City of Two Harbors

Inflow & Infiltration:
Ramifications, Sources & Potential Solutions
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Topics

- Sources of I&I
- Ramifications of I&I
- What is the City Doing to Address I/I
- What can Residents do to Help Address I/I
Definition

Clear water entering the sanitary sewer system

- Inflow is water entering the sanitary sewer system through improper, direct connections (sump pumps, roof lead, storm sewer cross connections)

- Infiltration is water entering the sanitary sewer through leaks in the sanitary sewer system
Examples of I&I
Examples of I&I
Examples of I&I
Ramifications of I&I
City of Two Harbors, MN

- Sewer Backups
- Additional Pumping Cost
- Increases Require Design Capacity of Some Wastewater Treatment Processes
- Increased chemical costs
- Wear on equipment
- Additional man hours
- Bypassing – Potential MPCA Violations
What is The City of Two Harbors Doing to Address I/I

- $127,000 Budgeted over the Next 5 Years for Manhole Covers
Solid Manhole Lids
I&I Manhole Barriers

- Internal/External Chimney
- Striker
- HDPE Rings
What is The City of Two Harbors Doing to Address I/I

- $127,000 Budgeted Over the Next 5 Years for Manhole Covers
- Televising Entire Collection System Over Next 5 Years.
- Sump Pump Education and Ordinances
  - Free Sump Pump Inspection by City Staff (218-834-8813)
- Smoke Testing (July 19 – 21, 2017)
Smoke Test Demonstration
Smoke Testing

Smoke coming out of ground. Logical place for a possible manhole or uncapped end of pipe.
Smoke coming out of ground at clean out. Pipe is obviously broken and not capped.
Smoke Testing

PVC clean out above ground with smoke present.
What can Two Harbors Residents do to Address I/I?

- Check your home for incorrect sump pump or storm drain connections to the sanitary sewer. Contact City at 218-834-8813 for a free inspection.
- Alert the City if you observe a flooded manhole cover.
- Inform your neighbors and friends about I/I
- Check City Website for Updates and More Information on I/I
In Closing....

- Two Harbors has 31 Miles of Water Distribution System Piping and 24 Miles of Sanitary Sewer.
- Current Replacement Cost = 15 Million (Water) = 15 Million (Sewer)
- Maximum Life Span = 100 years
- Replace 1% per year = $300,00 per year
THANK YOU!