

Addressing inflow and infiltration at point of sale

What is I&I?

I&I is the total quantity of water from both inflow and infiltration without distinguishing the source.

Inflow is extraneous/clear water entering a sanitary sewer system by direct connection from roof drains, basement sumps, manhole covers, etc.

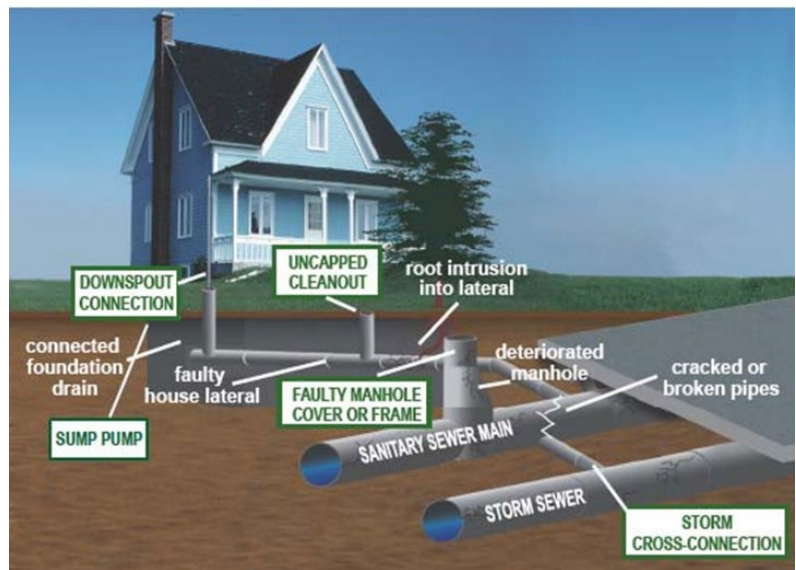
Infiltration is extraneous/clear water entering a sanitary sewer system through joints and cracks in the sewer from groundwater.

Service connection is any single pipe, gate, valve, or similar mean of transfer to a main collection system from any individual building.

What's the problem?

Problems arise when excess groundwater and stormwater enters the sanitary sewer collection system from private sources through breaks, defective joints, tree root intrusion, cross connections, or porous walls. The result is unauthorized release from the wastewater treatment or collection system, increased costs to treat influent, increased operation and maintenance, and basement flooding from overwhelmed collection systems or damaged/collapsed service laterals.

Designing for excessive I&I includes planning for increased capital and operational costs for collection system conveyance, pumping stations, and treatment facilities.



Different ways inflow and infiltration can happen.

Why should I&I be addressed when selling a home?

Service lateral inspection is not required during real estate transactions. However, many cities require a home be inspected prior to being advertised for sale or the city requires a certificate of compliance on file that is renewed at a defined interval (such as five years). The MPCA recommends a licensed professional perform the service lateral inspection during real estate transactions when an unbiased third-party is desired. Buyers and sellers in a real estate transaction can negotiate inspection, repair process, and who is responsible for the costs before closing. If repairs cannot be made before a title transfer, then escrow may be required.

How inflow and infiltration can be reduced?

Local governments throughout Minnesota have been working for decades to address sources of I&I in city and regional sewer infrastructure. Fixing sources of I&I on private property is just as important.

Property owners can:

- Inspect and repair damaged sewer service lines.
- Replace older clay pipes that are beyond their service life.
- Make sure sump pumps and building drains are not connected to the sanitary sewer system.

Cities and townships can:

- Educate property owners about I&I.
- Implement sump pump inspection programs.
- Consider point-of-sale inspection programs and other measures.
- The League of Minnesota Cities (LMC) has a new model ordinance to help cities keep clean water out of the sanitary system. The ordinance prohibits property owners from discharging footing tile, sump pumps, roof drains, and ground water into the sanitary sewer through defective plumbing and non-conforming sewer service laterals. The ordinance allows cities to develop an inspection program, require corrections by property owners, develop point-of-sale inspection/upgrade requirements, and assess penalties for violations. Upon compliance, the city issues a certificate of compliance to the property owner. The LMC model ordinance can be found at [Sanitary Sewer Toolkit: A Guide for Maintenance Policies and Procedures](#). Select Inflow and Infiltration under Models.

In addition to developing and enforcing sump pump and service lateral ordinances, the following links will provide guidance to further develop an I&I plan:

- A completed [EPA Capacity, Management, Operation, and Maintenance \(CMOM\) checklist](#).
- A completed [League of Minnesota Cities Sanitary Sewer System Assessment](#).

Other cities with I&I programs

Inflow and Infiltration is not unique to Minnesota. Many communities around the country have I&I programs. Below are some examples of Minnesota communities.

- Foley
- Golden Valley
- Roseville
- Duluth
- Steen
- Courtland
- Hills
- West St. Paul
- Pipestone
- Woodstock