



August 30, 2013

Bernard Beckhoff, Public Affairs Adviser
International Joint Commission
Canadian Section
234 Laurier Avenue West, 22nd Floor
Ottawa, ON K1P 6K6

RE: Conservation Ontario's Additional Comments and Information to Support the IJC's 'Proposal for Lake Ontario and St. Lawrence River Regulation'

Dear Mr. Beckhoff,

Conservation Ontario is grateful for being provided with the opportunity to present at the International Joint Commission's (IJC)'s recent technical hearing on the Proposal for Lake Ontario and St. Lawrence River Regulation on July 15th in Toronto, Ontario. Following Conservation Ontario's presentation the Commissioners raised several questions. This letter is being provided to the IJC to further elaborate on the answers that were provided verbally at the hearing and to point the Commissioners to further information that may be of assistance as they seek to move forward with the regulation plan.

Implementing the Conservation Authority Approach to Flood Protection

One of the first questions received was "What would it take to implement the Conservation Authority approach to flood protection for the south shore of Lake Ontario?" While the answer to this question is complex, it is possible to outline the basic framework that has allowed the Conservation Authority approach to flood protection to succeed on the North shore of Lake Ontario. It includes:

- a) Mapping of the shoreline with elevation/bathymetry data and coastal processes (this includes the need to update and refine data on an ongoing basis);
- b) Comprehensive legislation and regulations from a senior level of government;
- c) A mandated agency (such as a Conservation Authority) to enforce the regulations;
- d) Local, regional, and state support (financial, technical);
- e) Public education; and,
- f) A strategy to deal with existing at risk structures and properties.

Examining this framework in further detail reveals that Conservation Authority flood management programs are based on the five pillars of Emergency Planning and Management; prevention, mitigation, preparedness, response, and recovery. There are several important activities associated with each pillar

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that flood management agencies undertake. This approach creates efficiencies, cost savings and is defensible as it relies on existing new science and technology.

More details on the Conservation Authority approach to Flood Management in Ontario are available in Conservation Ontario's attached document "*Protecting People and Property: A Business Case for Investing in Flood Prevention & Control*" (2009). Conservation Ontario is currently in the process of updating this document and the updated version can also be provided at a later date upon request.

It should also be noted that while the implementation of Plan 2014 is expected to result in very minor changes to impacts on coastal hazard zones, these minor changes still need to be understood by flood management agencies going forward in order for them to adapt their programs. The IJC's adaptive management process would be the ideal framework to use to start cooperative efforts between flood management agencies such as Conservation Authorities and federal and state/provincial governments to understand the practical issues around how changes in a regulation plan might impact shore hazard planning.

Additional changes outside of the control of the regulation plan such as climate change, continuing development, and lagging investment in natural hazard structures, tools, and programs will also impair the ability of agencies to maintain existing levels of flood control and will require further study. It is critical that agencies responsible for flood management have access to up to date resources and tools to meet their responsibilities. Conservation Ontario applauds the IJC on the development of an adaptive management process for Great Lakes Water levels which would facilitate the implementation of a coordinated adaptive emergency planning and management program across the Great Lakes basin to minimize the effects of these emerging threats.

Economic Value of the Conservation Authority Approach to Flood Protection

Another question that was asked at the technical hearing was whether Conservation Authorities could direct the IJC to any reports and or studies that have been done that highlight the economic benefits of the Conservation Authority approach to flood management. This question was broken down into two parts. The first part was to provide further detail on the economic benefits associated with the implementation of the Conservation Authority approach to flood protection.

Conservation Ontario's report "*Protecting People and Property: A Business Case for Investing in Flood Prevention & Control*" provides a description of the integrated approach to flood management used by Conservation Authorities and the Ministry of Natural Resources in Ontario. This approach includes the use of a combination of structural and non-structural measures. There are over 900 dams, dykes, channels and erosion control structures in Ontario that protect more than 46,000 homes and prevent an average of well over \$100 million a year in flood damages. The combination of structural and non-structural measures used in the Grand River basin in Ontario reduced potential damages from a storm similar in nature to the 1996 Saguenay River flood by \$160 million (\$2008).

