

City of Sault Ste. Marie Peoples Road Area Overland and Basement Flooding Class Environmental Assessment

Property Owner Handout

➤ Introduction

The purpose of this Handout is to share important information to assist you in understanding the historical flooding problems being experienced in the study area and provide important information for you, as the homeowner, to best protect your home in the future.

Based on the input received throughout this study, which has included input from City staff, Municipal records, returned property owner questionnaires, property owner discussions and field visits, most flooding problems have occurred during significant precipitation or snow melt events.

Through its ongoing operations and maintenance efforts and planned future capital works, the City plans to assist property owners in mitigating future property impacts from flood waters. However, more importantly, homeowners are encouraged to take appropriate action to protect their properties.

➤ Understanding the Problem

In Sault Ste. Marie, sanitary sewage and stormwater are conveyed in separate sewer systems. The sanitary sewer system conveys wastewater or sewage from fixtures within buildings, such as toilets, showers, sinks, washing machines and floor drains. These flows are conveyed via the sanitary sewer system to one of the City's two sewage treatment plants.

The stormwater sewer system conveys rainwater and groundwater from roof drains, foundation drains, lawns, surface features and catch basins through a system of underground pipes, ditches, valleys and creeks with eventual discharge in the St. Mary's River.

Basement flood water can be sanitary sewage, groundwater, surface water, or a combination of all three. Based on the input received from homeowners, the basement flooding in the study

area has been linked to both sanitary sewage flows and stormwater/groundwater flows - in some instances property owners reported the flood waters were clear with no odour and water was observed to be entering through walls or windows and in other cases it entered through floor drains or plumbing fixtures and was odorous and dirty.

➤ Sanitary Sewer System

There is evidence of significant inflows and infiltration (i.e. extraneous flows) of stormwater and groundwater into the sanitary sewer system particularly during more significant precipitation events. This is in part due to homes that have foundation drains and /or roof downspouts connected to private sanitary sewer laterals. Other sources of extraneous flows include cracks or leaky joints in sanitary sewers or manhole lids. Sanitary sewer systems are not designed to handle large amounts of excess stormwater or extraneous flows. If they were, the pipes would be much bigger and very costly to construct. During a significant rain or snow melt event, inflow and infiltration takes up valuable sewer capacity and as a result, the sanitary sewer system may become overloaded and may cause basement flooding.

Your home's plumbing is connected to the City's sanitary sewer system by a sanitary service lateral. Ideally, but not always each sanitary service lateral will have a cleanout. The cleanout is an access port that is used to clear blockages in the pipe. In addition, your sanitary service lateral should have a **backwater valve** located in your home which is intended to prevent sewage from flowing backwards from the sanitary sewer system into your home when the system is overloaded and surcharging. The portion of the service lateral that is on your property is your responsibility to maintain and clean. The expertise of a licensed plumber is invaluable with respect to issues related to your sanitary sewer lateral and the **backwater valve**. The sanitary sewers and the portion of the service lateral from the

property line to the sanitary sewer is maintained by the City.

➤ Storm Sewer System

The conveyance of stormwater flows is managed in both a minor stormwater drainage system (i.e. piped system) and a major stormwater drainage system (i.e. over land system). Like the piped sanitary sewer system, the underground stormwater pipe network is not sized to handle all flows or storm events. If it was, the pipes would be much bigger and very costly to construct. In Sault Ste. Marie the system is designed to collect and convey stormwater generated by a 1:10 year storm event which means an event that is statistically likely to occur once every ten years.

