



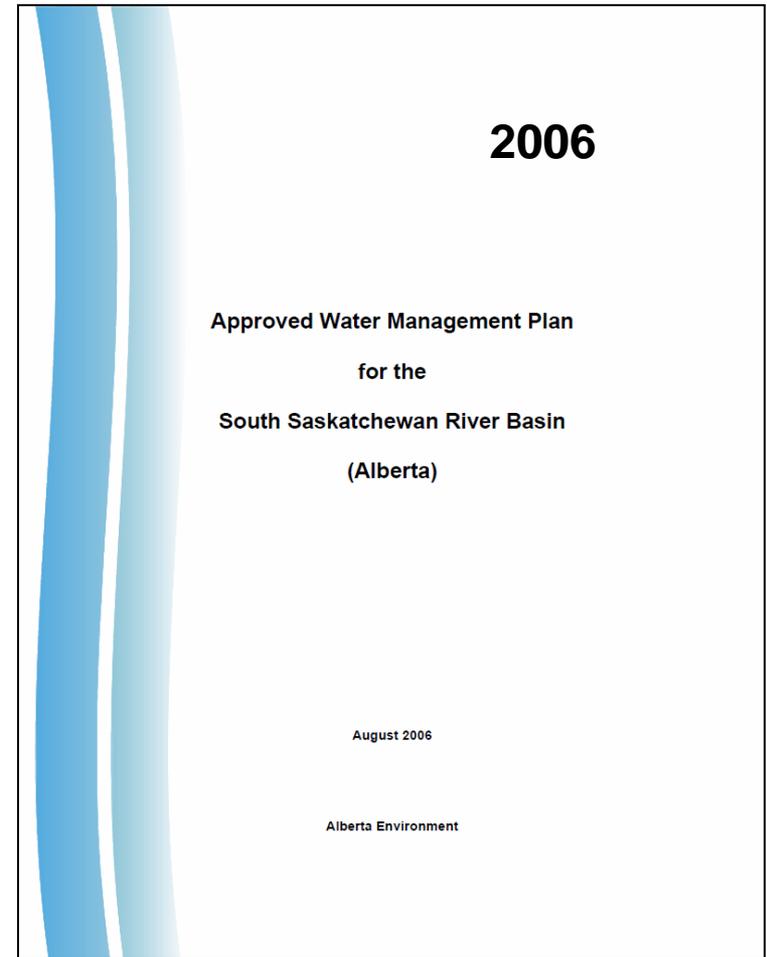
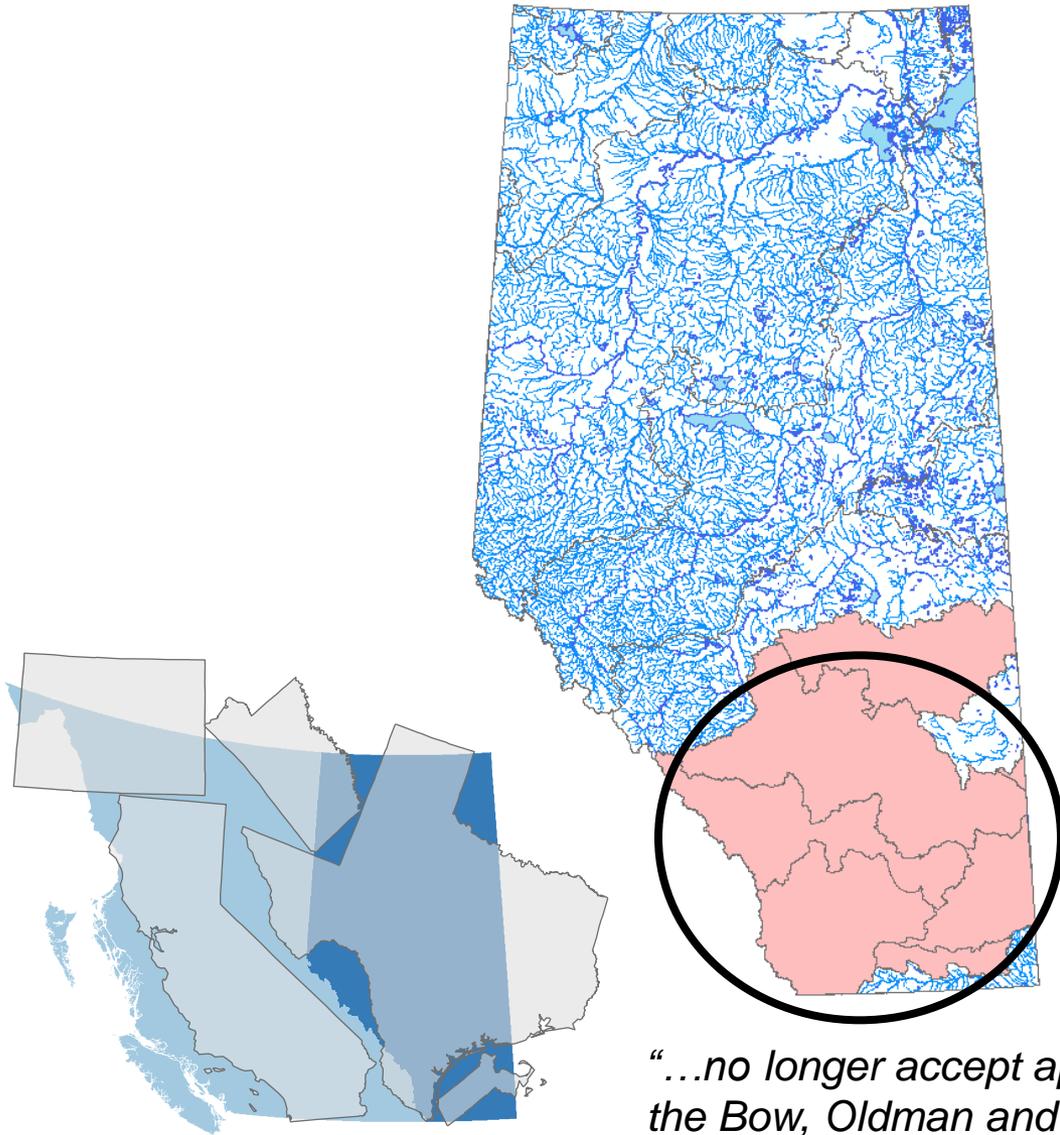
Environmental Flows in Alberta

