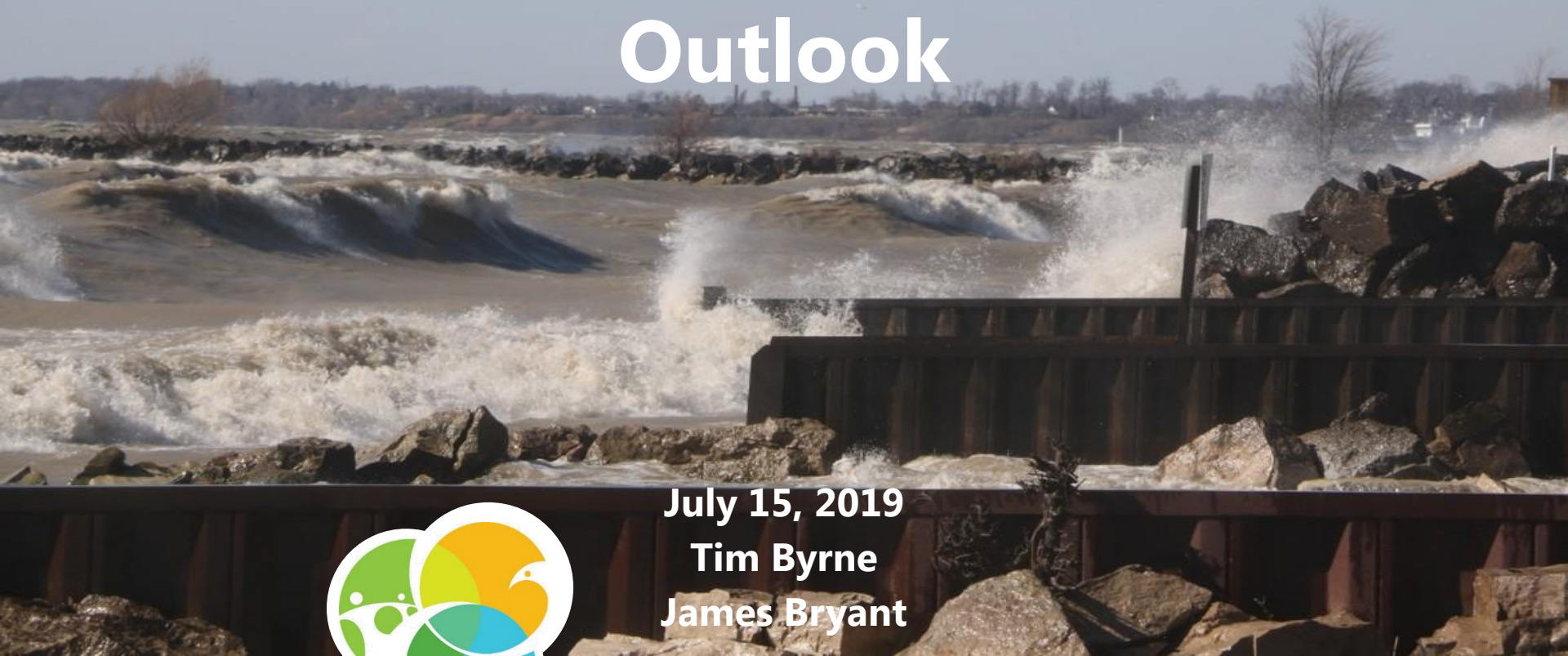


# GREAT LAKES WATER LEVELS

## Current Conditions and Outlook



July 15, 2019

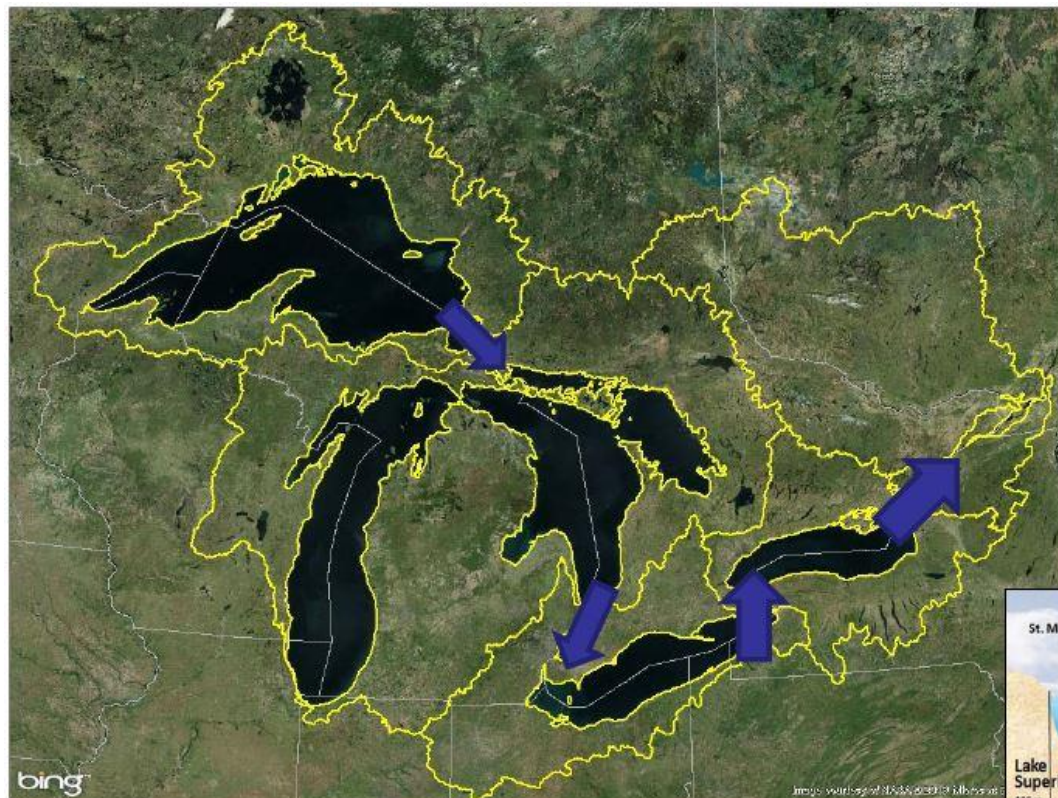
Tim Byrne

James Bryant

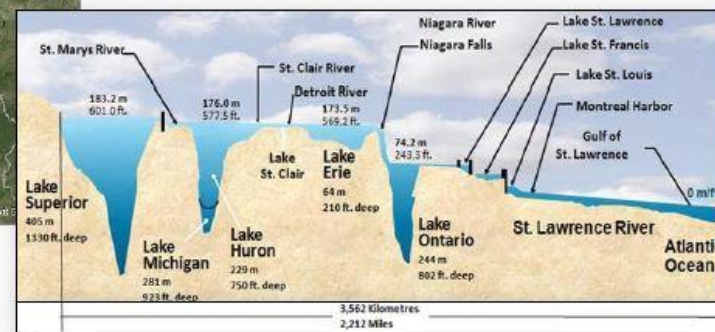


Essex Region  
Conservation Authority  
*sustaining the place for life*

# The Great Lakes – St. Lawrence System



	Surface Area
Superior	82,100 km <sup>2</sup>
Michigan-Huron	117,000 km <sup>2</sup>
Erie	25,700 km <sup>2</sup>
Ontario	19,000 km <sup>2</sup>
	Volume
Superior	12,100 km <sup>3</sup>
Michigan-Huron	8,460 km <sup>3</sup>
Erie	484 km <sup>3</sup>
Ontario	1,640 km <sup>3</sup>



