

Dealing With High Water

Pierre Béland PhD

Canadian Co-Chair
International Joint Commission

Ontario Sailing
National Yacht Club
Toronto, Ontario

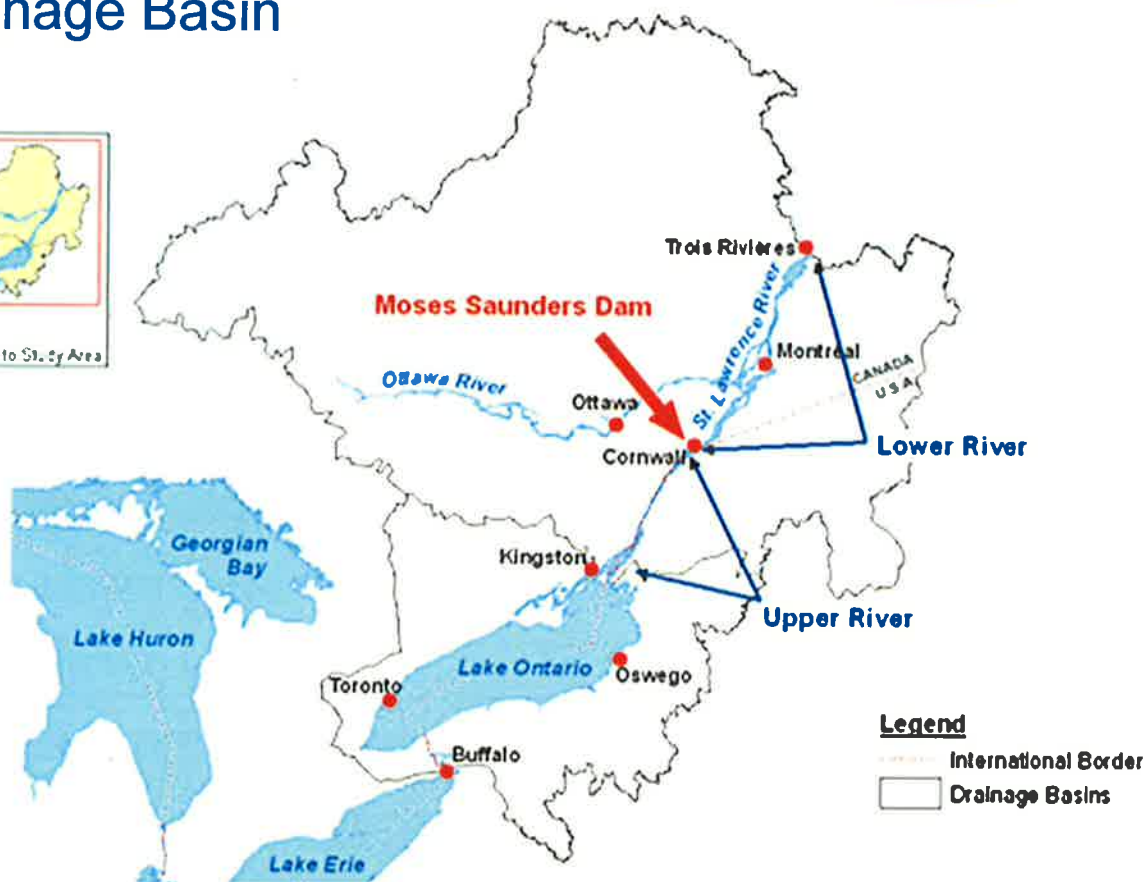
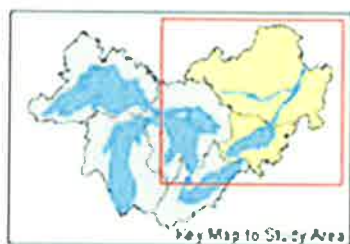
Saturday, February 15, 2020







