Overview of the International Souris River Study Board

Public Presentation in Bottineau, ND

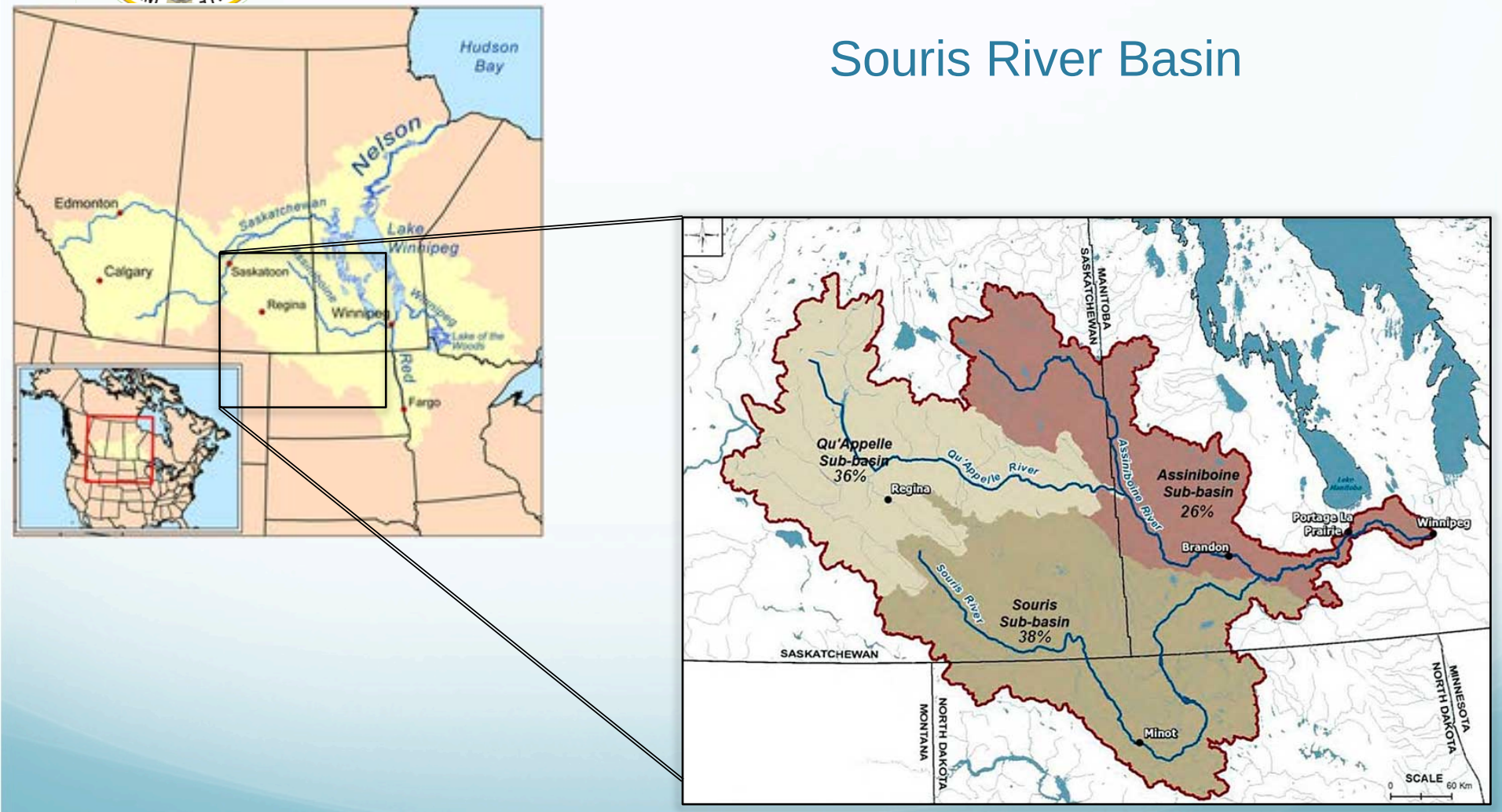
June 2019

International Souris River Study Board

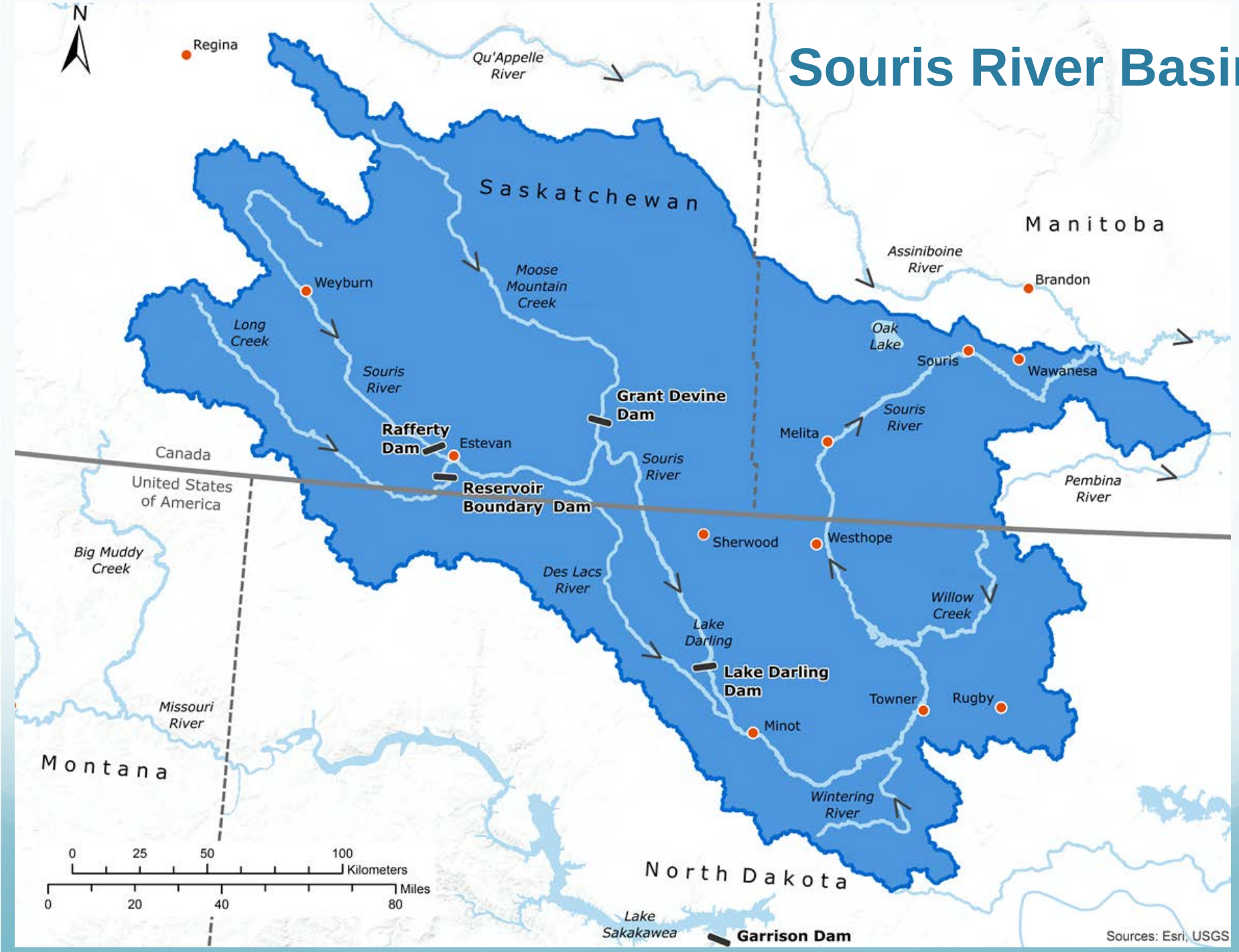
Nelson River Basin

Assiniboine River Basin

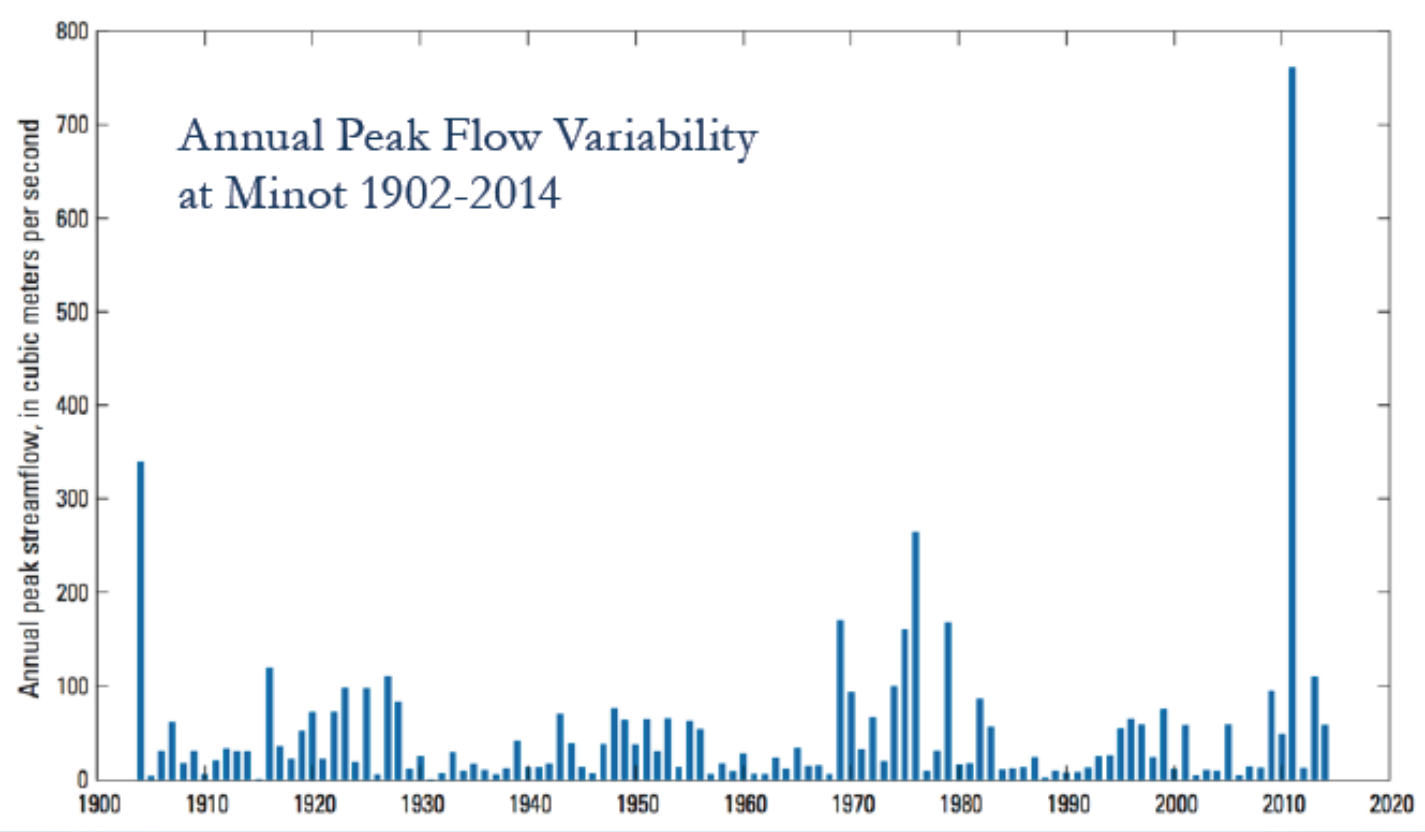
Souris River Basin



Souris River Basin



Study Driving Force: 2011 Flood


Annual Peak Flow Variability
at Minot 1902-2014
Annual peak streamflow, in cubic meters per second
800
700
600
500
400
300
200
100
0
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020

Study Purpose and Objectives

September 2017 Directive:

1. Examine and report to the Commission on matters raised by Governments of Canada and the United States in reference dated July 5, 2017.
2. Evaluate and make recommendations regarding the Operating Plan contained in Annex A of the 1989 Agreement, and additional flood protection measures, and beneficial water supply measures.
