



International Niagara Board of Control

2016 Open House

Lewiston, NY
August 29, 2016



Presentation Outline

1. Introduction to the International Joint Commission, International Niagara Board of Control/International Niagara Committee (INC)
2. Overview Great Lakes water levels and Niagara River flows
3. Chippawa-Grass Island Pool Operations
4. 2015-16 Ice Season
5. Discharge measurements conducted for the Board
6. Horseshoe falls recession
7. Questions/ Discussion



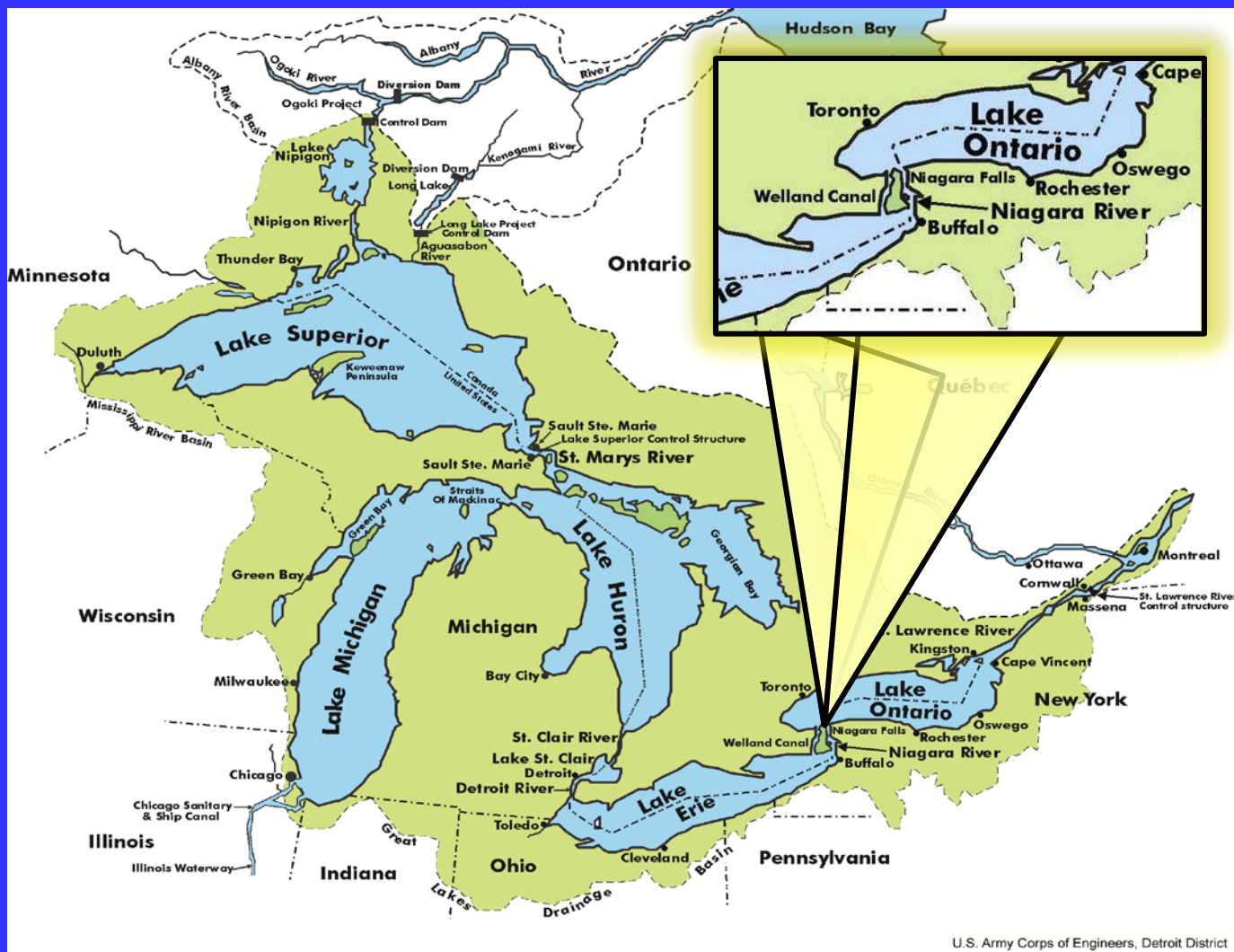
Introduction

1909 Boundary Waters Treaty between U.S. and Great Britain (on behalf of Canada)

- Provides mechanism for prevention and resolution of water disputes
- Created the International Joint Commission (IJC)
 - Jurisdiction over and approval of the use, obstruction, or diversion of Boundary waters
 - Investigation and reporting

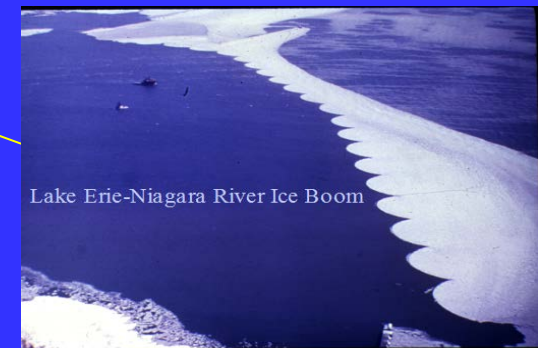


International Niagara River Board of Control





Niagara Board's Area of Responsibility



Lake Erie-Niagara River Ice Boom



Board Membership

The Board is currently comprised of two members from Canada and two members from the U.S. with a broad diversity of expertise and interests

