

**TOWNSHIP OF SOUTH GLENGARRY  
SPECIAL MEETING OF COUNCIL  
AGENDA**

Monday, March 20, 2023, 5:00 PM  
Tartan Hall - Char-Lan Recreation Centre  
19740 John Street, Williamstown

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	Pages
1. CALL TO ORDER	
2. APPROVAL OF AGENDA	
3. DECLARATION OF PECUNIARY INTEREST	
4. APPROVAL OF MINUTES	
5. PRESENTATIONS AND DELEGATIONS	
5.a Floodplain Mapping Presentation - Joanne Haley	2
6. ACTION REQUESTS	
7. BY-LAWS	
8. ITEMS FOR CONSIDERATION	
9. CONSENT	
10. CLOSED SESSION	
11. CONFIRMING BY-LAW	
12. ADJOURNMENT	



# Floodplain Mapping

## March 20, 2023

Township of  
South Glengarry

# Flood Plain Mapping

- Lands adjacent to watercourses are zoned as either Flood Plain, Flood Plain- Holding or Natural Hazard
- These lands are determined by the flood plain mapping produced by the Province of Ontario and are incorporated into the Township's Zoning By-law

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# Flood Plain Mapping

- What is a **Watercourse**?
  - Means a natural channel where water is flowing continuously or intermittently, possessing a bed and banks, where it usually discharges into a stream or water body

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# Flood Plain Mapping

- What is a **Flood Plain**?
  - Means the area, usually lowlands adjoining a watercourse (river, stream and small inland lake systems) which has been or may be subject to flooding hazards

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# Flood Plain Mapping

- **Flooding Hazard** means the inundation of areas adjacent to a shoreline or a river or a stream system and not ordinarily covered by water:
- 1. along the shores of the St. Lawrence River System, the flooding hazard limit is based on the one hundred year flood level plus an additional allowance for wave uprush and other hazards
- 2. along rivers and streams, the flooding hazard limit is the greater of:
  - Flood resulting from rainfall/weather events
  - The one hundred year flood
  - A flood which is greater than above

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# Flood Plain Mapping

- What is the **100-year flood**?
  - For rivers and streams means that flood, based on an analysis of precipitation, snow melt, or a combination thereof, having a return period of 100 years on average, or having a 1% chance of occurring in any given year.
  - Locally, recently, 2014 was a significant high-water year. The return period was 1:20 years.

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# McGillivray Road (2014, 1:20)



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# St. Andrews West (2014, 1:20-yr)



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# Grant's Corners (2014, 1:20-yr)



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# Loyalist Road (2014, 1:20-yr)



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# Raisin River Marine (2014, 1:20-yr)



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# Ottawa River (2019, 1:100-yr)



Flooded homes along Boisé Lane in Cumberland on Sunday, April 28, 2019. Jason White/1310 NEWS



# Flood Plain Mapping

## Flood Plains in South Glengarry

- St. Lawrence River System zoned- Flood Plain- Holding



# Flood Plain Mapping

## Flood Plains in South Glengarry

- Raisin, Beaudette, Delisle Rivers etc. zoned- Natural Hazard



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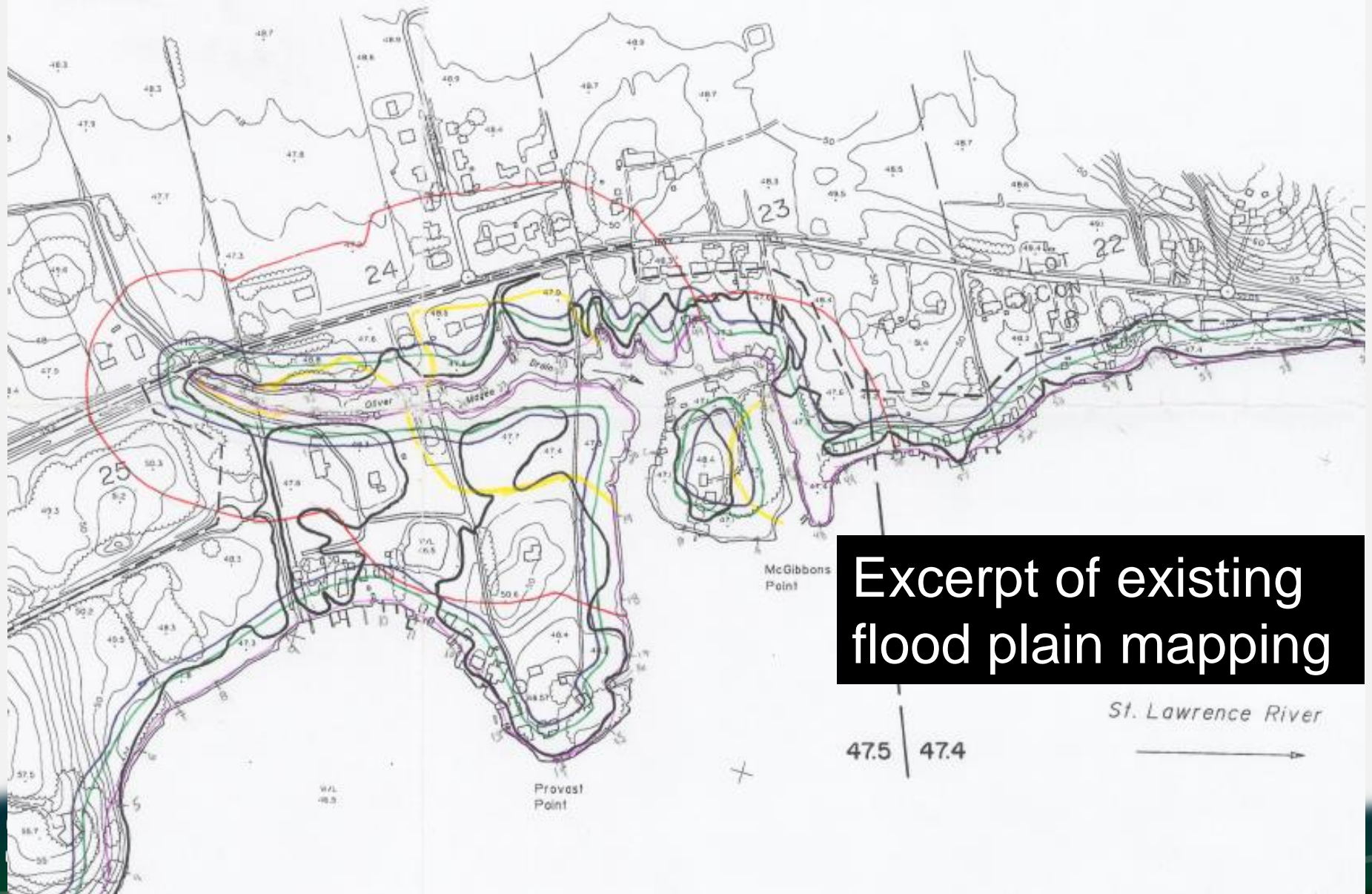