3. Carry out the instructions provided by the Commission to guide the Study Board

International Souris River Study Board Administration

- **Board Structure**
  - 4 Members for Canada - agency and public
  - 4 Members for the United States - agency and public

    - First Nations/Metis/Tribal
    - Public Advisory Group (PAG)
    - Resource Agency Advisory Group (RAAG)
    - Independent Review Group (IRG)
    - Climate Advisory Group (CAG)
    - United States and Canadian Study Managers
    - Observer status for Interested Parties

4 Main Work Plan Areas

- Operating Rules Review (OR1) is close to completion
- Data Collection and Management group tasks DW1-DW4 are mostly complete
  - DW4 – Performance Indicators are still being adjusted
- Hydrology and Hydraulics-majority of group tasks are underway
  - HH2 – Stochastic Modelling is well underway
  - HH3 – Artificial Drainage Impacts Review is well underway
  - HH4 – MESH Modelling is well underway
  - HH6 – ResSim Modelling is well underway
- Plan Formulation tasks (PF1-PF4) are beginning
  - PF1 – Workshops and Engagement is well underway
  - PF2 – Running and Evaluating Alternatives is well underway
  - PF3 – Dam Safety work is underway
  - PF4 – Roadmap work for apportionment, water quality and ecosystem health is pending

Time and Budget Extension

- Approved by Governments June 7, 2019
- The time and budget extension will be used to;
  - Have more thorough engagement with the public and agencies.
  - Allow more analyses of alternatives and the effects of Climate Change.
  - Additional alternative scenarios can be considered.
- Study Modeling complete Summer 2020
- Final Report Due to IJC January 2021