Some, but not all properties in the study area, are connected to the City's storm sewer system by a stormwater service lateral. Ideally, but not always each stormwater lateral will have a cleanout. The cleanout is an access port that is used to clear blockages in the pipe. **In addition, your storm service lateral should have a backwater valve located in your home which is intended to prevent stormwater from flowing backwards from the storm sewer system into your home when the system is overloaded and surcharging. In some cases, the stormwater lateral may convey groundwater by gravity to the storm sewer system and in other cases you may have a sump pump that conveys groundwater to the lateral. The portion of the stormwater lateral that is on your property is your responsibility to maintain and clean. The expertise of a licensed plumber is invaluable with respect to issues related to your storm sewer lateral and the backwater valve.** The storm sewers and the portion of the stormwater lateral from the property line to the storm sewer is maintained by the City.

Where homes do not have a stormwater lateral they may have a sump pump that conveys groundwater to a ditch, lawn, driveway or splash pad or alternatively the foundation drain maybe directly connected to their sanitary sewer lateral which contributes to extraneous flows.

➤ How Can You Reduce Inflow and Infiltration (Extraneous Flows) In the Sanitary Sewer System

As a property owner, you are responsible for maintaining, repairing, and/ or replacing the sanitary sewer lateral (pipe) from your house to the property line. Discharging stormwater into the City's sanitary sewer system can overload the sanitary sewer system and can also result in overloading of the sewage treatment plants which could ultimately impact the level of treatment.

You can reduce Inflows and Infiltration in a number of ways:

- Remove the foundation weeping tile from the sanitary system. If your home has a basement and does not have a sump pump or separate storm sewer lateral it is likely the weeping tile is connected directly to the sanitary system. A sump pump can be installed to disconnect the weeping tile drainage system from the sanitary system and direct the ground water to the storm sewer (i.e. if a storm lateral is present) or overland away from the house if there is no storm lateral present.
- Disconnect downspouts and redirect your downspouts so that rain soaks into your yard or garden. Even though the downspouts may be connected to a separate storm sewer system if the downspout piping is damaged below grade rainwater may be directly entering and overwhelming the foundation weeping tiles. Redirect the downspouts as far away from the foundation walls as possible.
- Ensure the grading around your home is properly sloped away from the house. Pooling water near the foundation walls will result in excess water being collected by the foundation weeping tiles.
- Report missing or defective cleanout caps located on the City's right-of-way.
- Have your property's sewer pipe inspected. Replace any known broken, leaky or problem sections. Maintaining and repairing the pipe is the homeowner's responsibility and can reduce inflow and infiltration and prevent sewer backups into your home.
- Avoid planting trees and shrubs over sewer pipes as roots can damage sewer pipes.

➤ How to Protect Your Home from Basement Flooding

A **backwater valve must be installed** directly in all sanitary sewer laterals and gravity storm sewer laterals (again not all homes have storm sewer laterals). In addition, a gravity storm lateral could be replaced or enhanced (i.e. contingency) with a sump pump and check valve. Refer to the attached City standard drawings for the location of these important valves. **Backwater valves** are designed to close when the sanitary sewer or storm sewer is overloaded and begins to surcharge which is typical during higher rainfall or snow melt events.

Other important considerations:

- Water use in the house must cease when the sanitary lateral backwater valve is in the closed position. Sewage generated in your home will have nowhere to go but back through a floor drain, toilet, sink, etc.
- Ensure the backwater valve is properly installed and routine maintenance and inspection is critical to ensure proper functionality. The slightest amount of debris caught in the backwater valve may prevent proper closure of the valve. The expertise of a licensed plumber is invaluable with respect to issues related to this valve.

➤ Conclusion

The City is committed to assisting in mitigating flooding problems in the study area through operational and maintenance practices and through the implementation, over time, of several capital improvements. However, the property owner measures described in this handout are critical to reducing the likelihood of basement flooding incidents.

In addition to the above, other useful information is included in the City's Sewer Use By-law found at saultstemarie.ca/bylaws and at the Institute for Catastrophic Loss Reduction website under the Flood category (www.iclr.org/flooding/ or <https://www.iclr.org/wp-content/uploads/PDFS/handbook-for-reducing-basement-flooding.pdf>).

Storm Lateral Configurations (these form part of City By-law 2009-50)