Environment and  
Climate Change Canada

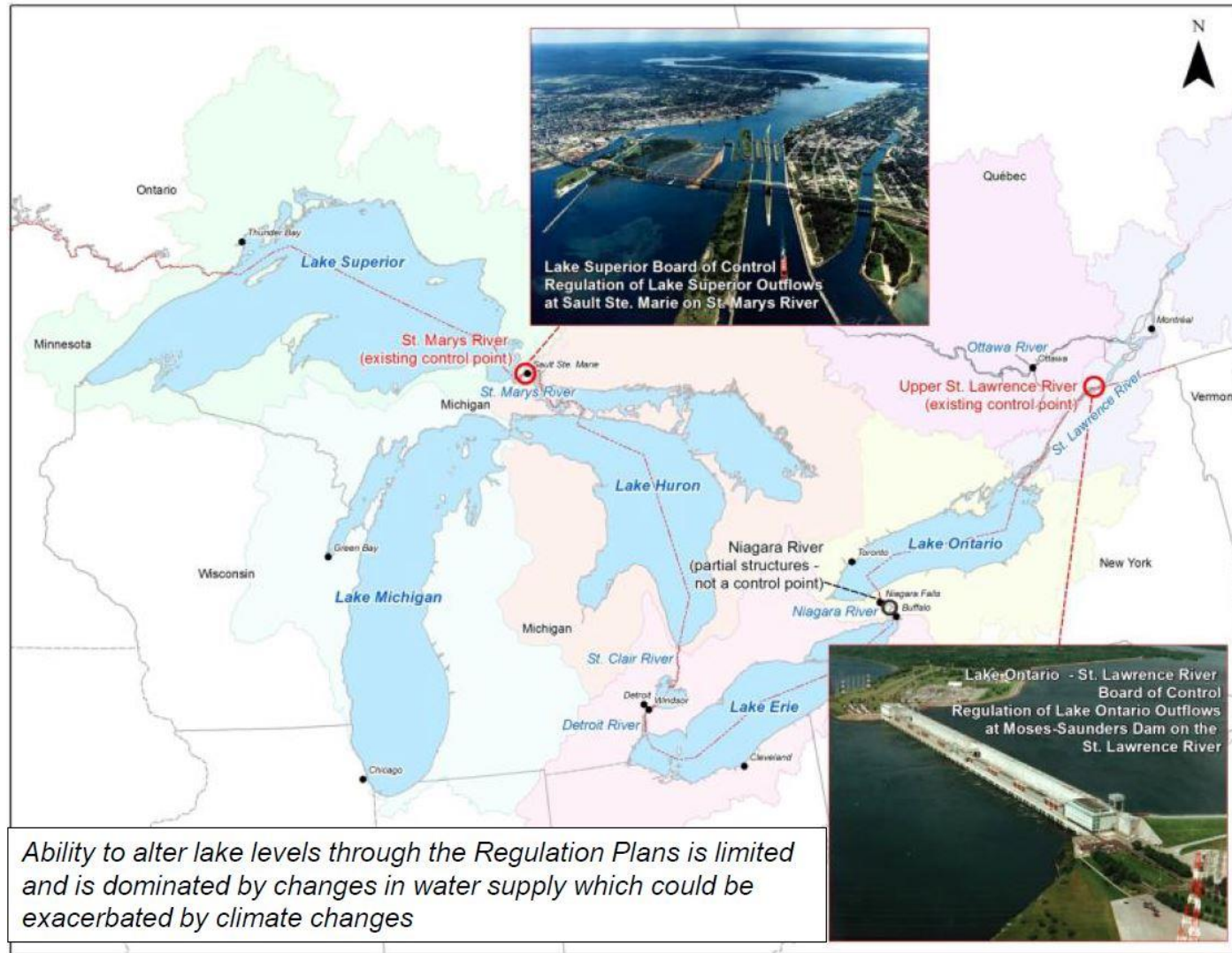
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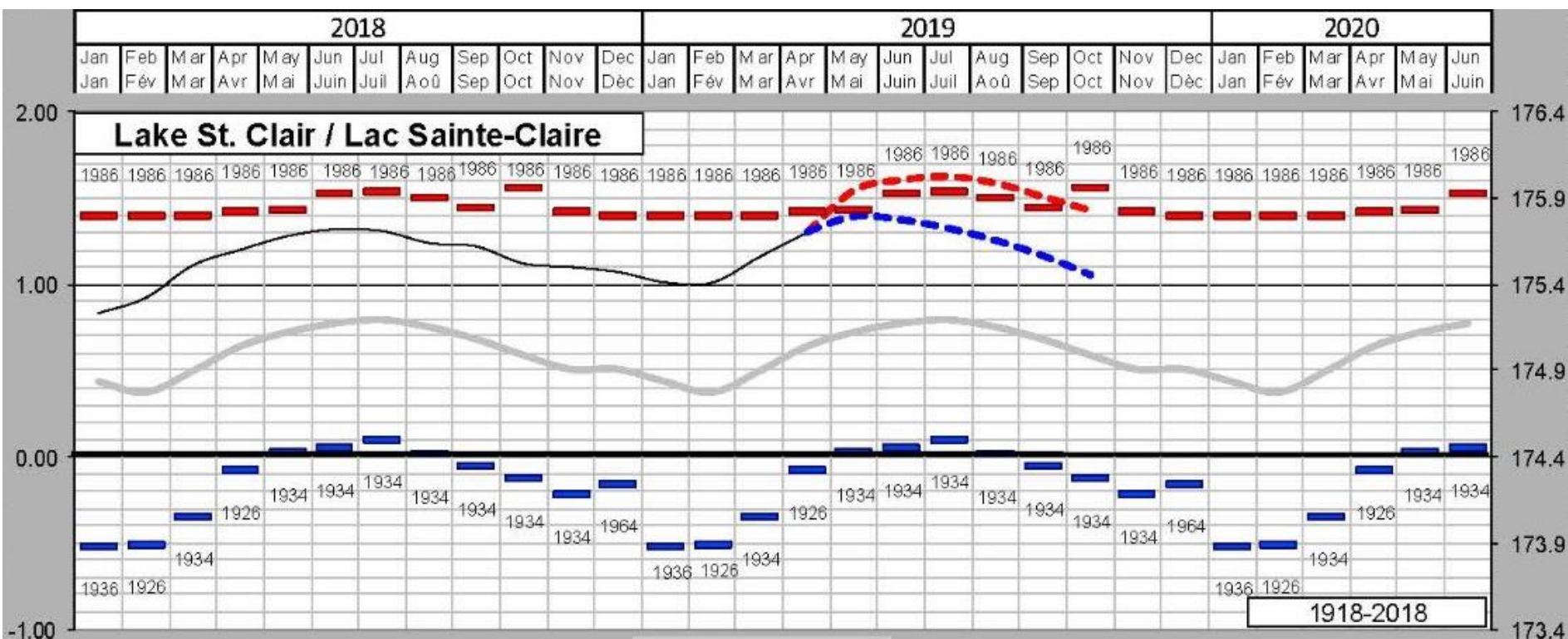