Andrew J. Paul and Lauren
Makowecki

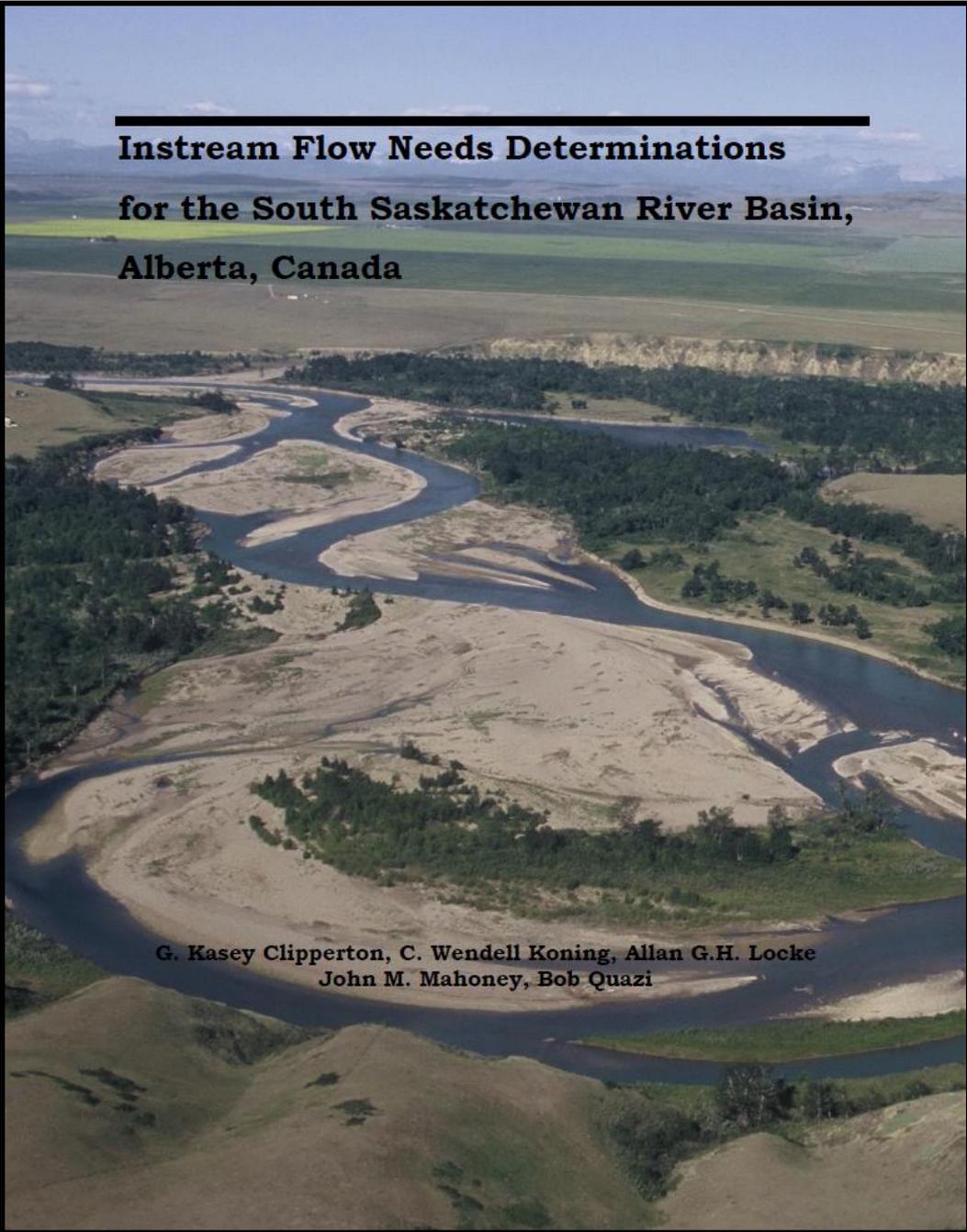
Fish and Wildlife
Environment and Sustainable
Resource Development
Cochrane, Alberta
April 2015



Basin-Wide Water Management Plans in Alberta



“...no longer accept applications for new water allocations in the Bow, Oldman and South Saskatchewan River Sub-basins...”

An aerial photograph of a river system in the South Saskatchewan River Basin, Alberta, Canada. The river is dark blue and winds through a landscape of green fields and brownish-yellow sandbars. The sky is clear and blue. The text is overlaid on the top left of the image.

