



WATER RESOURCE CENTER

# FACT SHEET

Southwestern Pennsylvania Commission

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# INTRODUCTION TO STORMWATER MANAGEMENT

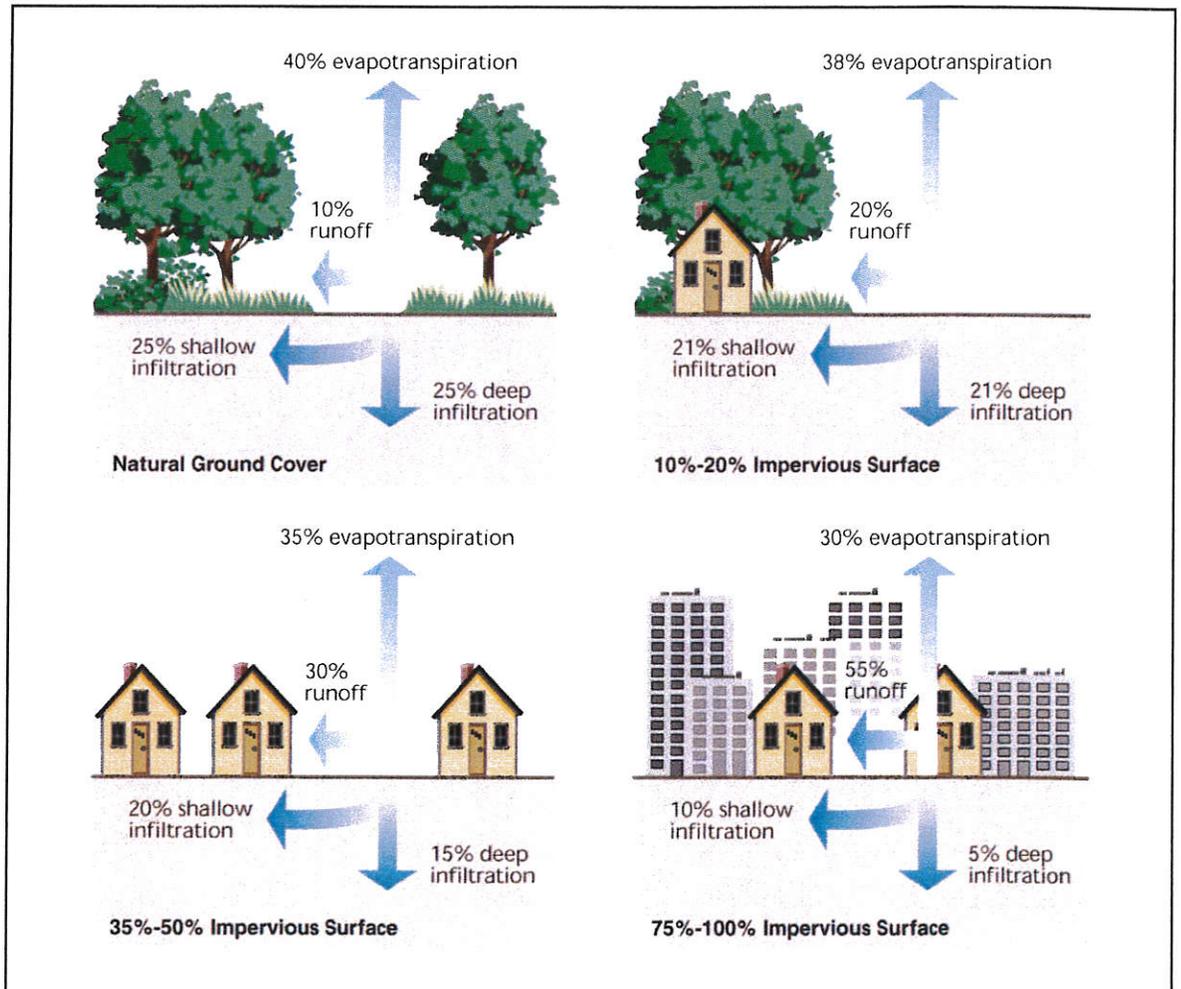
## KEY CONCEPTS

**STORMWATER** occurs when it rains or when snow melts.

**STORMWATER RUNOFF** is a term used to describe rain and snow melt that is unable to infiltrate into the ground.

**IMPERVIOUS SURFACES**, such as roads, parking lots, roof tops, and compacted land, do not allow for any infiltration into the ground. The presence of impervious surfaces results in an increase in the amount of stormwater runoff.