Public Engagement

- February 2019: Public Meeting Brandon, MB
- January and March 2019: PAG / RAAG Webinars
- Spring 2018: PAG was expanded to 12 members to spread workload
- August 2018: Questionnaire sent for public input
- June 2018: Public Meeting in Estevan, SK
- Introduced study board and PAG. Provided overview of Work Plan.
- February 2018: Public Meeting in Minot, ND

Alternative Building Blocks

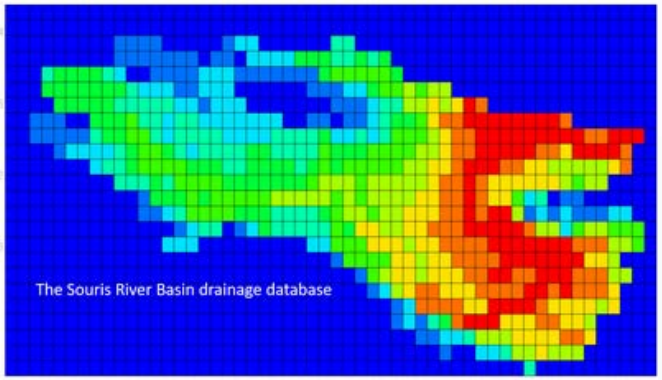
The Study modeled components of alternatives based on the following conditions:

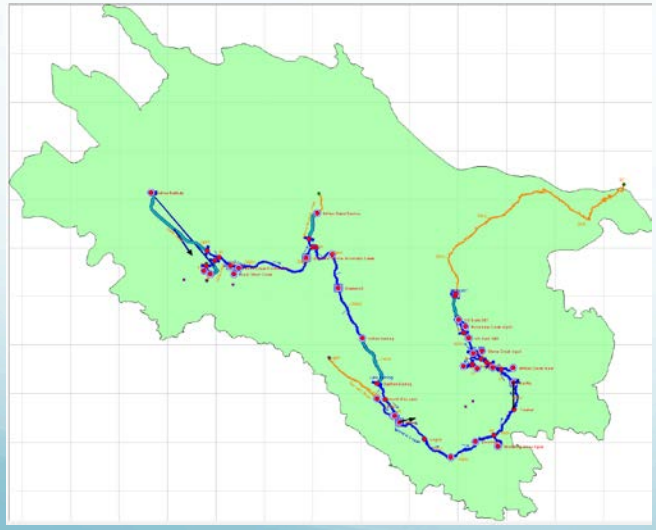
- Existing Agreement ("Baseline"-Annex A/B)
- As if No Dams ("Unregulated")
- Before 1989 ("Pre-Agreement")
- If Dams had full capacity available at the start of the run ("Dry Dam")
- Full Supply Level
- Mitigating Agricultural Damages
- Minimum Fish and Wildlife Releases
- Flood Control
- Water Supply
- Dam Safety

Plan Formulation Process

- Phase 1: Model Test Runs ---------- Mar 2019
- Phase 2: Initial Runs ---------- Jul 2019
- Phase 3: Sensitivity analysis on alternative building blocks (Scenarios) ---------- Sep 2019
- Phase 4: Alternatives ---------- Jan 2020
- Phase 5: Detailed modeling on select alternatives ---------- Jun 2020

Models





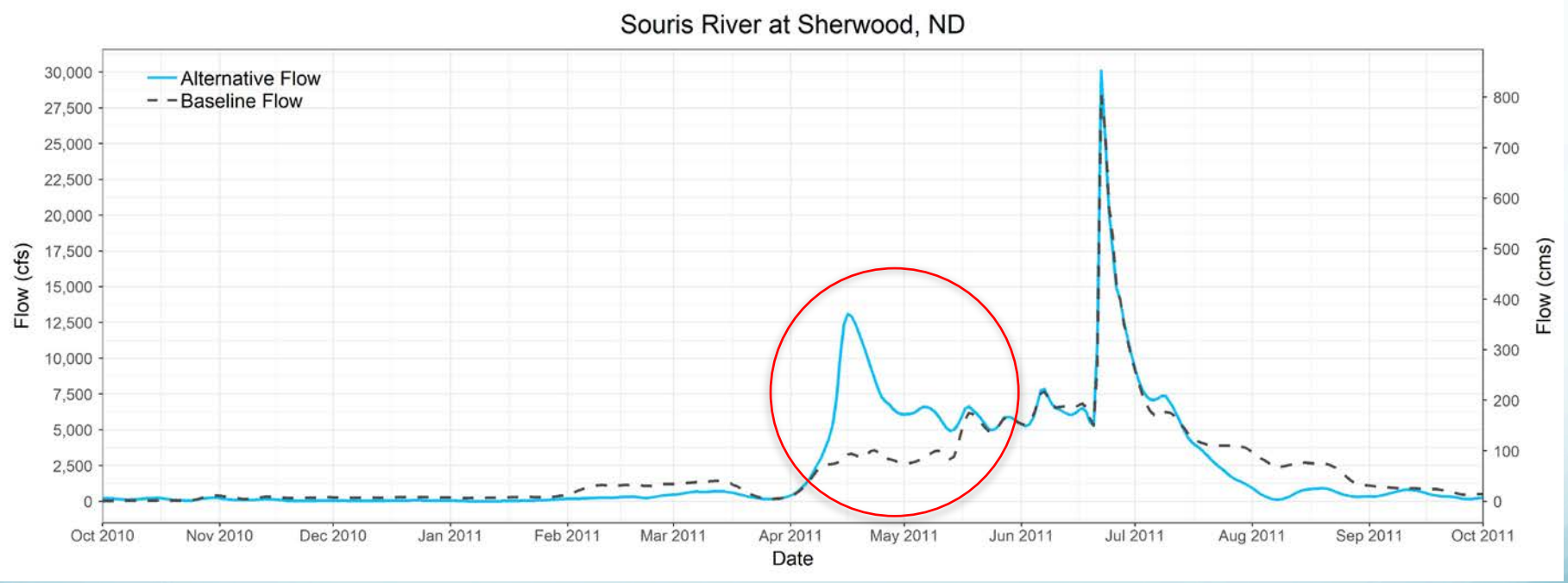
- **HEC-ResSim**
  - Reservoir operations
- **MESH**
  - Climate change scenarios
- **Stochastic Hydrology Inputs**
  - Alternative estimate of past variability
  - Additional estimate of climate change

