

Stormwater: True or False

Rain, rain, and more rain. Since approximately 2017, we've been getting much more of it than we used to, and in larger chunks and more than most of us want. As a result, the Township has been hearing many things regarding stormwater runoff from its residents that aren't completely accurate. Regardless of what may be causing this phenomenon, higher rainfall appears to be something that we need to adjust to and understand the concepts and related laws.

In upcoming newsletters, the Township Engineer will continue to present a series of articles based on misconceptions heard from our residents regarding stormwater. In each article, a statement will be presented, along with an explanation of why each statement is a misunderstanding of the concept of stormwater management, drainage conveyance, and other related topics regarding stormwater.

Statement: "The roadways should never flood if the stormwater drainage system (drains, pipes, and culverts) is working properly. If they do flood, there must be something wrong with the system or the design."

Analysis: Mostly false.

While there certainly could be something wrong with the drainage system if a roadway is flooding, often this is due to experiencing a storm that is beyond the design of the drainage system. Back in the "old days" of the 1960's to 1980's, designing a drainage system to convey a storm of about five inches of rainfall in a day was most common in Southeastern Pennsylvania, particularly for municipally owned roadways, which required roadway runoff to be confined to the shoulder areas or gutter line of curbed roadways. Larger storms could occupy the gutter line and up to one half the travel lane of the roadway on both sides of the road for storms of a little more than seven inches of rainfall in a day, leaving a single travel lane for emergencies

in the center of the roadway. Storms beyond seven inches of rainfall in a day were considered emergency conditions and beyond the scope of the design, allowing the travel lanes to flood, if the runoff eventually entered the storm drainage system at the low point in the system, or by flowing overland to a stormwater management facility.

Since the late 1980's the regulations in most municipalities have become more stringent, requiring the storm drainage system to be designed to convey about five to six inches of rainfall in a day while being contained within the roadway shoulder or gutter line of curbed roadways, along with some additional safety factors that must be implemented in the design to address potential problems during storms that aid in reducing lane flooding. However, the regulations still permit half the travel lane to flood during heavier storms, with the same requirements for the larger storm runoff to be captured at the low point in the system or by flowing overland to a stormwater management facility.

For most people, this presents the following two questions: 1) Why don't municipalities require the designs to confine the lane flooding to the gutter line for a massive storm and 2) What does this mean to the average person from a practical perspective? First, to confine all the runoff to the gutter line, practically the entire roadway would have to have one, continuous inlet along the curbing for its entire length to allow for clogging, etc. While that may sound great when a developer is building the roadway, the municipality usually owns and maintains the roadway after a development is built. A road with more drainage facilities is more expensive and time consuming to maintain than one with fewer facilities. So, designing and maintaining a roadway for a rain event that happens very occasionally is not fiscally reasonable. (It would be akin to requiring twice as much parking



at the King of Prussia Mall to simply accommodate the annual holiday shopping rush).

Second, the practicality to the average person is to try to avoid driving when heavy rainfalls are forecasted, if possible. If this is not possible, be very cautious of roadway flooding both at creeks and within the travel lanes. Pulling off to the side of the road until the downpour subsides is usually a good idea, particularly if lane flooding is combined with poor vision, and never try to cross a creek that has flooded a roadway. While the flood waters may look still on the surface, there can be a raging torrent beneath that can easily move a vehicle. ●

Toss It? No Way! Just Visit a Repair Café

Do you have a household item that is broken that you know can be fixed but don't have the tools or skill to fix it yourself? If so, you should check out the Repair Café in Downingtown. Repair Cafés are free meeting places that are all about repairing things (together). When you visit a Café, you'll find tools and materials to help you make any repairs you need. You'll also find expert volunteers with repair skills in all kinds of fields. It's a win-win for you and the environment as this initiative helps keep items out of a landfill. The nearest Repair Café is located in the Central Presbyterian Church in Downingtown at 100 West Uwchlan Avenue. If you are interested in learning more about the Café, please visit their website at <https://www.repaircafe.org/en/cafe/downingtown-repair-cafe/>