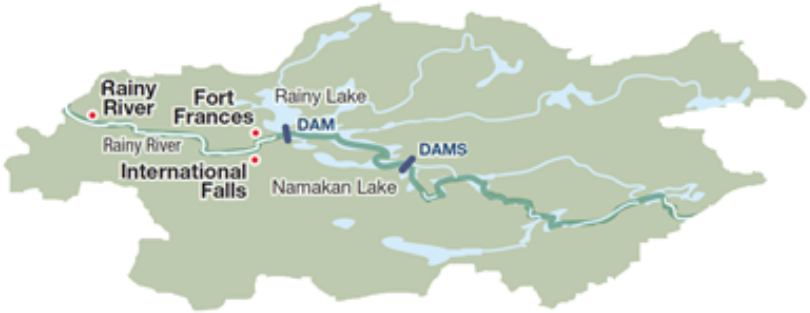
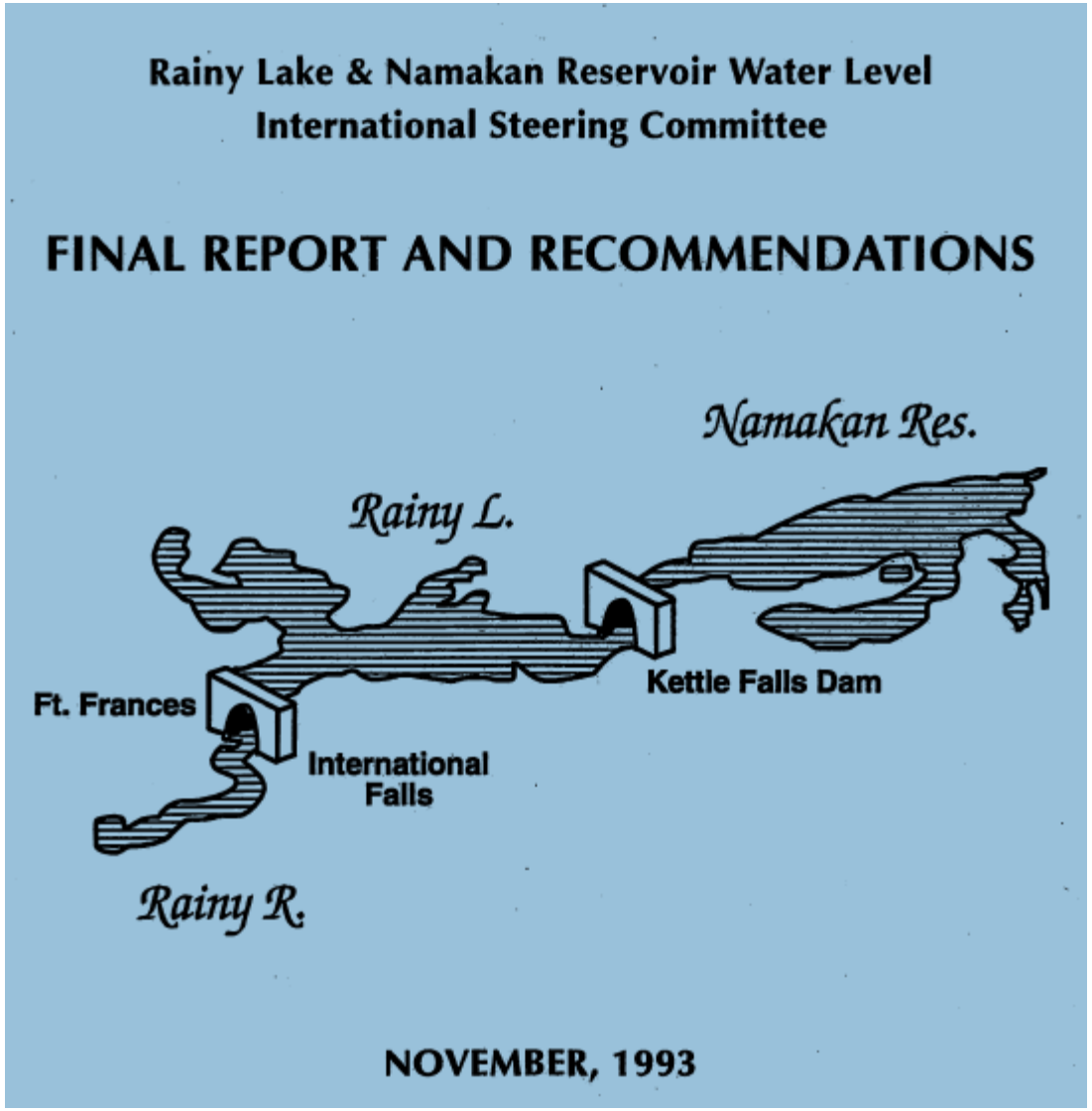
International Rainy and Namakan Lakes Rule Curves Study Board