Performance Indicators

- PI's calculate/measure how much an interest is affected by a change in operations.
- Performance Indicators (PI's) were developed based on public and agency input to score and evaluate alternatives.
- **Study Themes**
  - Flood Control
  - Water Supply
  - Environmental
  - Agriculture
  - Erosion
  - Recreation
  - Cultural
  - Water Quality

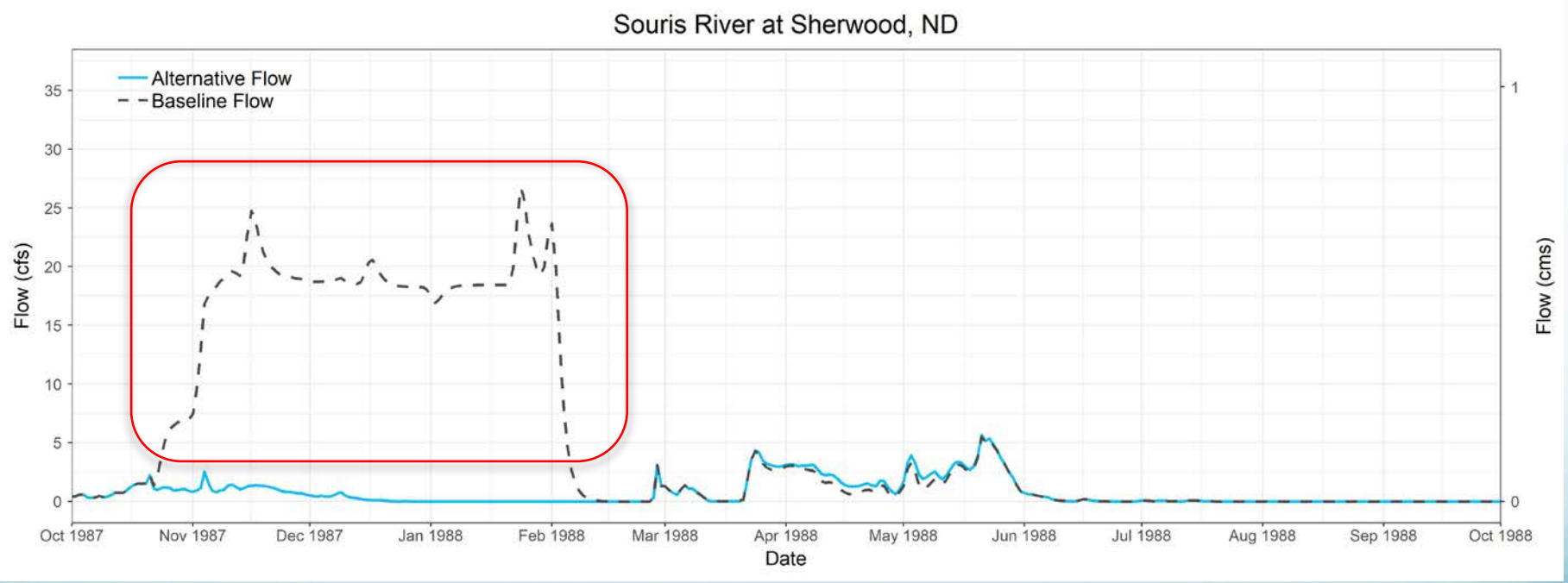
Initial Outputs
Sherwood Unregulated - 2011

