



## Understanding Drainage and Why Flooding Problems Exist...

In order to better understand the matter of yard flooding, and ways to prevent it, residents should be aware of some important terms and facts;

**Storm Sewer** – A storm sewer takes rainwater from streets and parking areas through various inlets. The water taken into these types of sewers does not get generally get treated at wastewater plants, as it does not typically contain sewage. It is usually simply discharged back into the environment through rivers and streams.

**Combined Sewer** – A combined sewer takes in waste from your drains located inside homes, businesses, and other buildings. It also takes in rainwater from streets and parking areas through various inlets. The water taken into these types of sewers needs to be treated before it is released to rivers and streams, because it actually contains waste.

**Inlets** – An inlet can be any structure that water or sewage can get into a sewer system. The most common inlets that the public sees on a regular basis, are open “sewer grates”, which are installed in the pavement of roads and parking areas, and along curbs. These inlets can lead to either a combined sewer, or a storm sewer.

**Village of La Grange Park Sewer Systems** - Most of the Village of La Grange Park is served by a combined sewer, which means surface rain water and sewage all travels in the same pipes to a treatment plant, prior to it being released back into the environment. The reason for this is that the sewer infrastructure for most of the Village was designed and installed prior to the need for separated sewers was recognized. Only one very small section of the Village was developed with completely separated systems. Again, in 2005, the Village installed additional modified storm sewer structures to relieve rainwater in some sections of the Village, but they do not serve each individual street, as a truly separated system would do. To do so, and go back and redesign the entire Village, is an extremely costly process.

Many properties throughout the Village experience yard flooding, especially in back yards. This is due to the topography of the land and the limited ability to convey water from rear yards with low elevations, to the front yards, which can help to absorb water as it travels to Village sewer structures.

Although yard flooding is undesirable, the Village put forth a great amount of money and effort in 2005 to relieve basement flooding, which can create further damage, by installing additional storm sewers and inlets, relieving combination sewers from taking a great deal of the storm water.

Yard flooding can increase over time due to a variety of reasons. The most common is the increase numbers of large additions, patios and garages being constructed, which can result in more rainfall running off into poorly drained backyards. Overall, the Village does not want to prevent property owners from improving their property, but there are Village codes that require certain improvements to be reviewed by Village engineers and building staff, to ensure that the improvement does not directly impact their neighbors. In specific, any plans for a new home, or any improvement which results in more than 250 square feet of new impervious surface, is required to be accompanied by an engineering plan, which will indicate how the water is being handled.

Cumulative effects of development can sometimes become a very difficult problem to correct for those properties which are some of the lowest ones in a particular section of the Village. Property improvements in the general area could be done according to code and best engineering practices, but a problem may still develop over time. The reason for this is that even with good engineering design for a particular site, state drainage law does not allow someone to redirect the normal flow of water. Therefore, as an example, if for years water traveled downhill over five to seven backyards to yours, it cannot simple be blocked at some point, and diverted somewhere else.

## **Solutions to Reduce Yard Flooding...**

The following are some common ways to reduce yard flooding which may be occurring on your property, depending upon the severity. Please remember that some of the situations can be difficult to completely take care of in a Village of our age, and with our current infrastructure. There are though some common solutions.

### **Yard is relatively flat with Minor Flooding (<3 Days)**

**Solution: Install a drain tile, swale or dry well.**

Drain tiles and swales provide a pathway for water to flow through higher land.

Drain tiles are now usually made of plastic piping and may be perforated (water seeps into tile) or non-perforated (water enters through inlets). They should slope at least 2% (two feet of fall for every 100 feet of length). Drain tiles discharge either to a front yard or into a storm sewer inlet, as allowed by the Village. Again, there are limited dedicated storm sewers installed in the Village, as combined sewers are installed throughout most of the Village. Unfortunately, drain tiles are not allowed to be connected to the combined sewers, as rain events place a great burden on these structures, and increasing the amount of water entering these increases the potential for system surcharges, and such things as basement flooding.

Swales are a created by a combination of higher and lower elevated areas of the yard, simply graded with the dirt in the yard and usually covered with grass. They should slope at least 1% (one foot of fall for every 100 feet of length). Gutter downspouts should extend to swales via non-perforated tiles. The ground surface around the house should slope away from the foundation toward the swales.

Dry wells are underground retention areas. They are usually comprised of a large area or pit, filled with specific sized stones, and enclosed with a fabric which keeps out dirt and debris, while allowing water to enter. They absorb frequent rainfalls that pose problems for grass growth. When the rainfall stops, and the ground dries, the water slowly seeps into lower areas underground. Dry wells will occasionally overflow after successive rainfalls or especially heavy rainfalls. Dry wells are generally installed when drain tiles and swales are unfeasible.

## **Yard is low with Major Ponding (≥ 3 Days)**

**Solution: Install a drain tile or swale.**

Drain tiles and swales provide a pathway for water to flow through higher land.

Drain tiles are now usually made of plastic piping and may be perforated (water seeps into tile) or non-perforated (water enters through inlets). They should slope at least 2% (two feet of fall for every 100 feet of length). Drain tiles discharge either to a front yard or into a storm sewer inlet, as allowed by the Village. Again, there are limited dedicated storm sewers installed in the Village, as combined sewers are installed throughout most of the Village. Unfortunately, drain tiles are not allowed to be connected to the combined sewers, as rain events place a great burden on these structures, and increasing the amount of water entering these increases the potential for system surcharges, and such things as basement flooding.

Swales are created by a combination of higher and lower elevated areas of the yard, simply graded with the dirt in the yard and usually covered with grass. They should slope at least 1% (one foot of fall for every 100 feet of length). Gutter downspouts should extend to swales via non-perforated tiles. The ground surface around the house should slope away from the foundation toward the swales. Drain tiles and swales provide a pathway for water to flow through higher land. Drain tiles should slope at least 2% (two feet of fall for every 100 feet of length). Drain tiles may be perforated (water seeps into tile) or non-perforated (water enters through inlets). Drain tiles discharge either to a front yard or into a storm sewer inlet, as allowed by the Village. There are limited dedicated storm sewers installed in the Village, as combined sewers (sanitary and storm), are installed throughout most of the Village. Unfortunately, drain tiles are not allowed to be connected to the combined sewers, and rain events place a great burden on these structures, and increasing the amount of water entering these, increases the potential for system surcharges, and such things as basement flooding.

## **Alternative Options...**

Re-grading (raising your elevation), or using pumping systems to convey water, are generally not allowed except in extreme cases. Such designs can create problems for other property owners, who end up receiving the water runoff. If water is forcibly pumped onto public walkways or streets, this has a better chance to overflow nearby sewers or create hazardous walking and driving surfaces, especially in winter, when ice can form. If and when these options are deemed appropriate for your property, a professional engineer must be involved in the engineering of such, as various requirements would need to be met to prove to the Village that there will be no adverse effects to others.

## **Designing and Installing the Solution...**

In many instances, qualified landscape contractors or landscape architects can usually help you design a system that is appropriate. If more help is needed, a professional civil engineer can also be useful. Regardless though of which solution is appropriate for you, or who designs it, the design needs to be reviewed by the Village Building Department and a permit needs to be obtained to do the work. Should you have any further questions or concerns, please contact the Village of La Grange Park Building Department.