# Flood Plain Mapping

- Why did we need new flood plain mapping?
  - The flood plain mapping that the RRCA uses and implements was prepared by the Province (MNR) and is dated 1989 or 1991
  - Prior to 2005, there were less rules and policies in regards to filling in properties located in a natural hazard or floodplain therefore the current maps are very outdated

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Excerpt of existing  
flood plain mapping

# NDMP Project

- In 2014, the federal government earmarked \$200 million dollars to establish the National Disaster Mitigation Program (NDMP) as part of the Government's commitment to build safer and more resilient communities
- The NDMP program is intended to reduce the impacts of natural disasters on Canadians with investments focused on:
  - Reducing significant occurring flood risks and costs;
  - Advancing availability of private residential insurance for overland flooding

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# NDMP Project



- The intent of the NDMP project was to plan and prepare for disaster mitigation
- South Glengarry will use this mapping both for emergency planning and land use planning

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# NDMP Project

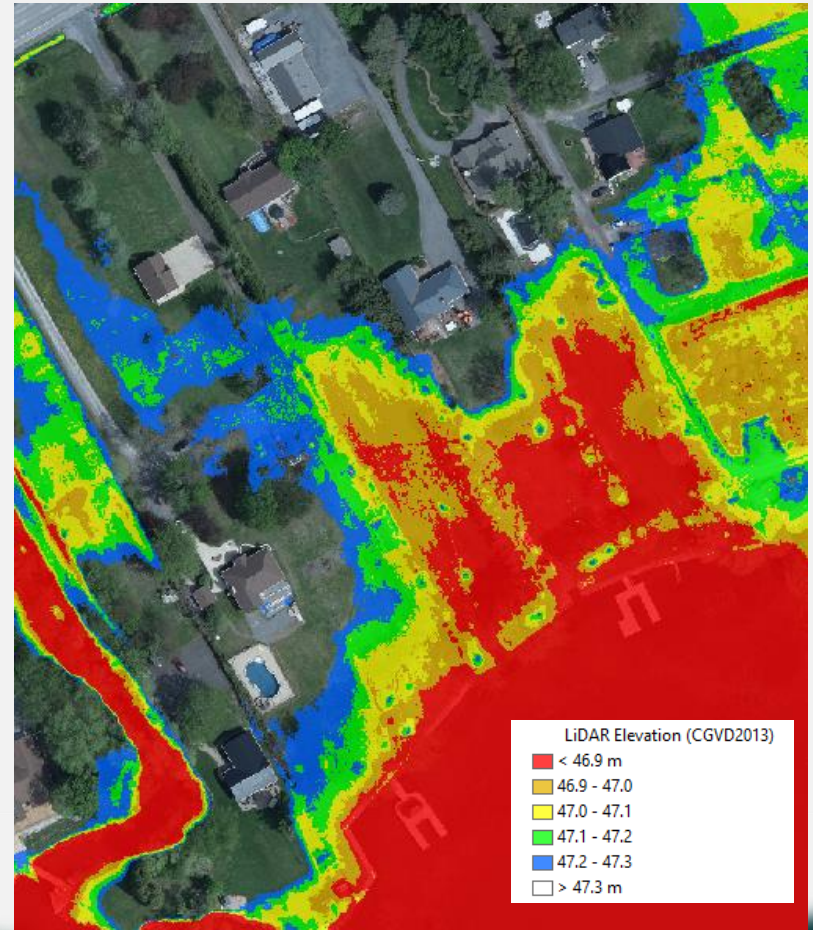
- South Glengarry submitted a funding application on May 1, 2018 to the NDMP
- South Glengarry's application was approved as requested and was to receive \$116,000 which was 49% funding
- The first step of this project was to acquire LiDAR (light detection and ranging) which is precise topographical remote sensing data for the St. Lawrence River and Raisin River
- This part of the project can only occur in the seasons where there is "leaf off" or very little vegetation to allow for very clear imaging to be taken

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# NDMP Project

- Airborne Imaging collected an aerial LiDAR Survey along the St. Lawrence and Raisin Rivers totalling to 48 square kilometers



