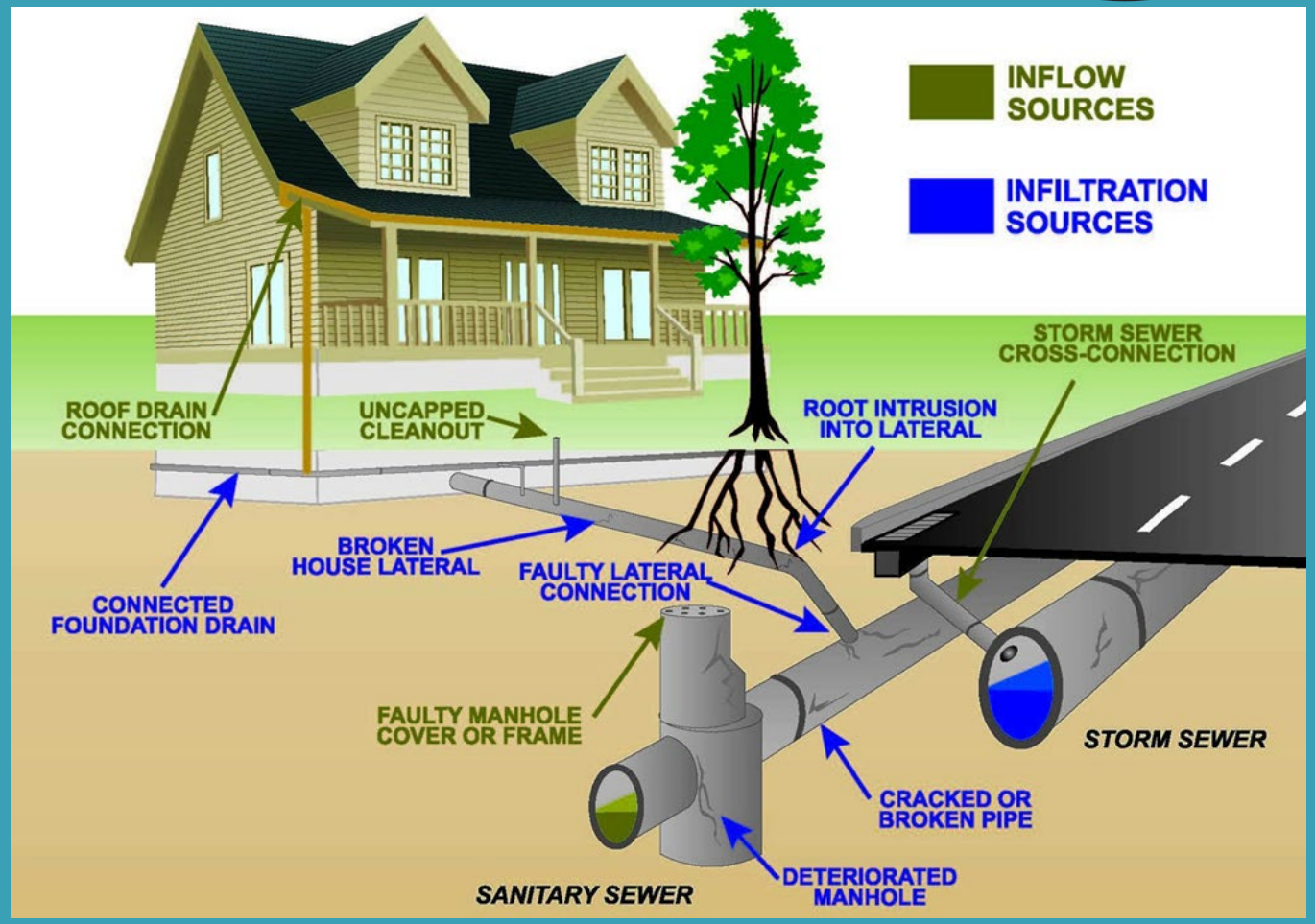
INFLOW AND INFILTRATION (I&I) STUDY

- Downtown/Flats Area Sewer System Evaluation Survey (I&I Study) was initiated in 2023
  - Project study area – north of IL 72 and west of Van Buren Street
- This study is particularly important for the Flats neighborhood and downtown area due to:
  - Close proximity to the Fox River
  - Elevated groundwater table
  - Aging/aged sanitary sewer system
- History of sewer backups in those areas
- Increased wastewater flow into the wastewater treatment plant that would otherwise be conveyed to natural waterways via storm sewers
- Hill Street Lift Station pump improvements that were completed in 2022 were made to address additional stormwater/groundwater flow coming into and through the lift station during rainy periods

INFLOW AND INFILTRATION (I&I) STUDY

- ***Inflow*** occurs when stormwater flows into the sanitary sewer system via roof drain downspouts, storm sewer/drain cross-connections, through holes in manhole covers, faulty manhole covers

- ***Infiltration*** occurs when groundwater seeps into the sanitary sewer system through holes, cracks, joint failures, faulty pipe connections, foundation drains



INFLOW AND INFILTRATION (I&I) STUDY

- East Dundee's I&I Study is comprised of essentially the following phases
  - ***Manhole inspections*** – using 360-degree camera, inspected the condition of each manhole and identified those that allow storm/ground water into the sanitary sewer system.
    - Total of 60 sanitary sewer manholes were inspected - of which defects were identified in 22
    - Recommendation to replace 12 manhole covers (11 have since been replaced by Public Works)
    - Remaining manholes (approx. 15) to be repaired contractually
  - ***Smoke Testing*** –injected a supply of smoke into the sanitary sewer.
    - Smoke visible outside of the injection point indicated leaks in the sanitary sewer system that were located/logged.
    - Identify cross connections with storm drain lines, structural defects in sanitary sewer pipes and structures, and locates illegal private connections such as downspouts and surface drains.