- Storage limits flood peaks



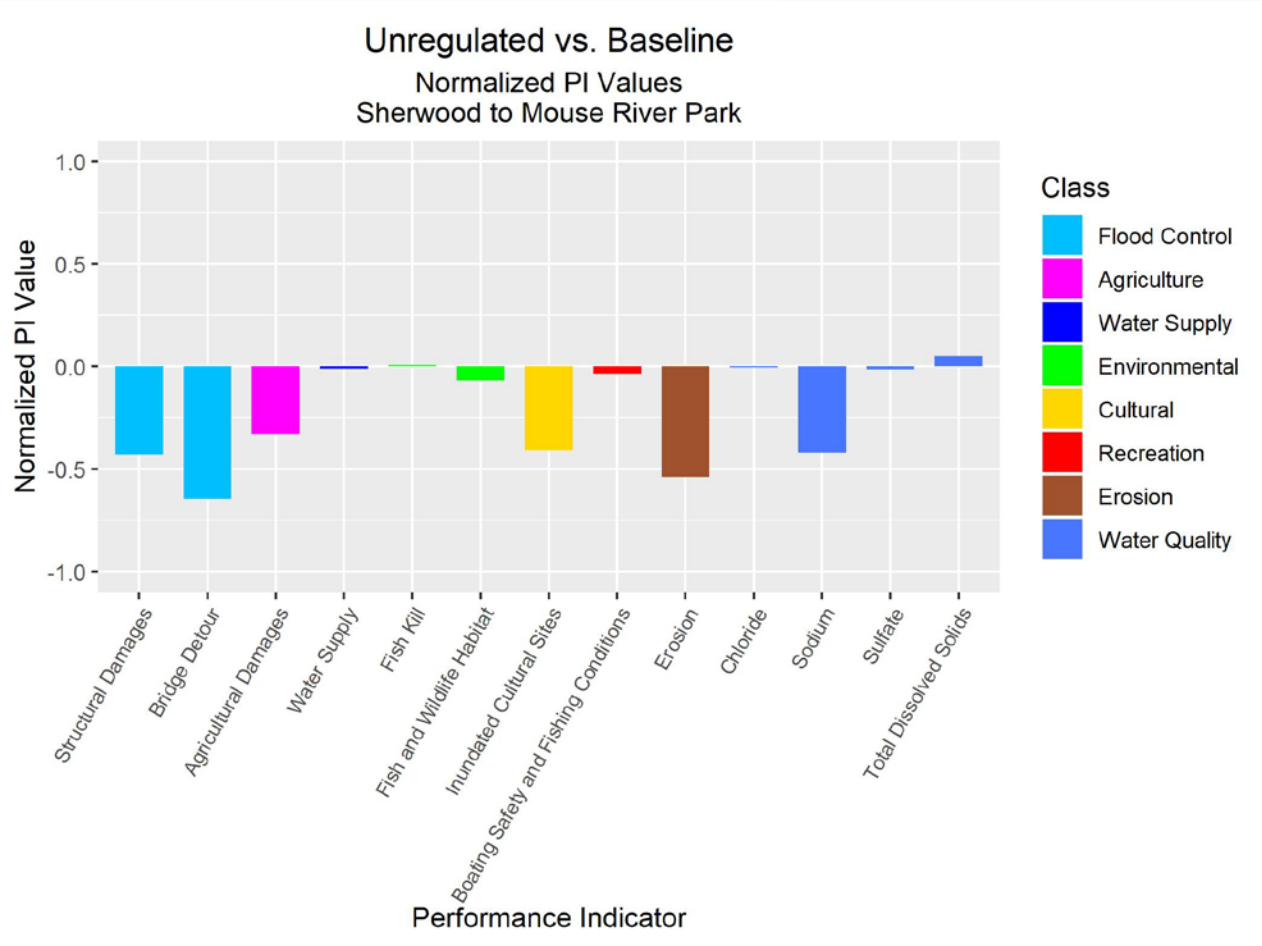
Initial Outputs
Sherwood Unregulated - 1988