**NON-POINT SOURCE POLLUTION** is pollution that comes from many sources. As stormwater makes its way across the surface and into our local waterways, it brings with it non-point source pollution. Causes of non-point source pollution include oils, fertilizer, pesticides, animal waste, trash, and organic matter.



As illustrated in the diagram above, the amount of stormwater runoff increases as the amount of impervious surfaces increases. Poorly managed stormwater runoff can cause a variety of problems such as environmental degradation and localized flooding.

Image: NRCS

(OVER)

## IMPACTS OF STORMWATER

Stormwater runoff, when managed improperly, can impact land owners and the environment. Some examples of stormwater-related problems are listed below.



Poorly managed stormwater can lead to stream bank erosion. This can affect stream quality and habitat and cause property damage.

Photo: [enviroloknw.com](http://enviroloknw.com)

### Land Owner / Economic Consequences

- ◆ Localized flooding damages
- ◆ Land destabilization
- ◆ Loss of recreation and tourism income
- ◆ Transportation infrastructure and sewer system damage



Stormwater is usually not treated before entering our waterways. Therefore, pollutants that enter storm drains have direct environmental impacts on our waterbodies. Photo: [Wilmingtonnc.gov](http://Wilmingtonnc.gov)

### Environmental Consequences

- ◆ Erosion
- ◆ Polluted waterways through non-point sources such as oils, pesticides, trash, fertilizers, etc.
- ◆ Loss of aquatic habitat
- ◆ Lack of groundwater recharge
- ◆ Elevated concentrations of nutrients such as phosphorus

### *Did you know that...*

- ◆ Stormwater is the primary cause of water pollution nationally.
- ◆ As little as 10% of impervious cover in a watershed can cause degraded stream conditions.
- ◆ Public and private drinking water sources can be affected by poorly managed stormwater.

Source: EPA

**For More Information**  
To learn more about stormwater problems and solutions, visit the following websites:

- ◆ [EPA.gov](http://EPA.gov)
- ◆ [depweb.state.pa.us](http://depweb.state.pa.us)
- ◆ [pacd.org](http://pacd.org)
- ◆ [bmpdatabase.org](http://bmpdatabase.org)
- ◆ [spcwater.org](http://spcwater.org)

## STORMWATER SOLUTIONS: BEST MANAGEMENT PRACTICES

Best Management Practices (BMPs) refer to the suite of options available to avoid and/or minimize damages associated with stormwater. BMPs can include the installation of stormwater management controls as well as practices that prevent stormwater pollution. See below for some examples of effective BMPs for common land use types.

### Residential BMPs

- ◆ Rain gardens
- ◆ Rain barrels
- ◆ Pervious walkways and patios
- ◆ Landscaping with native plants
- ◆ Minimization of pesticide and fertilizer use
- ◆ Proper disposal of hazardous chemicals, electronics, and pharmaceuticals

### Commercial Development BMPs

- ◆ Vegetated swales
- ◆ Pervious pavement
- ◆ Preservation of existing undeveloped land
- ◆ Constructed wetlands
- ◆ Capture and reuse of stormwater for irrigation
- ◆ Detention basin
- ◆ Street sweeping
- ◆ Erosion and sediment control during construction



Rain gardens are relatively simple to construct and can be designed to fit a variety of land use types. In addition to managing stormwater, rain gardens improve aesthetics, support pollinators, and more. Photo: [afbeducation.org](http://afbeducation.org)