



London
CANADA

Sewage Bypasses and Overflows into the Thames River



Why are we highlighting overflows and bypasses?

- Questions about overflows of sewage often come up during budget deliberations and during committee debate.
- This report and presentation is an opportunity to provide further background on this important issue and inform Council about what we are doing to reduce sewage overflows to the Thames river
- Today we will provide information regarding the current problem and discuss the various programs underway to address it.



Definitions

Overflows:

- release of untreated wastewater to the environment
- can occur in our sewer system, at pump stations, or treatment facilities

Bypasses:

- diversion of wastewater around part of the wastewater treatment process most often within a wastewater treatment plant.



What Causes Overflows and Bypasses?

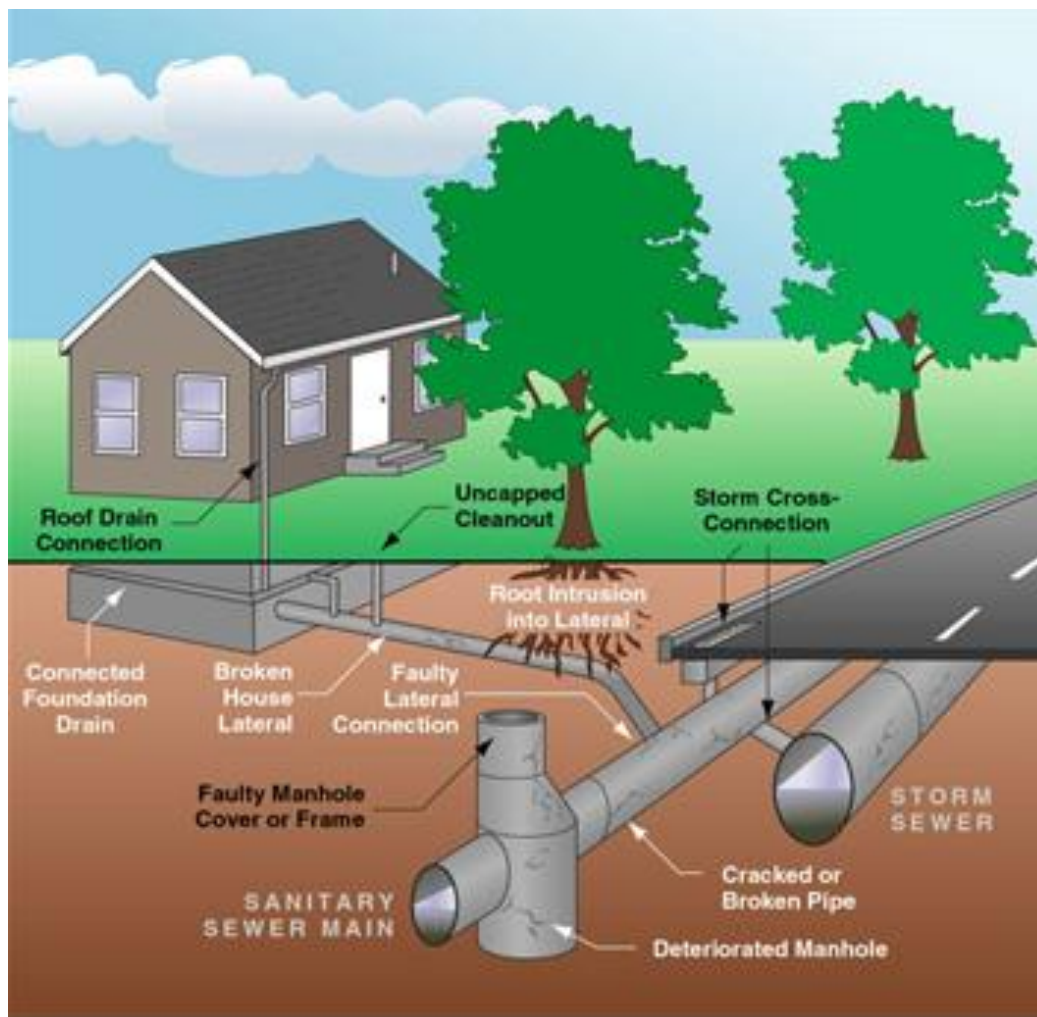
Both are most commonly caused by stormwater entering the sanitary sewer system, increasing flows beyond the capacity of the sewer.

Inflow: flow of stormwater into the sanitary sewer via a direct connection, e.g. combined sewers, or weeping tiles connected to partially combined sewers

Infiltration: seepage of groundwater into the sanitary sewer

- This is **unwanted water** in our sanitary sewer system
- Reduction of unwanted water from inflow and infiltration is key!

Inflow and Infiltration





What Are We Doing?

- Because there are multiple sources of this unwanted water, multiple approaches are needed
- Many of the plans and initiatives are interconnected



Pollution Prevention Control Plan (PPCP)

- Multi-year master planning project to provide long-term solutions to address conveyance system sewer overflows and bypasses
- Identifies highest priority overflow points for management based on frequency and volume of overflows
- Recommendations of the PPCP included considerations for climate change, data management, capital works, and removal of inflow and infiltration at the source.



