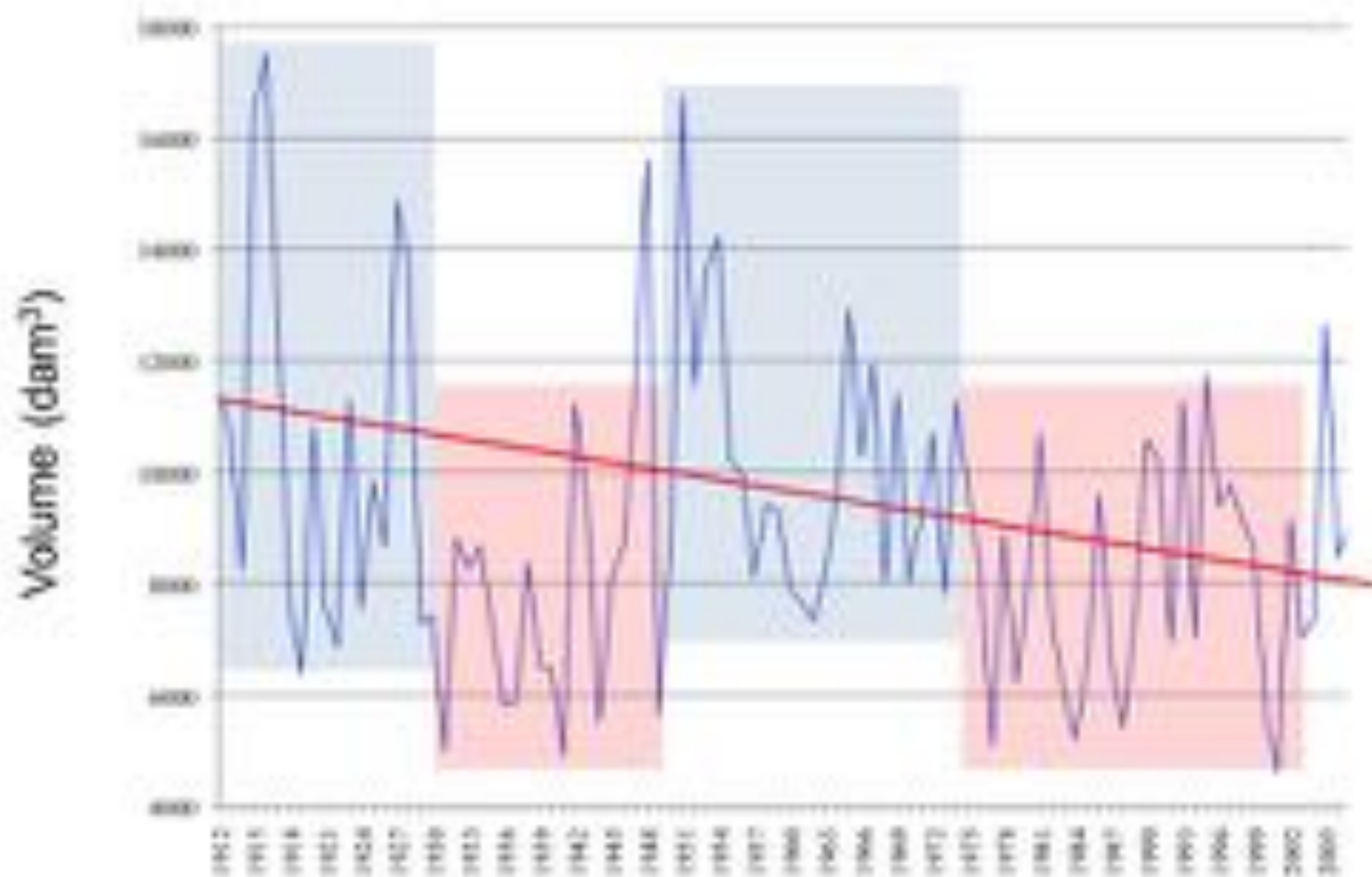




**Are they paying attention to climate change?**



## Annual natural flow, South Saskatchewan River at Medicine Hat



source: PPWB



# The Present and the Future

- Summer flows in Bow & Oldman (below dams & diversions) have declined 40-60% due to withdrawals
- Climate change modelling predicts continued decline in natural annual flows
- Decreased snow accumulation, melting glaciers, increased evaporation & evapotranspiration
- Under Historical Drought Scenarios – demand could exceed supply