Study of 2000 Rule Curves for Namakan and Rainy Lakes

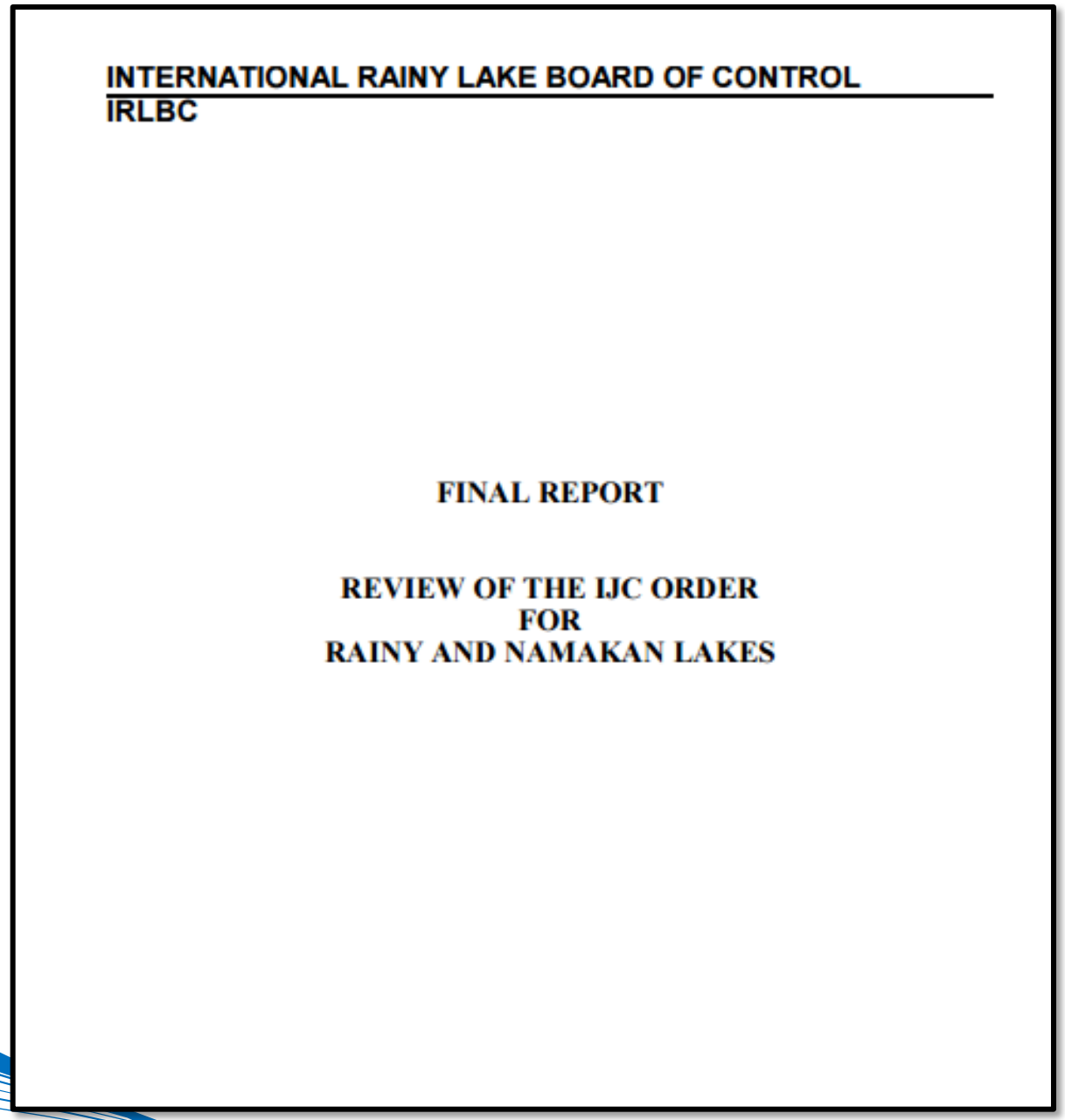
NOVEMBER 2016

PROGRESS UPDATE



1990s – Steering Committee Recommendations

- Reduced over winter drawdown on Namakan Reservoir
- Earlier Refill on both lakes
- Gradual summer drawdown on both lakes