Lake Ontario–St. Lawrence River Drainage Basin



High Water: Lake Ontario and Upper St. Lawrence River



High Water: Ottawa and Lower St. Lawrence Rivers



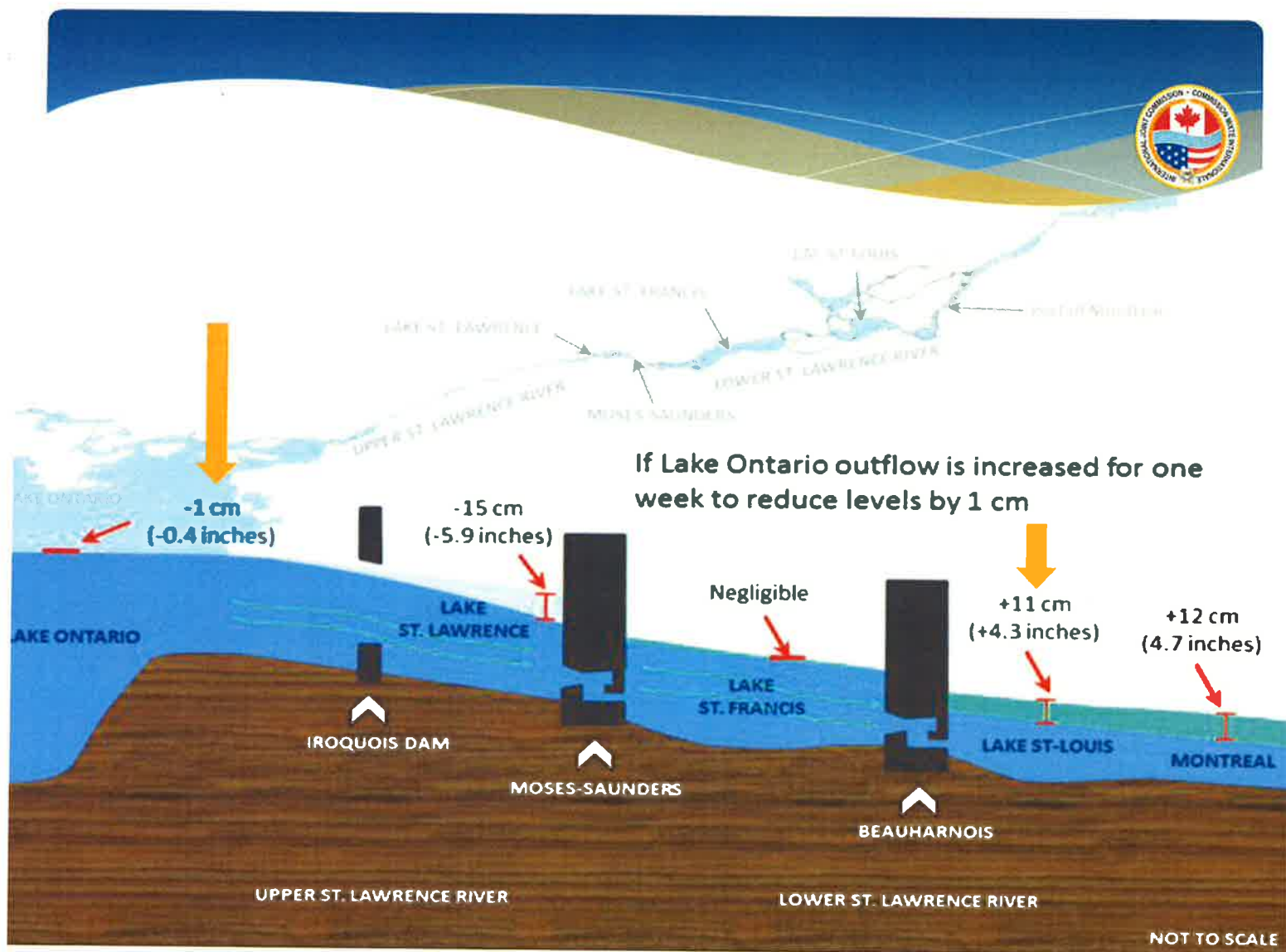




Karen Richardson stands on one of the sidewalks of Aultsville, one of the villages that were flooded during the creation of the St. Lawrence Seaway 60 years ago. Thanks to extremely low water levels, some of these villages are above water once again. Photo credit: Ray Smith.