United States Section

BG , Mark Toy, Chair

U.S. Army Corps of Engineers

Mr. Stephen Durrett, Alt Chair

U.S. Army Corps of Engineers

Mr. William Allerton, Member

Federal Energy Regulatory Commission

Canadian Section

Mr. Aaron Thompson, Chair

Environment and Climate Change Canada

Ms. Jennifer Keyes, Member

Ontario Ministry of Natural Resources
and Forestry

Secretaries

Mr. Arun Heer

U.S. Army Corps of Engineers

Mr. Derrick Beach

Environment and Climate Change Canada



Working Committee Composition

The working committee supports the Board and INC

United States Section

LTC Adam Czekanski, Chair

U.S. Army Corps of Engineers

Mr. Keith Koralewski, Alt Chair

U.S. Army Corps of Engineers

Mr. Mike Asklar

New York Power Authority

Mr. John Spain

Federal Energy Regulatory Commission

Canadian Section

Dr. Frank Seglenieks, Chair

Environment and Climate Change Canada

Ms. Joan Frain

Ontario Power Generation

Mr. Jonathan Staples

Ontario Ministry of Natural Resources

Ms. Jeanette Fooks

Environment and Climate Change Canada



Niagara River Water Diversion Treaty 1950 and the International Niagara Committee

In order to preserve the scenic beauty of the Falls, the Treaty of 1950 stipulated that no water diversions would be allowed that would reduce the flow of water over Niagara Falls as follows:

- No less than 100,000 cubic feet of water per second (ft^3/s) from April 1st to September 15th (inclusive) between 8 a.m. and 10 p.m.
- No less than 100,000 ft^3/s from September 16th to October 31st (inclusive) between 8 a.m. and 8 p.m.
- No less than 50,000 ft^3/s from November 1st to March 31st (inclusive)
- $100,000 \text{ ft}^3/\text{s} = 2832 \text{ m}^3/\text{s}$ $50,000 \text{ ft}^3/\text{s} = 1416 \text{ m}^3/\text{s}$



Great Lakes and Niagara River Conditions



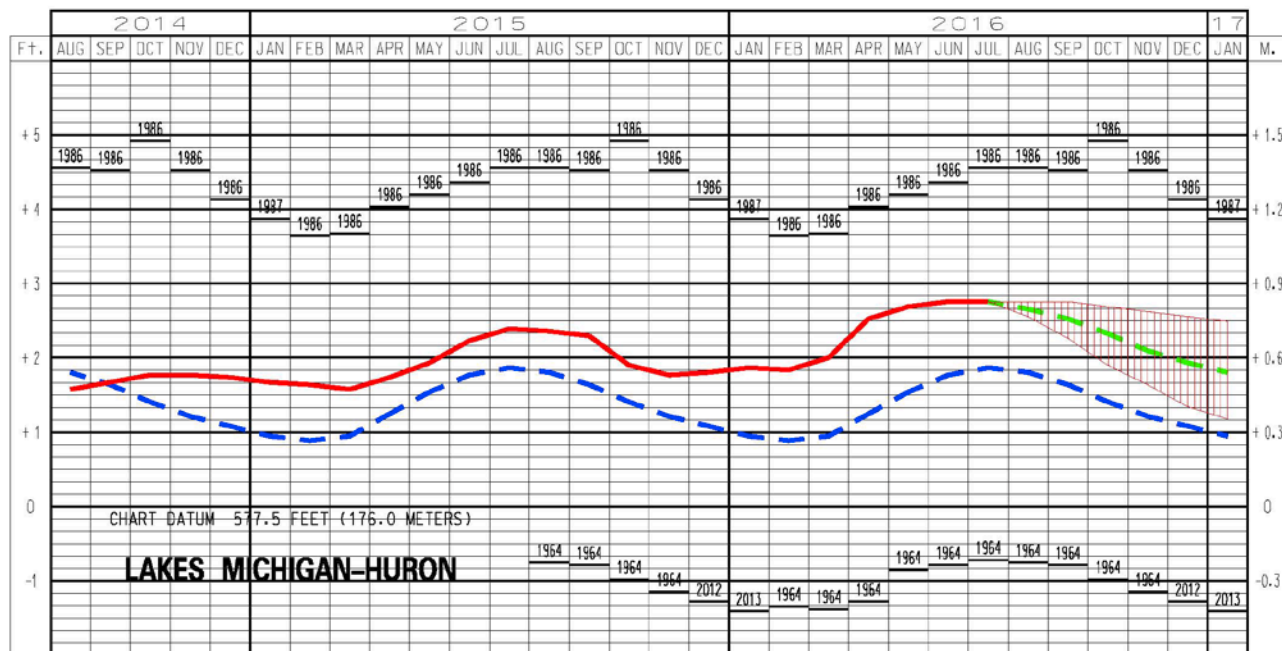
AVERAGE **	1985		1973	
MAXIMUM **	1985	1985	1973	1973
MINIMUM **	1936	1934	1926	1934

*** Average, Maximum and Minimum for period 1918-2015



Lake Michigan/Huron Water Levels

LAKES MICHIGAN-HURON WATER LEVELS - AUGUST 2016

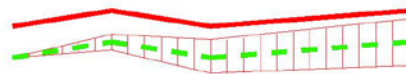


LEGEND

LAKE LEVELS

RECORDED

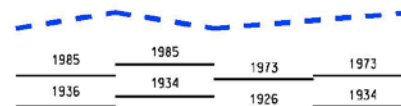
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AVERAGE **