**“Droughts lasting more than 2 years cannot be mitigated with reservoir storage”**

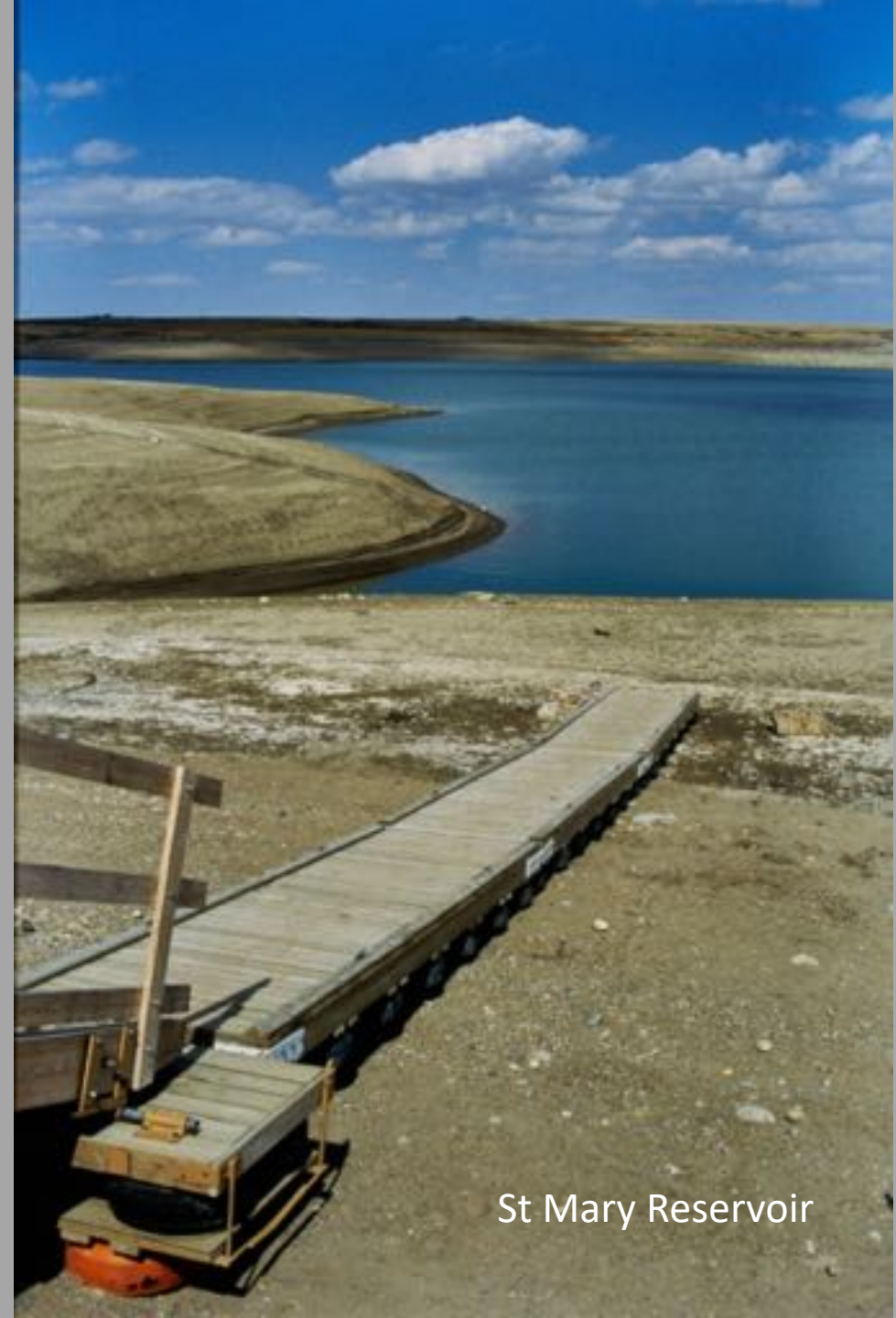


Oldman Reservoir






Chin Reservoir



St Mary Reservoir





“...important to look at the whole thing before expanding irrigation in one part or managing it differently in another part, and we’re going to have to do that always with an eye to the mountains.”