    - Smoke would not be observed in a completely tight sanitary sewer system
    - Smoke was observed exiting 10 storm sewer inlets/structures – indicating some level of cross-connect

INFLOW AND INFILTRATION (I&I) STUDY

12 Hill St
Manhole 1-59

INFLOW AND INFILTRATION (I&I) STUDY

Recommendations for 2024

- Manhole Rehabilitation
  - Estimated cost (rehabilitate 15+ manholes): $30,000-$35,000
  - Develop specifications and solicit competitive bids
- Dyed-Water Testing
  - Fill storm sewer with dyed water to simulate a rainstorm - dye is food grade and same product used to dye the Chicago River
  - Monitor sanitary manholes for dyed water that left the storm sewer and entered the sanitary sewer
  - Estimated cost: $25,000-$30,000
- FY 2024 Budget: $62,500
  - Staff recommends utilizing the following funds for the above projects
  - Manhole Rehabilitation - $42,500
  - Televising - $15,000
  - Misc. Manhole Repairs - $5,000

INFLOW AND INFILTRATION (I&I) STUDY

Recommended for 2025 (and beyond):

- Closed-Circuit Televising:
  - Develop sewer rehabilitation program
  - Village owns/operates a sewer televising system, utilized more to locate blockages and investigate suspected/known problems inside the sewer main.
  - Outsourcing a comprehensive televising project to identify sources of I&I is recommended as the project would require a broader scale evaluation (with formal documentation of defects) within the sanitary sewer system.
- Point Repairs: sanitary sewer main repairs at the point of failure, typically via excavation.
- Sewer Main Replacement: replacement of longer segments of sanitary sewer main.
- Sewer Lining - cured-in-place-pipe lining (CIPP) is a trenchless method of lining the inside of the sewer main requiring little or no digging. This option requires less time to complete compared to other sewer repair methods and is suitable for repairing both short and long runs of pipes.
  - Village has previously lined some sanitary mains in the downtown area and Flats neighborhood