- February drawdowns provide flow during winter months



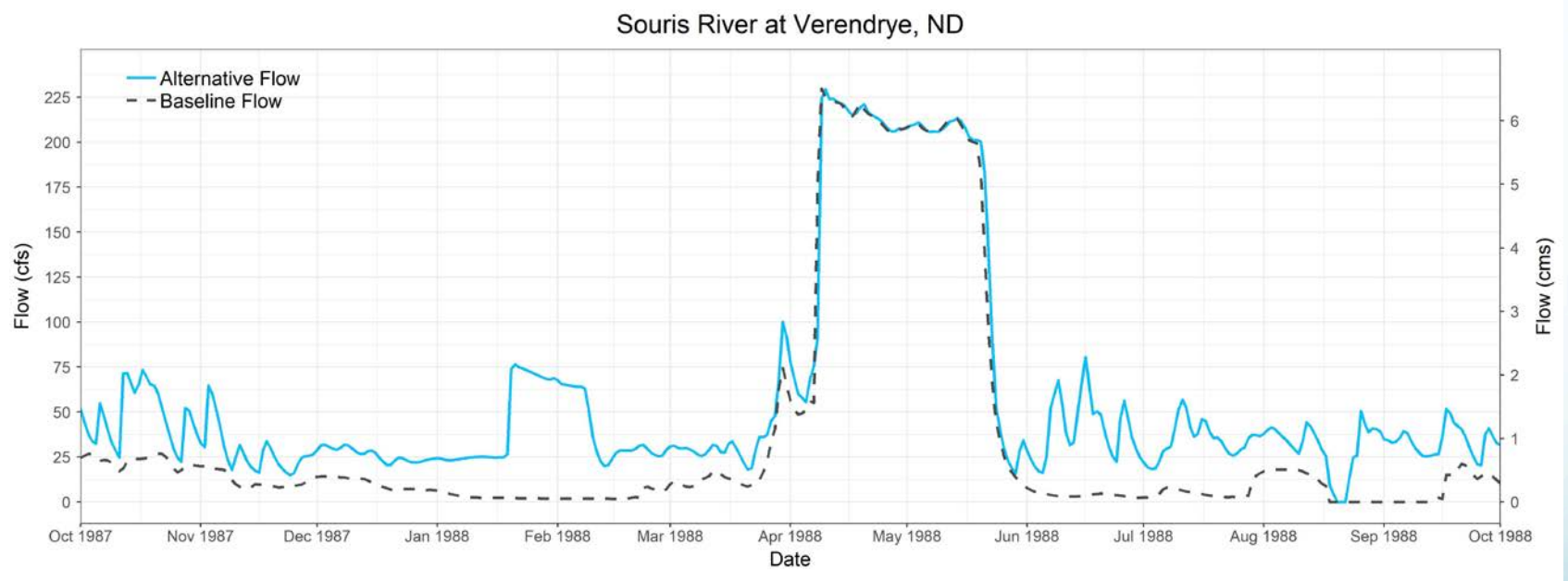
Sherwood Unregulated 1946-2017

- Performance indicators summarize the entire period
- Unregulated (no dams) scenario performs poorer than current conditions in almost all categories



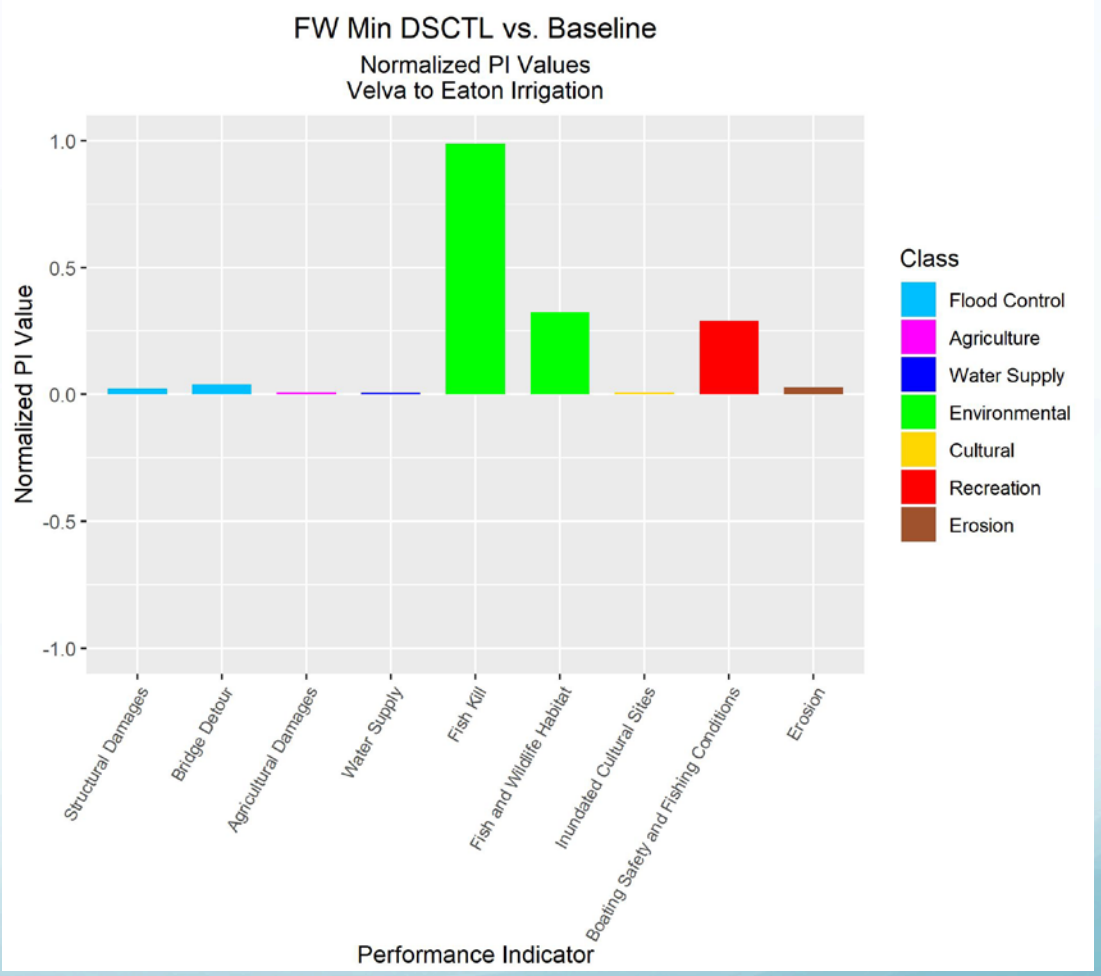
Alternative Snapshot:
Min. Releases for Fish & Wildlife