INTERNATIONAL RAINY LAKE BOARD OF CONTROL
IRLBC

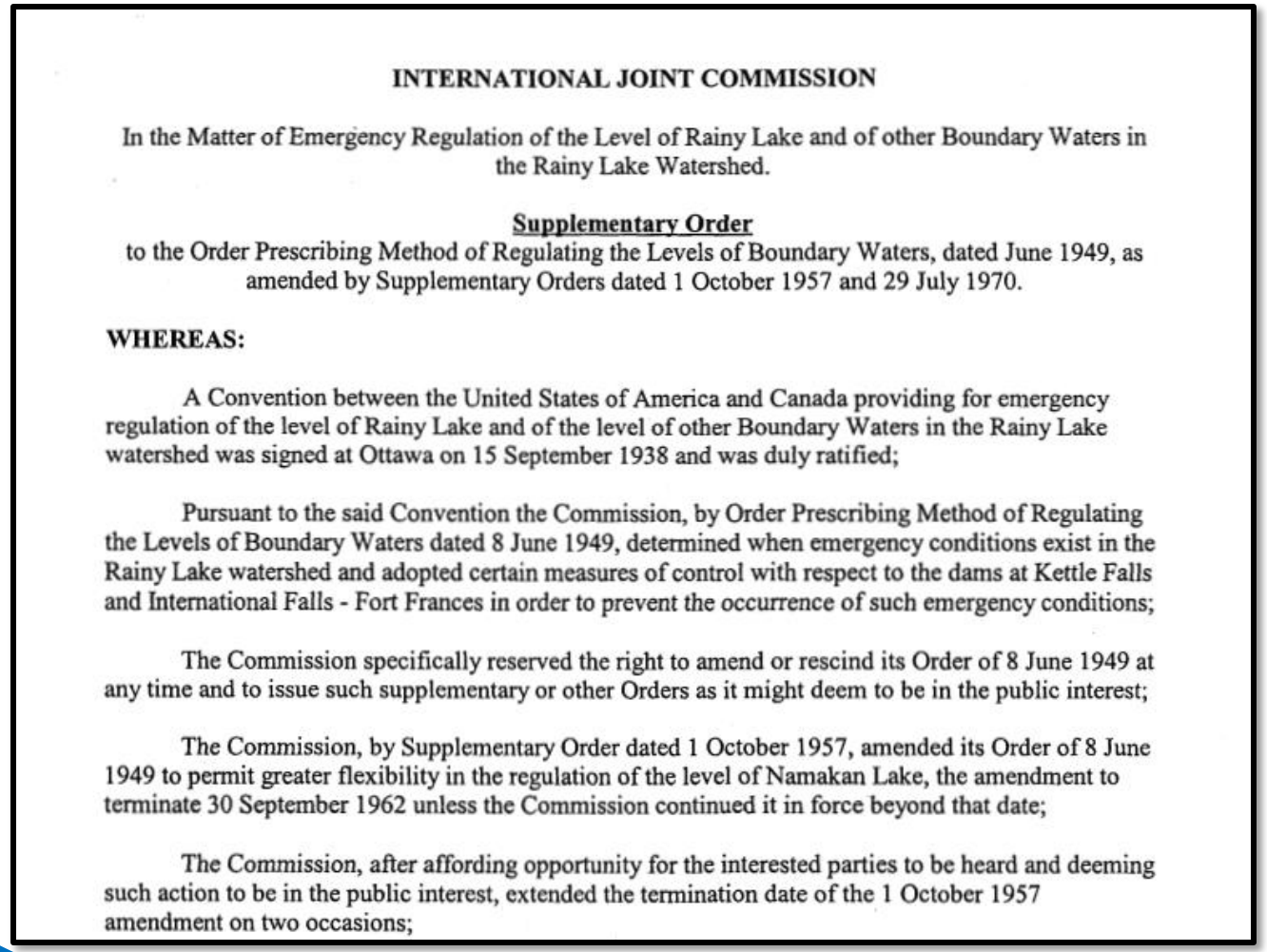
FINAL REPORT

REVIEW OF THE IJC ORDER
FOR
RAINY AND NAMAKAN LAKES

1996-1999 Control Board Studies Rule Curve Options

- Provides options for IJC to consider
- Incorporates many of Steering Committee recommendations for Namakan Chain, some for Rainy Lake.

2000
IJC Adopts New Rule Curves



INTERNATIONAL JOINT COMMISSION

In the Matter of Emergency Regulation of the Level of Rainy Lake and of other Boundary Waters in the Rainy Lake Watershed.

Supplementary Order
to the Order Prescribing Method of Regulating the Levels of Boundary Waters, dated June 1949, as amended by Supplementary Orders dated 1 October 1957 and 29 July 1970.