MAXIMUM **

MINIMUM **

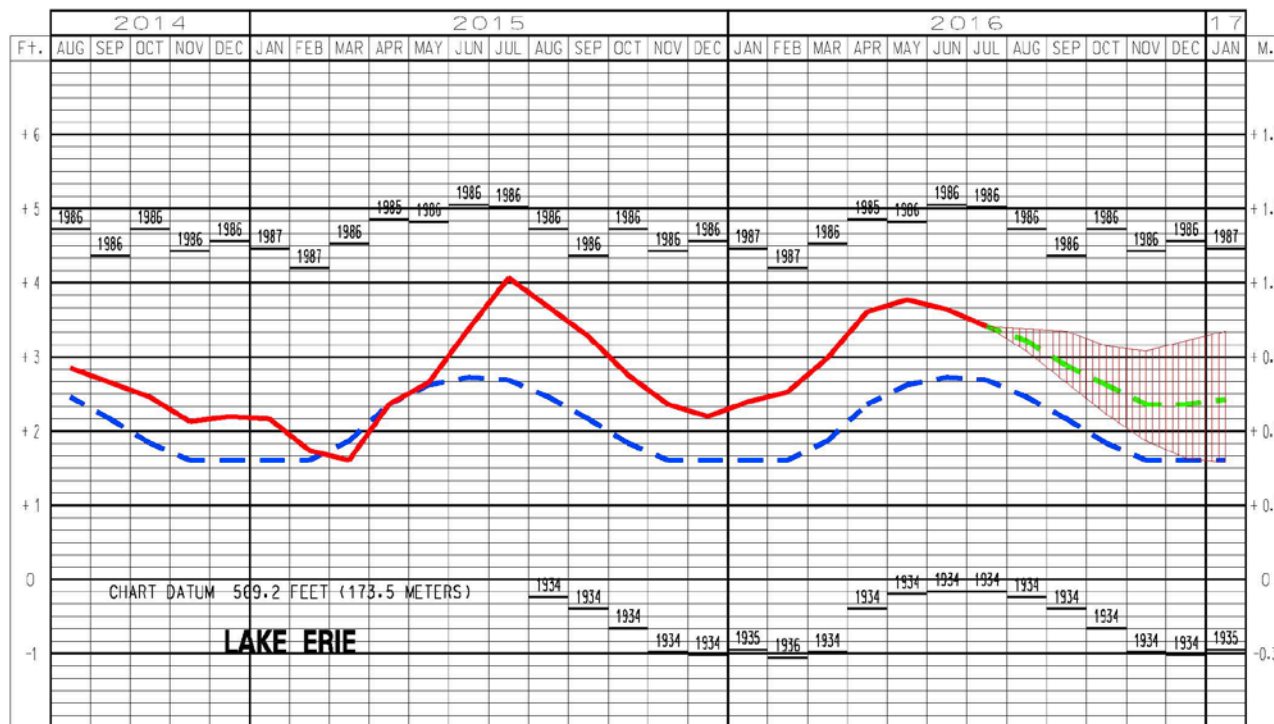


** Average, Maximum and Minimum for period 1918-2015



Lake Erie Water Levels

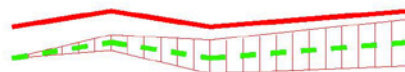
LAKE ERIE WATER LEVELS - AUGUST 2016



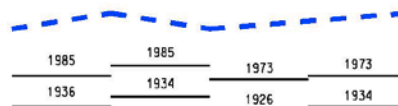
LEGEND

LAKE LEVELS

RECORDED
PROJECTED