# IJC Great Lakes Boards of Control



# Current Water Levels / Projections



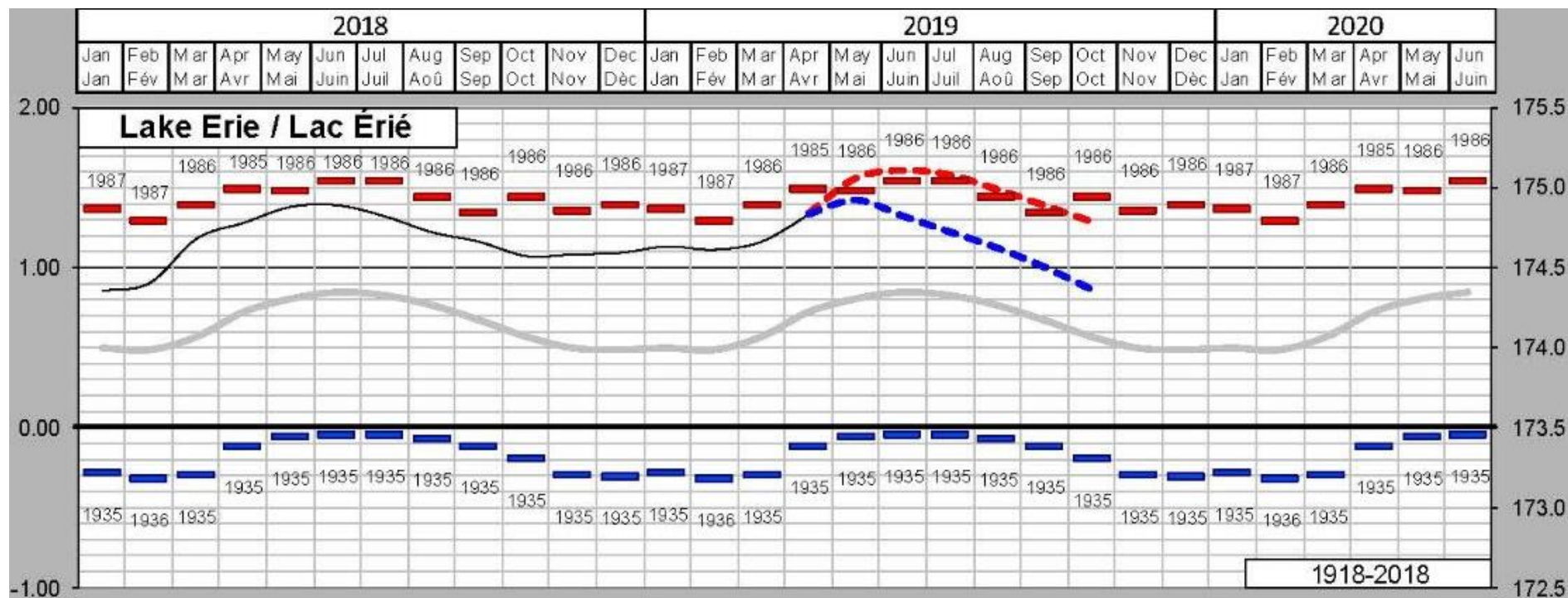
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# Current Water Levels / Projections



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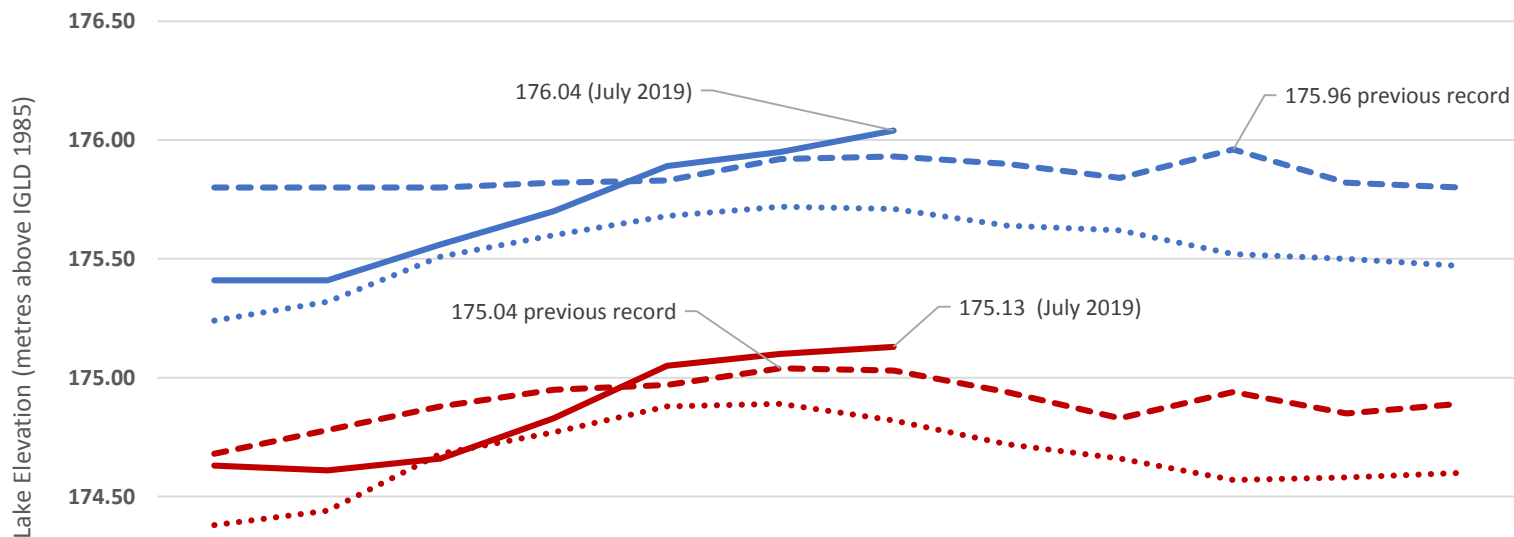
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# Current Water Levels