John Pomeroy

















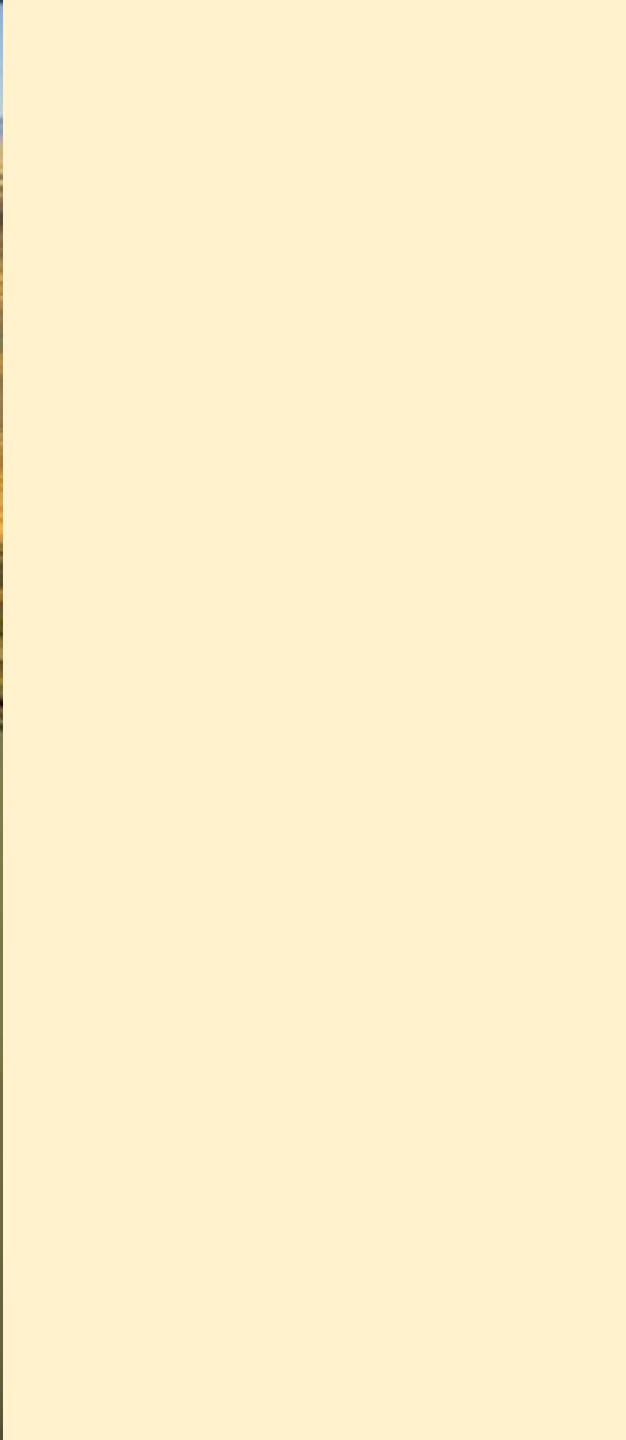


















An aerial photograph of a vast, green agricultural field. A winding road or path cuts through the field, and a small body of water is visible in the distance. The field is surrounded by a mix of green and brown land, with hills visible on the horizon.