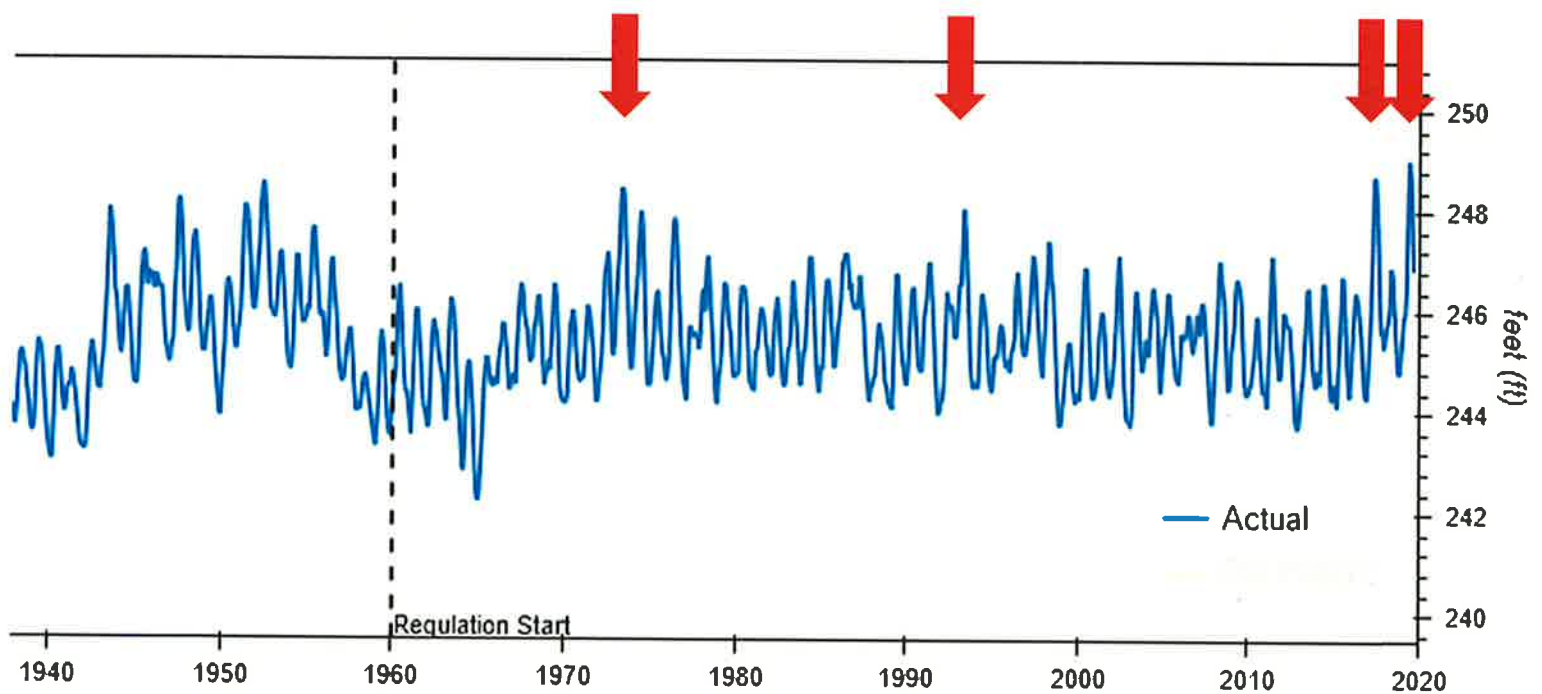








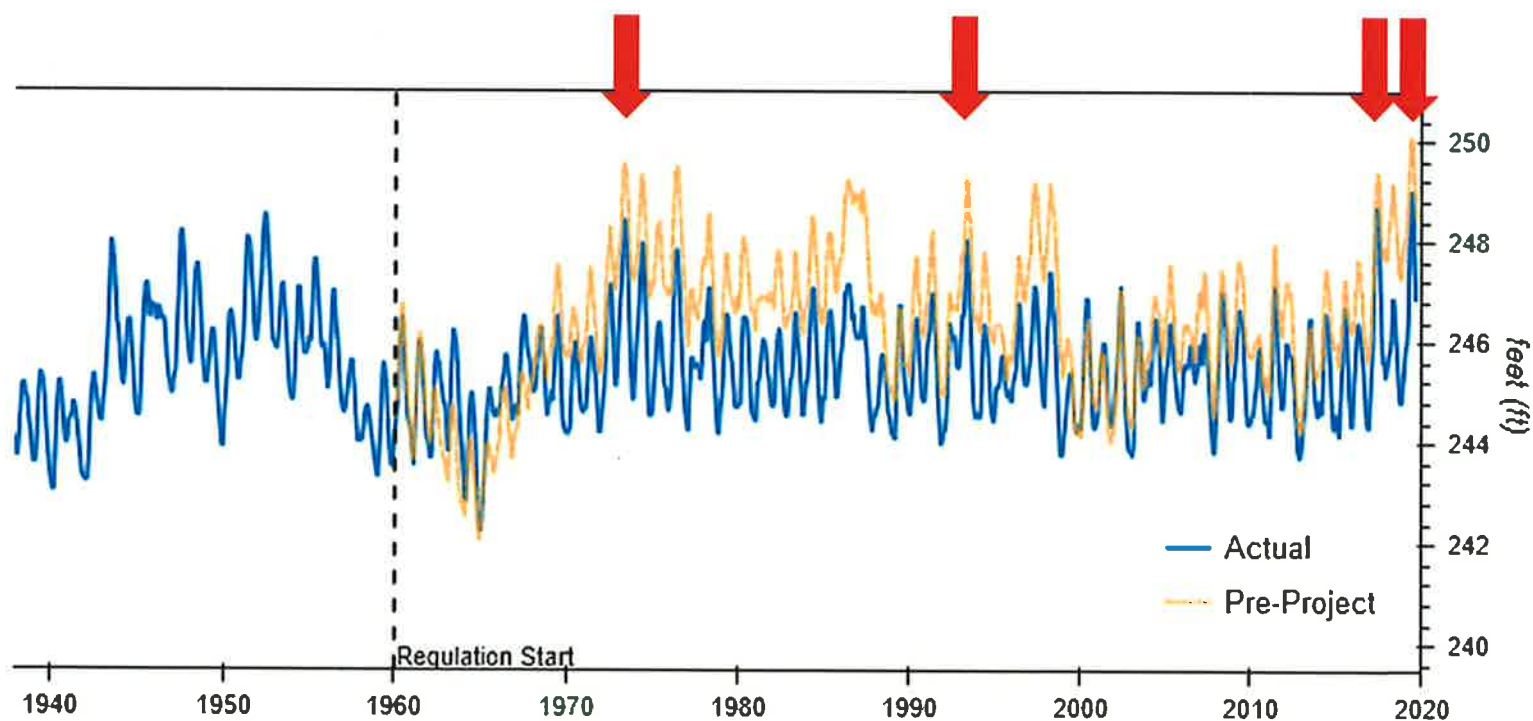
Lake Ontario Water Levels With Moses-Saunders Dam





