



FAQ's – Village of Shorewood Flooding

The following list of frequently asked questions and answers have been developed by Thomas Zoulek, P.E. of Mid City Plumbing and Heating Inc. and in coordination with the Village of Shorewood Planning and Development Department Inspectors.

1) What causes my basement to flood?

Basement flooding can be caused by multiple sources. During a rain storm the basement can flood due to a sewer surcharge, storm water runoff or a combination of both. If you have water/sewage coming into your basement through the floor drain(s), laundry tub or other basement plumbing fixtures, it is due to a sewer surcharge and backup. If you have water coming into the basement from or through walls, the floor, window wells or if the sump pump cannot keep up that is due to storm water runoff. It's not uncommon to have both sources cause flooding at one location.

2) What is a sewer surcharge?

A sewer surcharge is when the volume of water discharged to a sewer exceeds the carrying capacity of the sewer. In that event the water elevation (otherwise known as the hydraulic grade line) of the system raises until the necessary amount of holding area is available for the system. When the water elevation raises the direction of flow can change and sewage can flow backwards in the system causing flooding in low areas such as a basement.

3) Can I prevent my basement from flooding due to a sewer surcharge?

Yes, there are multiple ways of preventing basement flooding due to a sewer surcharge.

4) Can I prevent my basement from flooding due to storm water runoff?

Yes, each property is different and rain storms can vary greatly but solutions are possible. Please note that when the first floor of the building is located below the flood level then preventing against building flooding is much more difficult.

5) What is a backwater valve?

A back water valve or BWV is a device that prevents water /sewage from flowing backwards or upstream in a sewer.

6) What is the difference between separated sewers and combination sewers?

Separated or combination sewer indicate the type of liquid (otherwise known as effluent) that flows through them. In a separated system the sanitary waste flows into a sanitary sewer and storm water flows into or is collected by a storm sewer system. In a combination system both sanitary waste and storm water combine in one sewer and is transported to the sewage treatment plant.

7) Is my house in a separated or combination sewer area?

A local sewer official or engineer can determine this.

8) Is the water that comes out of the floor drain, during a rain storm, sewage?

Yes. The effluent that is coming from the floor drain or other basement plumbing fixture contains sewage. Typically, the sewage is diluted from the infiltration of rain water to the sewer system; however this is still sewage and carries the same bacteria as raw sewage.

9) What are drain tile, drain tile receivers and palmer valves?

Drain tile typically refers to a system of piping located around the perimeter foundation of a basement to convey storm water runoff to a sewer system or sump crock. Drain tile receivers are the plumbing device that allow drain tile to discharge to a gravity sewer system. A palmer valve is a mechanical check valve, located in a drain tile receiver, to prevent the backflow of sewage into a drain tile system

10) What is the purpose of drain tile?

Drain tile prevent hydraulic pressure from building against foundation walls and basement floors. When water infiltrates the ground near a basement the drain tile create a passage way for the ground water to get to the sewer system. Without drain tile hydraulic pressure would increase causing ground water to infiltrate through cracks in the wall and floor systems.

Hydraulic pressure can cause foundation walls to shift and collapse and basement floors to lift and buckle.

11) Does my house have drain tile? How do I tell?

Most homes do have drain tile. If you don't have a sump crock then you need to look for a drain tile receiver. Sometimes the expertise of licensed plumber will be needed to determine this.

12) Who do I contact to help determine what I need to do to prevent basement flooding?

When determining who to call to evaluate and propose a solution to your problem first look at where the source of flooding is coming from. If your source of water is from sewer backups, an undersized sump pump system or foundation drainage problems call a licensed master plumber that is familiar with your neighborhood. If your flooding is from grading problems start with a civil engineer and/or landscape architect and in some cases a plumber or sewer contractor may be needed. Be careful of whom you get advice from. Look for a trade professional who is experienced in solving these problems and knows the local and State codes that pertain to plumbing and grading.

