



Richland Soil and Water Conservation District

Conservation, Education and Stewardship
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2020 MS4 Theme – Trees Reduce and Clean Stormwater

The 2020 MS4 Theme is "Trees – Reduce and Clean Stormwater" so this year you will be learning how trees help manage stormwater. Runoff is commonly transported through Municipal Separate Storm Sewer Systems (MS4s). Did you know trees are the most productive filters on the planet, starting from their canopy down to their roots? They help improve water quality in streams, rivers, and lakes by reducing flooding and minimizing chemical/ sediment runoff. The tree's canopy acts as a large umbrella capturing rainwater as it falls, which reduces the speed and amount that reaches the ground and becomes stormwater runoff. Trees root system takes up various pollutants and reduces the effects of erosion. An average tree can catch and hold onto 700 to 1000 gallons of rainwater a year. (Multiple Sources)

Find out more [here](#).

Trees Benefit Soil and Water

Forested watersheds provide quality drinking water to more than 180 million Americans. There are many considerations that are required to produce clean water including trees. You may not even know how much water that comes from a forested area. Any guesses? Well, it is 75 percent of the worlds available fresh water comes from forested watersheds and wetlands. Imagine the impact that may have on the clean drinking water supply for that area if for some reason the forested area that has always been there disappears. We need to help encourage the conservation of these forested areas so they may continue to provide reliable, safe clean water.

Source: [Arbor Day Foundation](#). Find out more [here](#).

Infiltration and Groundwater Recharge

Trees and wooded area's allow rainwater to seep into the soil and recharge the groundwater. Rainwater is filtered as it moves through the soil and goes toward streams and rivers as it flows under the surface. In forest and wooded areas seepage rates can vary from 18 inches per hour to 10 inches per hour depending on the composition of the soil. In a research study they found that in one area the seepage rate decreased from 12.4 inches per hour to 4.4 inches per hour when the site was changed from forest to suburban lawn. Source: Penn State Extension

*** Serving all Richland County Landowners with Conservation Assistance***

Pollutant Removal

Trees are good at removing many contaminants from rainwater such as: nitrates, phosphates, heavy metals, pesticides, solvents, oils and hydrocarbons. The process that takes place is called phytoremediation. In a study that was conducted, a single maple tree that was growing alongside the road took out 60 mg of cadmium, 140 mg of chromium, 820 mg of nickel and 5200 mg of lead in one season. The maple then took those pollutants and stored it in wood. Source: Penn State Extension

Water Consumers

Trees ingest and utilize gigantic measures of water for photosynthesis and growth, by moving the water from the trees root to leaf and then back into the air by evapotranspiration. A fully-grown oak tree can transpire over 40,000 gallons of water per year. The cooling of air through evapotranspiration adjusts summer temperatures in areas near and around the trees. Studies in Pennsylvania forests show that an average of 60% of precipitation is taken up by trees and transpired back into the atmosphere. When a forest is cut down for development, evaporation production declines, while the additional water runs off into a stream. This excess water entering the stream increases bank erosion, flooding, and other damages, costing money to repair and fix the area affected. Source: Penn State Extension