What's causing citywide stormwater issues?

Much of Peoria's stormwater infrastructure is old and approaching the end of its useful life—needing repair or replacement. At the same time, increased development has altered our natural landscape.

Chief causes of citywide drainage problems are summarized in Peoria's 2003 "Stormwater Master Plan," which states that pressing problems are occurring:

1 As a Result of Increased Runoff from Urbanization

Our City has continued growing geographically, with new subdivisions and shopping centers. But along with growth has come development that has increased Peoria's "impervious" footprint: more parking lots, more roofs, more patios, more driveways, etc. Impervious surfaces like these don't allow rain and snow to do what they normally do—soak into the ground. With less land available to allow infiltration, more rain and snow runs off into the sewer system or elsewhere.

GIS data from 2011 (latest available detailed information) shows that the City of Peoria has more than 235 million square feet of impervious area—mainly buildings and paved driveways and parking lots. That's equivalent to nearly 4,100 football fields.

PEORIA HAS ABOUT

4,100

FOOTBALL FIELDS' WORTH OF IMPERVIOUS AREA

A PEORIA HOME WITH A 1,500-SQ.-FT. ROOF PRODUCES ENOUGH RUNOFF FROM RAIN IN A YEAR TO FILL

1,400 bathtubs

– Estimate using U.S. Geological Survey and National Weather Service data

A PARKING LOT SHEDS

16 times

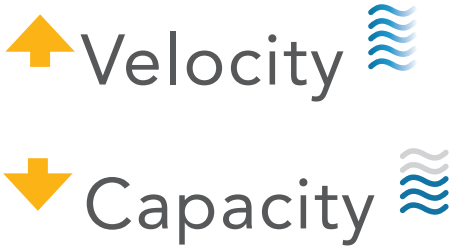
AS MUCH STORMWATER AS A MEADOW

– North Carolina Department of Natural Resources

2 Because of Channel Modifications by Property Owners—Resulting in Higher Flow Velocities and a Higher Potential for Erosion

Most channel modifications occur on private property (adding pavement, retaining walls, etc.) when owners want to expand their yards or protect them from erosion. They tend to move the natural channel of water flow to the very back of their property.

But if a cross-section of a channel is reduced through this type of development, it makes the area that water has to flow into much smaller, resulting in an increased velocity of water flow … similar to squeezing the end of a garden hose. Another way that property owners increase velocity is by changing the type of material that water flows over, from natural vegetation to concrete … similar to sledding on grass versus sledding on ice.



Simply stated, property owners' well-intentioned actions can cause flooding upstream (through reduced capacity) or erosion at the channel modification site itself as well as downstream (through increased velocity).

3 Due to a Lack of Construction/Development Controls (i.e., Ordinances) to Prevent Development in the Vicinity of an Open Channel

SINCE THE 2003 PLAN, THE CITY OF PEORIA HAS:

Created a stream buffer ordinance (2005).

This was intended to establish minimal requirements for the designs of buffers to protect property adjacent to streams and floodways, along with protecting water quality and stream ecosystems. The ordinance also was set up to ensure environmentally sound use of land resources.

Modified the stormwater detention ordinance (2006).

This controls the peak rate of discharge from a property for two-year and 25-year storm events. This means that the peak rate after development for those storms will be the same as it was before development.

Stormwater volume control practices required (2017).

Stormwater volume control practices must be constructed on projects with over 5,000 feet of distributed area. Volume control practices capture, retain and infiltrate the first one inch of stormwater runoff from the impervious areas. Also, major stormwater systems are now to be designed to convey the 100-year storm.

STORMWATER & WATER QUALITY

Peoria also must be prepared for regulatory changes that will impact storm sewer management

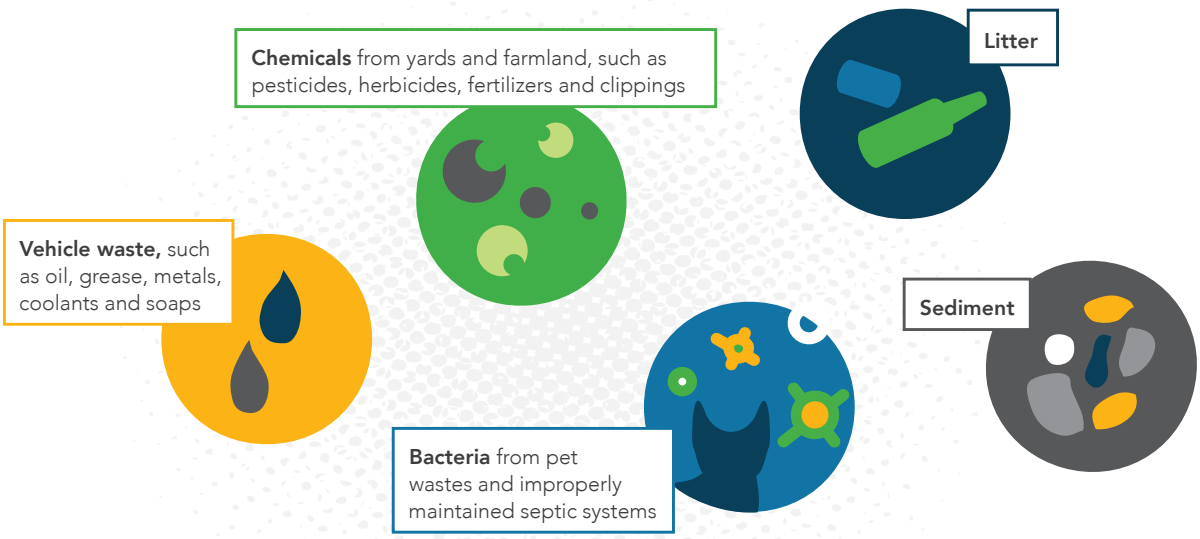
Runoff in our City picks up a witches' brew of pollutants from homes and businesses.

Peoria's native landscape used to allow stormwater to infiltrate and slowly drain into channels over time. This system naturally cleaned and filtered the water, allowing a stream ecosystem to thrive. Now, with impervious and semi-pervious surfaces covering much of our land, rain and snow runoff are carried by pipes into channels.

While the system is intended to prevent street flooding and other hazards for cities, it means water gets into drainage channels much faster and untreated. There is no longer a filter system or a slow, steady water source.

WHAT DOES STORMWATER RUNOFF CARRY?

Stormwater runoff in the City of Peoria is not treated by the Greater Peoria Sanitary District. Rather, rainfall and snowmelt pick up whatever chemical compounds and/or trash lie on developed land, which then make their way into creeks and streams.



OUR PERMIT REQUIREMENTS

Like other communities, Peoria also has an NPDES permit for our Municipal Separate Storm Sewer System (commonly referred to as MS4). Our permit is administered by the Illinois EPA under the Clean Water Act, and it regulates untreated, discharged stormwater runoff. A more stringent NPDES MS4 permit went into effect March 2016.

The time is right to explore more robust funding mechanisms for stormwater management so that Peoria can be better prepared to meet existing requirements and increased NPDES permit standards, which will require changes in how we build, monitor and maintain our storm sewer system. Our permit also compels us to educate citizens about pollution impacts. We can encourage people to be aware and play a role in preventing pollution.