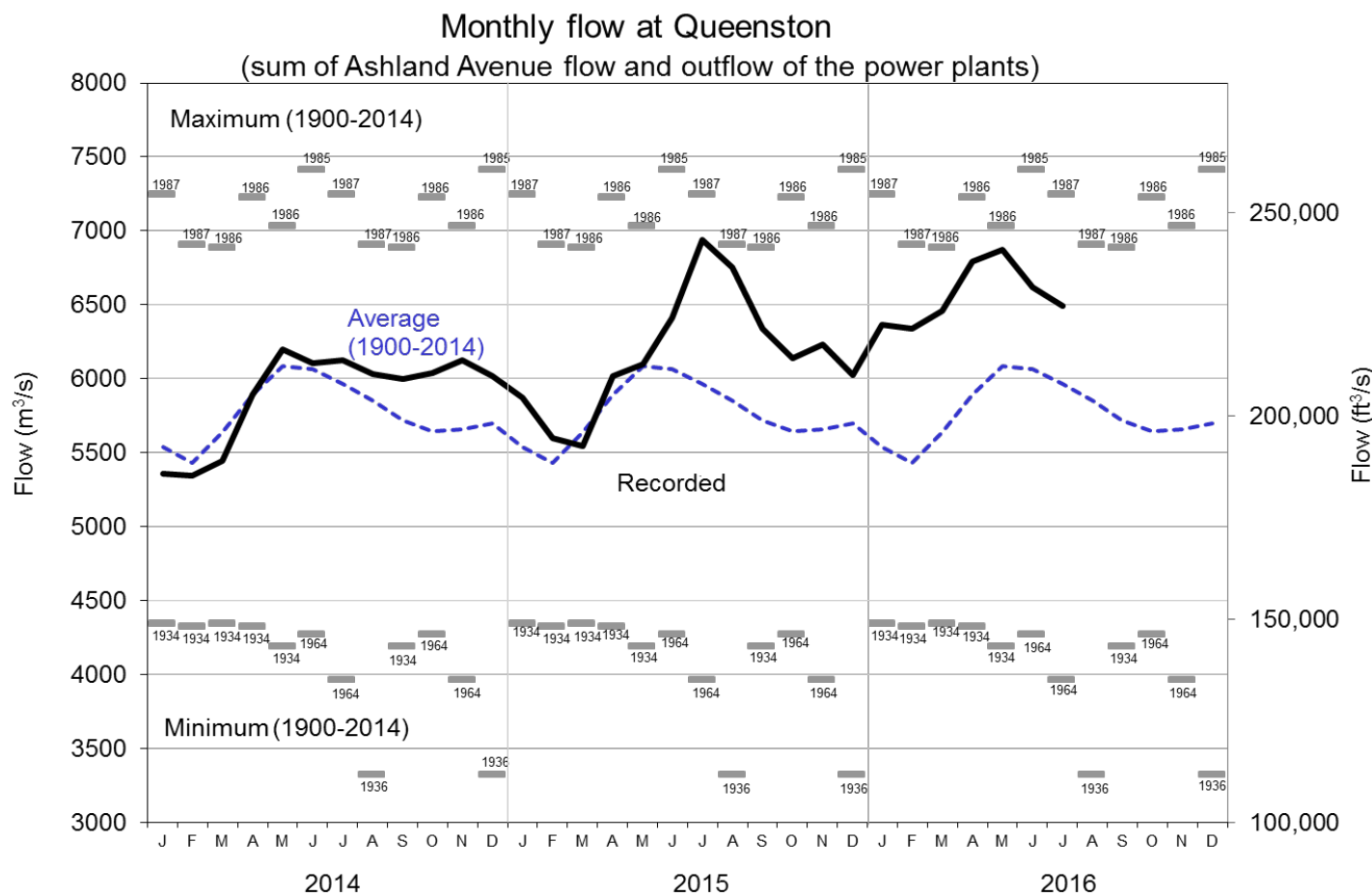
AVERAGE **
MAXIMUM **
MINIMUM **



** Average, Maximum and Minimum for period 1918-2015



Niagara River Flows





Chippawa- Grass Island Pool Operation

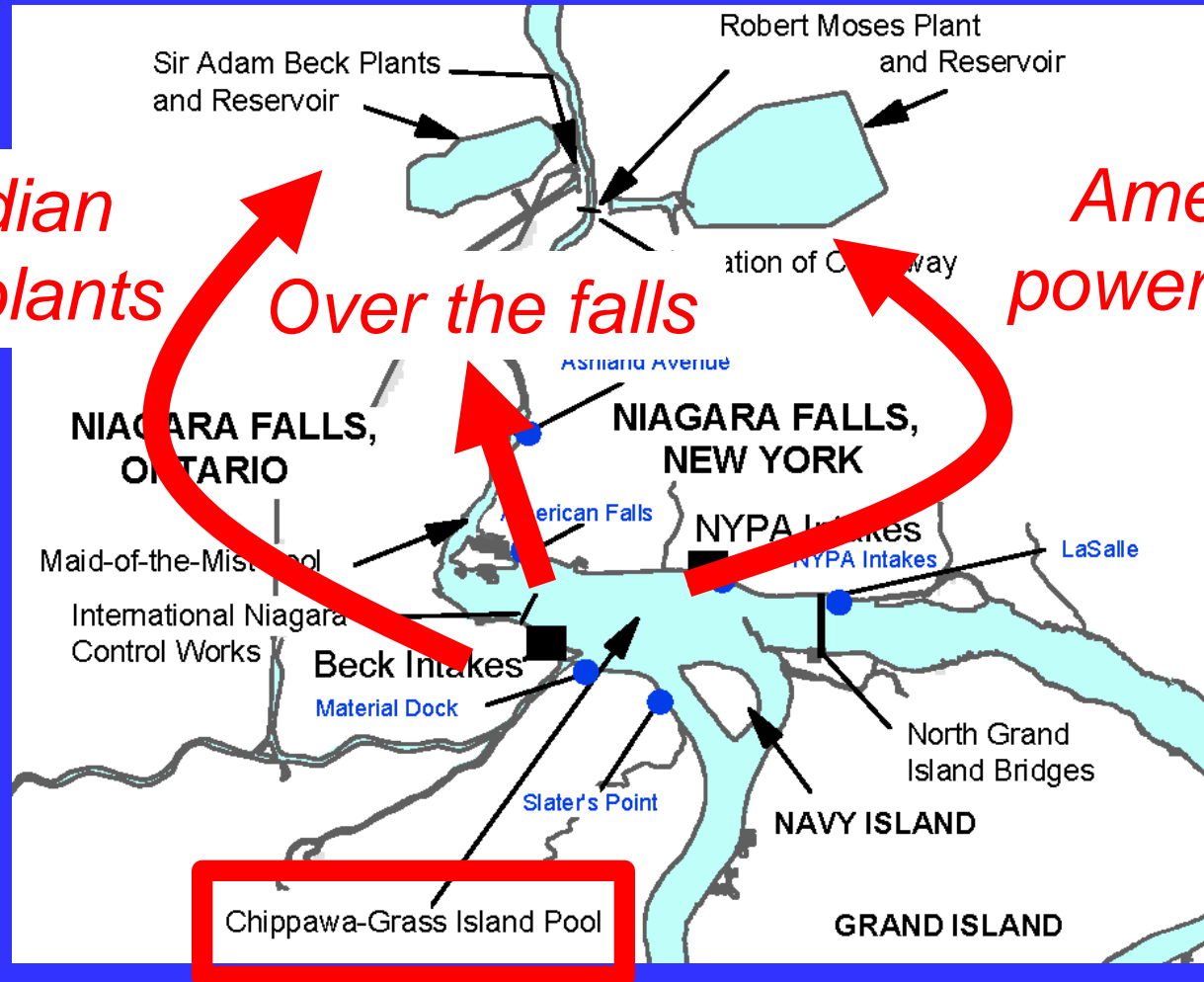


Water in the Chippawa-Grass Island Pool (CGIP) can only leave in one of three ways:

Canadian power plants

Over the falls

American power plants





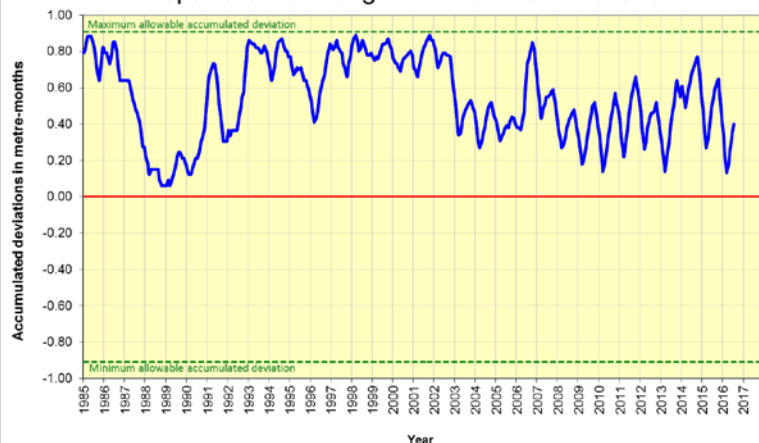
International Niagara Control Works





CGIP Tolerances – 1993 Directive

Accumulated deviation of Material Dock level departure from long-term mean GIP elevation



Change in monthly mean level (m)

Month

March

-0.09

April

0.05

May

0.08

June

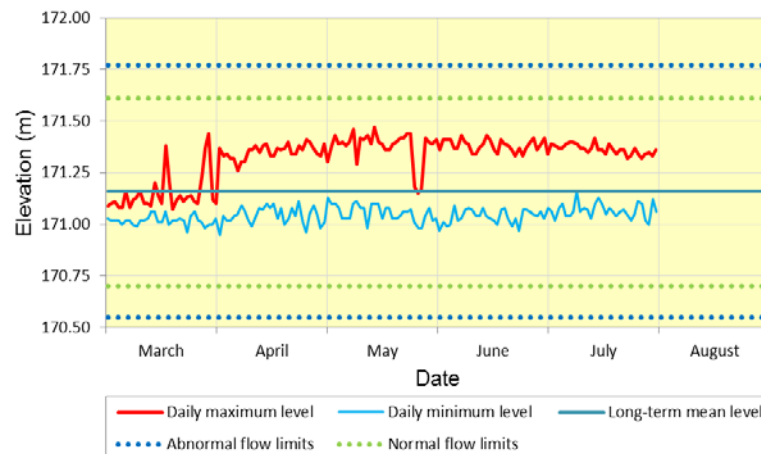
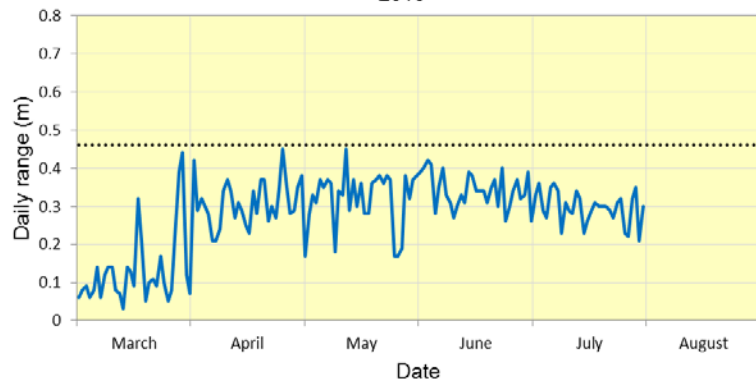
0.07

July

0.07

August

Niagara River daily range at Material Dock gauge
2016





Chippawa-Grass Island Pool Operations

The flow over Niagara Falls went below the minimums set by the 1950 Niagara Treaty 2 times since the last public open house on May 24th and May 25th.





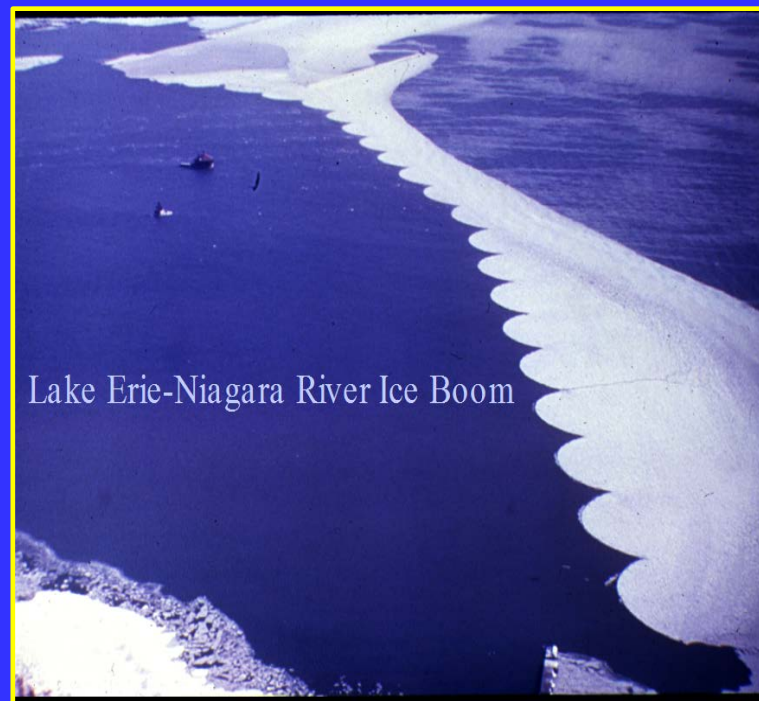
2015-16 Ice Season





Lake Erie-Niagara River Ice Boom

- First installed in 1965
- Designed to help form and sustain a natural ice arch at the mouth of the Niagara River
- Minimizes power losses caused by ice at the intakes in the CGIP