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# NDMP Project

- The services of Dillon Consulting Ltd., being a professional engineering firm, were retained to complete modeling of portions of the St. Lawrence River and the Raisin River to determine the flooding potential
- Dillon Consulting Ltd. produced flood plain mapping that delineated the 1:100 year flood extent
- The Raisin Region Conservation Authority staff (Phil Barnes) peer reviewed the modeling and the final flood plain mapping

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# NDMP Project

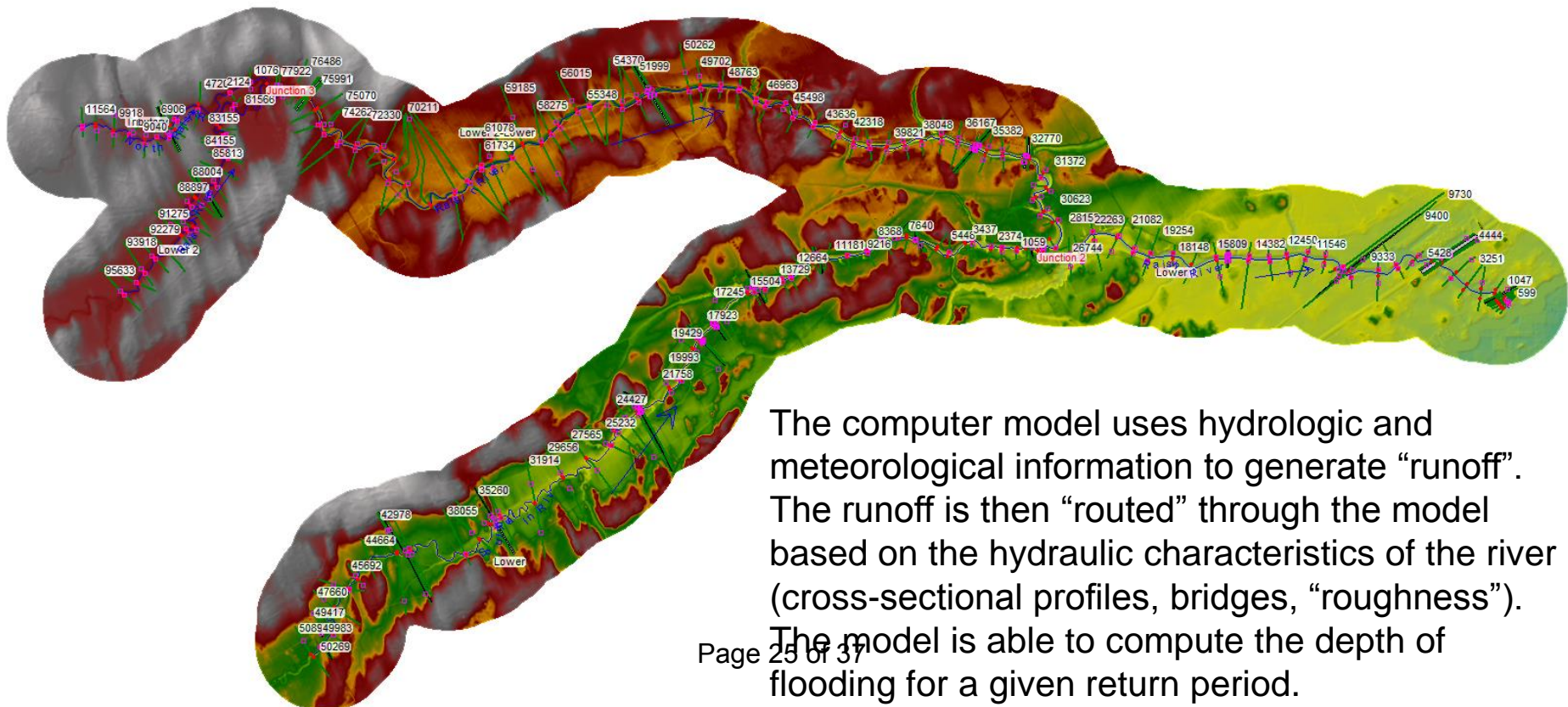
- Dillon Consulting Ltd. was paid to produce flood plain maps to demonstrate the existing flood plain and the proposed flood plain
- This was completed as there was a perception that a majority of our flood plain would be removed due to portion of the St. Lawrence River in our Community being located between 2 dams

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# Raisin River – new Modelling

- Engineering firm, Dillon, prepared a new computer model of the Raisin River.



The computer model uses hydrologic and meteorological information to generate “runoff”. The runoff is then “routed” through the model based on the hydraulic characteristics of the river (cross-sectional profiles, bridges, “roughness”). The model is able to compute the depth of flooding for a given return period.

# How accurate is the Model?

Figure 4-2: Calibrated Modelled vs. Observed Discharge Snowmelt Event (2008) for the Raisin River at Williamstown (02MC001)