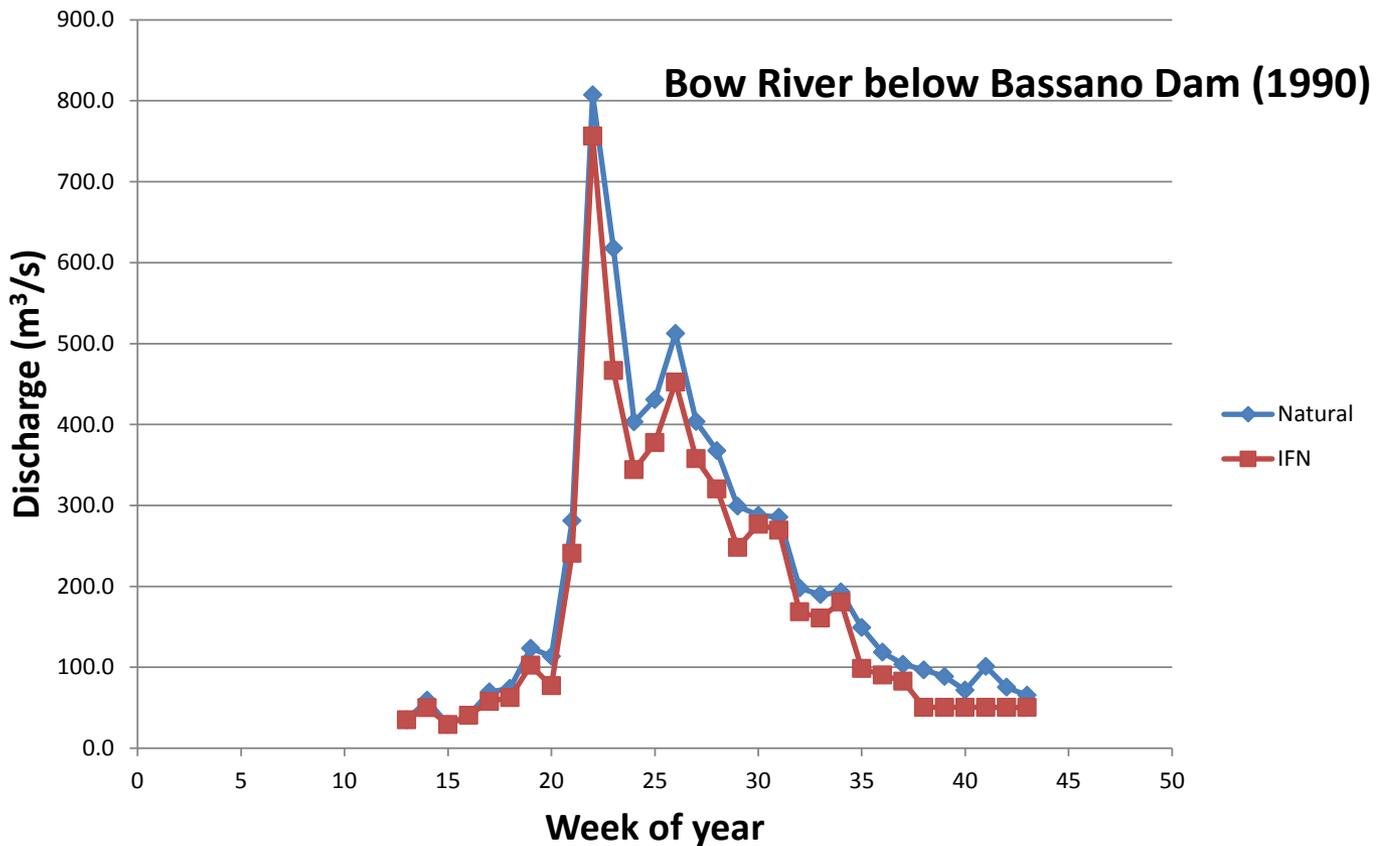
**Instream Flow Needs Determinations
for the South Saskatchewan River Basin,
Alberta, Canada**