Implementation of PPCP

The City has undertaken a number of initiatives that will help achieve the desired outcomes of the PPCP. These include:

- updates to storm data used for modeling to account for higher intensity storms that we experience due to climate change;
- data management updates such as continuous updates to GIS, sewer modelling, and flow monitoring program;
- sewer separation projects; and,
- inflow and infiltration reduction projects, e.g. weeping tile disconnections.

An update to the PPCP will be required in 2023. There is budget allotted in 2022 to retain a consulting engineering firm to complete this work.



Domestic Action Plan

- Highlights projects completed that reduce discharge of phosphorous to the Thames River as well as projects in the 20 year plan
- Sewer overflows contribute to phosphorous loading
- One of the objectives is the replacement of combined sewers and managing the highest priority overflows as identified in PPCP

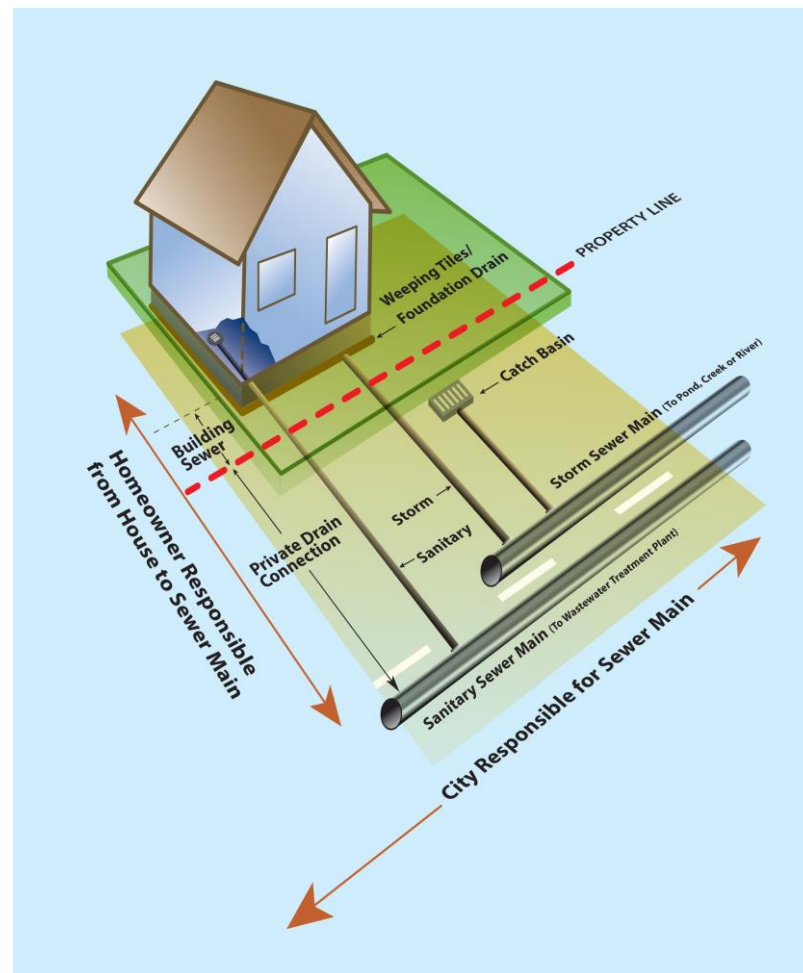


Sewer Separation Program

- DAP goal is to separate 80% of the combined sewer system by 2025
- This equates to 17km of sewer separation
- 6.2km removed, and another 1.45km will be removed in 2021
- This included many sewers in the downtown that contribute to priority overflows identified in the PPCP

Inflow Source: Weeping Tiles

- Weeping tiles were connected to sanitary sewer between the 1920s and 1980s
- That makes these sanitary sewers “partially combined” as the weeping tiles are a point of inflow
- Leading cause of basement flooding
- Approximately 50,000 weeping tile connections





Weeping Tile Disconnection

Basement Flooding Grant Program

- Subsidy of 90% of costs to separate weeping tiles from the sanitary sewer and install sump pumps and backflow valves
- Applied for by individual homeowners
- Average of over 60 grants approved each year