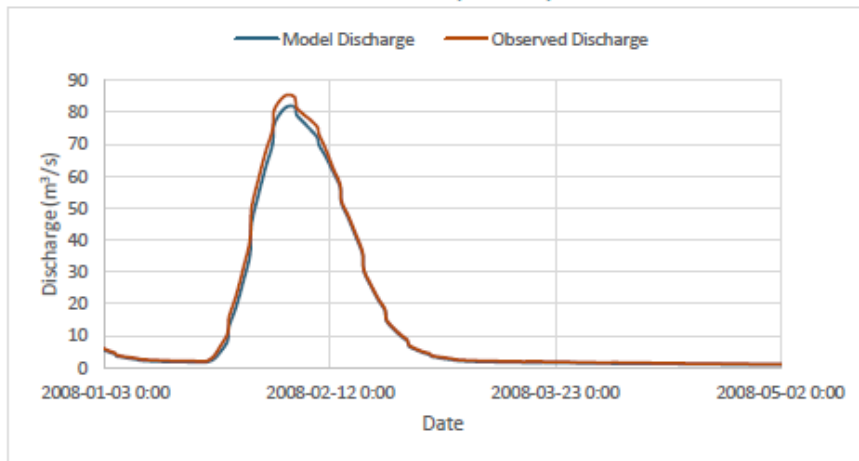
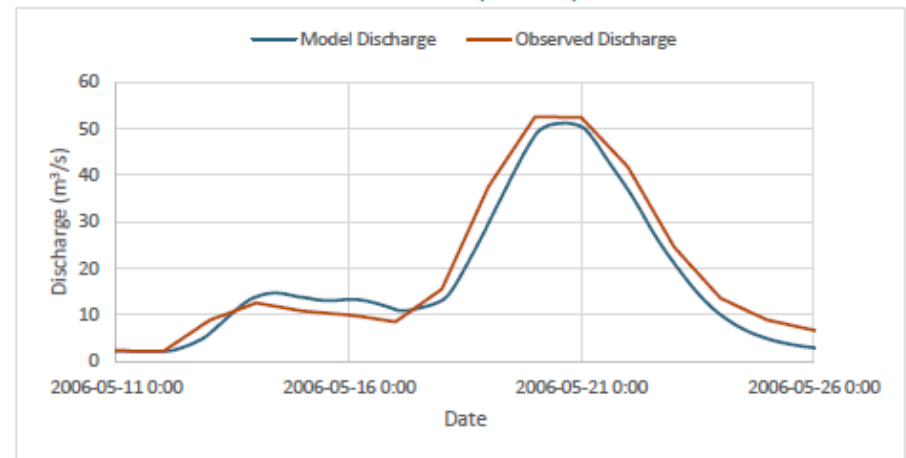


Figure 4-4: Calibrated Modelled vs. Observed Discharge Rainfall Event (2006) for the Raisin River At Williamstown (02MC001)



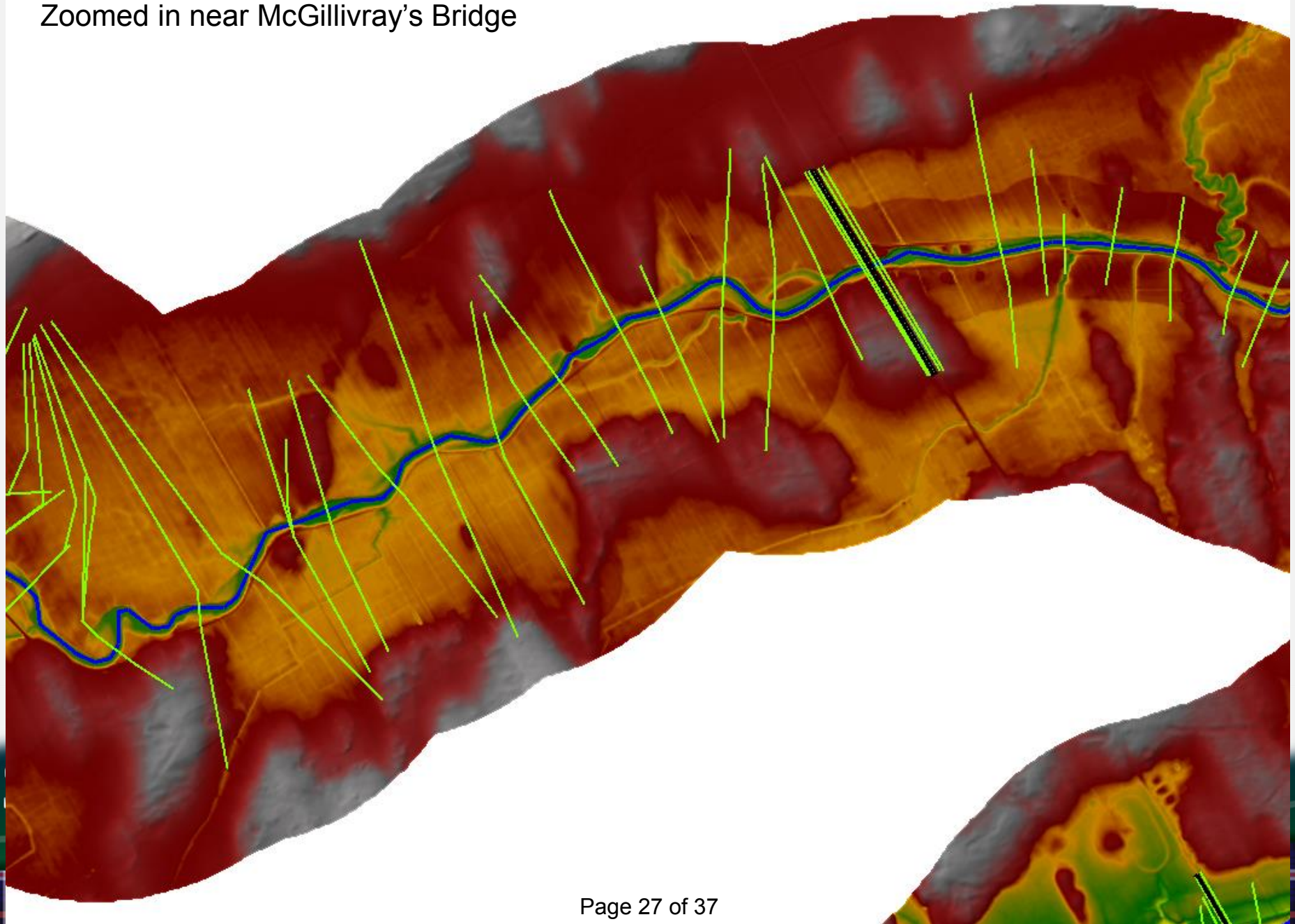
The computer model output was compared to measured flows from past events, including snowmelt and rainfall events.