Lake Ontario Water Levels

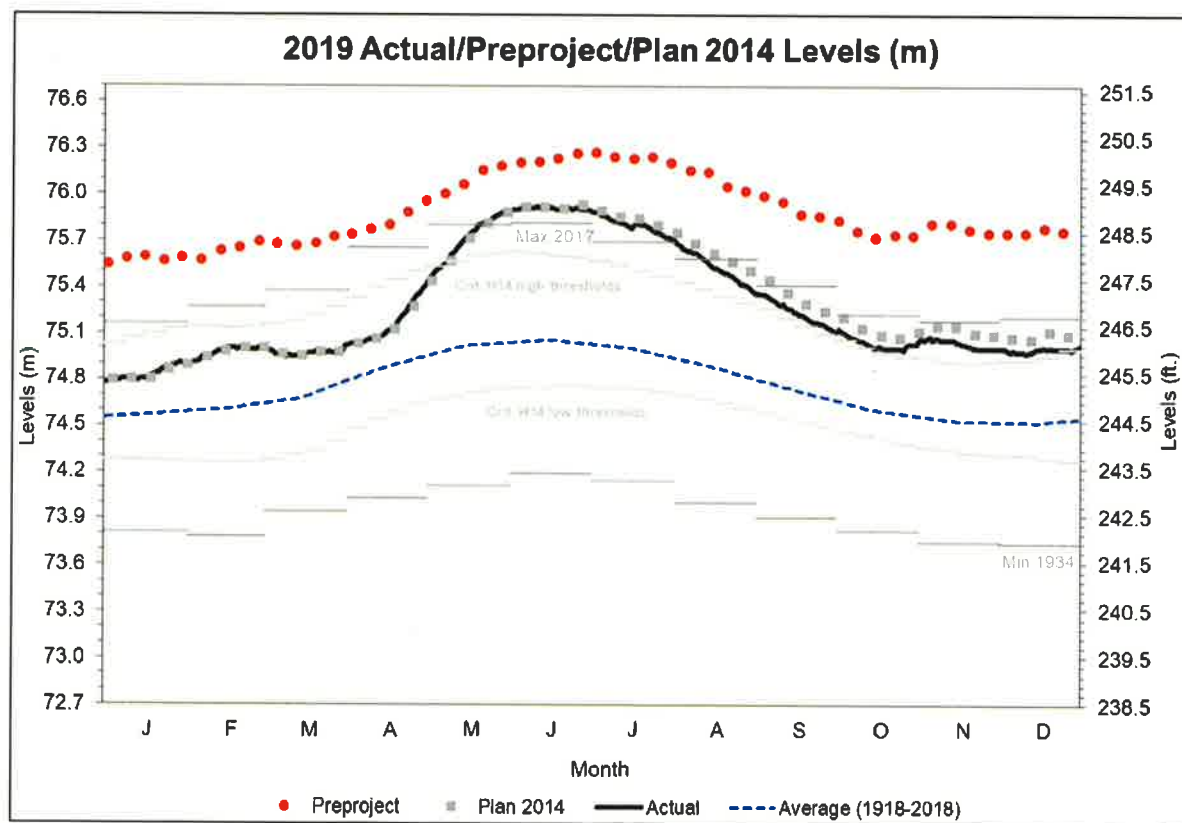
With and without the Moses-Saunders Dam





Lake Ontario Water Levels

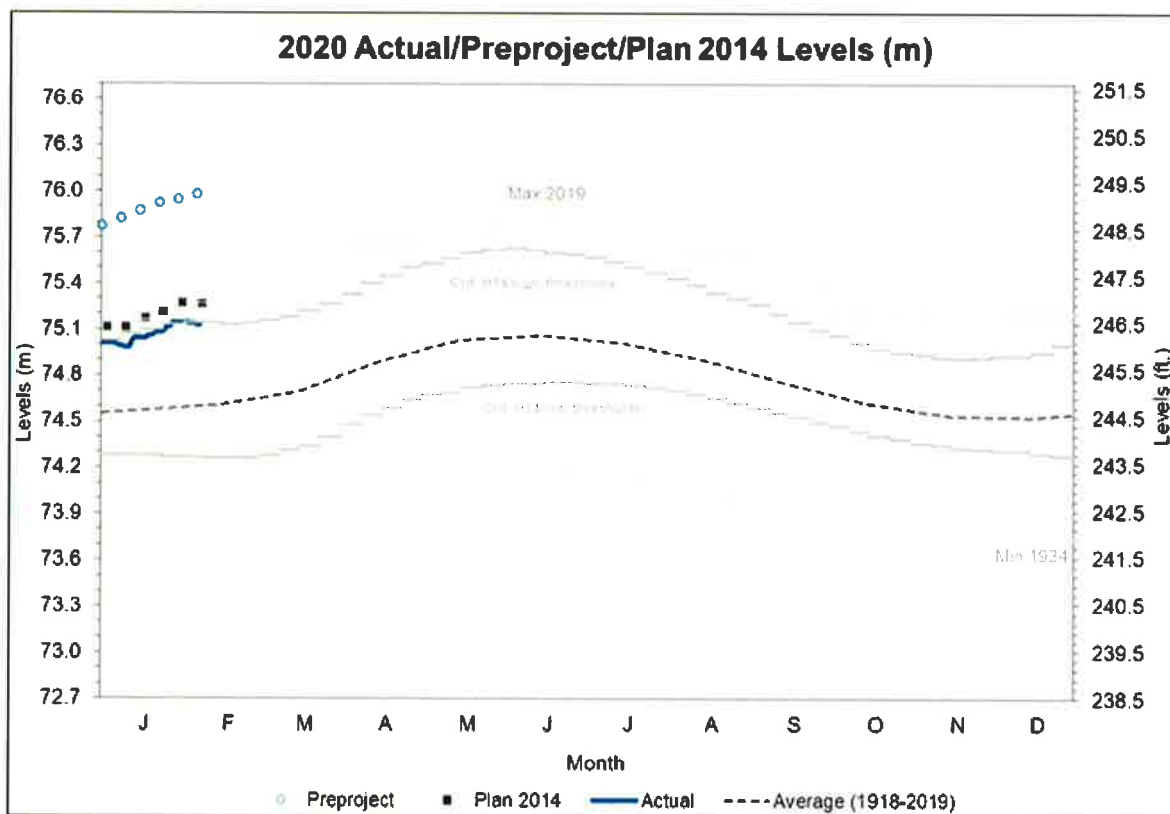
Actual, Pre-project and Plan 2014





Lake Ontario Water Levels

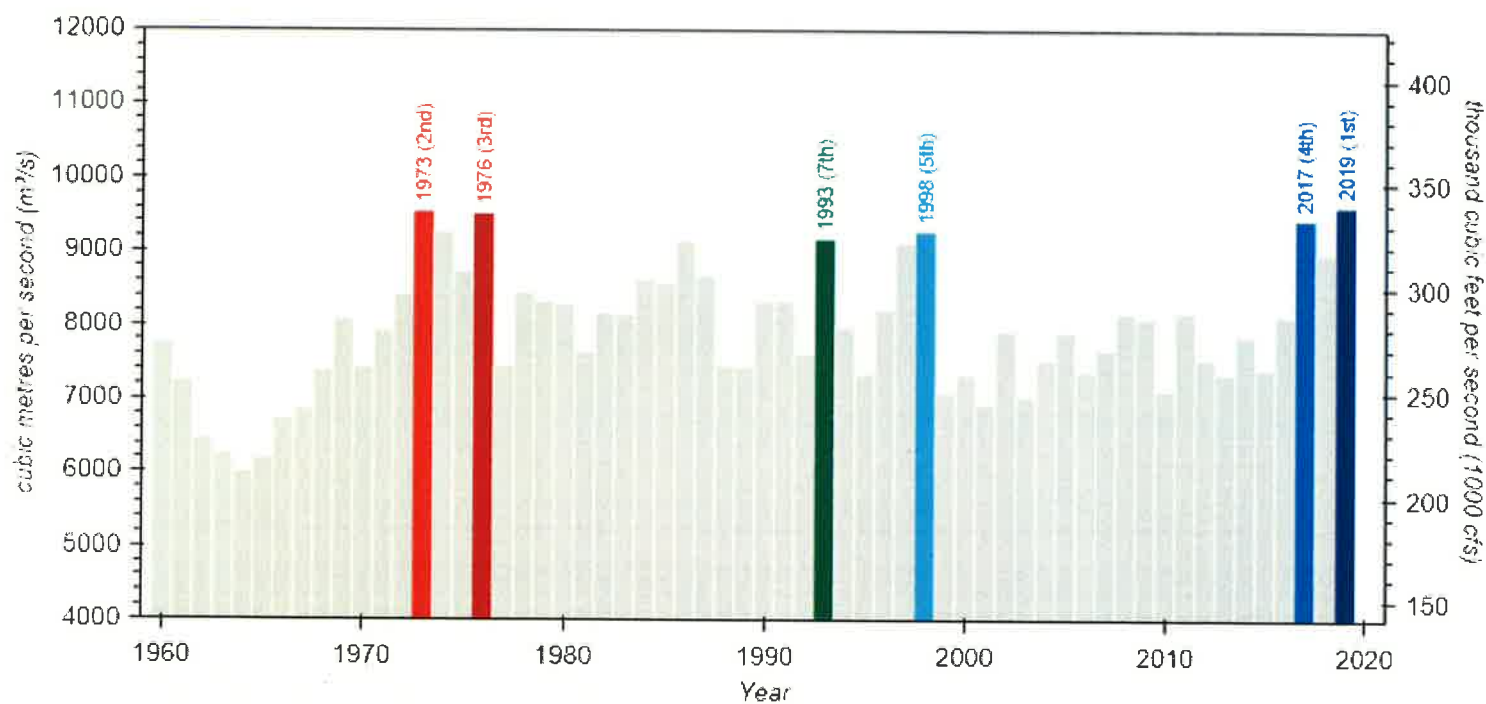