Other earlier studies have also demonstrated the economic benefits of this integrated approach. For example, Brown et al.'s study "*A Comparison of Flooding in Michigan and Ontario: Soft Data to Support Soft Water Management Approaches*" compared four 1986 storms that occurred in comparable regions of Michigan and Ontario. The only major difference between the two regions was that Ontario had an integrated flood-reduction program whereas Michigan had limited flood plain restrictions. This study showed that while flood flows during the storms studied were higher in Ontario, damages were

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much lower: \$640 million in Michigan versus \$0.64 million in Ontario. This study also found that the benefits of non-structural flood plain management measures are cumulative and increase over time. Therefore, the full benefits of these approaches cannot be fully represented by studies based on shorter periods of flood plain development control and as a result they are often under-estimated by planners and resource managers. This information is still relevant today and should be considered by decision makers as they move forward with flood management. For further details the above referenced documents are attached.

Economic Benefits of Restoring Wetland Areas

The second part of the request to Conservation Ontario involves providing more detail on the economic value of restoring Wetland Areas.

It is well known that wetlands provide a wide array of ecosystem services including regulating climate, regulating water supply and water levels, forming new soils, cycling nutrients and treating waste. However, putting an economic value on these services can be challenging and there have been many studies that use different approaches. For example, a 2009 study entitled "*Natural Credit: Estimating the Value of Natural Capital in the Credit River Watershed*" found that wetlands in the Credit River watershed provided services to society valued at \$187 million per year. A related study "*Valuing Wetlands in Southern Ontario's Credit River Watershed*" found that when members of the household were provided with the facts regarding the services that wetlands provide, households were willing to pay a significant amount for the wetland restoration programs: approximately \$229-\$259 per household over the next 5 years.

Flood control services provided by wetlands are of particular relevance to the proposed Lake Ontario Regulation Plan. The 2009 study referred to above cites the example of the Charles River Watershed in Massachusetts where the presence of wetlands avoided flood related damage costs by \$2,711 per hectare per year. Another report "*The Economics of Ecosystems and Biodiversity for Water and Wetlands*" cites the example of the 3,000 ha Muthurajawela Marsh near Colombo, Sri Lanka where it was found that the marsh provides flood attenuation ecosystem services worth over US\$5 million/year. This value was calculated by estimating the costs needed to construct a drainage system and pumping station that would provide the same flood control function. These are only a few examples of the studies available that support the assertion that restoration of wetlands provides economic benefits. For further details the IJC is directed to review reports available at the following links:

http://www.ducks.ca/assets/2012/06/duc_blackriver_case.pdf

<http://www.conservationhamilton.ca/documents/pdf/HHWSPFactSheet.pdf>

http://www.teebweb.org/wp-content/uploads/2013/04/TEEB_WaterWetlands_Report_2013.pdf

<http://www.creditvalleyca.ca/wp-content/uploads/2011/06/Natural-Credit-Estimating-the-Value-of-Natural-Capital-in-the-Credit-River-Watershed.pdf>

<http://www.creditvalleyca.ca/wp-content/uploads/2011/01/ValuingWetlandsPhase1-final.pdf>

<http://www.creditvalleyca.ca/wp-content/uploads/2011/01/ValuingWetlandsPhase2-final.pdf>

Once again thank you for providing Conservation Ontario with the opportunity to present at the International Joint Commission's (IJC)'s recent technical hearing on the Proposal for Lake Ontario and St. Lawrence River Regulation. Overall, it is expected that IJC's proposal will contribute to the economic, ecological and social well-being of the Lake Ontario and St. Lawrence River. This letter is being provided with the objective of providing the Commissioners with further information that may be of assistance as they seek to move forward with the regulation plan. Please do not hesitate to contact Conservation Ontario staff Bonnie Fox (223) or Samantha Dupre at extension (228) if you have any further questions.

Thank you,

A handwritten signature in dark ink, appearing to read 'D. Hibma', with a long horizontal flourish extending to the right.

Dick Hibma

Chair, Conservation Ontario

c.c. Camille Mageau, Secretary, International Joint Commission, Canadian Section &
Charles A. Lawson, Secretary, International Joint Commission, U.S. Section
All Conservation Authorities, Chief Administrative Officers