WHEREAS:

A Convention between the United States of America and Canada providing for emergency regulation of the level of Rainy Lake and of the level of other Boundary Waters in the Rainy Lake watershed was signed at Ottawa on 15 September 1938 and was duly ratified;

Pursuant to the said Convention the Commission, by Order Prescribing Method of Regulating the Levels of Boundary Waters dated 8 June 1949, determined when emergency conditions exist in the Rainy Lake watershed and adopted certain measures of control with respect to the dams at Kettle Falls and International Falls - Fort Frances in order to prevent the occurrence of such emergency conditions;

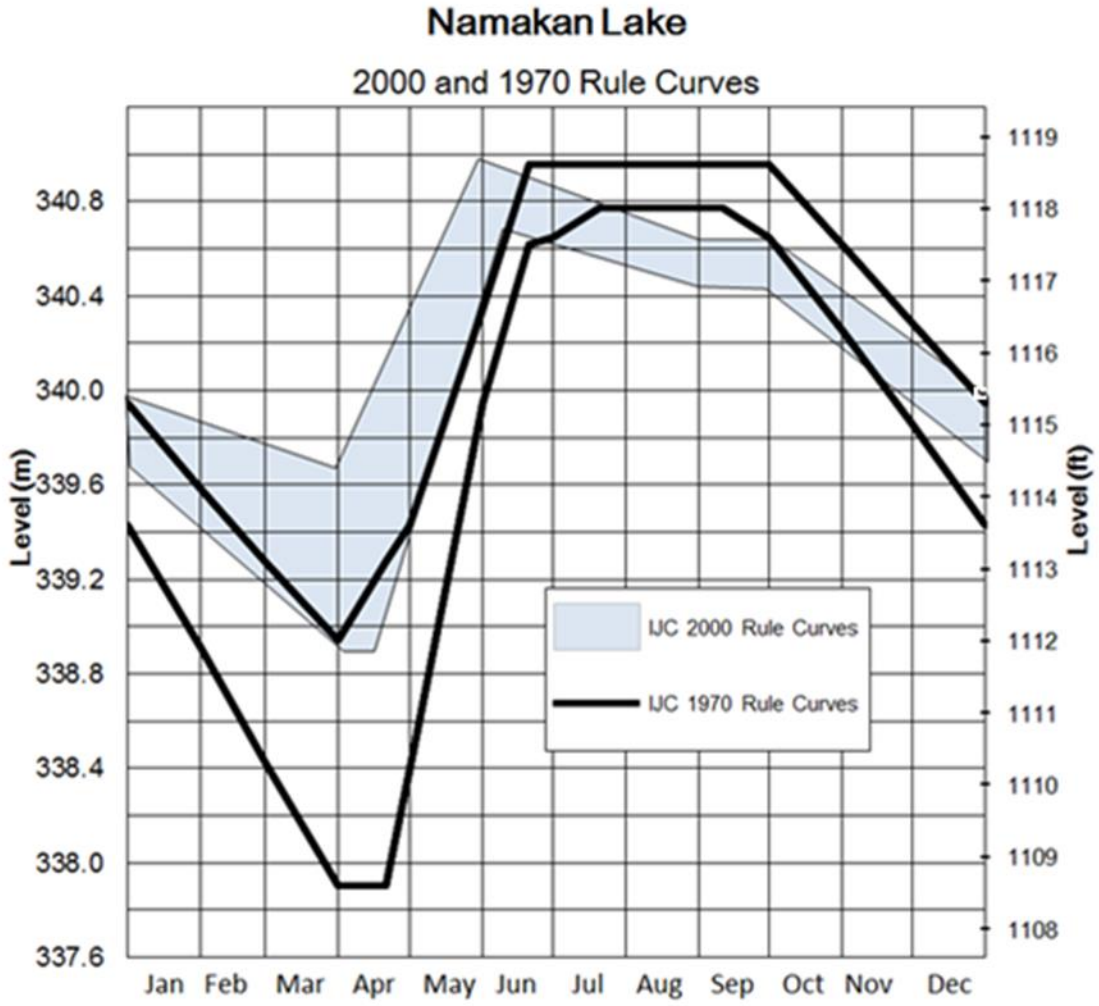
The Commission specifically reserved the right to amend or rescind its Order of 8 June 1949 at any time and to issue such supplementary or other Orders as it might deem to be in the public interest;