Lake Levels



174.00

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
--- St. Clair 1986	175.80	175.80	175.80	175.82	175.83	175.92	175.93	175.90	175.84	175.96	175.82	175.80
.... St. Clair 2018	175.24	175.32	175.51	175.60	175.68	175.72	175.71	175.64	175.62	175.52	175.50	175.47
— St. Clair 2019	175.41	175.41	175.56	175.70	175.89	175.95	176.04					
--- Erie 1986	174.68	174.78	174.88	174.95	174.97	175.04	175.03	174.94	174.83	174.94	174.85	174.89
.... Erie 2018	174.38	174.44	174.68	174.77	174.88	174.89	174.82	174.72	174.66	174.57	174.58	174.60
— Erie 2019	174.63	174.61	174.66	174.83	175.05	175.10	175.13					





# Great Lakes Levels

## Current Lake Levels with respect to Historical Levels (cm above or below)

Lake	Long-Term Monthly Avg <sup>a</sup>	Compared to one year ago	Compared to Monthly High	Compared to All-Time High
Lake Superior	+ 34	+ 20	+ 3	-6
Lake Michigan-Huron	+ 79	+ 39	-2	-13
Lake St. Clair	+ 86	+ 35	+ 13	+ 10
Lake Erie	+ 84	+ 35	+ 14	+ 13
Lake Ontario	+ 85	+ 80	+ 17	+ 5

<sup>a</sup> Period of Record is 1918 - 2018

Note: Information obtained from Environment and Climate Change Canada



# Great Lakes Outflow Data

Lake	Outflow from the Great Lakes <sup>a</sup>			
	December	January	February	March
Lake Superior	112%	115%	135%	138%
Lake Michigan-Huron	116%	119%	118%	124%
Lake Erie	121%	126%	125%	122%
Lake Ontario	124%	116%	126%	128%

<sup>a</sup> As a percentage of monthly long-term average

Note: Figures are preliminary and obtained from Environment and Climate Change Canada



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Climate Change Canada

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# Great Lakes Precipitation Data

## February precipitation over the Great Lakes <sup>a,b</sup>

Lake	%
Great Lakes Basin	139%
Lake Superior	172%
Lake Michigan-Huron	143%
Lake Erie (including Lake St. Clair)	114%
Lake Ontario	105%

<sup>a</sup> As a percentage of February long-term average.

<sup>b</sup> United States Army Corps of Engineers

Note : These figures are preliminary.



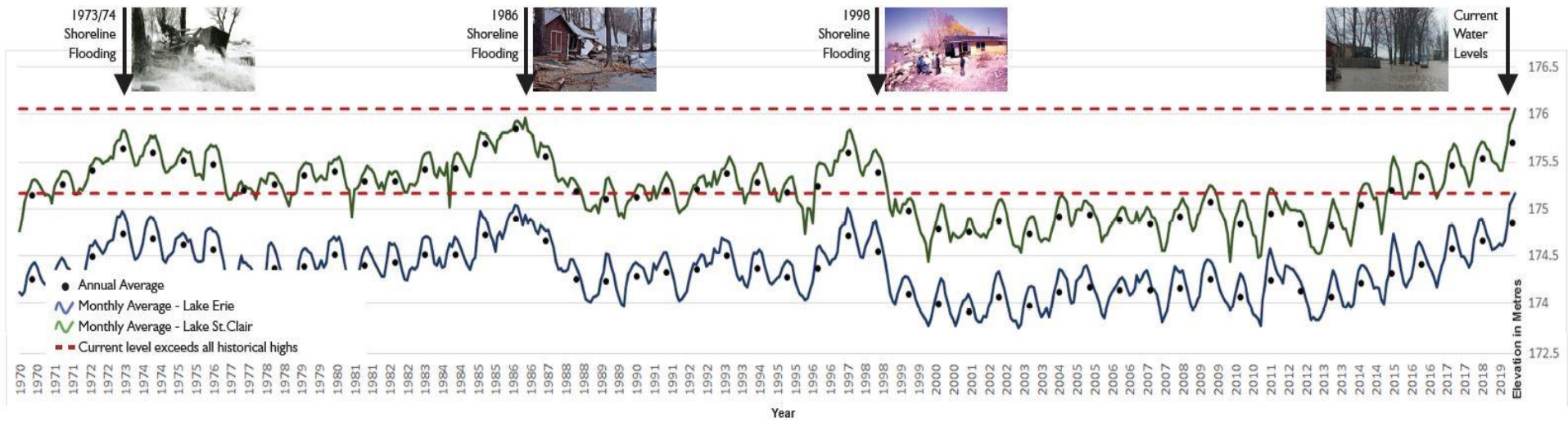
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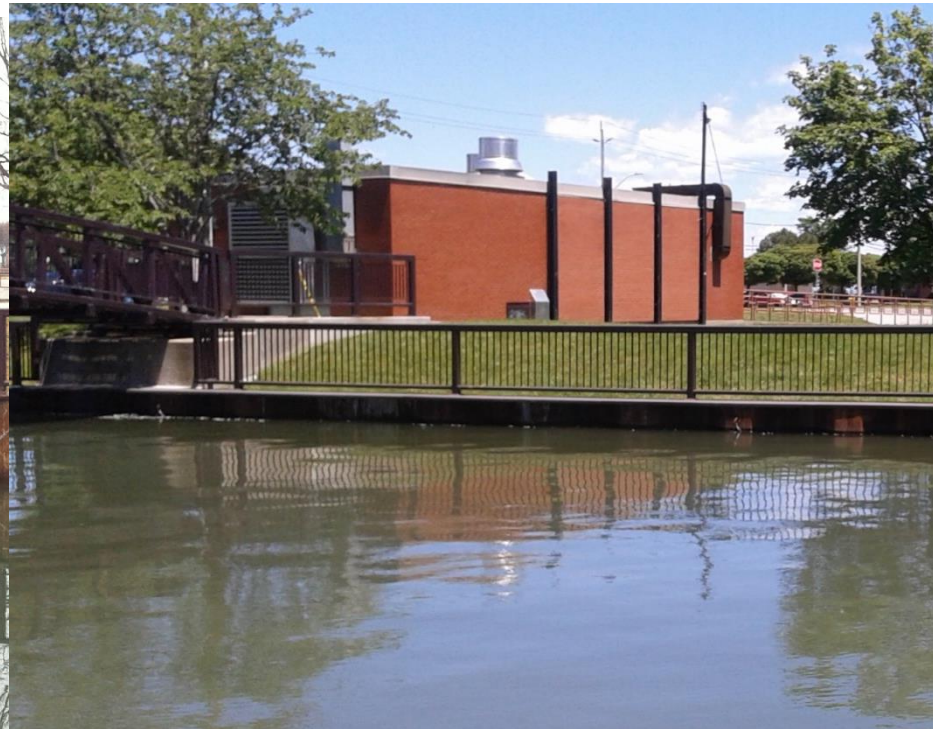
# Lake Erie and Lake St. Clair



