



## DID YOU KNOW?

In May 2012, Thunder Bay received 77mm of rain in two hours. More rain than typically falls in the entire month of May. The storm caused extensive flooding, damage to businesses, infrastructure, and homes. It required a massive emergency response, caused millions of dollars of damage, and overwhelmed the local stormwater infrastructure.

A storm of this size can happen by chance. But this storm came after another major flooding in 2008; and was followed by another major storm and flooding in 2016. Thunder Bay has been experiencing more frequent and intense rain storms, and the frequency we have seen would be very unlikely without the influence of climate change. As climate change warms the atmosphere, it can hold more water and more energy, leading to wetter, wilder, and weirder weather. <sup>1</sup>



Most of our stormwater infrastructure, the pipes, ditches, and drains that move rainwater, was built to handle weather Thunder Bay experienced in the past. Engineers used decades of weather records to estimate how much water the systems would need to handle, assuming our weather patterns would remain similar in the future. However, the weather patterns have already changed, and our systems are having difficulty keeping up. As these weather changes continue, our new infrastructure needs to be built to handle it.

Excess stormwater, from both rain as well as snow melt, can lead to two major types of flooding in Thunder Bay <sup>2</sup>:



- **Riverine flooding** – which occurs when water entering a river causes it to exceed its capacity, causing additional erosion, putting nearby homes and environments at risk, and;
- **Urban flooding** – when stormwater exceeds the capacity of infrastructure to remove it. This flooding can occur far away from a waterway, and in some cases can cause basement flooding and sewer backflow into homes.

## Work in Thunder Bay

To adapt to these risks, the City of Thunder Bay has identified stormwater management as a priority in its Climate Adaptation Strategy, and supports decisions to be made on the weather we are experiencing currently and will see in the future, not the weather of the past. <sup>3</sup> Adaptations don't just include improvements in stormwater pipes (grey infrastructure), but also finding opportunities to use "green" infrastructure that affordably manages stormwater while providing co-benefits, such as low impact developments (LIDs), our urban forest, and natural or

constructed wetlands. These stormwater considerations have now been incorporated into the City's Stormwater Management Plan, Official Plan, and Asset Management planning. The City also funds a residential drainage rebate through EcoSuperior for residents who want to reduce their own flood risk!



This complements work by the Lakehead Region Conservation Authority (LRCA), who have completed floodplain mapping on major tributaries within its area of jurisdiction. Based on the most current climate data, the maps give valuable information on which areas of the City are at risk of riverine flooding in extreme weather events. The LRCA also owns, operates and maintains the Neebing-McIntyre Floodway, which provides riverine flood protection to the lower Neebing River and Intercity Areas up to and including the Regional Storm. <sup>2</sup>



## WHAT CAN WE DO?

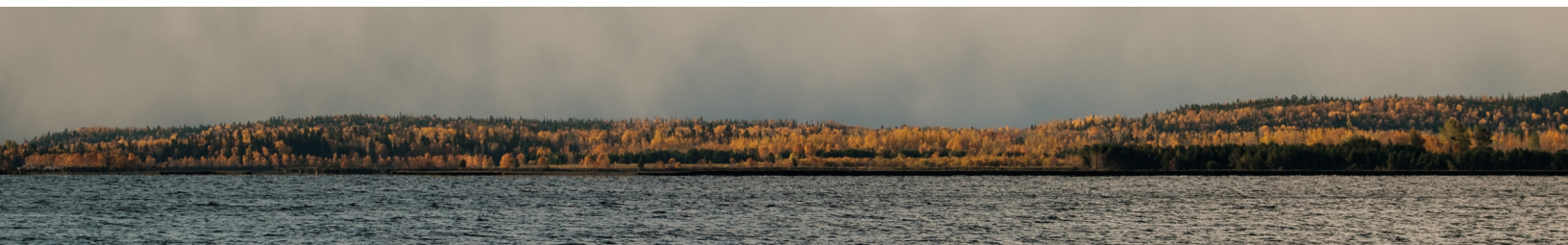
Here is what you can do to help:

- Learn how to protect your home from flooding from the book "Understanding and Improving your Residential Drainage", produced by the City of Thunder Bay and EcoSuperior, and take advantage of rebates to make improvements, such as using a rain barrel, building a rain garden, and increasing the natural vegetation cover on your property.
- Reduce community flood risk by taking part in events to increase urban trees, protect wetlands, or Depave <sup>5</sup> impermeable surfaces.
- Join an EarthCare working group, and come up with new ideas to implement and share!
- Address climate change itself – communicate with decision makers, take action individually and with community groups, talk about it.



## TAKE ACTION NOW!

- *Communicate about climate change*
- *Encourage decision makers to take action*
- *Get involved with community initiatives*



## REFERENCES:

- 1- [climate.nasa.gov](https://climate.nasa.gov)
- 2- [www.lakeheadca.com](http://www.lakeheadca.com)
- 3- [www.climatereadycity.com](http://www.climatereadycity.com)
- 4- EcoSuperior Residential Drainage Rebate Program
- 5- [EcoSuperior Depave Program](#)

## THIS RESOURCE IS BROUGHT TO YOU BY:

- CITIZENS UNITED FOR A SUSTAINABLE PLANET
- EARTHCARE – CITY OF THUNDER BAY
- ECOSUPERIOR ENVIRONMENTAL PROGRAMS
- ENVIRONMENT NORTH
- FRIDAYS FOR FUTURE – THUNDER BAY CHAPTER
- LAKEHEAD REGION CONSERVATION AUTHORITY
- LAKEHEAD UNIVERSITY – SOCIAL SCIENCES AND HUMANITIES
- RESEARCH COUNCIL
- MATAWA FIRST NATION MANAGEMENT – FOUR RIVERS ENVIRONMENTAL GROUP
- ONTARIO NATURE
- THUNDER BAY DISTRICT HEALTH UNIT – NORTHERN ONTARIO HEALTH AND CLIMATE CHANGE COLLABORATIVE

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