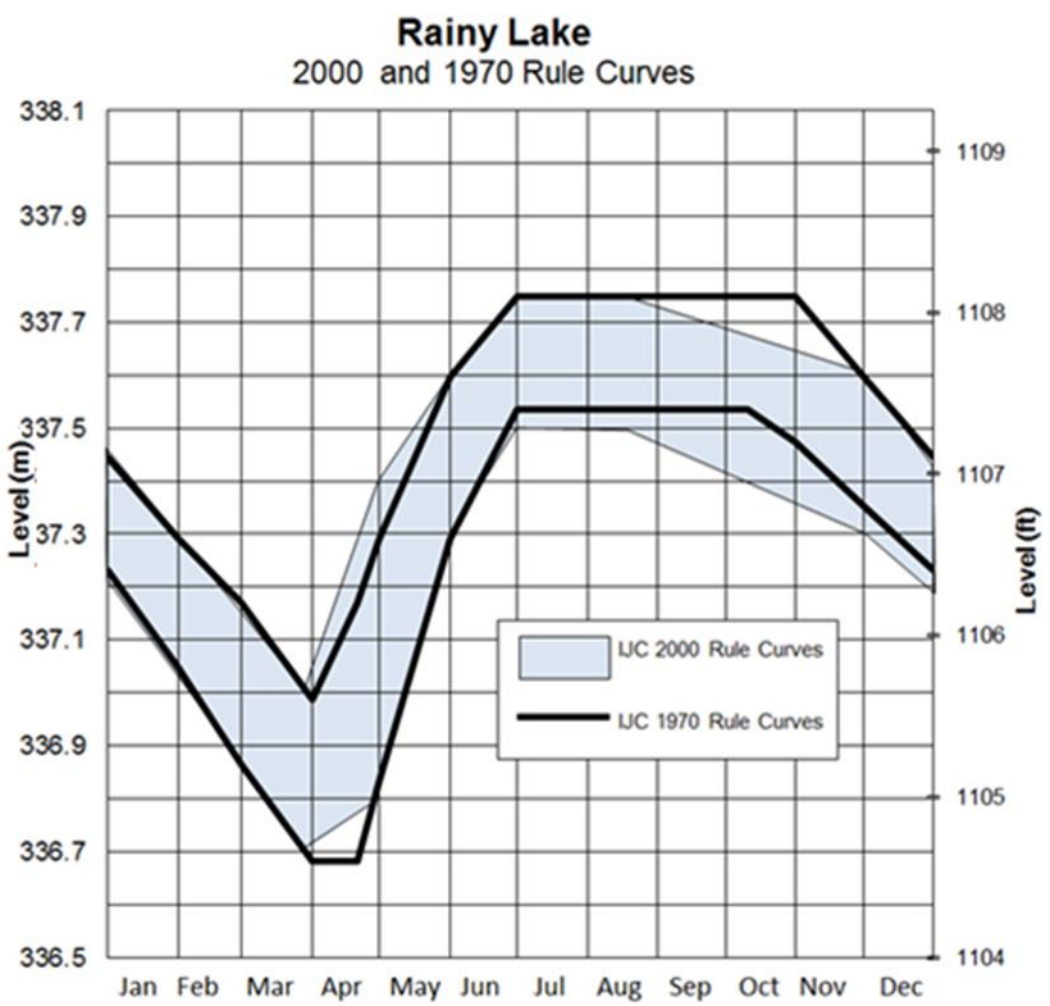
The Commission, by Supplementary Order dated 1 October 1957, amended its Order of 8 June 1949 to permit greater flexibility in the regulation of the level of Namakan Lake, the amendment to terminate 30 September 1962 unless the Commission continued it in force beyond that date;