# Little River – Little River Pump Station at Riverside Drive



March 2015



June 2017





**UNITED STATES**

**LAKE ST. CLAIR**

**DETROIT RIVER**

**PELEE ISLAND TO BAR POINT**  
The river can be squeezed at both ends from a northeast wind, with water backing up from Erie and pushing in from St. Clair.

**LAUZON ROAD TO PIKE CREEK**  
A natural and artificially constructed landform along portions of shoreline offers some protection; area can be a metre or more lower than flood creating lake level.

**MOUTHS OF ALL CREEKS AND WATERWAYS**  
Northeast winds can build up a wall of water which prevents the watercourse from draining. Much of the area intensively developed with older residences built prior to ERCAs regulations. Watercourses leading into St. Clair are generally at a higher risk due to the low lying nature and concentration of existing development along these waterways.

**CEDAR BEACH**  
A long stretch from Kingsville to Oxley; several hundred properties at risk, flood prone area extends inland. Cedar Creek can back up with Erie pushed to shore by east, southeast and northeast winds.

**SOUTHEAST LEAMINGTON**  
Includes Pulley Road, Coterie Park, Elm Dale Subdivision, East Beach and Marentette Beach in Leamington, susceptible to northeast and east winds.

**POINT PEELE**  
The greatest threat would come from a prolonged, strong northeast, east and southeast wind.

**KINGSVILLE TO POINT PEELE**  
Northeast and east winds of similar strength and duration will raise lake levels and could result in flooding.

**PELEE ISLAND**  
Three-quarters of the island dyked, northeast. Winds from east and southeast could result in flooding.

**BIG CREEK**  
At similar risk to Cedar Beach with potential flooding from Erie and Big Creek.

**WIND**

**WIND**

**WIND**

**WIND**

**WIND**

**WIND**

**WIND**

**WIND**

**WIND**

**WIND**

**FLOOD PRONE AREAS**

**LOWER THAMES**

**LAKE ERIE**

With lake levels rising due to the impacts of the past two winter seasons, the Essex Region Conservation Authority is presently working with all municipal partners to ensure that they are prepared in case of flooding. Local lake levels have been most impacted by the snowfall and resulting snowmelt from the upper Great Lakes received over the past two winters. Winds – especially those from the north east – can more significantly impact shoreline municipalities and residents and are potentially more concerning for these areas than rainfall. Strong winds push the lake waters against the shoreline and the resulting wave energy can be immediately and significantly destructive to these properties.

# Flood Watch/Warning



## FLOOD WATCH

The Essex Region Conservation Authority advises that, due to predicted winds out of the southwest blowing at 30 to 40 kph, with potential gusts to 70 kph, the possibility of shoreline erosion and flooding resulting from wave overtopping breakwalls and resulting spray exists within the region particularly for areas in the east limit of the Town of Essex, the Town of Kingsville and the western portions of the Municipality of Leamington west of Point Pelee National Park and the west side of Pelee Island.

People should take extra caution and avoid shoreline areas. Waves overtopping breakwalls/shorelines can be extremely dangerous. Standing water can also present its own unseen hazards. Children, pets and livestock should be kept away from flowing water, standing water and breakwall/shoreline areas.

Weather forecasts will continue to be monitored and updates provided as required.

## Flood Status



## FLOOD WARNING

The Essex Region Conservation Authority advises that, the previously issued Watershed Conditions Statement – Water Safety (issued at 4:00 pm on Friday, May 19, 2017) has been upgraded to a **FLOOD WARNING** for portions of the Municipality of Leamington. Due to continuing winds from the east at 30 kph, with gusts to 50 kph, flooding is occurring within the Cotterie Park Road area. In the affected area, portions of the traveled road surface and private lands are covered with water. Flooding, shoreline erosion and damaging waves may also impact other shoreline areas throughout the night along the east shoreline of the Municipality of Leamington between Wheatley Harbour and Point Pelee National Park as the winds continue to blow from the east. The public is advised to avoid these areas. People who must access these areas are advised to use extreme caution when traveling through floodwater.

