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## **Flood Hazard Mapping: What it is, and what it might mean for you**

Flooding alone is expected to cost the Canadian economy over \$30 billion in the years leading up to 2050, making up almost half of the country's estimated total direct losses.

The Flood Hazard Identification and Mapping Program (FHIMP) is one of many measures the Government of Canada is pursuing with a view to increasing the resiliency of Canadians in the face of the rising frequency and costs of flood events and other climate-related disasters. Through this program, 165 million dollars has been invested in updating Canada's existing flood mapping capabilities.

These maps will inform decision-making in support of land use planning, flood mitigation, adaptation to a changing climate, resilience building, and protection of lives and properties. While climate change is evaluated in the flood hazard mapping process, per the Conservation Authorities Act, it is not used by CAs in regulatory mapping.

**How were areas chosen?** The opportunity to partner with SVCA was given to all 15 municipalities in the Saugeen watershed. The Municipality of West Grey, the Town of Saugeen Shores and the Township of Huron-Kinloss decided to proceed with mapping for the desired areas within their municipalities. SVCA was the program applicant and acted as project coordinator. Engineering companies were contracted through the RFP process to complete all necessary modelling and mapping required to generate flood hazard maps.

**How is flood hazard mapping done?** To generate flood hazard maps, a five-step process is used, as described below:

- 1) *Data Collection and Review* involves review of existing floodplain mapping (where applicable); collection of GIS data to act as a topographic based for the model (LiDAR DTM, land cover, and soils); collection of hydrometric data, including rainfall, water level, and stream flow data; completion of a topographic survey of all structures (i.e. culverts, bridges, dams), which involved consulting staff on-site, physically collecting topographic information using GPS survey equipment; and completion of a bathymetric survey of river/creek cross-sections for model verification.
- 2) *Hydrology Study* is used to develop a hydrologic model using HEC-HMS (catchment delineation); this model produces the appropriate storm event that will be

incorporated into the hydraulic model. Calibration is done using rainfall and stream data and a flood frequency analysis. Peak flows are used in the hydraulic model.

- 3) *Hydraulic Modelling* involves selection of either a 1D or a 2D modelling approach based on the likelihood of “spills areas” within the area of interest. HEC-RAS was used for all hydraulic modelling and is a widely recognized and approved model. The HEC-RAS model was prepared using hydrologic conditions (cross-sections, Manning’s n value, hydraulic structures, buildings, etc.). Final calibration of the model was completed using background data collected.
- 4) *Flood Hazard Delineation* is completed after all models are run to generate flood lines using the tools available in HEC-RAS based on the LiDAR DTM. Flood lines are then imported into GIS based software where they are refined to produce final, regulatory flood maps.
- 5) *Reporting and Consultation* occurs throughout the project through public information sessions and preparation of detailed technical reports. A requirement of this funding program was to hold two public information sessions, within a set schedule.

**Who reviews the maps?** All mapping results have undergone extensive third-party review by a different engineering consultant as well as members of the provincial and federal government that are administering the grant program. Through this review process, all models and maps were thoroughly scrutinized with respect to the data collected, hypotheses made, and regulatory standards/guidelines. Extensive modelling calibration was completed in addition to a sensitivity analysis to ensure that the hypotheses (where applicable) were valid and appropriate for the model being produced.

**How were the dates chosen?** Projects were initiated in late May 2023, when consultants for both the mapping itself and the peer review were selected through an open RFP process. Scheduling of public information sessions and other deliverables were contingent upon strict federal program guidelines.

**How was this information communicated?** Beginning in the summer of 2023, SVCA circulated a notice of study in paper to the mailboxes and front porches of residents within the areas of interest. Through the fall and winter of 2023/24, both the affected municipality and Saugeen Conservation made concerted efforts to ensure the community was informed of the public information meetings, through posting on respective websites and social media accounts (Facebook, Twitter and Instagram), as well as through multiple press releases circulated in both print media and online platforms.

**What was the content of the public meetings?** The first public meeting was an information session to educate the public on what flood hazard mapping is, and where it would be taking

place. The second public meeting shared the draft results of the mapping. Final results are not yet complete.

**Will there be another meeting?** Yes. Future public consultation will be performed regarding updates to regulatory mapping, conducted by the SVCA Environmental Planning and Regulations department. The updates to regulatory mapping will include the best available information regarding all regulated natural hazards, this flood hazard mapping included. We remain committed to open dialogue and will ensure that all affected parties are kept informed and given access to the final results once they are available.

Regarding the update to the mapping and its implications on property values, it's important to note that the final results, derived from engineering models approved by the federal government, are still pending. This process was undertaken with the utmost seriousness and adherence to federal guidelines, and all mapping results have undergone extensive third-party review. It is pertinent to clarify that the flood hazard mapping, as determined by the approved methods, is not subject to an appeal process.

**What does this mean for my property?** Ignorance is not bliss when it comes to natural hazards. First and foremost, this is true for landowners. Not having the necessary information about existing, up to date, hazards on your property exposes you and your family to potential harm, financial risk, insurance exposure and does not allow for measures to be taken on and around your property to address these existing conditions. Long and short-term planning as well for these conditions on a property, or in a watershed, are key and cannot be meaningfully approached without the facts.

**For more information:**

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