- Increased flow during low-flow periods



Alternative Snapshot:
Min. Releases for Fish & Wildlife

- Increased minimum flow = environmental benefit at this location
- But there are tradeoffs..



Alternative Snapshot:
Min. Releases for Fish & Wildlife

- No water supply available during droughts

What happens next?

- Study Team will continue to develop alternative building blocks and begin building them into full alternatives.
- Analysis of alternatives using climate change scenarios
- During the process we will continue to get Public input through the Public Advisory Group
- Alternatives and outcomes will be put into a report.

What is the end goal?

- Deliver a report to the IJC to present to Governments January 2021 that includes:
  - Recommended operating plan
  - Recommendations on future projects and issues to look into within the Basin.

Stay Connected

Do you follow the IJC on Facebook? Search #sourisriverstudy for news and updates on the study, or email us at sourisriverstudy@ottawa.ijc.org

Our mailing address is:
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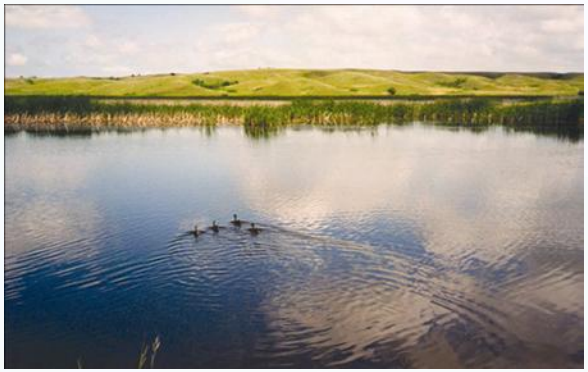
Questions and Comments



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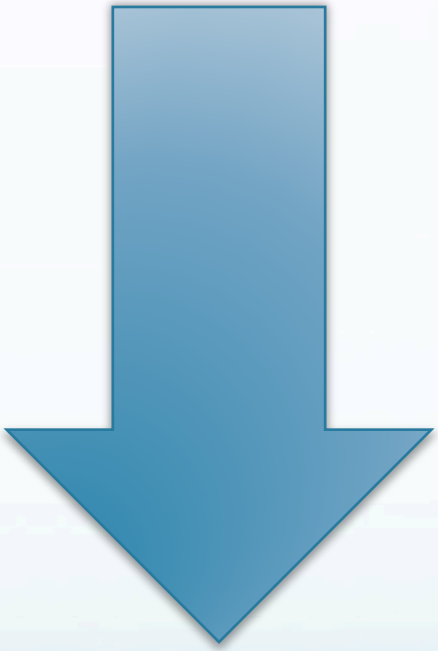
OPTIONAL SLIDES



Key Questions

- How did the study collect and incorporate input from the Public, Public Advisory Group, and Resource Agency Advisory Group?
- What are the initial criteria and boundary conditions used for the models?
- What is the Plan Formulation Process for the Study?
- What does the time Extension mean?
- What is the timeline for the Study?

How do reservoir operations, water elevations or flows affect you? Your story should include what happens, where and when it happens, and what you wish would happen.

If you have a story to tell, or want to suggest changes to the way the basin works now, please let us know as soon as possible so that it can be considered.

Submit your story by email to sourisriverstudy@ottawa.ijc.org