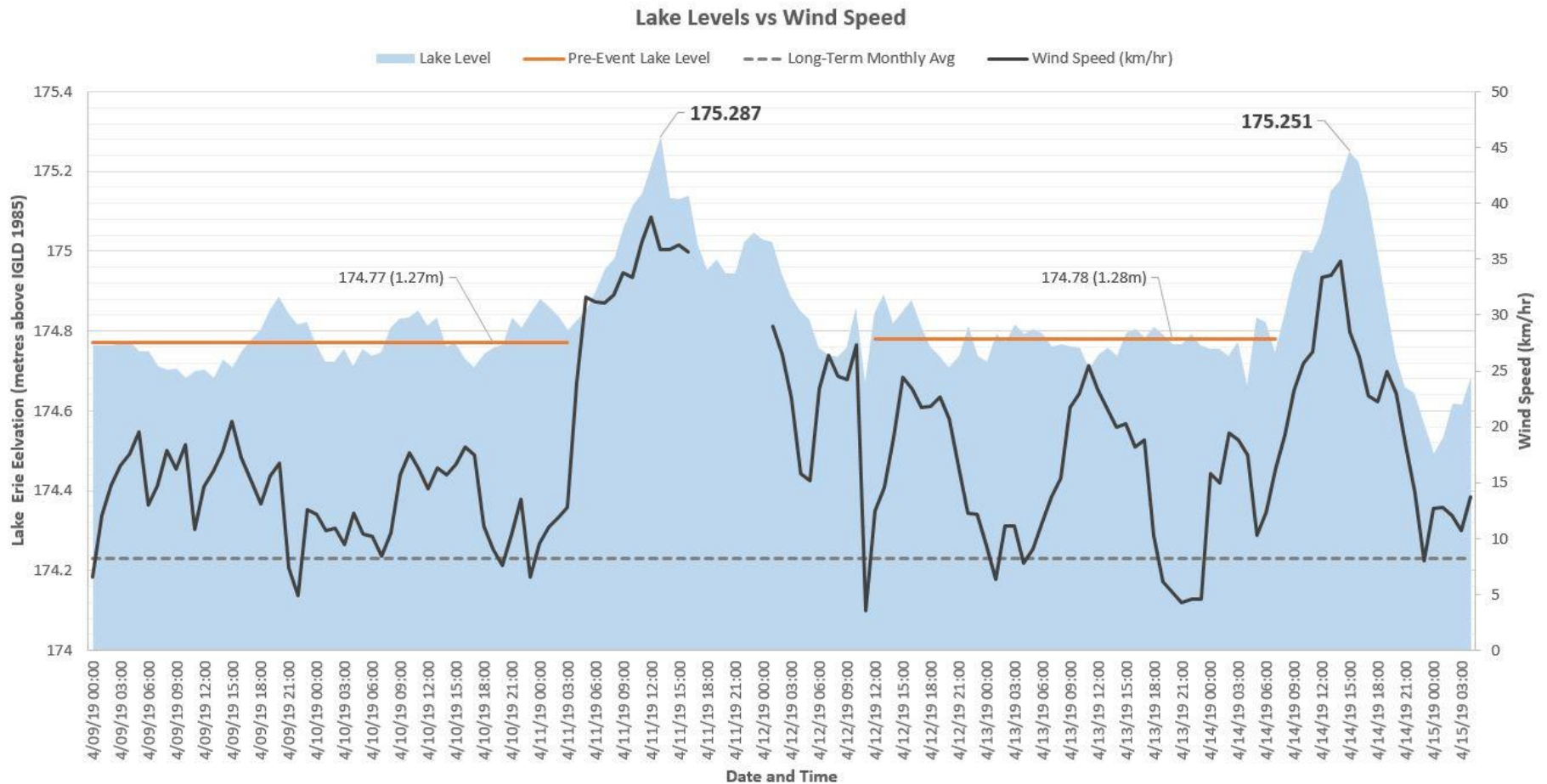
Due to the elevated lake levels and the easterly winds, the Municipality of Leamington should also monitor the dykes in the Southeast Leamington area.

Due to the predicted wind speed and duration, areas along the Detroit River may experience increased water levels due to the lake setup.

Due to continuing easterly winds, the previously issued Watershed Conditions Statement – Water Safety (issued at 4:00 pm on Friday, May 19, 2017) has been upgraded to a **FLOOD WATCH** for the Lake Erie shoreline on the east side of Pelee Island to include the possibility of

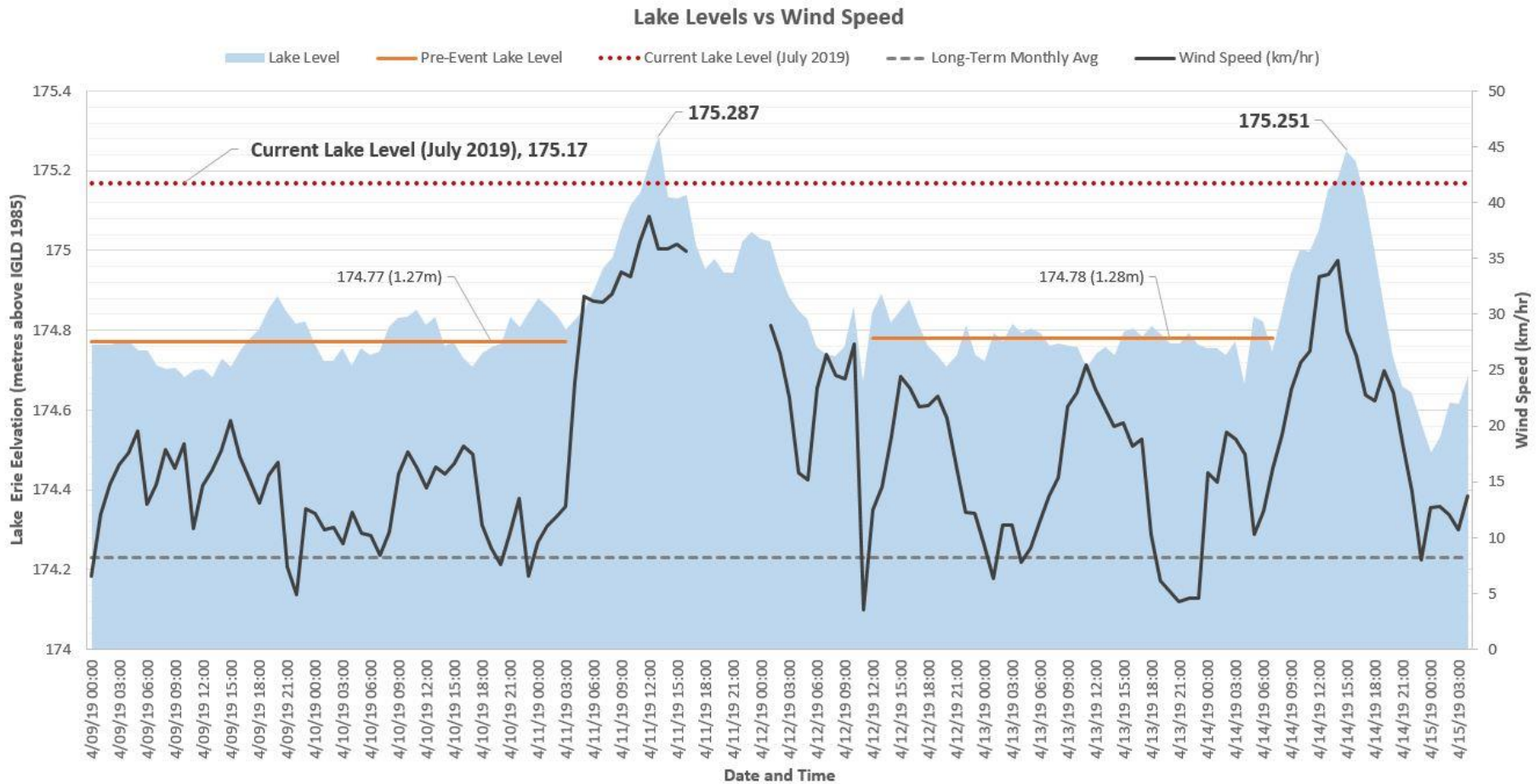


# Recent Storm Events (Apr. 11, 14)





# Recent Storm Events (Apr. 11, 14)



# Recent Storm Events



Lake Erie - Sturgeon Creek Outlet



# Recent Storm Events



Lake Erie – Point Pelee Drive





# Recent Storm Events



Lake Erie – Cotterie Park Road 2019 (April 11, 14 and May 1, 8, 12)



