



FEMA

Coastal Flood Risks and Floodplain Mapping in Lake St. Clair

WHY ARE LAKE ST. CLAIR'S FLOOD MAPS CHANGING?

Flood risk is dynamic—it changes over time. Since the last flood risk study was done for Lake St. Clair, technology has improved and the way flood risks are shown has changed. The latest methods consider the effects of flooding from many sources, including waves, storm surge, and higher lake levels. The updated analysis is highly detailed and considers high-quality ground elevation data, local wave effects, and other data to show how flooding effects can differ depending on where you are located along the lakeshore during a storm event. With these improvements, the updated maps provide a more complete and accurate understanding of flood risk for your community.

WHAT ARE THE COASTAL FLOOD HAZARDS IN LAKE ST. CLAIR?

Like all coastal communities, the communities located along Lake St. Clair are vulnerable to floods from a combination of rising water and waves. To more completely understand this risk, the Great Lakes Coastal Flood Study considers the effects of changing lake levels, storm surge, and waves.

Higher lake levels are the major cause of flooding along Lake St. Clair. Strong winds can push water toward land and cause water levels to rise. This process, called storm surge, can cause floodwaters and waves to travel further inland than they typically would.

Waves interact with the shoreline in different ways depending on the features of the coastline and how the land is developed. The new study considers these differences, resulting in more detailed flood hazard information that more accurately shows the hazards at different locations. In lower elevation areas around Lake St. Clair, land that is typically dry may be covered by water (inundated) when lake levels are high. During a storm event, waves can move across the surface of this flood water. As waves move across the land, features such as high ground or buildings can reduce their energy and cause the waves to become smaller.

In areas with slightly higher ground elevations, high lake levels alone may not cause flooding. However, during a storm, waves may break at the shoreline and push water up over a bank, seawall, or other barrier. This uprush of water from breaking waves is called wave runup. When wave runup reaches the top of the bank or seawall and flows or splashes onto the land behind, it is called wave overtopping.

LAKE ST. CLAIR'S COASTAL FLOOD MAPS

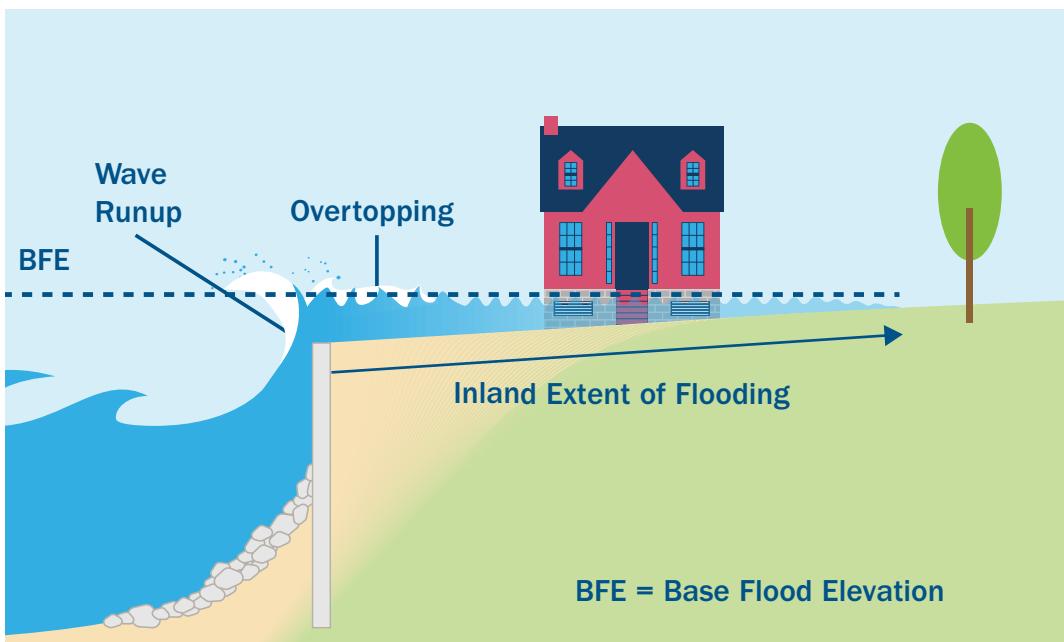
The new, detailed, site-specific flood hazard information for Lake St. Clair offers a more complete understanding of local flood conditions. This information can be used to better protect your home or other property from the effects of flooding.

The flood maps show how different flood hazards affect the lakefront at each location. The maps show the Base Flood Elevation (BFE), which is the level floodwater is likely to reach during a 1-percent-annual-chance flood event. There are different BFEs for different parts of the Lake St. Clair shoreline. Compared to the current effective flood maps for Lake St. Clair, the new maps show both increases and decreases to the size of the floodplain, or Special Flood Hazard Area (SFHA). Properties within the SFHA are at a high risk of flooding, with at least a 26-percent chance of flooding over the course of a 30-year mortgage.

Flooding from higher lake levels, storm surge, and waves are all considered in the new flood maps. Along the lakefront, the effects of wave runup and overtopping have extended the SFHA further inland in some areas. In these areas, the boundary of the floodplain depends on how high the wave runup goes above the top of the bank or barrier, and how far inland the overtopping water reaches. How far the waves push the floodwater is controlled by the slope of the ground, the height of the bank or seawall, and the materials that make up the shoreline.



PHOTO: Lower Thames Valley Conservation Authority



RUNUP AND OVERTOPPING:

In areas with higher ground and steeper shorelines, waves break at the shoreline and water washes up the face of the beach, dune, bluff, or structure that it meets. This uprush of water is called wave runup. Wave overtopping occurs when wave runup reaches the top of the dune or bluff and flows or splashes over into the area behind. Because of these actions, even properties located on relatively high ground or behind structures such as seawalls may be at risk of flooding.

To show Lake St. Clair communities where the effects of waves are expected to be the most powerful, the updated maps show velocity zones (VE). In these zones, powerful, fast-moving water and waves, including wave runup of more than 3 feet, can be expected. These powerful waves have the potential to cause structural damage to buildings. VE zones may be shown for areas upland of coastal protection structures or other barriers on the Lake St. Clair flood maps, depending on the strength of the waves and features of the shoreline.

HOW CAN UPDATED FLOOD MAPS HELP REDUCE MY FLOOD RISK?

Understanding the risks posed by high lake levels and waves is crucial when making decisions about how to make your family, home, business, and community safer and stronger. To help your community become more flood resilient, you can:

- **Be Prepared.** Remember, just because your home hasn't flooded in the past doesn't mean that it won't flood in the future. Your family should develop an emergency communications plan and build an emergency kit regardless of your home's flood zone.
- **Protect Your Investments.** Purchase and maintain a flood insurance policy to protect your home, property, or business from the financial damage of flooding. Different flood zones have different insurance implications, so be sure to consult with your insurance agent.
- **Reduce Your Risk.** Learn how you can take flood mitigation actions tailored to your property. Depending on the project, you may need to consult local architects, engineers, contractors, or other experts.

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