Actual, Pre-project and Plan 2014



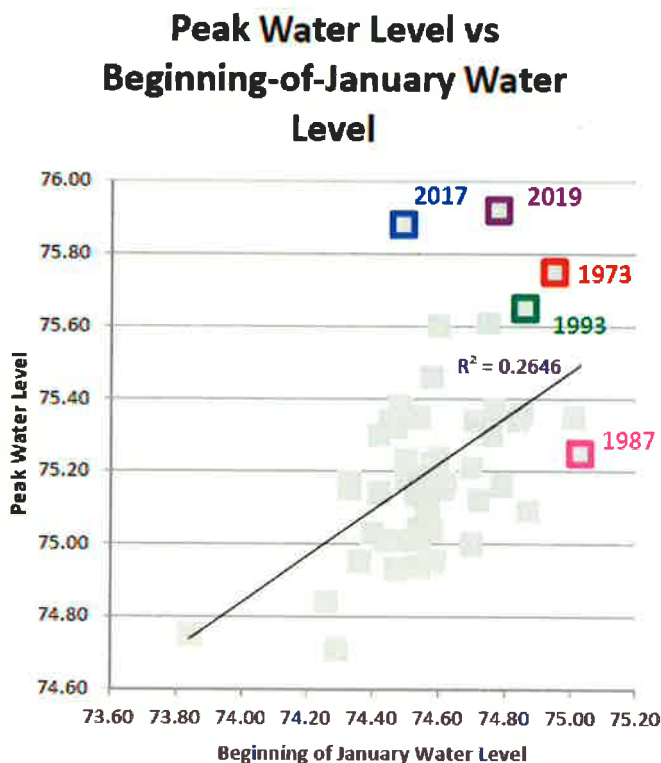


Water Supplies to Lake Ontario

Jan-Jun average NTS

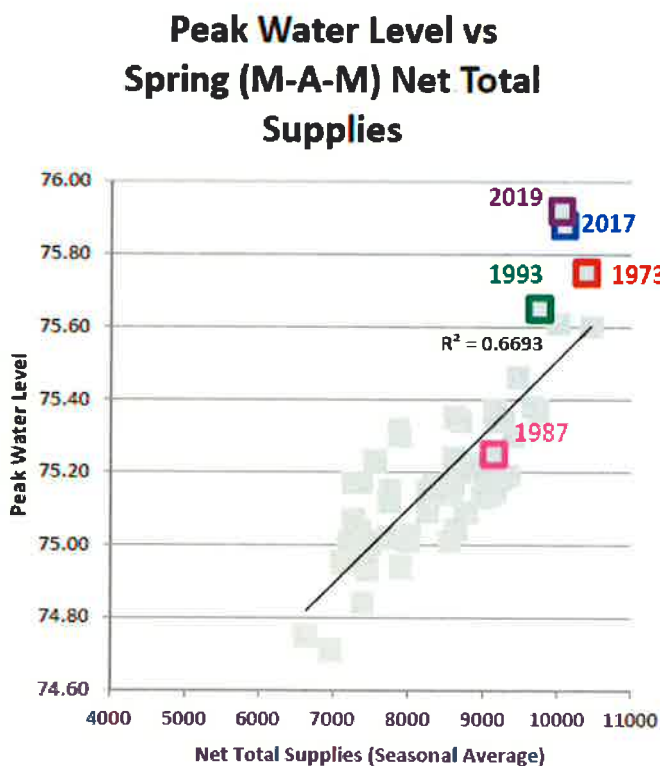


Relationship to Starting Levels



- Weak relationship between starting (Jan 1) level & peak level later that year ($R^2 = 0.26$)
- Levels in 1973 and 1993 started high and peaked high
- Levels in 1987 started at record highs, but peaked near average
- Levels in 2017 started near average
- Levels in 2019 started high, but not record-high