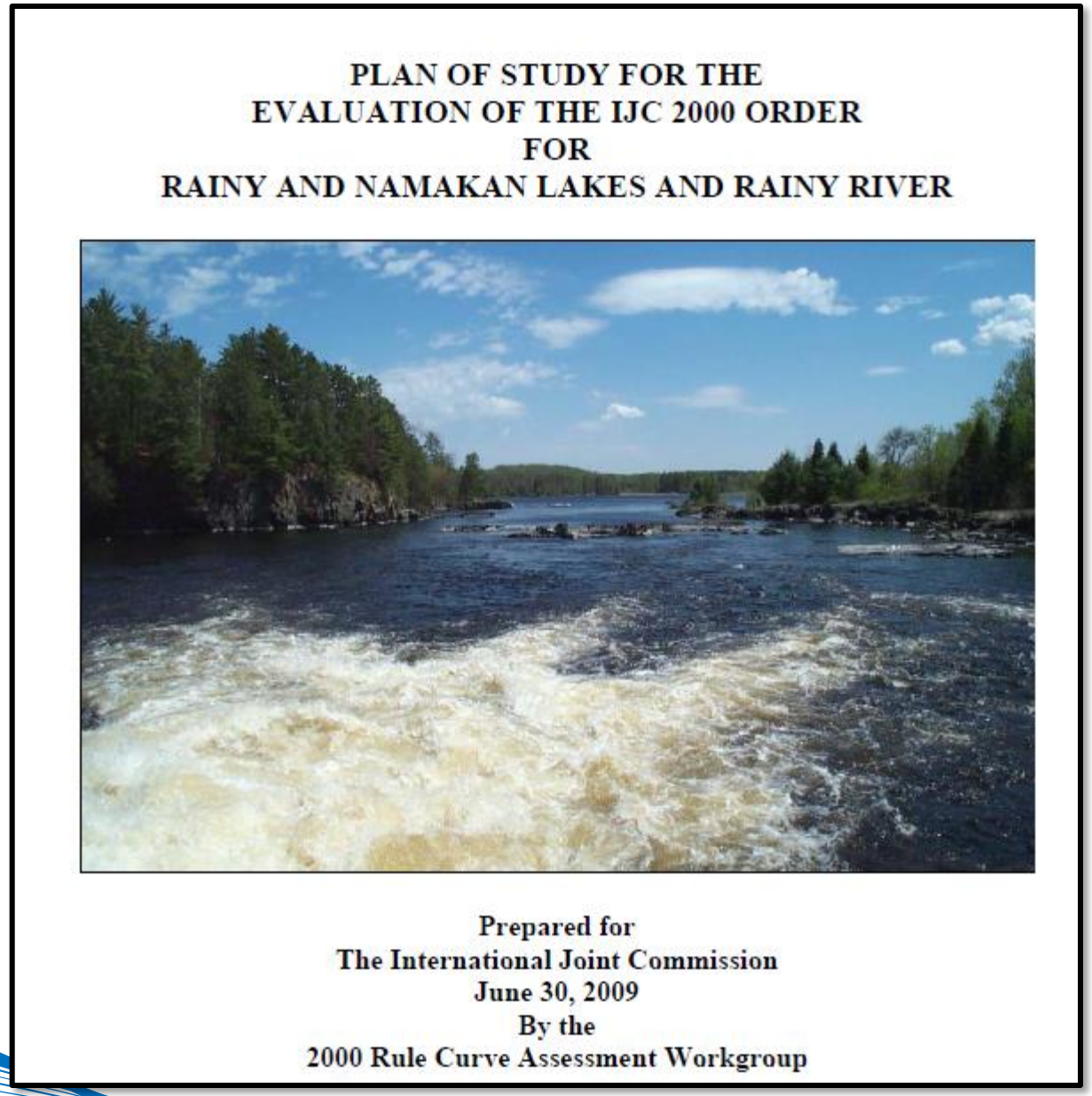
The Commission, after affording opportunity for the interested parties to be heard and deeming such action to be in the public interest, extended the termination date of the 1 October 1957 amendment on two occasions;

- Adopted many of the Steering Committee's recommendations
- Adoption followed extensive review, public consultation
- IJC accepted expected tradeoffs in the changes from 1970 Rule Curves, required review in 15 years to understand results