**“Progress may have been alright once, but it went on too long”  
Ogden Nash**



**Can “saved” water be left in the river?**

**Could Irrigation Districts relinquish part of their licenses?**

**What is a fair and equitable sharing of water?**

**What are the ecological limits to irrigation use?**

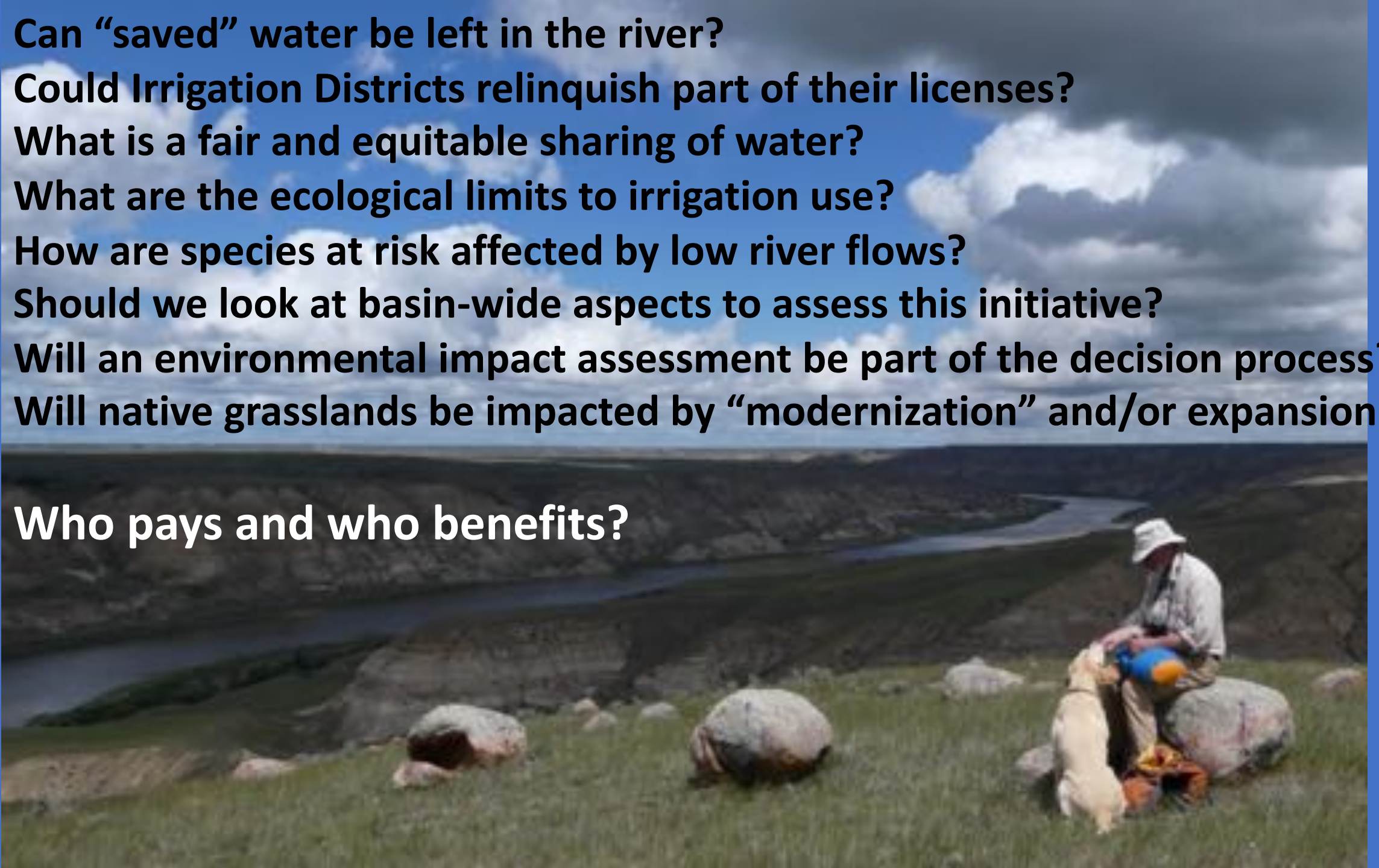
**How are species at risk affected by low river flows?**

**Should we look at basin-wide aspects to assess this initiative?**

**Will an environmental impact assessment be part of the decision process?**

**Will native grasslands be impacted by “modernization” and/or expansion?**

**Who pays and who benefits?**



# Fight for the Waterhole



Frederic Remington 1903