13) Should I disconnect my downspouts? Will that help?

Disconnecting downspouts helps slow the speed at which storm water runoff makes its way to the mainline sewer system. However, the location of the downspout runoff is very important. Be careful not to cause a flooding condition for yourself or your neighbor. It is best to consult a professional to help determine if disconnection is advantageous to yourself and the neighborhood.

14) My house is in a separated sewer area but I don't have storm sewer. Why?

Not all streets in a separated sewer area have storm sewers. Storm sewers are typically installed to provide roadway drainage and not necessarily drainage for individual residential properties. Even if there is storm sewer in your street you may not have a storm sewer lateral into your property. The DPW or Engineering department can determine in fact if there is a storm sewer and /or lateral to your property. If there is a sewer but no lateral, you are typically allowed to connect to the municipal storm sewer at your own expense.

15) I live in a separated sewer area but I don't have a sump pump. Do I have drain tile? If so, where do they drain?

As mentioned above most all homes in southeastern Wisconsin have drain tile. Typically, if your home was built but prior to 1955 your drain tile are connected to the sanitary sewer via a drain tile receiver. The drain tile receiver is typically located in the vertical piping of the basement floor drain.

16) Will a sump pump help prevent flooding? How big of a sump pump do I need?

A sump pump and crock is a part of the drain tile assembly. If you have drain tile and you disconnect the drain tile from the sanitary or combined sewer you need to have a sump crock and pump. If your source of flooding is due to runoff then a properly designed sump pump system will help. Determining size of the system must be done on a case by case basis. Both the crock and the pumps need to be sized properly to handle the design flow rate of the drain tile system. Placing an oversized pump in small crock will lead to short run times and premature pump failure.

17) How effective is a back water valve? Is there a warranty?

Back water valves are a mechanical device and for years engineers and plumbers have argued about the reliability of a mechanical device on a sewer system. As with any piece of equipment, typically the better designed and built item will outperform the lesser. That is no different with back water valves. However, even the best and most expensive valve can fail, especially if it is not maintained. Backwater valves need to be maintained at least once a year.

Warranty. Manufacturers will only provide limited warranties against product defect but will not warrant operation. Installers should warrant the installation but not the operation of the device.

18) Are there other options to back water valves?

Yes. There are a few ways of preventing a sewer backup due to a surcharge. There are backwater valves, sewage ejector systems and manual valves. Sewage ejector systems allow the homeowner to remove the basement plumbing fixtures from the gravity sewer while still maintaining the basement plumbing system. Manual valves are a way of providing positive closure of the sewer system but someone has to be home to close the valve when needed. Please keep in mind that with almost any type of back water valve or other system a clear water sump pump and crock will be necessary. This system will convey the ground water, collected by the drain tile system, outside or to the storm sewer.

19) Can you have a back water valve in a combination sewer area?

Yes. Installation of a backwater valve can sometimes be more difficult in these areas but it can be done. In a combination sewer area the downspouts are typically connected to the sewer in the basement. If a back water valve is not installed in the correct location then in the event of a surcharge the valve would close and the rain water from the downspouts will fill the inside sewer and flood the basement. Each property is different and requires careful evaluation of the system prior to install. Typically in a combination area you tend to install multiple backwater valves. These valves are installed on the various fixtures instead of one for the whole house and are sometimes referred to as fixture or branch back water valves.

There are other options for this case however. One option is to separate the basement fixtures from the gravity sewer system and install a sewage ejector along with a clear water sump pump and crock. Another option is to install one main back water valve, disconnect the downspouts (only if there is green space available for this) seal the conductors, install a clear water sump pump system.

20) I have a back water valve and it failed. Why?