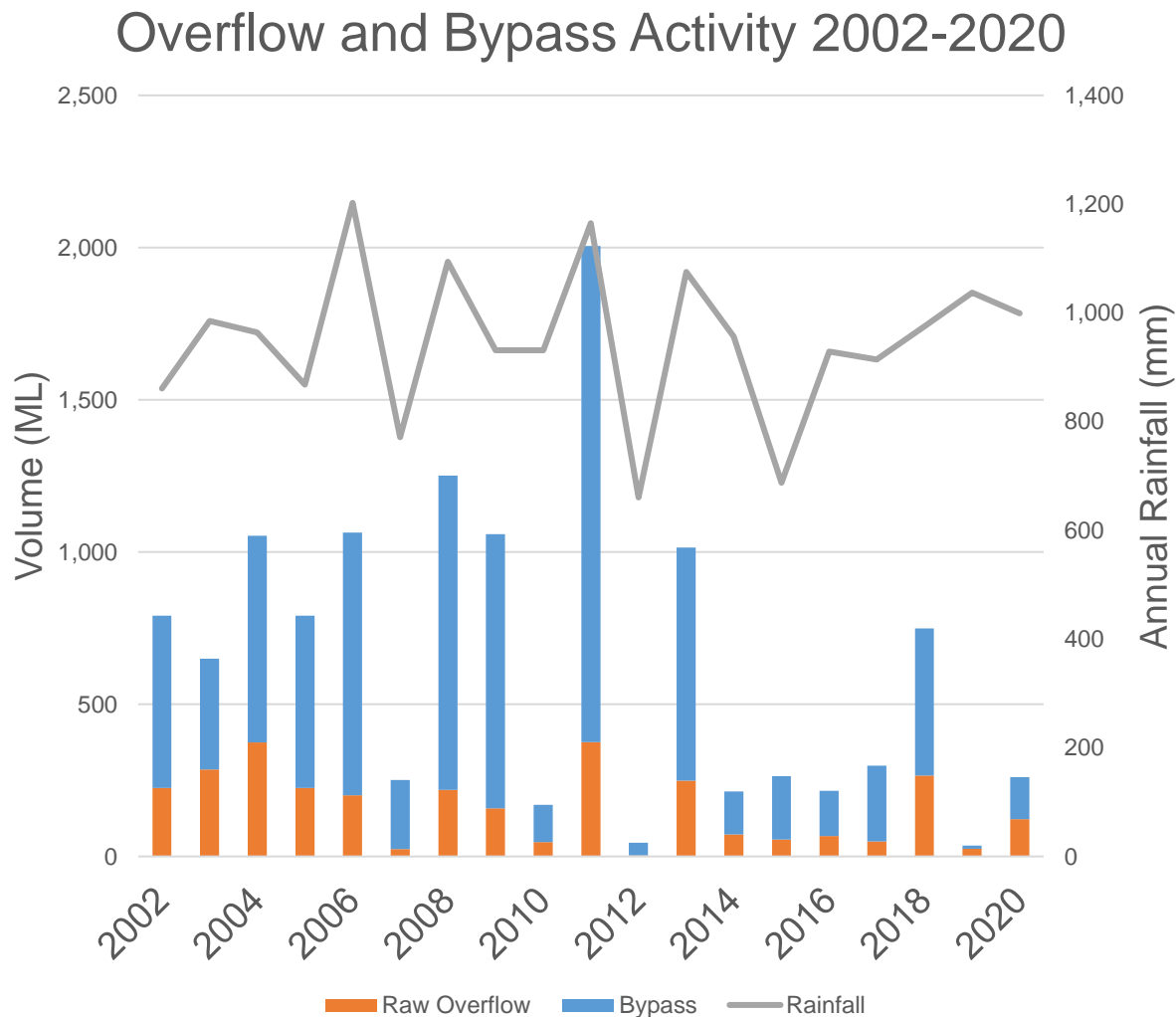
Targeted weeping tile disconnection program

- City initiated projects to target neighbourhoods for overall system benefit
- Budget of \$1 million annually which is sufficient to disconnect approximately 30 homes



Historical Bypasses and Overflows

- Raw overflow volume < 0.17% of total wastewater treated
- 2018 stands out
 - Multiple intense rain events with snow melt
 - 75% of raw bypass before end of February
 - Greenway upgrade not complete





Recent Work

- Greenway Expansion
 - \$40M to increase treatment capacity, add wet weather treatment and storage capacity
- Dingman Creek PS
 - \$25M project to increase capacity in southeast London and increase ability to partially treat extreme flow events (2022)
- Adelaide WWTP Upgrades
 - Project to recover treatment capacity and construct wet weather storage tanks (2022)
- Pottersburg-Vauxhall System Optimization
 - Interconnection forcemain (2020) to allow full use of available treatment capacity
 - Wet weather treatment and storage facility (2022)
- Flood Protection at Greenway and Adelaide WWTP
 - \$49M project to protect WWTPs from floods and enable full treatment to occur up to 100 year flood elevation (complete by 2025)





Wastewater Treatment Master Plan

- Wastewater Treatment Master Plan initiated
 - First Public Meeting April 22, 2021
- Develop strategy for collection and treatment of wastewater in London over the next 50 years
- Provide long term plan for wastewater infrastructure including treatment plants and pumping stations
- Minimizing bypasses and overflows at these facilities will be a key consideration in developing this plan



New Initiative: Unwanted Water

- The goal of this initiative is to give Committee and Council options for reducing sewage releases into the Thames River
- The focus will be to identify projects, policies, or programs that will reduce the amount of unwanted water getting into our wastewater collection system
- Additional benefit is that removing unwanted water also reduces the risk of basement flooding.
- Will include a series of reports with the next report brought to committee Q3 2021



Conclusions

- Unwanted water has many sources
- Multi-faceted approach required to address the various causes
- Ultimate goal is to protect properties from flooding and our environment from overflows and bypasses