2000
IJC Adopts
New Rule Curves

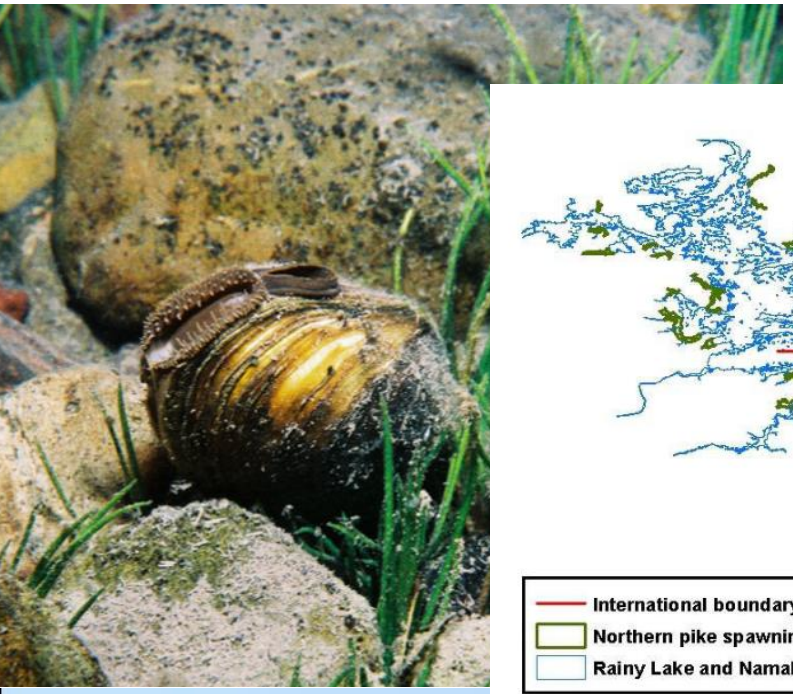


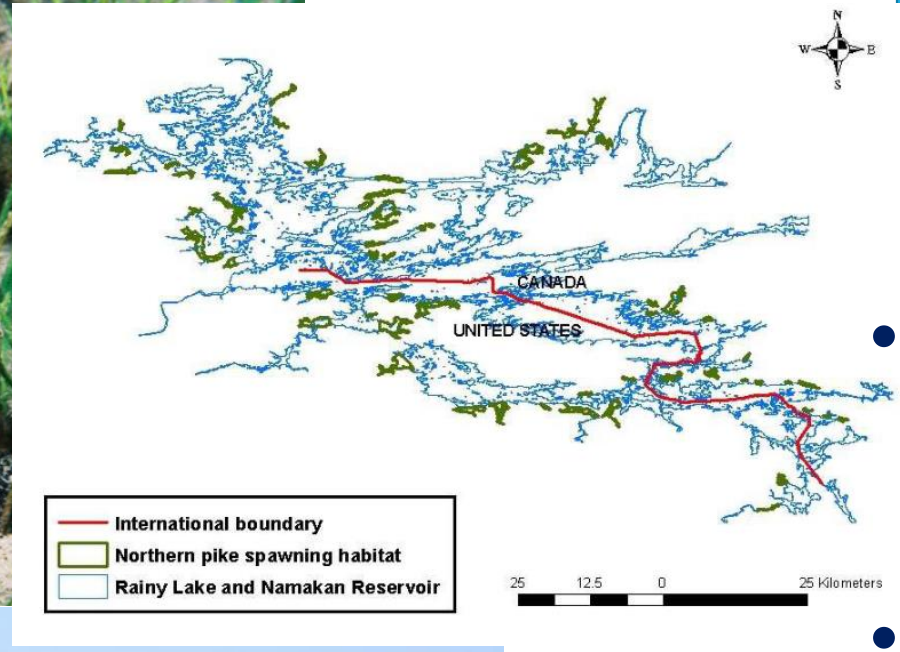




2007 -2009 Plan of Study Workgroup

- Directed to identify monitoring programs needed to provide data for 2015 review for range of subjects
- Identify gaps in monitoring that would need to be filled

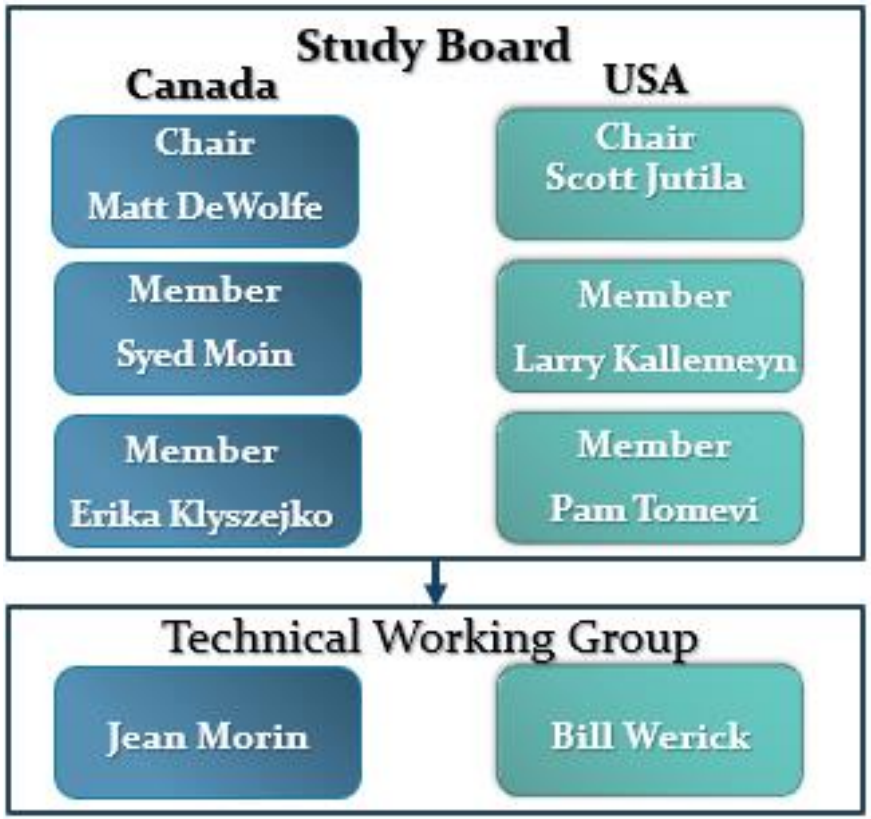




2009-2016 Research In Support of Review is Conducted

- 22 IJC-funded studies to support upcoming review of 2000 Rule Curves
- Other related IWI-funded studies
- Other agency-supported studies related to the Rule Curves
- 39 studies plus monitoring data

August 2015- Rule Curve Study Board Appointed



- Directed to provide scientifically-supported recommendations on retaining or modifying 2000 Rule Curves
- Developed Study Strategy with 2 key approaches:

1. Weight of Evidence
2. Shared Vision

Approach 1: Weight of Evidence

Aim : Did 2000 Rule Curve perform as expected?