Lake Erie-Niagara River Ice Boom





Recent Ice Cover by Season

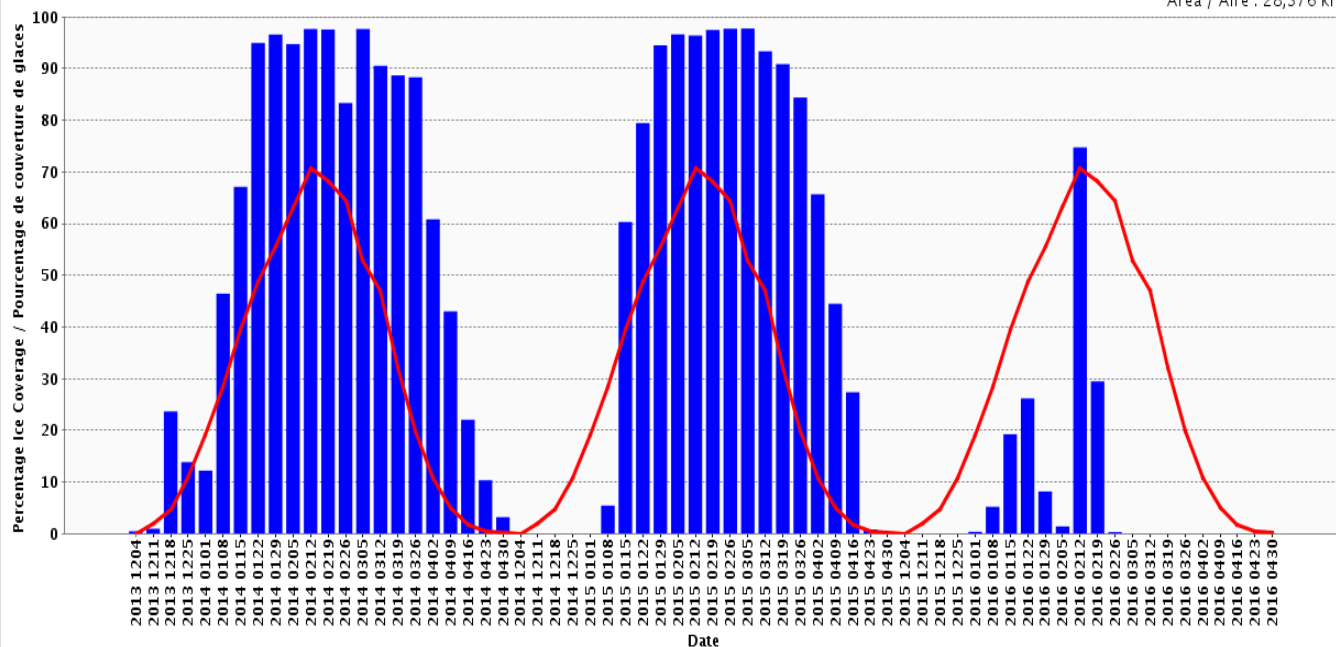
Multiple Seasons: Weekly Ice Coverage for the seasons
2013/14 to 2015/16, Weeks: 1204-0430

Plusieurs saisons: Couverture des glaces hebdomadaire
pour les saisons 2013/14 à 2015/16, Semaines:
1204-0430



Lake Erie /
Lac Érié

Area / Aire : 28,576 km²



No significant interpolated data / Pas d'interpolation significative

Canadian Ice Service - Environment Canada / Service canadien des glaces - Environnement Canada

(2016-03-08 08:37 IceGraph - Canadian Ice Service/Graphe des glaces - Service canadien des glaces 2.0.7 2014/01/21)

■ Ice Coverage / couverture des glaces ■ Interpolated Data / Interpolée ■ No Data / Aucune donnée — Average / moyenne 1980/81-2009/10

2013-14

2014-15

2015-16




Ice Boom Removal

The ice boom can be removed when less than 650 sq. km (250 sq. mi) of ice is present in the eastern section of Lake Erie





Further Ice Boom Information



International Niagara Board of Control

[Home](#) | [Contact](#) | [Français](#)

[Home](#) [About the Board](#) [News & Information](#) [Publications](#) [Links](#)


Ice Boom Information



New releases from the Board and further information on the boom are below.

The New York Power Authority [Ice Boom camera](#) shows current images of the boom.

This video from the [U.S. Army Corps of Engineers](#) describes the boom and how it is monitored in cooperation with the International Niagara Board of Control and other agencies.

Lake Erie Ice Thickness Flight



From:  To:  [Filter](#) [View All](#)

Title	Date
Ice Boom to be Removed -2016	2016/03/08
Ice Boom Installation Planned Start - Winter 2015	2015/12/15

http://ijc.org/en/_inbc/ice_boom



Further Ice Boom Information

View the report online at:

http://ijc.org/en_/inbc/reports

2014 – 2015 Operation of the Lake Erie – Niagara River Ice Boom

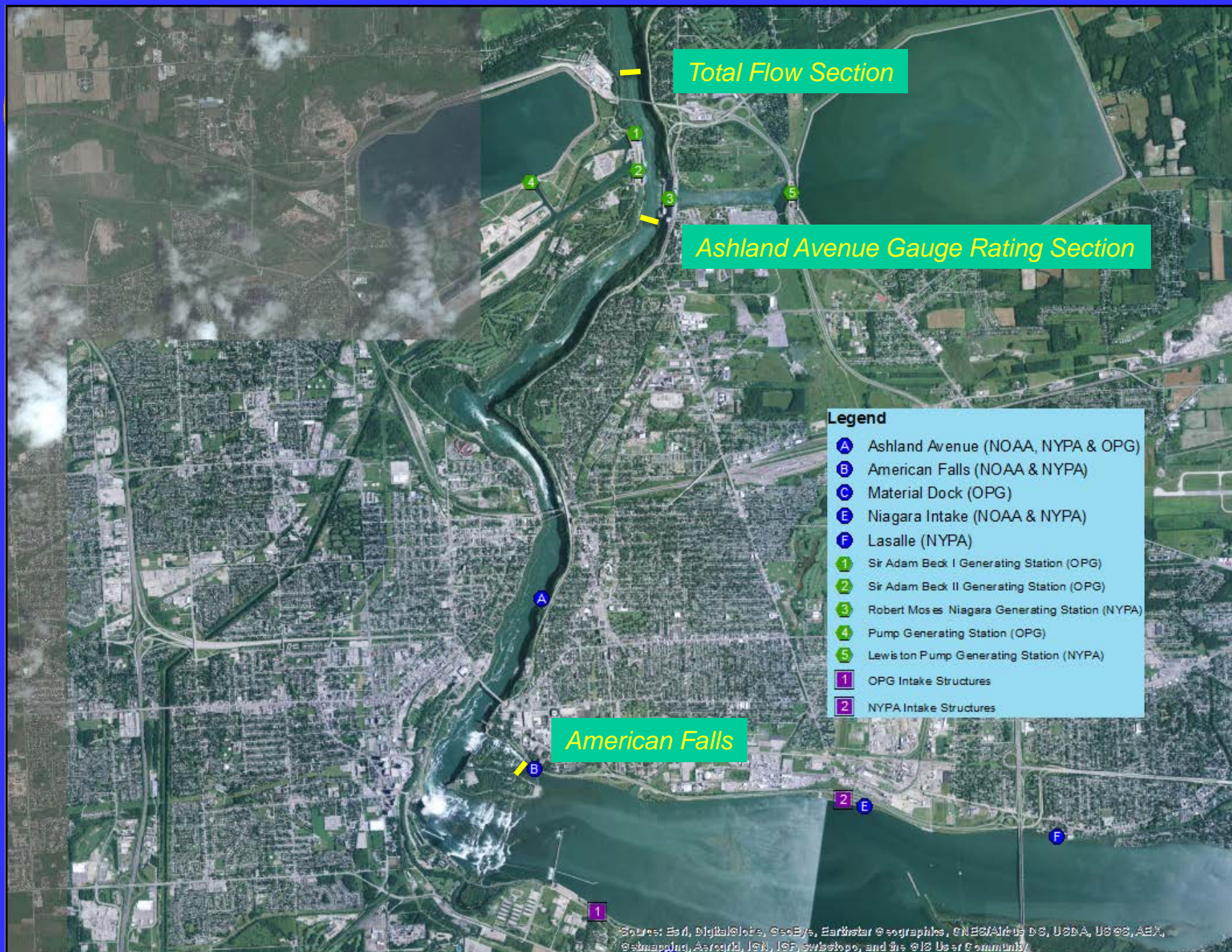
A report to the International Niagara Board of Control by
the International Niagara Working Committee

September 2015





Water Level and Discharge Monitoring





Ashland Avenue Water Level Gauging Station (NOAA station 9063007)



*Station jointly operated by National Oceanic Atmospheric Administration,
New York Power Authority and Ontario Power Generation*