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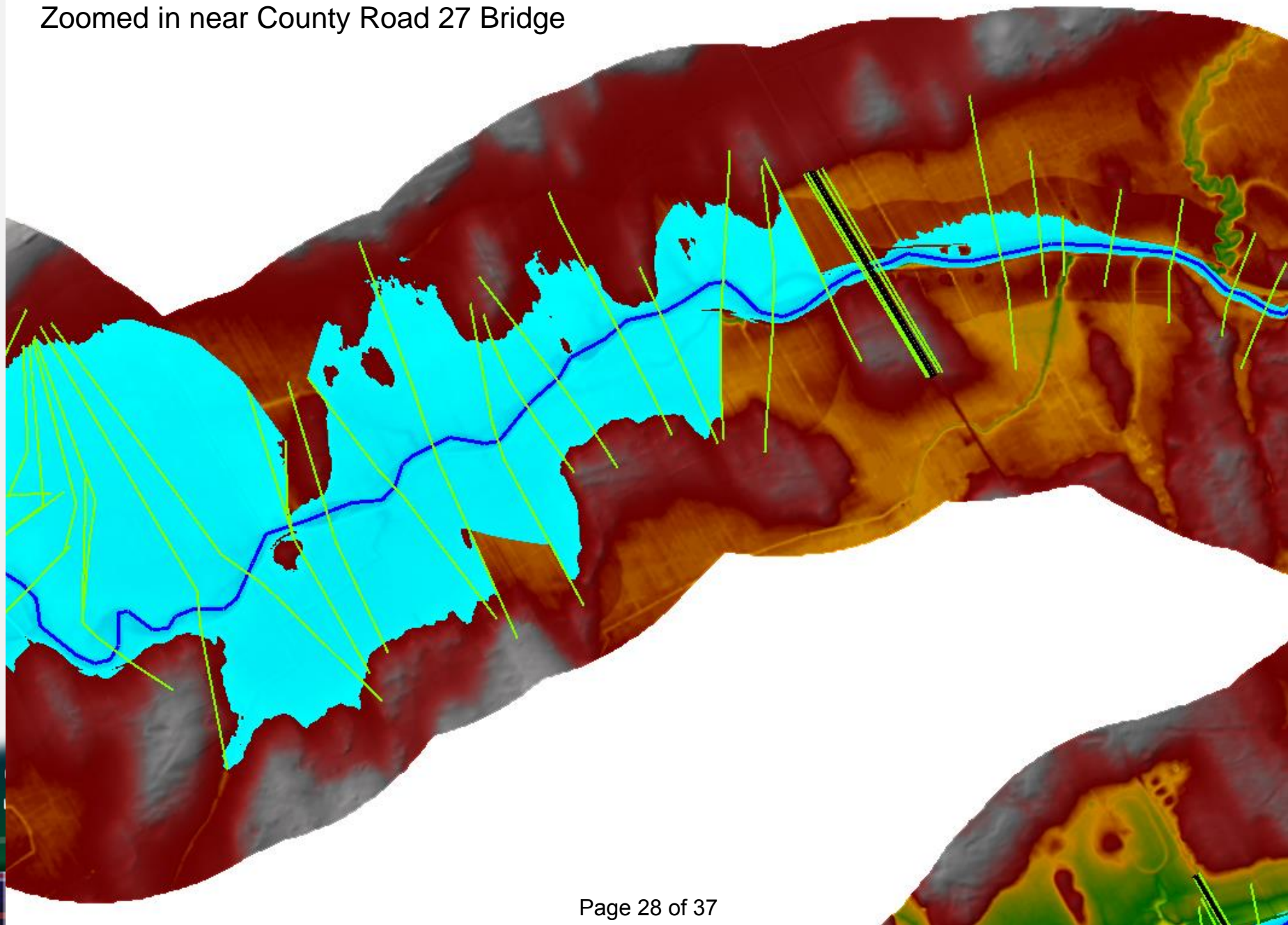
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Zoomed in near McGillivray's Bridge

