Even Flow:
Managing Stormwater Movement

The City of St. Charles' storm sewer system includes culverts, ditches, detention basins and approximately 175 miles of storm sewer pipes with over 5,200 curb inlets. This system is designed to help control urban flooding events by directing runoff into the storm sewer which guides excess water into detention basins, local creeks and streams. Most people think that stormwater runoff travels through these drains to a treatment plant before being released. What actually occurs in most urban areas, including the City of St. Charles, is the runoff discharges directly to area creeks and rivers without any treatment whatsoever.

In 1972, the National Pollutant Discharge Elimination System (NPDES) program was established under the Clean Water Act. Phase I of the NPDES Stormwater program was established in 1990 and required permit coverage for municipalities with populations of 100,000 or more.

The Phase II program, signed into law in December 1999, extends permit coverage to smaller (less than 100,000 pop.) communities and public entities that own or operate a separate storm sewer system. The City of St. Charles is a Phase II municipality.

By properly managing our stormwater systems, the City of St. Charles can minimize or avoid complications that lead to erosion and flooding. The objective of the Phase II program is for cities, such as St. Charles, to develop effective, site specific stormwater management programs to reduce the discharge of pollutants. The EPA has chosen this flexible approach because the nature of discharges varies from region to region.

Environmental Protection Agency (EPA) regulation requires permitted municipalities to develop, implement and enforce a stormwater program designed to reduce the discharge of pollutants. These programs must include six minimum control measures:

1. Public Education and Outreach on Stormwater Impacts
2. Public Involvement and Participation
3. Illicit Discharge Detection and Elimination
4. Construction Site Stormwater Runoff Control
5. Post Construction Stormwater Management in New Development and Redevelopment
6. Pollution Prevention / Good Housekeeping within Municipal Operations

When combined, these tasks form the framework for a cohesive stormwater management program.

One approach gaining popularity among property owners and municipalities is to combine efforts for stormwater management. The easiest and most effective way to prevent stormwater pollution and flooding is for runoff to be absorbed by the ground.

One way property owners can help is by using rain barrels. An average home with a roof size of 1,000 square feet will generate approximately 600 gallons of water from a 1-inch rainfall. Collecting and using this water with rain barrels helps reduce the demand on public/private water supplies. These barrels can also help reduce pollution, flooding, and erosion in local waterways by reducing the amount of runoff. The runoff collected with these barrels can be used to water indoor and outdoor plants, clean gardening tools, or even wash your vehicles.

Another way property owners can help is by building rain gardens. These simple bio-retention gardens can increase runoff infiltration to groundwater and reduce the amount of polluted stormwater leaving a property. Typically built in low spots that retain water, a rain garden can add year-round color to a property and create new habitat for butterflies and song birds.

In addition to property owners doing their part to control stormwater runoff, the City of St. Charles manages stormwater in area neighborhoods. In 2016, the City published the Long-Range Stormwater Plan. This plan guides Public Works in planning for capital expenditures and allows coor-

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Officer Juan Wilson talks with students at Duchesne High School about the dangers of heroin.

The Fight to Stop Heroin

Officer Juan Wilson of the St. Charles Police Department is carrying an important message to kids: curiosity with heroin can kill.

"What we want these kids to learn and remember is 'Not Even Once!'," he said. "In fact, I have them scream it as loud as they can. They need to know that just one use of heroin is all it can take for them to end up dead or fighting through a lifetime of addition. It's a devastating drug."

A St. Charles police officer, Wilson also works for the St. Charles County Regional Drug Task Force and the St. Louis Drug Enforcement Administration (DEA). "I've always worked in community outreach," he said. "But as I started to see kids dying–seeing what these families go through as they attempt to pick up the pieces–I wanted to help change that."

Here are just some of the facts Officer Wilson presents:

- 80% of those who use heroin started by misusing prescription pain meds.
- Heroin and prescription pain meds are derived from the same plant, the poppy. These highly addictive drugs are in a class called opioids.
- People who become addicted to prescription pain meds are 40% more likely to become addicted to heroin.
- The purity of street heroin has drastically increased, allowing it to be snorted instead of having to be injected.
- The purity of heroin is never known. It can be cut with more potent drugs or diluted which drastically increases the chances of an overdose.
- Opioids are depressants which means they can slow breathing and heart rate until both just stop.

"In 2010, we started to see a rise in heroin deaths in St. Charles County. Now we're losing more people to overdoses than fatal car crashes," he said. "We know it's important to talk to kids early so they can make educated decisions about their futures, so we are in the schools as often as possible."

For high school students and their parents, Officer Wilson adds it's especially important to talk about prescription pain meds. "Since that's where the problem almost always begins, if these kids get injured playing football or soccer, they have to understand how dangerous prescription opioids can be," he said. "And parents have to monitor their dosing."

Wilson first began these presentations in conjunction with the County Drug Court and at the invitation of the Ft. Zumwalt School District. Since then, he has spoken with students at Warrenton, Duchesne and St. Charles High schools as well as St. Cletus and Orchard Farm Middle School, just to name a few.

"Heroin is destructive and deadly," Wilson concluded. "I've seen too many families suffer the heartache it leaves behind. We have to change this trend."

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dination of various types of projects to minimize costs and maximize the value of the City's construction funding. The projects incorporated in the Long-Range Stormwater Plan are identified through the investigation of resident concerns, regular video inspection of the storm and sewer system and through a risk-based GIS model and tools. The plan includes projects in the following categories:

- Creek Bank Stabilization Projects
- Flood Damage Mitigation
- Infrastructure Replacement & Repair
- Stormwater Improvements
- Water Quality Enhancements

Injuries and loss of life can result from urban flooding and stormwater runoff. Flooding results in public and private funds being spent on emergency services, clean-up and repairs. The negative financial impacts can impact all regional property owners for years through loss of land, increased insurance rates and lowered property values. The land itself can lose nutrients that are important to the health of lawns, trees and shrubs. Erosion can also be a major source of sediment that fills up ditches and clogs storm drainage pipes which can in turn cause higher and more frequent localized flooding

Stormwater management matters to the environment, to the City of St. Charles and to you.

OTHER READING:

www.onestl.org/toolkit/practice/rain-barrels

www.grownative.org

www.stcharlescitymo.gov/longrangestormwaterplan