

REDUCING INFLOW AND INFILTRATION

PART 1: SUMP PUMPS



In this series of articles I will discuss cost effective ways of reducing inflow and infiltration to our wastewater facilities. Inflow and infiltration are defined below.

INFLOW:

“THE WATER DISCHARGED INTO A SEWER SYSTEM AND SERVICE CONNECTIONS FROM SUCH SOURCES AS ROOF DRAINS, SUMP PUMPS, FOUNDATION DRAINS, COOLING WATER DISCHARGES, MANHOLE COVERS, COMBINED SEWER SYSTEMS, CATCH BASINS, STORM WATER AND SURFACE RUNOFF”

INFILTRATION:

“THE WATER ENTERING SEWER PIPES AND SERVICE CONNECTIONS FROM THE GROUND. DEFECTIVE PIPES, JOINTS, CONNECTIONS AND MANHOLE WALLS ARE COMMON LOCATIONS OF INFILTRATION”

Sump pumps are used by some home owners to remove unwanted water from basements. Unfortunately, a lot of these sump pumps are hooked into home owner sewer lines. This is a direct connection to the sewer collection system and results in extra influent flow, that the collection system has to handle and the wastewater facility has to treat. This treatment of unwanted ground/surface water wastes valuable facility capacity and restricts the amount of future hookups and growth of a community. A huge waste of money and time will result in wastewater facility upgrades due to lack of capacity that has been taken up by inflow and infiltration sources. Sump pump discharges can also cause wwtf's to use extra electricity, chemicals and can affect the efficiency of the treatment process.

A typical homeowner sump pump (40 gallons/minute) running 10 minutes per hour can pump 9,600 gallons per day. If there are 20 similar sump pumps in your community, 192,000 gallons of unwanted water is being sent to your wastewater facility in one day!

There are several ways to ensure that sump pumps are not tied into sewer collection systems:

-Education, Many home owners do not realize the problems they are causing by hooking sump pumps into their sewer lines. Educational mailings, billing inserts, door hangers, newspaper notices and town report messages are all ways of communicating to homeowners about sump pumps. Most homeowners that find out they pay for these wasteful flows in sewer rates and taxes, will voluntarily fix the problem.

-Ordinances, Most communities have sewer ordinances that regulate illegal connections such as a sump pumps, roof drains and perimeter drains. Enforcing the sewer ordinance is sometimes necessary.

-Plumbers, A visit to your local plumbers to remind them about proper sump pump installation may also help.

Getting the word out in your community about sump pumps and doing periodic inspections of basements may yield surprising results for your wastewater collection system and treatment plant. For assistance with inflow and infiltration in your community, contact VRWA Wastewater Specialist Wayne Graham at 800-556-3792 ext. 319

Example of billing insert:

THE IMPACT of SUMP PUMP FLOWS

The impact of sump pump flows on a wastewater treatment plant can be significant. These additional flows can lead to operational problems at the treatment plant as well as sanitary sewer overflows (SSO's). The following illustrates the impact of sump pump flows:

The Facts:

- The average homeowner sump pump is between 1/3 and 1/2 horsepower.
- The average discharge rate is between 2500 to 3200 gallons per hour (gph) or 42 to 53 gallons per minute (gpm).

The Example:

- Using the low end pumping rate of 42 gpm
- Using an average pump time of 5 minutes per hour
- Using 50 sump pump connections

During a wet weather event (substantial rain, snow melt) the following can be assumed:

$$42 \text{ gpm} \times 5 \text{ mins/hr} = 210 \text{ gallons per hour/connection}$$

$$210 \text{ gph} \times 24 \text{ hrs/day} = 5040 \text{ gallons per day/connection}$$

$$5040 \text{ gpd/connection} \times 50 \text{ connections} = \textbf{252000 gallons per day extra flow!}$$

That's 252000 gallons a day in addition to the usual daily flow.

What Can You Do?:

1. Disconnect sump pumps from the sanitary sewer. Connect them to a storm sewer, drainage ditch, or dry well.
2. Urge your neighbors to do the same. It will save you money in the long run.
3. If you have any questions regarding a sump pump connection, call your wastewater treatment plant operator. They will be happy to assist you.

This fact sheet was prepared by Steve Grimm, Wastewater Technician for the New York Rural Water Association, using information gathered from local hardware stores regarding basic homeowner sump pumps. For more information, or to schedule a technical assistance visit, please call (518) 828-3155.