

Levels Reference Study Board

International Joint Commission

March 31, 1993
Chicago, Illinois
Burlington, Ontario

International Joint Commission
Ottawa, Ontario
Washington, D.C.

Dear Commissioners:

The Levels Reference Study Board is pleased to submit its report on methods to alleviate the adverse consequences of fluctuating water levels in the Great Lakes-St. Lawrence River System, pursuant the Commission's Directive dated February 8, 1990 and revised April 20, 1990.

The Board recommends forty-two practical actions that governments can take in the following six key areas:

- Guiding principles for future management of water level issues.
- Measures to alleviate the adverse consequences of fluctuating Great Lakes-St. Lawrence River water levels.
- Emergency preparedness for high- or low-water level crises.
- Institutional arrangements to assist in implementing changes.
- Improvements in communications with the general public on water level issues.
- Management and operational improvements to facilitate future Great Lakes-St. Lawrence River management.

The Board would like to call the attention of the Commission to Chapter 5 which deals with emergency preparedness. There are a number of actions recommended that should be given early attention by the Commission.

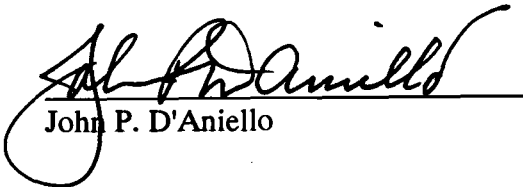
The details of public involvement and details of the studies and investigations carried out by the Board are contained in six separately bound Annexes to the Final Report.

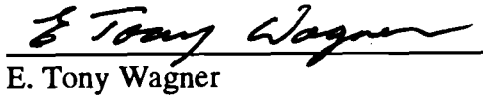
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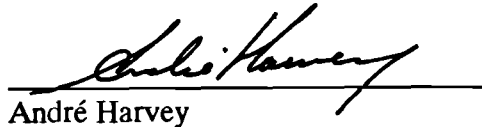
The Board wishes to acknowledge with thanks the assistance and guidance provided by the Commission and numerous other public and private agencies and individuals during the course of the Study.

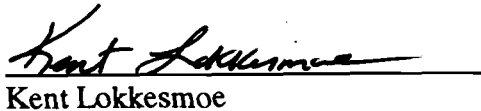
Respectfully submitted,

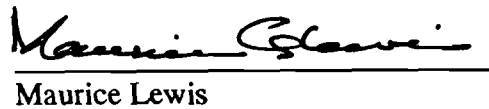

John P. D'Aniello

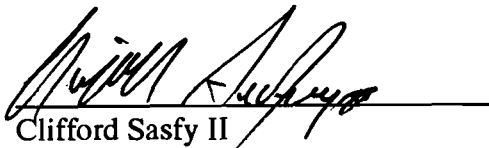

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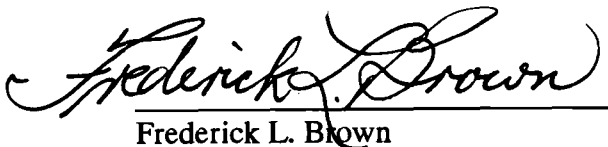

André Harvey

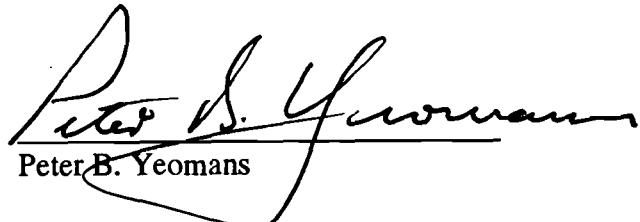

Kent Lokkesmoe

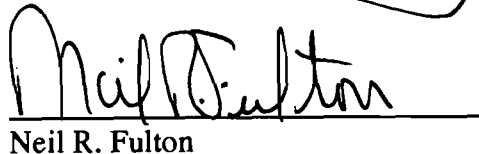

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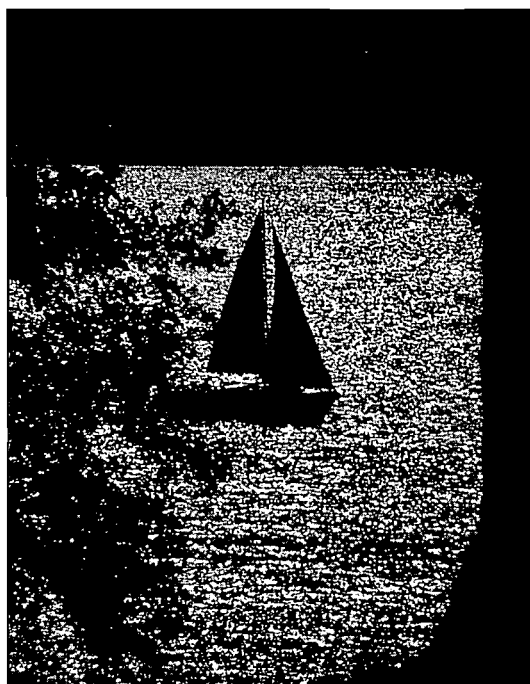