**G. Kasey Clipperton, C. Wendell Koning, Allan G.H. Locke
John M. Mahoney, Bob Quazi**

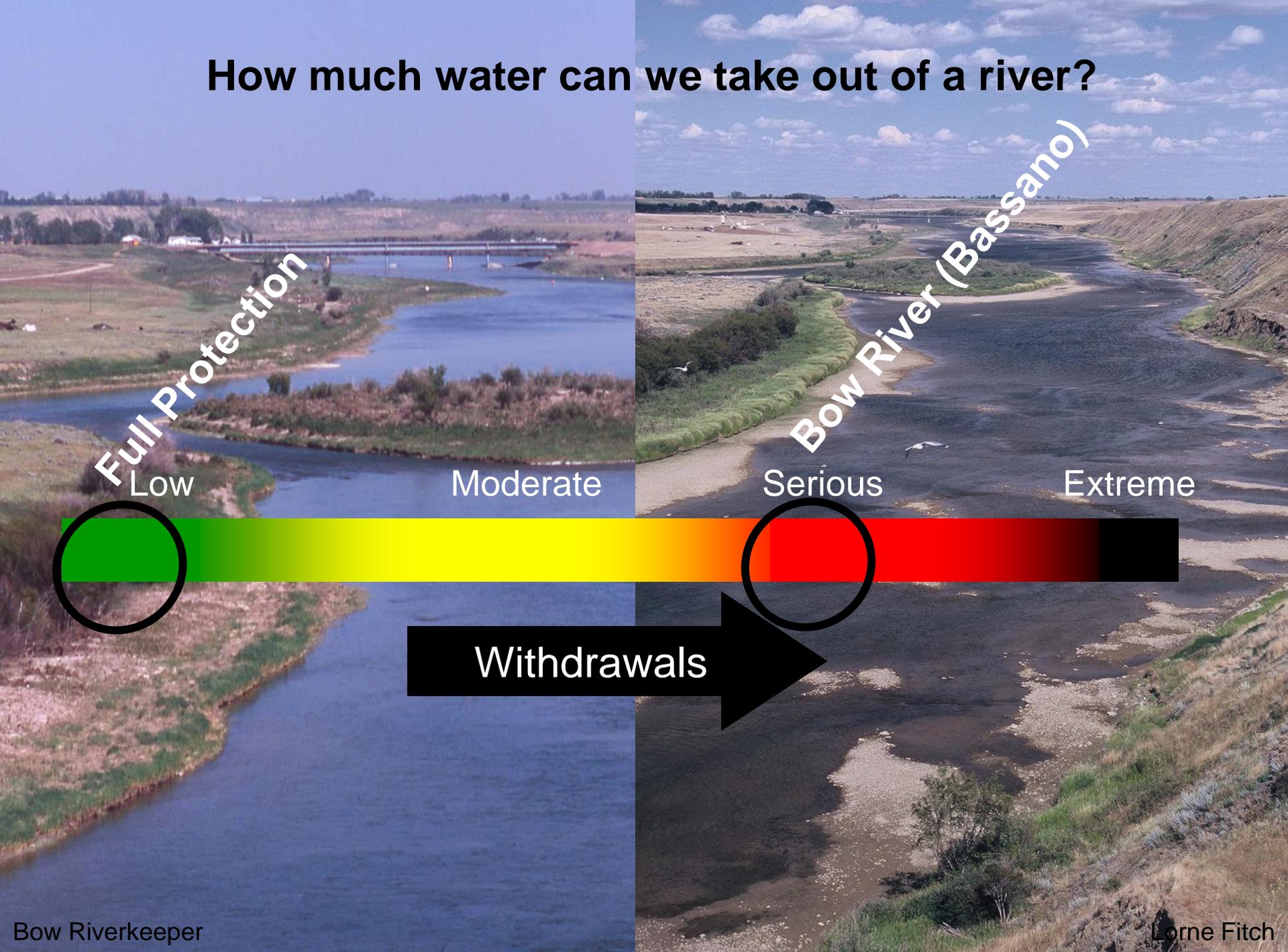
- report released 2003
- an IFN recommendation for full ecosystem protection
- first in Alberta to incorporate all five riverine components

Instream Flow Needs Determinations for the South Saskatchewan River Basin, Alberta, Canada

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How much water can we take out of a river?