- Study Board has reviewed all available studies and monitoring data, prepared simple matrix showing the overall effect of the 2000 Rule Curves on these subjects.
- Presented Preliminary Results in July.
- Since then, confirmed results with study authors, refined matrix format based on feedback

Draft WOE Matrix

See Study Board Website

http://ijc.org/en_/RNLRCSB

Draft Weight of Evidence Matrix
Click on ✓ ✖ or ● for details

✓	Result as expected
✖	Result not as expected
●	No Result was expected

Question Addressed: Did regulation of Rainy Lake and Namakan Lake under the 2000 Rule Curves result in a better, neutral, or worse outcome for the study subject?

	Namakan Reservoir				Rainy Lake				Rainy River			
Weight of Evidence Study Subject	Better	Neutral	Worse	Inconclusive	Better	Neutral	Worse	Inconclusive	Better	Neutral	Worse	Inconclusive
1. Fish												
Northern Pike Population	Awaiting Study Results											
Northern Pike Nursery Habitat, Spawning Success	✓				✓							
Walleye Young of Year	✓				●							
Walleye Spawning Habitat	✓				expected	✖				✓		
Lake Sturgeon Population	expected			✖	expected			✖		●		
Lake Sturgeon Spawning Habitat									Either neutral or better			
Whitefish Spawning Habitiat	Awaiting Study Results											
Whitefish Population	expected				expected			✖				
Rainy River Index of Biotic Integrity									expected	✖		
Mercury Availability	expected			✖	expected			✖				
2. Wildlife												
Beaver Population	Awaiting Study Results											
Habitat for birds and herptiles				●				●				
Common Loon Reproductive Success	✓				expected	✖						
Muskrats		✓			✖	expected						
3. Economic Impacts												
Power Production							✓					
Flooding			✓				✓					
Ice Damage			expected	✖			expected	✖				
Resort Industry	✓					expected		✖				
4. Cultural Resources												
Condition of Resources	✓				✓							●
5. Vegetation												
Cattail Invasion		●					●					
Wetland vegetation	✓							●				
Shrubby Swamps	●					●						
Emergent Vegetation - Wet meadow	✓				●							
Emergent Vegetation - Shrubby Swamp	✓					●						
Submerged Plants		●				●						
Wild rice	expected	✖				✓						
6. Invertebrates												
Invertebrate Community	✓					✓						
Mussels												●
7. Water Quality												
Trophic State	✓				✖	expected						
Internal Phosphorus Loading	expected	✖										
Municipal & Fish Hatchery Use										expected		✖

- Some expected benefits:
  - Improved Namakan navigation, tourism
  - Improved conditions for some fish, birds, other animals.
- Expected drawbacks:
  - Slightly higher lake levels in high inflow years on Rainy Lake, Namakan Lake.
  - Reduced Hydropower revenue

January-November 2016 Weight of Evidence Evaluation

- The weight of the evidence suggests that, overall, the 2000 Rule Curves have performed as expected.
- Awaiting 3 Studies to complete matrix, need to finalize details of matrix for a few studies

Approach 2: Shared Vision Planning

Aim : Can the 2000 Rule Curves be improved?

- Shared Vision Planning approach:
  - Transparent, participatory
  - Assisted by accessible open model to test outcome from alternative rule curve options under different conditions
  - Workshops with Rule Curve Public Advisory Group, Resource Advisory Group, open to public, to argue and weigh options.

What happened at the second practice decision today?

- About 35 members of the RAG and PAG participated
- The Study Board presented a preliminary weight of evidence table that showed that most evidence suggests that the 2000 Rule Curves performed as expected
- Two preliminary alternatives based on the 2000 Rule Curves were presented
  - The Adaptive Rule Curve which uses La Niña forecasts to reduce flood damages
  - The Environmental Rule Curve which adjusts the fall and winter levels to increase the percentage of muskrats that survive the winter
- The analysis used some performance indicators including flooding damages, but was not a full assessment
- Both alternatives provide benefits but also carry risks and participants offered their views on how to manage those risks

What happened at the second practice decision today?

- The Board practiced deciding by saying the 2000 Rule Curves had performed well and would form the basis for their recommendation
- But adjustments such as those suggested in the Adaptive and Environmental Rule Curves deserved more thorough investigation and might be part of their recommendation in some form.
- Participants supported the idea of more flexible rule curves and some sort of community involvement in the application of forecasting.

New Information Available Online

- Draft Weight of Evidence
- Story Map of Supporting Studies
- Fact Sheets
- First video on Rainy Lake outflow

Website: http://ijc.org/en_/RNLRCSB

Look Ahead…

- **January 2017** – Draft Decision Workshop
- **March 2017** – Final Decision Workshop
- **March 21, 2017** – Draft report submitted to the IJC
- **May 31, 2017** – Final draft report submitted to the IJC;
- Public hearings to be held as usual IJC practice
- **Final Decision by IJC**