



MAINTAINING DRAINAGE SYSTEMS CONTROLLING SUBSURFACE WATER

What is Subsurface Water?

"Subsurface water" generally refers to water that is beneath the ground surface and is also known as groundwater. (*Refer to Naperville's Fact Sheet titled Maintaining Drainage Systems – Sump Pumps for additional information*)

How does Subsurface Water cause problems?

In the case of a house or other buildings with a basement, or floor levels that are only partially below ground, subsurface water is generally collected by drain tile. It is then pumped out onto the ground outside the building. In some areas, the sump pump is sometimes connected to a storm sewer outside the house.

Subsurface water can be a problem if it seeps into the lower levels of a home through cracks in the wall or up through the floor. It also can be a problem when it drains into a sump pit at a rate that exceeds the ability of the sump pump to pump it out.

In a worst-case scenario, it causes water to rise in the lower level or basement such that it causes damage to the carpet, appliances, furniture, etc. When the water reaches that critical level, it may warrant spending time and money to correct the problem. It should be noted that this type of drainage problem is considered a localized problem for a particular property. It is therefore not an area-wide issue that is corrected by the City.

Types of Maintenance to prevent or correct problems with subsurface water

- Sump pumps, check valves and piping should be periodically tested and possibly replaced. These are sometimes not used very much during normal conditions but can suddenly become heavily taxed during heavy rainfall or snowmelt and fail at those worst possible times.
- If water rises up and out of the sump pit, the existing sump pump could be replaced with a larger one, or sometimes just with a newer one of the same size if the old one simply failed because it wore out over time.
- Another sump pit and pump can be installed to help out an existing one that is being overwhelmed.
- Replacement of existing drain tile or installation of additional drain tile is sometimes needed. This can be because the old tile plugged up over time, it collapsed or was broken due to settlement around the house, or the house did not have tile where the seepage is occurring.
- Standing surface water can soak into the ground and continually keep the level of groundwater high up around the building. This can sometimes seep through the walls or overwhelm the sump pump. To prevent this, standing water, if any, should be kept at least 20 feet away from the

house, preferably down the grade from the house. (*Refer to the City's Fact Sheet titled Maintaining Drainage Systems – Surface Water for additional information*.)

- If water is seeping through the basement walls or floor, the walls and floor could be waterproofed. This can be done in a variety of ways, ranging from filling cracks with a water-tight sealer on the inside of the basement, to digging around the foundation to seal leaks from the outside.
- If water rises up and out of the floor drain, it is usually because the sanitary sewer has backed up. This is not really a groundwater problem per se, but may be occurring because of heavy rainfall causing water to enter the public sanitary sewer main (in the street) or through the smaller service line running from the house to the public main.

A simple method to solving this condition may be with the installation of a riser-pipe on the floor drain. The sewage water is then allowed to rise within the pipe, but does not spill out onto the basement floor.

If this is occurring, this is a type of problem that may be an area-wide problem being addressed as part of a sanitary sewer maintenance or repair program. City staff should be contacted if this type of sewer back-up problem is occurring.

Frequently asked questions about subsurface water include:

Q. How is subsurface water getting into the sump pit?

A. Drain tile outside the foundation perimeter collects the groundwater and dumps it into the pit. Drain tile is generally small-diameter pipe with perforations (small holes) that allows the groundwater to drain into it.

Q. How do you check or test a sump pump?

A. Refer to the City's Fact Sheet titled "Maintaining Drainage Systems – Sump Pumps" for additional information.

Q. Why isn't the City fixing this problem?

A. Groundwater levels can vary greatly within a City and can be very much affected by localized conditions. Isolated seams of gravel or sand within the clay layers of soil typically found in this area can direct water to a basement. Surface water could also be collecting next to your house because of improper grading on only your property, or a list of other problems found only on that property could be the cause of water getting into a basement. Since these problems are almost always caused by things found only on an individual property, a public agency is very seldom able to correct the problem with public funds.