Relationship to Spring (MAM) Net Total Supplies



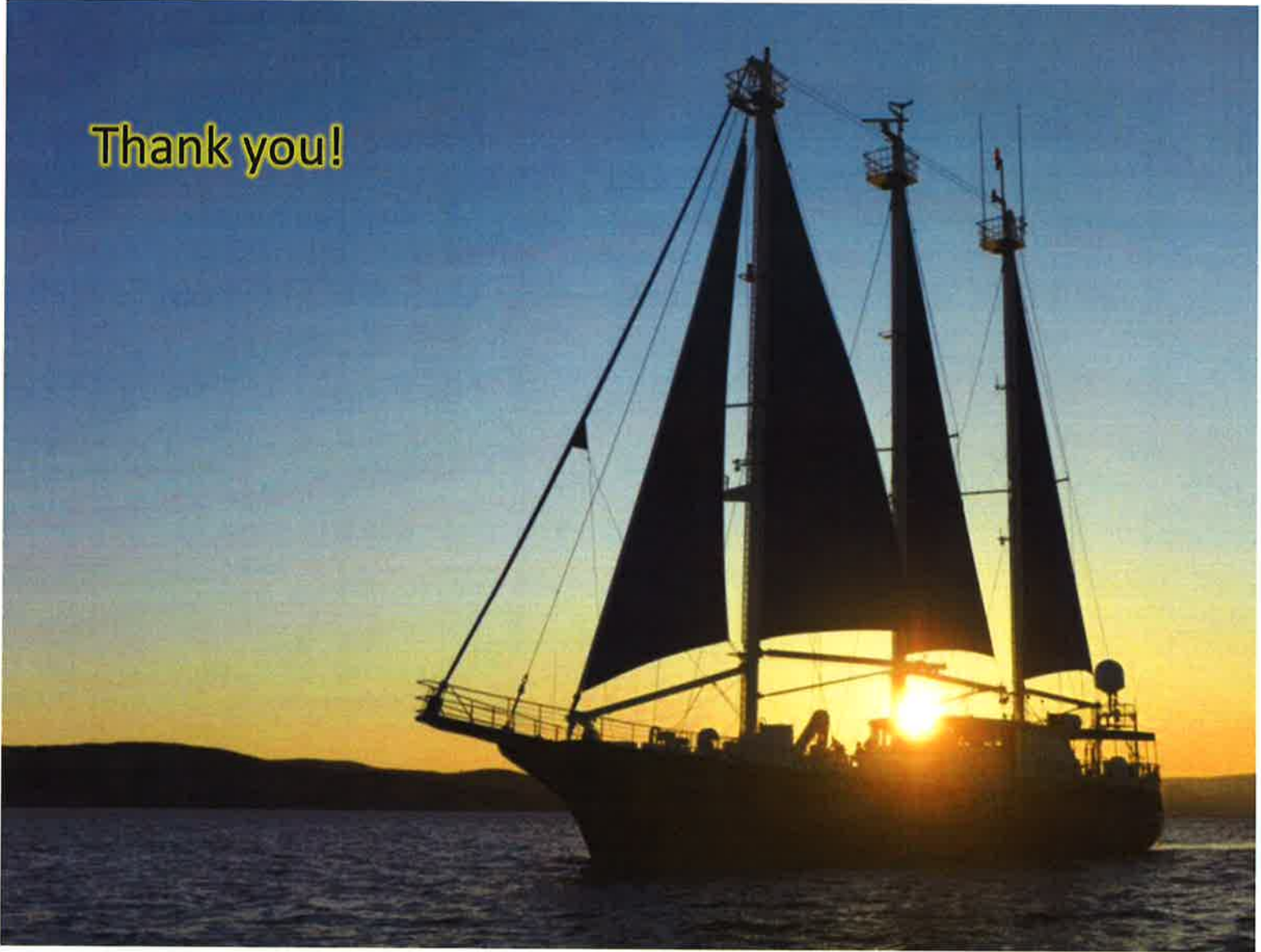
- Strongest relationship is between spring NTS and peak level ($R^2 = 0.67$)
- Spring NTS in 1973, 1993 and 2017 were all very high, resulting in the high peak levels
- Spring NTS in 1987 was only average and this helped offset the effects of high starting level, Erie flow and wet winter



Can flooding be avoided in 2020?

- Most important factors:
 - High starting level and Lake Erie flows
 - Which we currently have and can expect in to 2020.
 - High spring water levels alone do not cause flooding.
 - Deep snowpack and cold temperatures
 - Our ability to forecast this is very low.
 - High spring supplies.
 - THE MOST IMPORTANT FACTOR.
 - Again, the ability to forecast this is very low.

Thank you!





www.IJC.org