There are no statistics as to how often a back water valve will work. The manufactures will boost high success rates under factory testing but is that real life? No. There are four key elements to help provide a high success rate of your back water valve. These key elements are 1) quality of valve, 2) quality of installation, 3) maintenance and 4) sewage effluent. As with any item you purchase there is an industry standard then there are the subpar and high end products. The same goes for back water valves. Installation is also a key in the performance of the valve. One necessary element of a backwater is velocity of the effluent. If the sewage does not move through the valve properly it can become stuck and not allow the valve to close. Sometimes a back water valve cannot be installed because there is not enough change in elevation to permit flow through the valve. Maintenance is a necessity for a back water valve. Typically every six months a valve needs to be maintained. This includes removing the flapper, cleaning and lubricating it and cleaning the body of the valve. Sewage effluent contains any item that is flushed or washed down the drain. Certain items like starch based foods stick to piping and can become attached to flapper of the back water valve. Care needs to be taken with respect to the content of the sewage effluent that will pass through the valve.

21) How much does it cost to install a back water valve, sewage ejector and/or clear water sump?

There is no fixed cost or flat rate to install these devices. The plumbing system of each home or business is different and may require different systems or methods of installation. There are

also various brands and types of back water valves, ejectors and clear water sumps. On average a mid range, whole house back water valve installed will cost approximately \$3,500.00. Sewage ejection systems vary greatly and typically range from \$4,000 on up dependant on the size of the system and level of sophistication you desire. Clear water sump systems are much like sewage ejector systems. There prices range greatly also. A small residential system typically can be installed for around \$2,500. Again, keep in mind that get what you pay for. A small savings now can be the difference in having or not having a flooded basement.

22) Who can install a back water valve, sewage ejector or sump pump?

All of these installations require a municipal plumbing permit and possibly an electrical permit. Permits need to be obtained by licensed plumbing and/or electrical contractors. In some cases the homeowner can obtain the necessary permits. However, in any case the work needs to be done in accordance with all applicable codes.

23) If the Village enlarges or fixes the sewer system in the roadway can I still flood?

Yes. Surcharge of your system is not always caused by an undersized municipal sewer system. The sewer lateral serving your property can be undersized, deteriorated, or plugged. In this case the necessary storm water from downspouts, drain tile, etc.. cannot make it to the street fast enough causing a surcharge of your sewer system. A plumbing expert is need to evaluate and inspect the existing system.

24) What is infiltration of the sewer system?

Infiltration comes into play for separated sewer systems. In a separated system, without drain tile receivers, the sanitary sewer system should not have any additional flow during a rain event. Infiltration refers to the ground water that gets into the sanitary sewer system during such an event. Infiltration is due to cracks in pipes, leaks in manholes, etc....

25) What is a cross connection?

There are sewer cross connections and water cross connections. Water cross connections refer to a potable water line being connected to a non potable source or application without the proper safety device to prevent contamination of the water system. A sewer cross connection refers to discharging storm water to a sanitary sewer or sanitary sewage to a storm system. (In a separated sewer system) Cross connections lead to surcharge conditions or pollutants being discharged to our surface waters (rivers and lakes)

26) How do I know if someone is a licensed plumber or engineer?

When talking to a professional don't hesitate to ask them for their credentials. In Wisconsin all plumbers have to be licensed by the Department of Commerce. For installing a back water valve, sewage ejector or sump pump assembly only a fully licensed Master or Journeyman plumber can perform this work, not a restricted plumber or pipe layer. The reason for this is that plumbing systems have a direct connection to human health and safety.

To verify a plumber's credentials go to: www.commerce.wi.gov/SB_Credential/index.jsp

There are a lot of people that will sell themselves as an engineer but they are not licensed. Please keep in mind that a licensed civil or architectural engineer will be able to provide you with recommendations and plans as to needed repairs or preventative solutions but they cannot construct or install the product unless they are or sub contract to a properly licensed contractor. (IE plumbing contractor)

To verify an engineer's credentials go to:

www.online.drl.wi.gov/LicenseLookup/IndividualCredentialSearch.aspx