

Philadelphia Water Department Testimony to the Senate Majority Policy Committee and the Senate Environmental Resources and Energy Committee at the November 15 Hearing on Flood Mitigation and Stormwater Management

Good afternoon Chairman Erickson, Chairman White, and members of the Senate Majority Policy Committee and the Senate Environmental Resources and Energy Committee. My name is Paula Conolly and I am a policy specialist supporting the Philadelphia Water Department. I am honored to be here today to testify about flooding on behalf of the City of Philadelphia.

The threat of flooding in Pennsylvania is growing. Development trends in many parts of the state are creeping upward. Rainfall will likely increase and intensify with climate change, which means that flooding, that in the recent past occurred once every several hundred years, could happen much more frequently. Options available to address flooding range from expensive, engineered solutions to relatively straightforward policy changes that could prevent flooding from getting worse. These policy changes could save communities millions of dollars that would otherwise be needed for flood recovery. Today I'll talk about flooding issues in Philadelphia and its neighboring communities, as well as discuss several key policy and data needs that, if addressed, could help alleviate flooding concerns.

Flooding comes in a number of forms. Most flooding occurs near streams that become overwhelmed with runoff during storms. This runoff is largely from upstream development that has historically been built without sufficient stormwater management measures and from stormwater collection pipes that express the runoff directly to streams. Structures that have been built too close to streams also contribute to the problem. In Philadelphia, most of the land bordering surface water is park land, which provides an effective buffer against flooding. However, flooding of low-lying historic streams does occur. Many streams throughout Philadelphia's history were placed underground in sewers to address pollution and to facilitate development. While these streams no longer exist in their original form, the topography that defined these stream valleys often still exists, mimicking the original floodplains that become inundated during storms. Complicating matters is that historic floodplains are not recognized in FEMA floodplain maps, which means that affected properties are not eligible for federal emergency relief funds. The Philadelphia Water Department is evaluating a number of options to mitigate flooding in these areas.

Basement backups are another form of flooding that occurs in Philadelphia and other communities that are "built-out". Intense rain storms can cause sewers to fill up quickly causing sewage "traffic jams." When sewage can't proceed through the system to a wastewater treatment plant, it finds the nearest opportunity to relieve itself – including basement plumbing. The Philadelphia Water Department is undergoing extensive modeling of the sewer systems in these areas to identify potential solutions. For the

short term, the Water Department has developed a basement protection program that includes installing backflow preventer valves in homes. Longer term solutions will include relief sewer installation and other engineered solutions that come at great expense and with significant community disruption. The Philadelphia Water Department estimates a price tag in the range of \$1B to address these flooding issues, with some areas undergoing construction for periods of as long as 20 years.

There are a number of ways to help support municipalities that experience flooding. Here I'll focus on changes to policy and practices that could help take the edge off of flooding issues in Pennsylvania.

Solution 1: The most logical starting point to alleviate flooding is to support development of updated FEMA floodplain maps that reflect current conditions. These maps should recognize both current and historic floodplains. Standards of floodplain protection are also needed that provide "cushions" for increased development and increased storm intensity due to climate change. These efforts will help municipalities make informed decisions about future development and redevelopment.

Solution 2: Flooding occurs without regard for municipal boundaries. Development in one municipality may lead to flooding in another. Therefore, flooding solutions must be regional in their approach. Many communities are already involved in multi-municipal planning initiatives through the Act 167 program and through watershed consortiums such as the Darby Cobbs Creek Watershed partnership. However, more tools are needed to formalize regional cooperation, however. Senator Erickson's proposed Integrated Water Resources Restoration, Protection and Management Act, for example, would create regional entities with the authority to regulate and manage stormwater on a watershed basis. These authorities would also be able to raise sufficient capital to address stormwater runoff through the collection and pooling of stormwater fees.

Solution 3: Stormwater management fees should be tied to actual costs, which are directly linked to the amount of hard surfaces on properties. Philadelphia is undergoing a transition from a meter-based stormwater charge to a "cost of service" stormwater charge based on the size of a property's gross and impervious area. Commercial customers can reduce their stormwater fees by implementing green infrastructure to manage stormwater on-site. Collectively, these changes will reduce stormwater runoff as well as alleviate flooding throughout the City. This fee structure could provide a model for other Pennsylvania communities.

Solution 4: There is significant pushback throughout the development community to implementing stormwater management practices. However, flooding is often a direct result of insufficient stormwater management measures. Dollars that could go to flooding prevention and property enhancement are instead effectively shifted to flooding recovery and property cleanups. Given its high visibility and impact, flooding is a powerful message that should be used within the development community to

convince them of the importance of implementing sound stormwater management measures.

Solution 5: For areas such as Philadelphia that are “built out”, flooding that occurs when sewer systems are overwhelmed can only be fully addressed through expensive retrofits. Other communities with development underway should take note. Sewer systems that are actively being built to accommodate new development should factor in climate change during design. One way to do this may be to use data on the frequency and intensity of storms in warmer climates in modeling sewer system capacity.

Solution 6: Green stormwater infrastructure, such as green roofs, rain gardens, stormwater wetlands and porous pavement should be encouraged over conventional stormwater management solutions especially in flood prone regions. These solutions will help mitigate flooding for smaller storms, and may take the edge off of flooding from larger storms. Additionally, green stormwater infrastructure is significantly easier to modify in the face of changing climate conditions compared to hard-engineered tanks and tunnels.

In Southeastern Pennsylvania, as well as throughout the country, we are experiencing a time of great urgency in managing our water resources. Old problems, such as sewer overflows, aging infrastructure systems and frequent droughts and floods combine with new threats such as climate change to demand swift and long-term solutions. No single municipality can address these problems alone. Now more than ever we need smart policy decisions that encourage creative, regional solutions. Thank you.