Full Protection

Low

Moderate

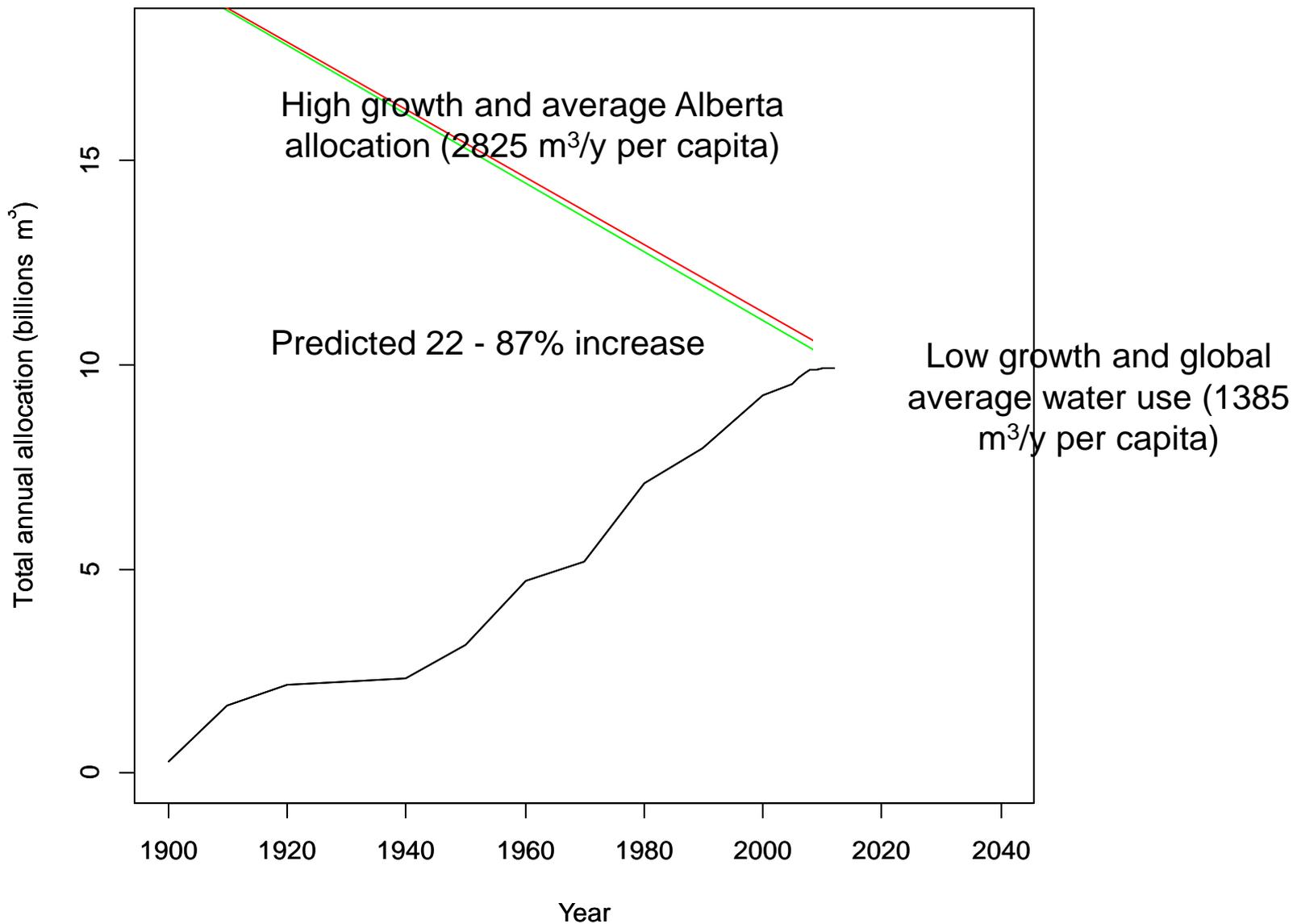
Serious

Extreme

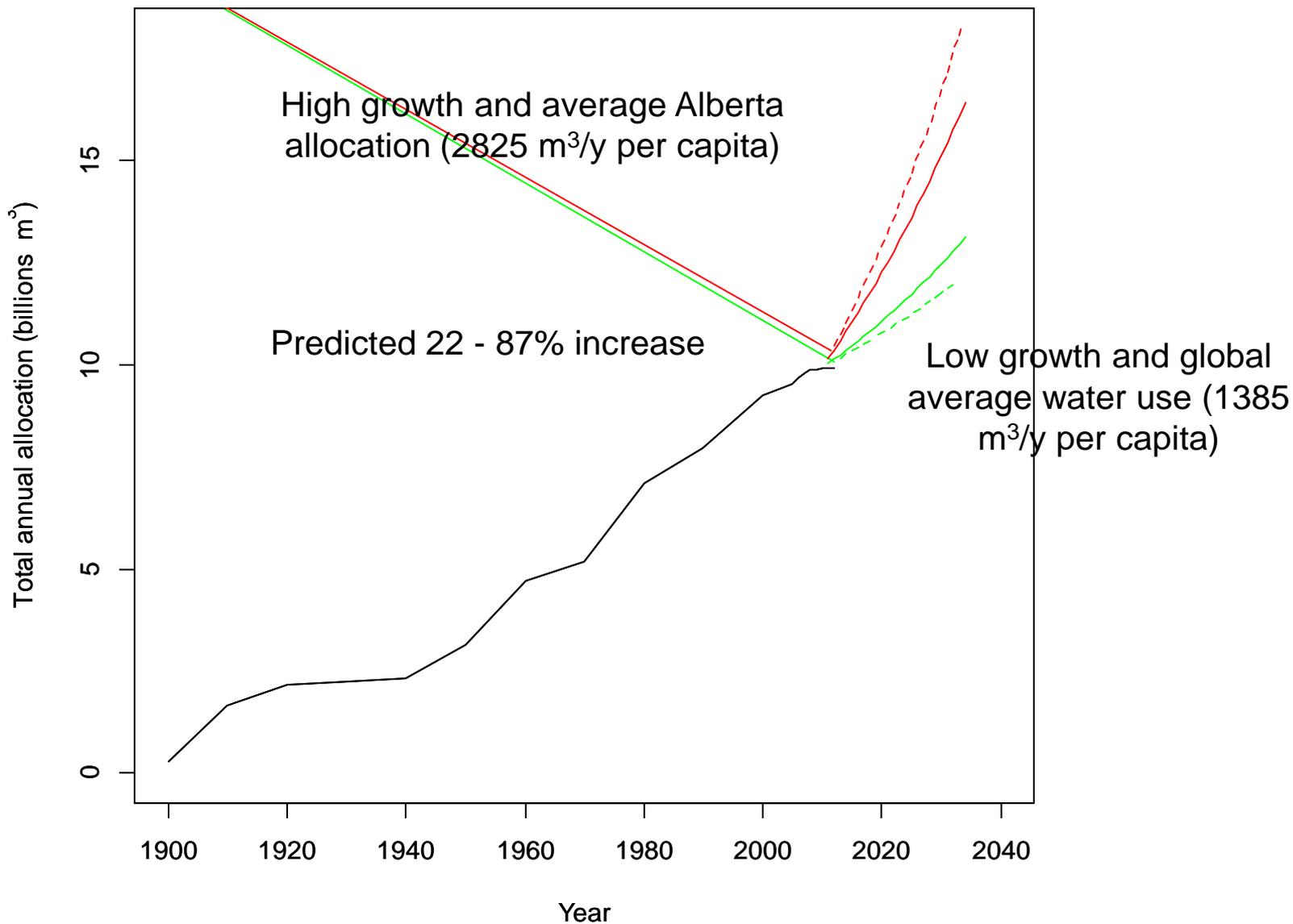
Bow River (Bassano)

Withdrawals

Alberta's Projected Total Annual Allocation (20 year projection; 2034)