# Recent Storm Events



Lake Erie – Cotterie Park Road (2019)





# Recent Storm Events



Lake Erie – Cotterie Park Road (2018)





# Recent Storm Events



Lake Erie – Cotterie Park Road (2018)





# Recent Storm Events



Lake Erie – Pelee Island





# Recent Storm Events



Lake Erie – Pelee Island





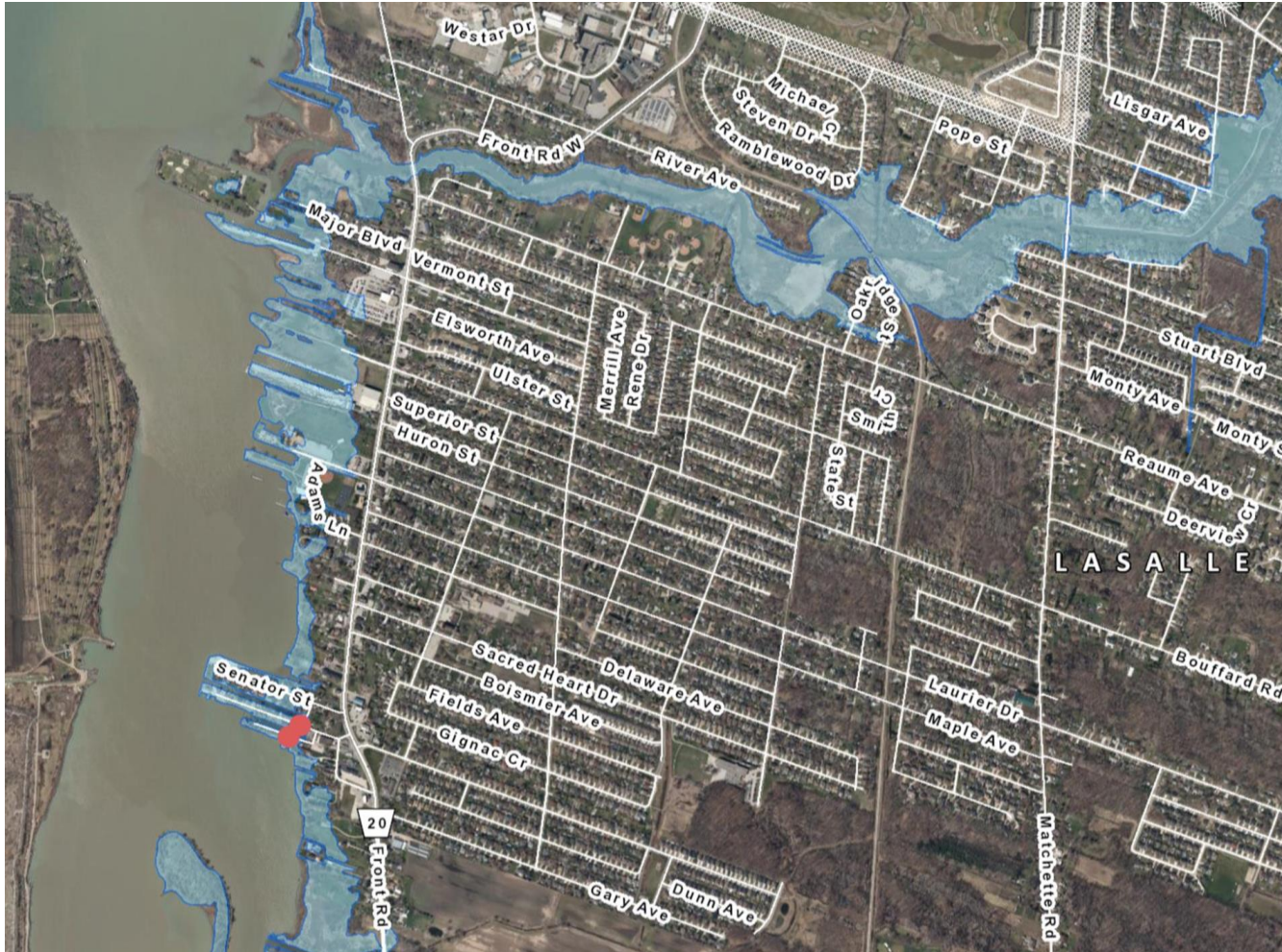
# Recent Storm Events



Lake St. Clair



# Potential Lake Flooding (key map)



Sunnyside Drive, Wahnetta Avenue





# Potential Lake Flooding



Sunnyside Drive





# Potential Lake Flooding



Sunnyside Drive



# Potential Lake Flooding

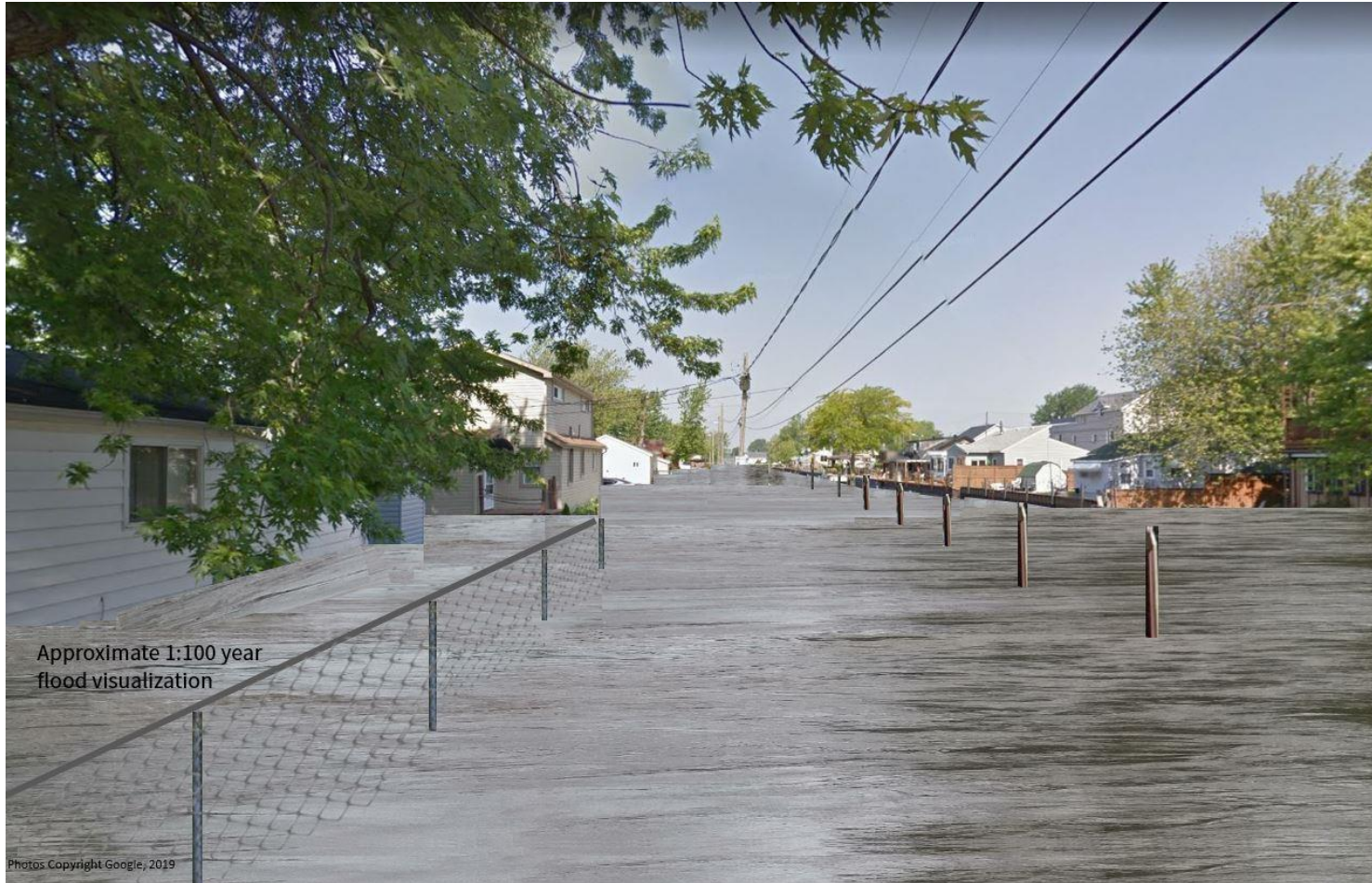


Sunnyside Drive





# Potential Lake Flooding



Sunnyside Drive