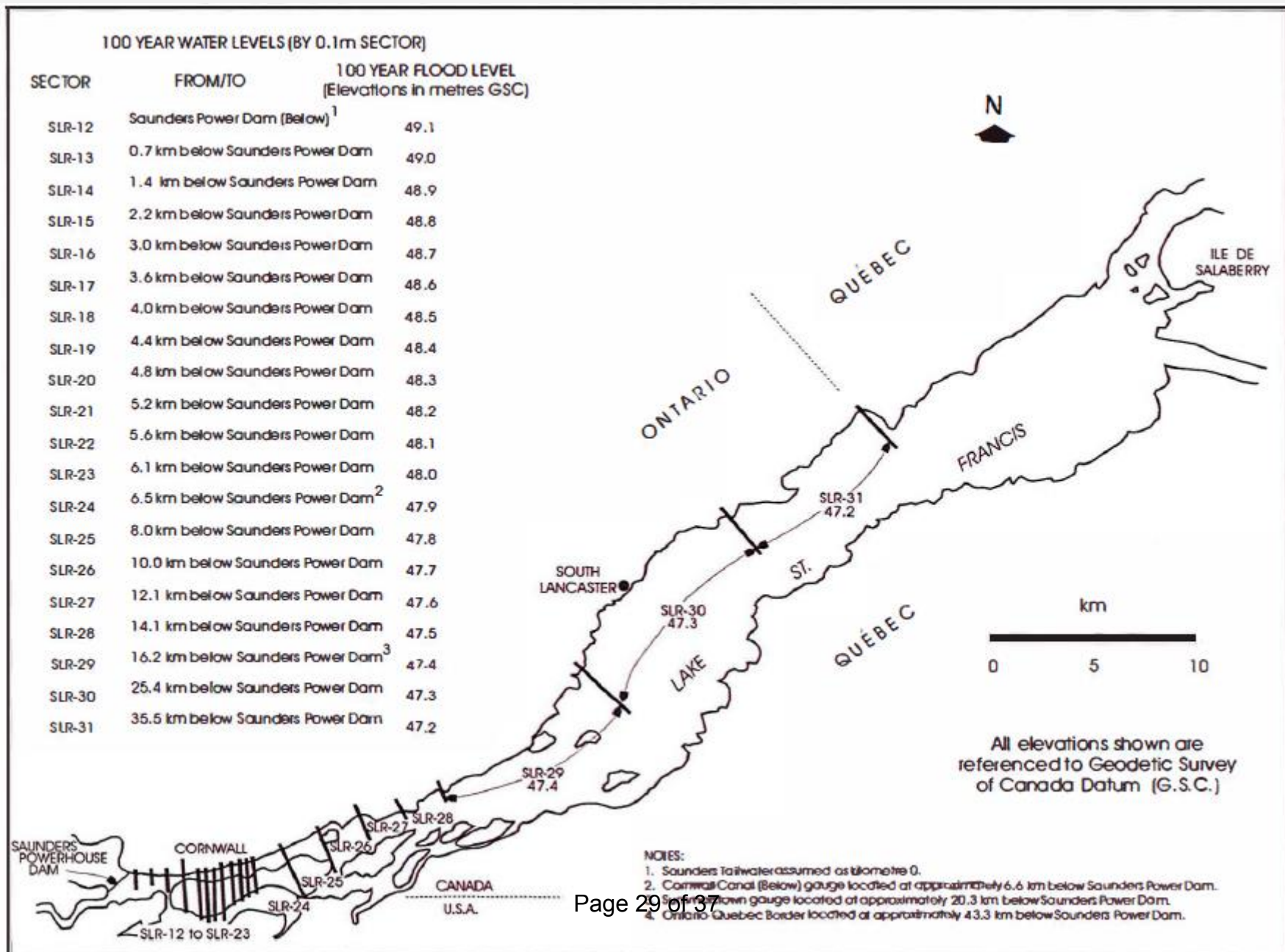


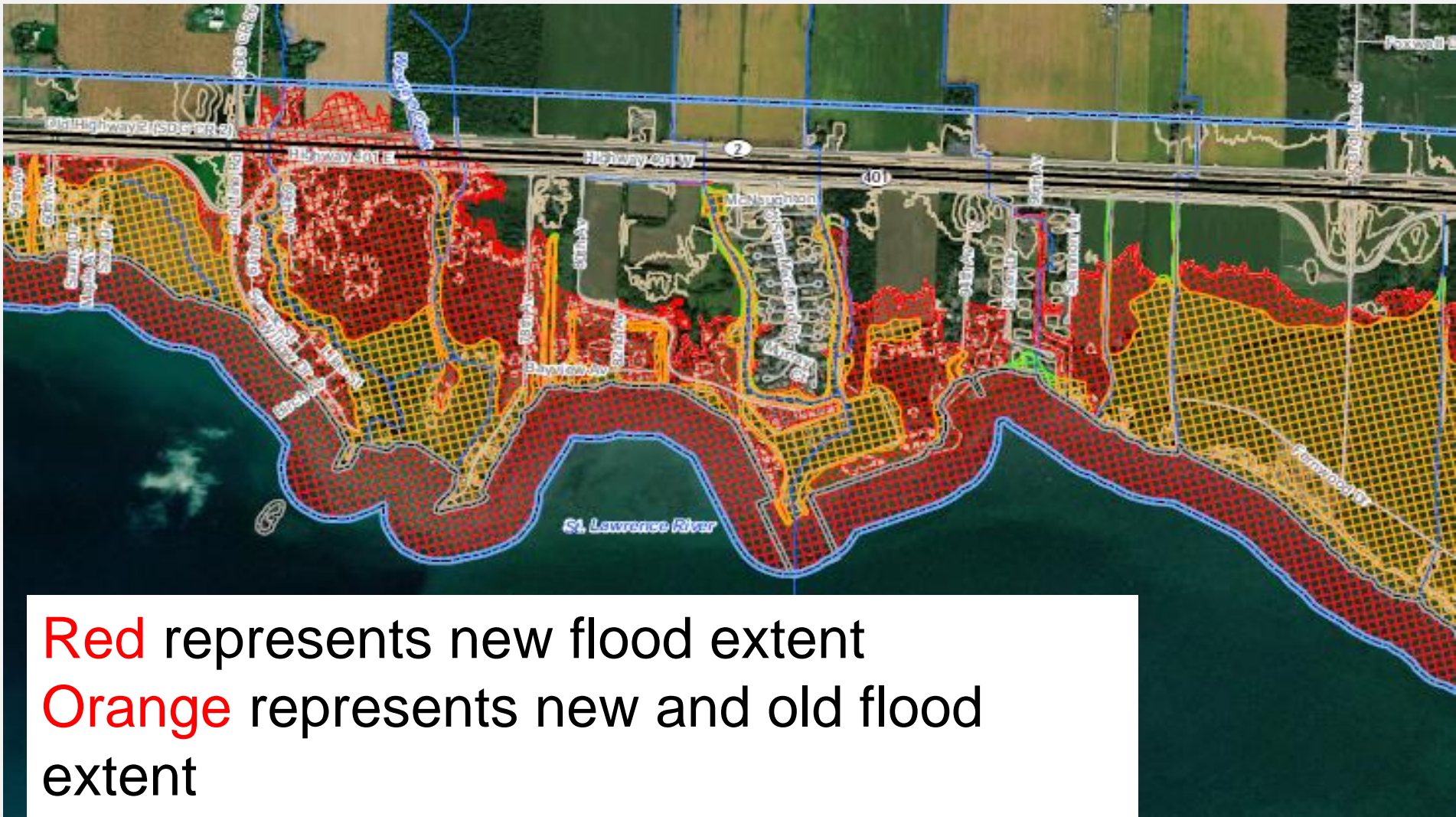
Zoomed in near County Road 27 Bridge





# St. Lawrence River





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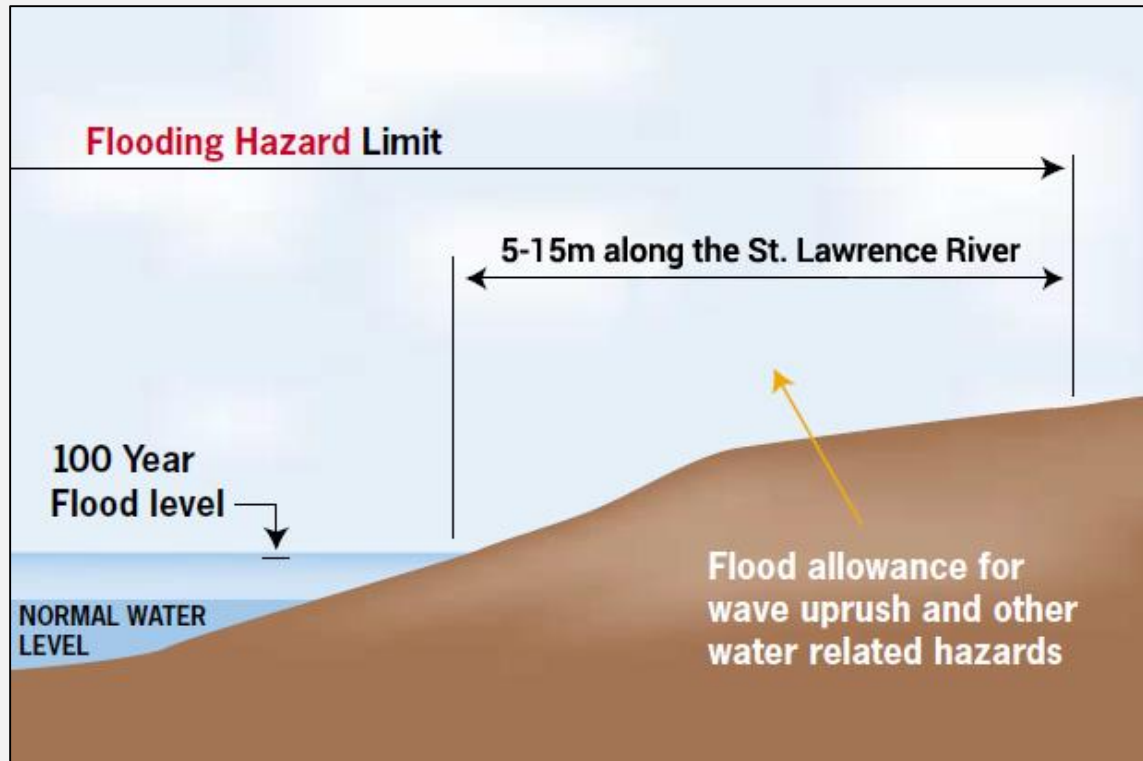


...But, the St. Lawrence River is regulated. We're between two dams.

"it should be noted that during the past 30 years, concentrated efforts have been taken to **regulate** levels of Lake Ontario and the St. Lawrence River. Past data and experience combined with modelling techniques have enabled the International Joint Commission's International St. Lawrence River Board of Control to regulate the levels of the Lake Ontario - St. Lawrence River System within a limited range of conditions. The impact of this control is reflected in the frequency analysis results upon which the 100-year levels are based. Many of the factors influencing lake supplies and levels such as precipitation and wind cannot be controlled. In addition, future changes in regulation procedures can also impact on levels experienced. One must not gain a false sense of security based on levels experienced over the past 30 years." (Environment Canada 1993)