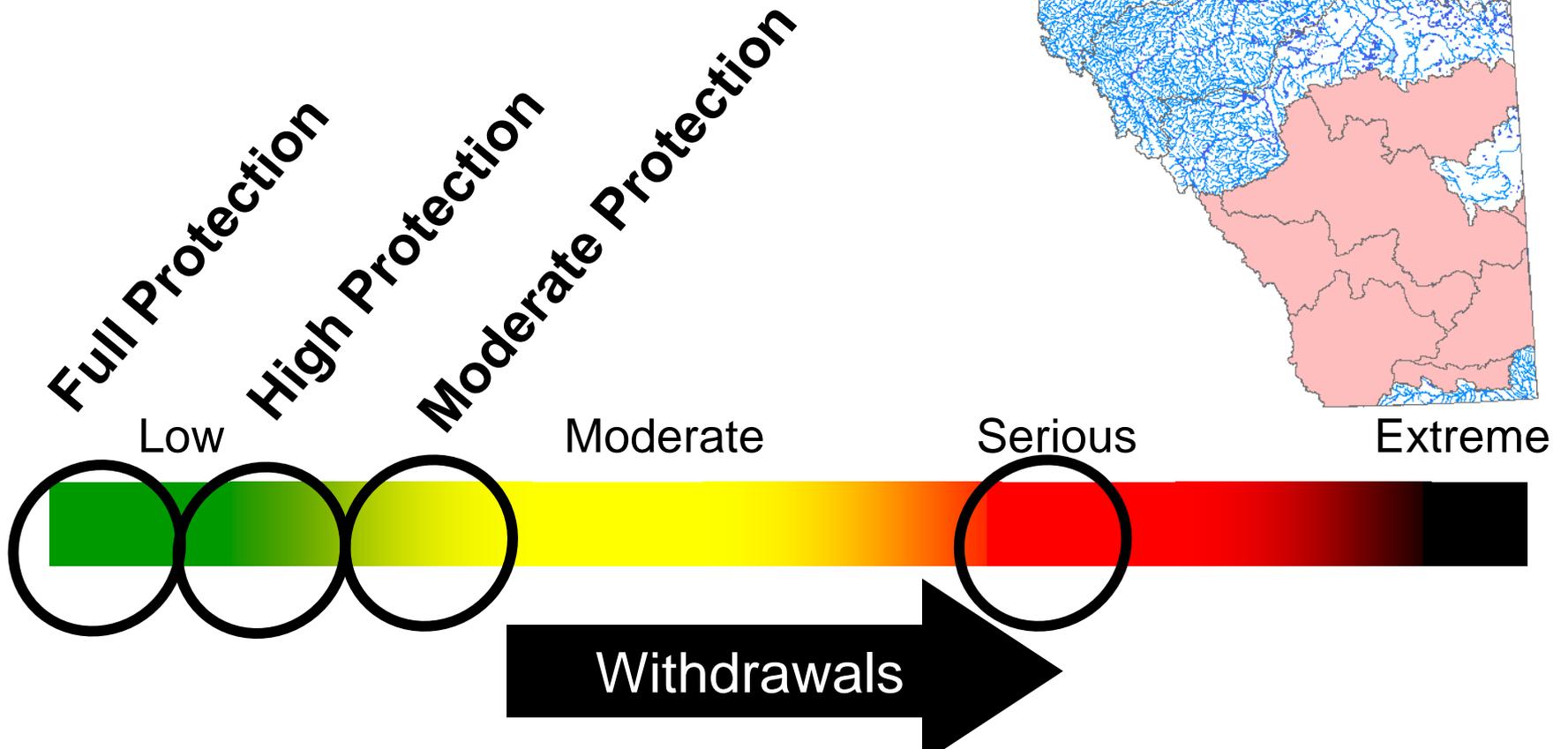
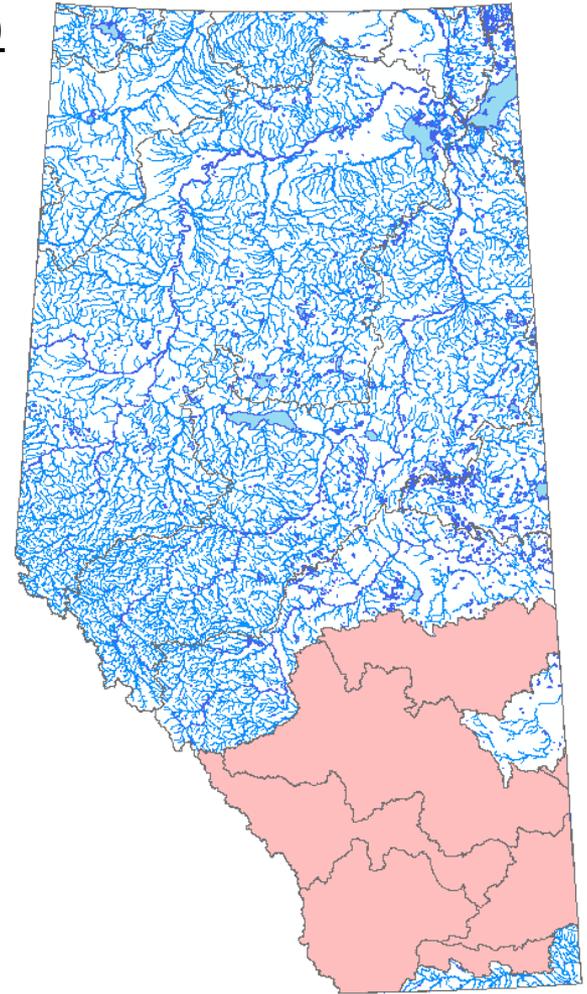


Alberta's Projected Total Annual Allocation (20 year projection; 2034)



Proposed Provincial Water-Use Rules (Desktop Method)

-to be applied where Water Management Plans are absent



Alberta Desktop Method (ADM)