# Potential Lake Flooding



Wahneta Ave. and Manhattan St.



# Potential Lake Flooding

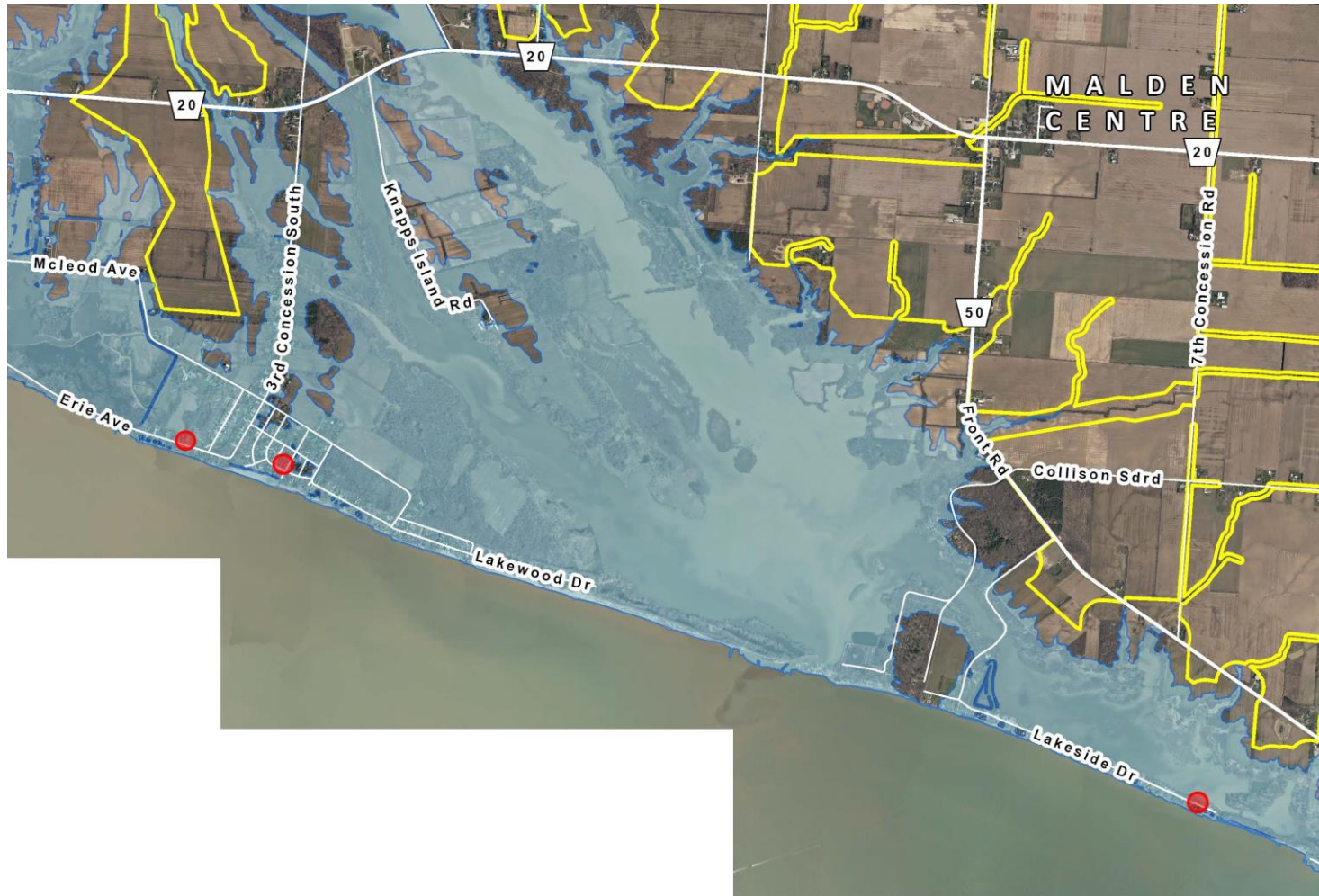


Wahneta Ave. and Manhattan St.





# Potential Lake Flooding (key map)



Willow Beach Road, Claremont Lane, Lakeside Drive





# Potential Lake Flooding



Willow Beach Road



# Potential Lake Flooding



Willow Beach Road





# Potential Lake Flooding



Claremont Lane



# Potential Lake Flooding



Claremont Lane





# Potential Lake Flooding



Lakeside Drive



# Potential Lake Flooding



Lakeside Drive





# Recent Storm Events (Rainfall)



Lesperance Road





# Recent Storm Events (Rainfall)



Lesperance Road – one block south of Riverside Drive





# Questions