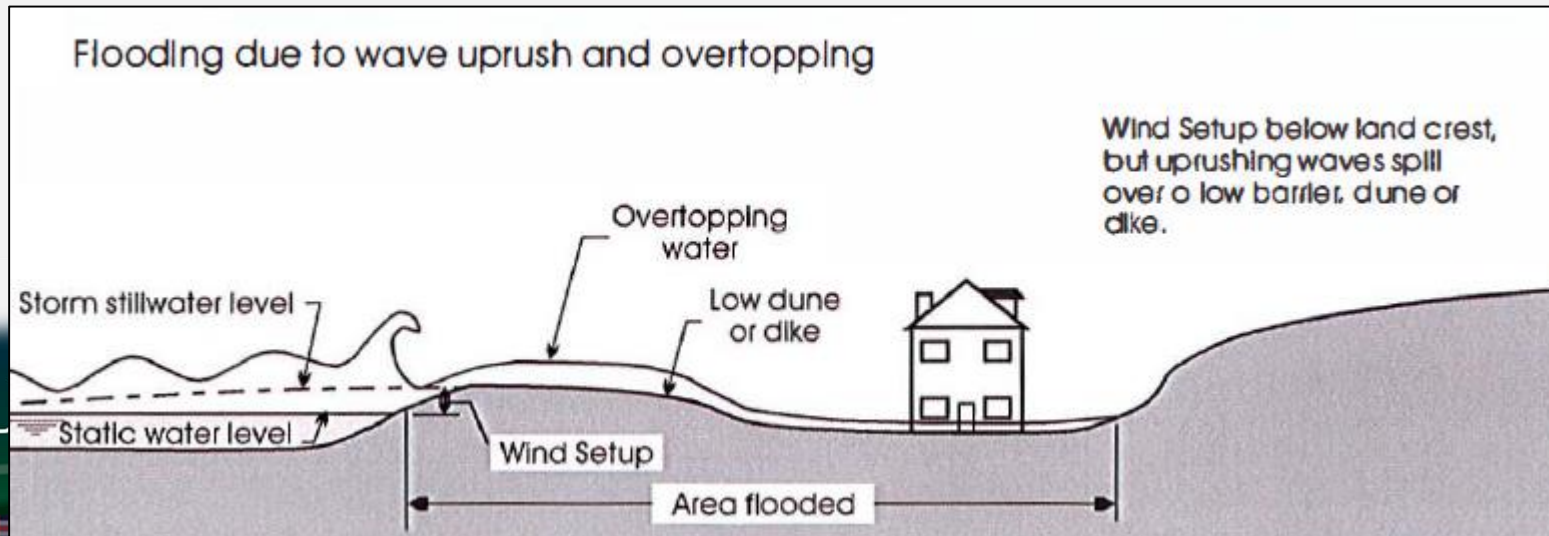
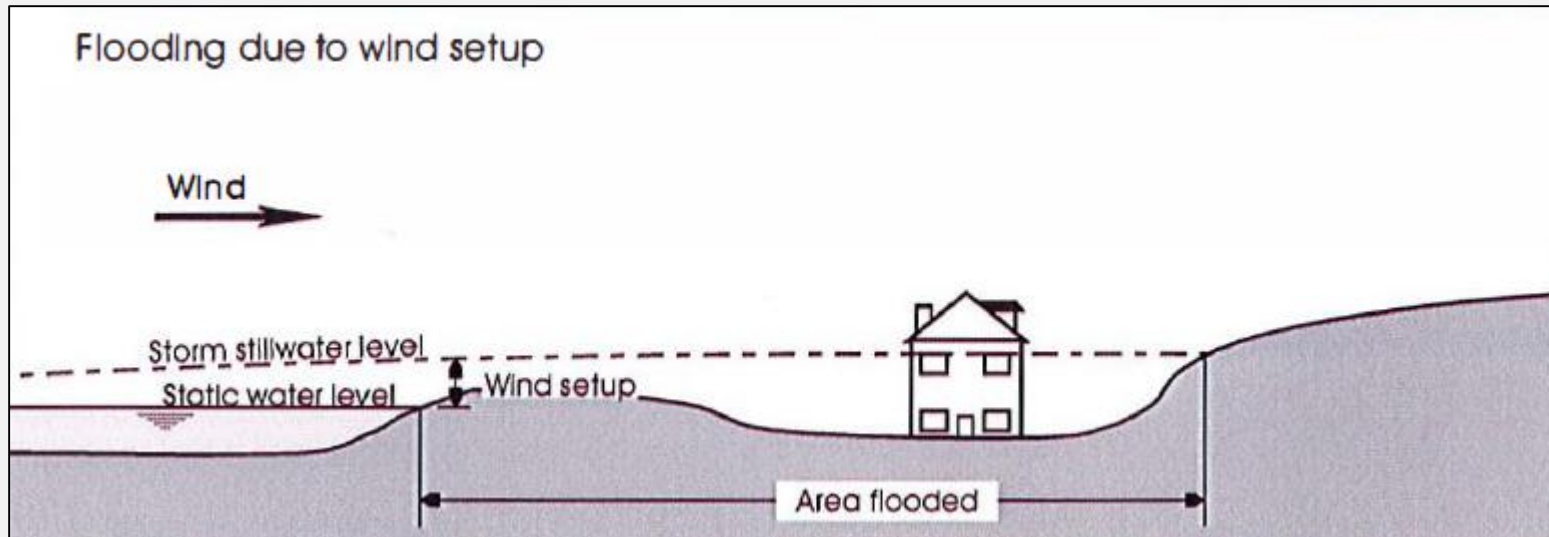
# Flood Hazard



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# Other Water Related Hazards



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# Bainsville Bay Waves

<https://www.youtube.com/watch?v=ShKBjnkek90&feature=youtu.be>

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## ...and also Ice Push



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# Next Steps

- Council to receive and file a staff report introducing the flood plain mapping
- RRCA Board to accept the flood plain mapping
- The most recent or new flood plain mapping is to be used without causing an amendment to the O.P.
- Incorporate the flood plain mapping into the new comprehensive zoning by-law
- Once new zoning by-law is approved, there will no longer be lands located in a “holding” zone, this may mean that no development will be permitted in the flood plain





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