*“The method provides a technique to estimate flows to meet the objective of **full protection** of the riverine environment, ...”*



water for life



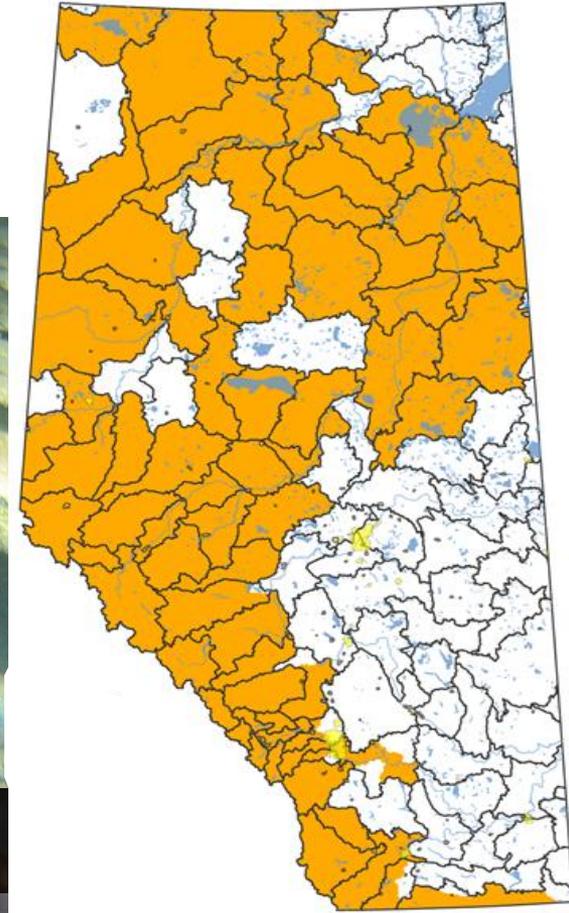
healthy aquatic
ecosystems

» A Desk-top Method for Establishing Environmental
Flows in Alberta Rivers and Streams

Government
of Alberta ■

Protection Levels

(1) Sensitive species



Protection Levels

(1) Sensitive species

(2) Stream size

- **Increased protection for stream order ≤ 5**
- **Stream order used as data readily available (GIS)**