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Executive Summary



In 1985 and 1986, after nearly two decades of above average precipitation and below average evaporation in the Great Lakes-St. Lawrence River Basin, all of the Great Lakes — with the exception of Lake Ontario — reached their highest levels of this century. Storm activity combined with these high levels to cause extensive flooding and erosion of lake shorelines and severe damage to lake shore properties. Millions of dollars in damage resulted. In response to widespread public concern, the governments of Canada and the United States requested the International Joint Commission to study methods of alleviating the adverse consequences of fluctuating water levels in the Great Lakes-St. Lawrence River Basin.

This is the final report of the Levels Reference Study Board. It responds to the issues raised in the Reference from governments and the subsequent Directive from the Commission. This report recommends 42 practical actions that governments can take in six key areas: 1) guiding principles for future management of water level issues; 2) measures to alleviate the adverse consequences of fluctuating Great Lakes-St. Lawrence River water levels; 3) emergency preparedness planning for high or low water level crises; 4) institutional arrangements to assist in implementing changes; 5) improvements in communications with the general public on water level issues; and 6) management and operational improvements to facilitate future Great Lakes-St. Lawrence River water level management.

Central to the success of this study has been an intensive public involvement process, which included an 18-member Citizens

Further, an increase in Chicago Diversion flows might coincide with high supplies to the Illinois Waterway. Therefore, the timing of releases from Lake Michigan would be critical and would require the cooperation of the State of Illinois together with communities along the Illinois River. The use of the Long Lac and Ogoki diversions and Lake Michigan Diversion at Chicago to alleviate high water level crises could also necessitate environmental impact assessments.

The majority of deviations in Welland Canal flows that have been considered in the example emergency preparedness plan would be reductions rather than increases. Consequently, these flow changes would be absorbed in the flow apportioned for hydropower. The cooperation of the St. Lawrence Seaway Authority, Ontario Hydro and other users of canal waters would be required.

Many of the land-based measures discussed here have been, or are being, implemented to varying degrees at various levels of government. Government experiences can be helpful to develop and implement more comprehensive emergency preparedness plans. Measures such as storm and water level forecasting, developing preparedness plans, and ensuring public information and awareness need to be continued and adapted to crisis events. Shore protection alternatives require lead time for proper design and construction. Many of the above measures may require the use of loans, grants, or tax incentives to make their implementation easier and more widespread.

5.5. RECOMMENDATIONS

The Board recommends that the two federal governments, in cooperation with provincial and state governments, begin preparation of a joint and cooperative Emergency Operations Plan for the Great Lakes-St. Lawrence River as soon as possible.

The Board recommends as a priority that investigations continue into methods of alleviating high or low water crises on the lower St. Lawrence River and that investigations continue into avoiding

increased damage as a result of crisis actions taken upstream.

The Board further recommends that the following be implemented in the near future:

- **The authority necessary for deviation from the Lake Superior Regulation Plan during an emergency, similar to the authority to deviate that exists for Lake Ontario.**
- **The installation of an ice boom at the head of the St. Clair River to reduce the risk of ice jams and flooding.**
- **An increase in the flow capacity of the Black Rock Lock, so the flow through the Lock may be increased in emergency situations by an additional 340 cms (12,000 cfs).**
- **The manipulation of the four major Great Lakes diversions; Long Lac, Ogoki, Lake Michigan at Chicago, and the Welland Canal during crisis situations when conditions permit.**

The Board recommends that, prior to implementing the manipulations of diversions, the potential impacts within and outside the Great Lakes-St. Lawrence River System of changes to the Long Lac, Ogoki and Lake Michigan at Chicago diversions be determined.

The Board recommends that post-crises action reports be done to evaluate the effectiveness of emergency preparedness plans and to recommend areas for improvement.

The Board recommends that comprehensive emergency preparedness planning be undertaken immediately at the provincial, state and local government levels. The preparations should include public information programs, stockpiling emergency materials, active monitoring of water levels and flows, and identifying areas where community-based shore protection can be implemented immediately.