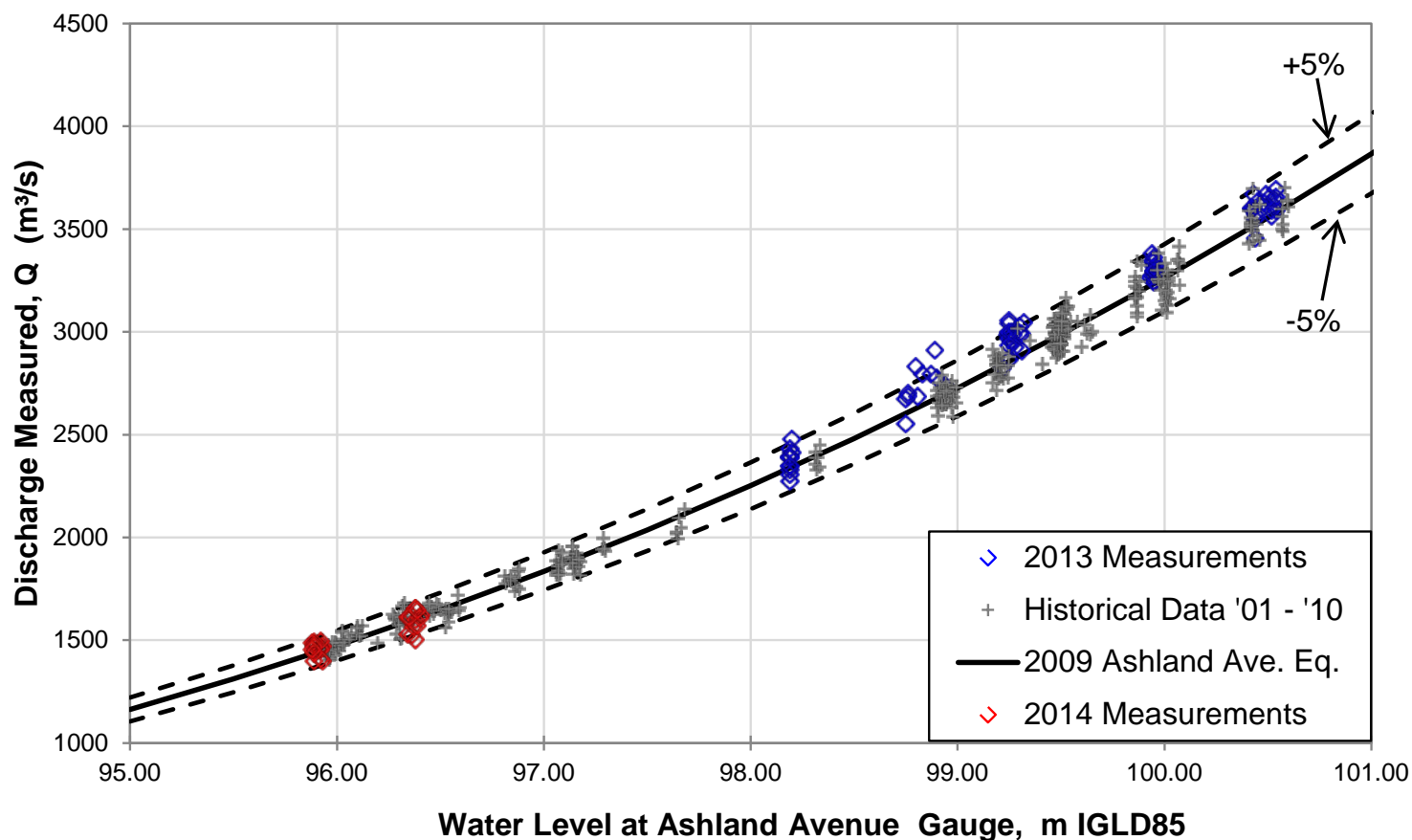


Niagara River Discharge Measurements





Stage vs Discharge Relationship Niagara Falls





Horseshoe and American Falls Recession



Niagara Board's 1953 Directive

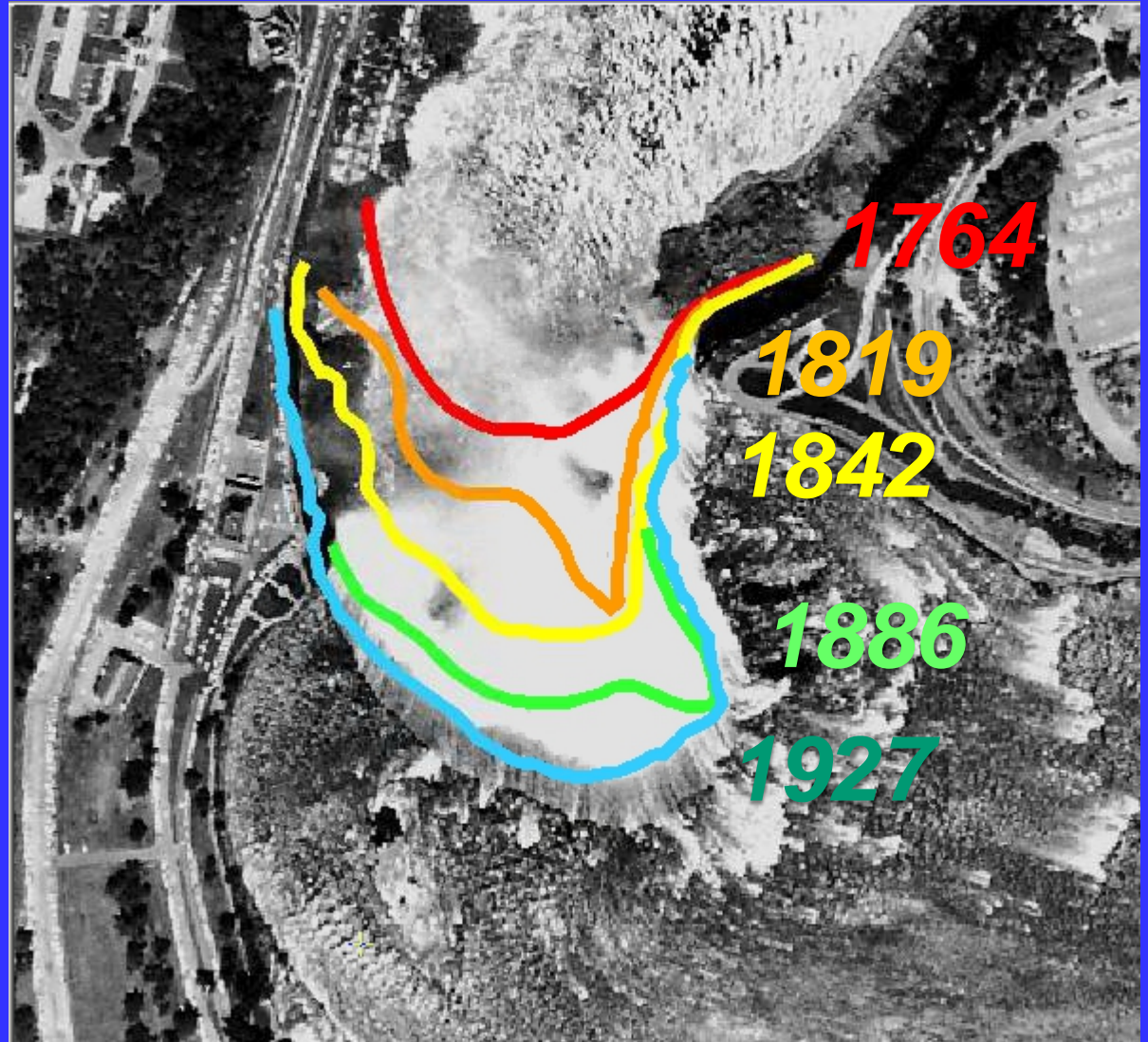
- Clause 2B) of the directive reads:

The board is to “Progressively, with the construction of the remedial works, to exercise control over the maintenance and operation thereof and more particularly the CGIP Control Structure in such a manner as fully to meet the scenic-beauty requirements of Article IV of the Niagara Treaty with the objectives of ensuring:

- “2B)b) ... A dependable and adequate flow over the Horseshoe Falls, including both flanks thereof, sufficient to provide an unbroken crest line, ...”



Recent Horseshoe Falls Recession







Thank you!

**Additional information
can be found at:
*http://ijc.org/en/_inbc***