Wapiti River (Grande Prairie) – an example -naturalized hydrology 1968 - 2010

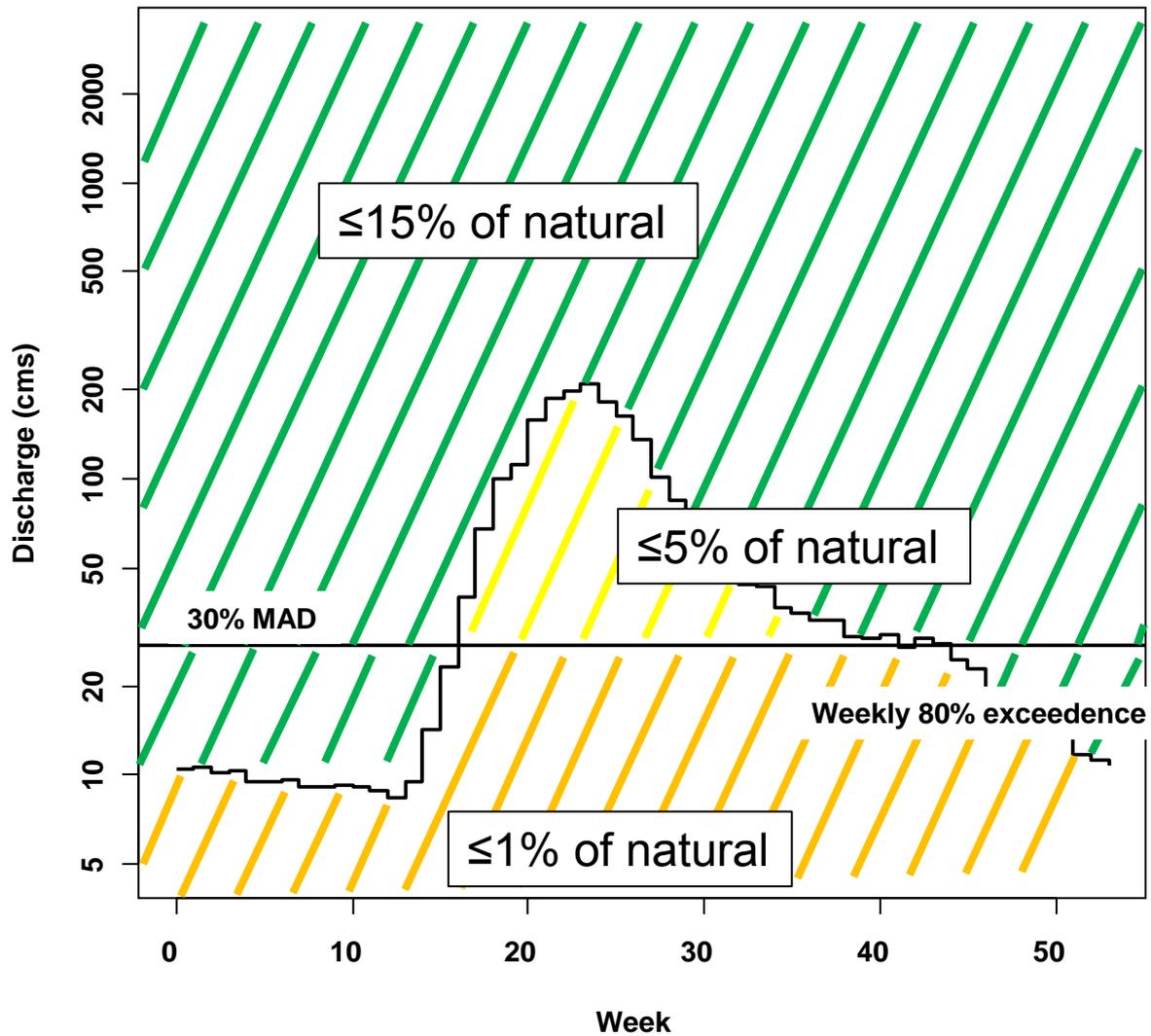


Stream order = 7

High Protection Level



High Protection



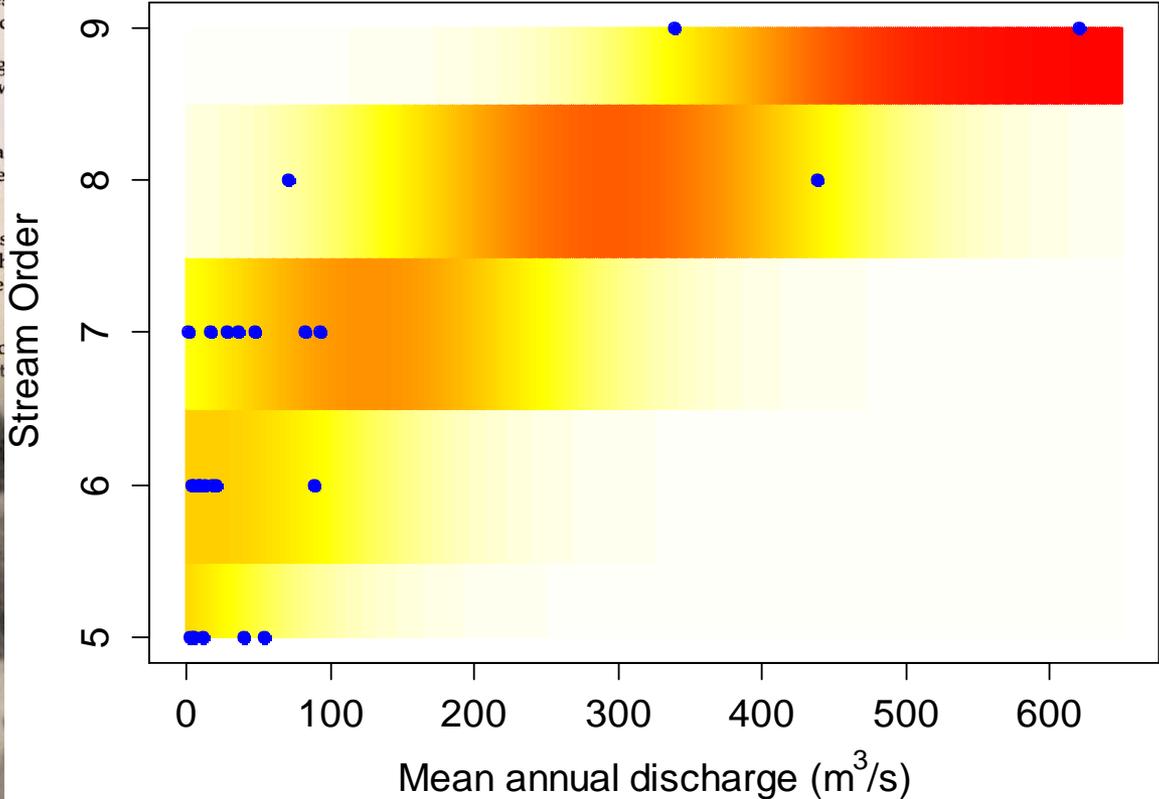
Uncertainty and Riverine Stewardship

“...quantify instream flow needs that address the five riverine components...”

IFC Principles for Riverine Resource Stewardship

1. Recognize and promote state and provincial stewardship responsibility as the basis for an advocacy role in conserving riverine resources for the use and enjoyment of present and future generations.
2. Recognize the limitations and opportunities of institutional factors. Work within them and expand them.
3. Always search for opportunities to enhance ecosystem functions and processes in any instream flow strategy.
4. Involve the public by providing information and education, and develop a successful instream flow strategy.
5. Use an interdisciplinary approach to address the five riverine components (water quantity, water quality, and connectivity).
6. Seek to maintain or restore the natural flow regime (magnitude, duration, timing, rate of change, and frequency) to maintain or restore the resources.
7. Follow a systematic, problem-solving approach to management applications within the context of management goals.
8. Use assessment to evaluate each instream flow strategy.
9. Document the effectiveness of the instream flow prescriptions.
10. Use monitoring and evaluation from experience to improve the process.

‘Science’ uncertainty



Uncertainty and Riverine Stewardship

“Recognize the limitations and opportunities imposed by legal and institutional factors. Work within them...”

**‘Social’ uncertainty
Are we willing to say ‘No’**

- ### IFC Principles for Riverine Resource Stewardship
1. Recognize and promote state and provincial stewardship responsibility as the basis for an advocacy role in conserving riverine resources for the use and enjoyment of present and future generations.
 2. Recognize the limitations of institutional factors. Work within them; do not expand them.
 3. Always search for opportunities to expand functions and processes in a riverine system.
 4. Involve the public by providing information and developing a successful instream flow strategy.
 5. Use an interdisciplinary approach to address the five riverine components: water quality, and connectivity.
 6. Seek to maintain or restore natural flow regime (magnitude, duration, timing, rate of change, frequency) to maintain or restore riverine resources.
 7. Follow a systematic, problem-solving approach to management applications with clear management goals.
 8. Use assessment tools and methods to evaluate each instream flow situation.
 9. Document the rationale behind the instream flow prescriptions.
 10. Use monitoring or adaptive management from experience in appropriate situations.

