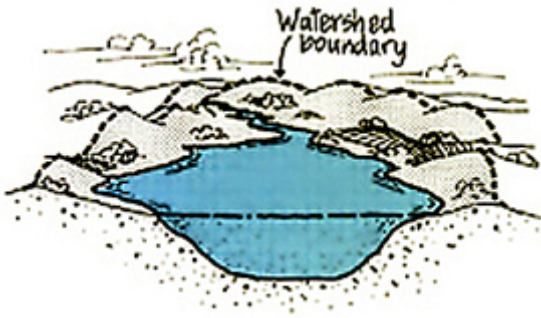


WHAT IS A WATERSHED?

"Watershed" is not a word common to our everyday use. Sometimes we hear of a "watershed event," but that refers to current events and not to water management. When talking about water, "watershed" refers to an area of land that drains towards a given river, lake or wetland.

Land in a watershed slopes downhill to the body of water it supplies and from which the watershed is given its name. For example, the Rum River Watershed is the land that drains towards the Rum River. High spots in the landscape, such as hilltops and mountain ridges, often mark watershed boundaries where rain or snow falling on one side goes to one river, lake or wetland, and rain or snow that falls on the other side goes to another.



A watershed is an area of land that drains towards a given river, lake or wetland.

Source: Northeast Illinois Planning Commission

Watersheds can be small, like an area of a field that creates a pond every spring, or huge, like watersheds for great rivers such as the Mississippi and Amazon, draining whole states and, sometimes, whole countries. A great visual description of watersheds is given in the "What is a Watershed" video — the link is <http://www.cleanwatermn.org/resources/Watershed.aspx>

Just as a person's character is shaped by their surroundings, the character of a river, lake or wetland is shaped by its watershed. Its water quantity (how much) and quality (how clean) depend on what is taking place in its watershed. This is why water-quality experts want people to be "watershed aware" and to "know their watershed." Usually, the fewer human activities that are going on in a watershed the healthier the body of water it supplies will be. Think about it. Where are the cleanest rivers and lakes and healthiest wetlands in Minnesota? Up north where there is the least human activity. As human activity increases in a watershed, either through farming, forestry, mining, industry, or urban development, the condition of the body of water it supplies declines.

When a river, lake, or wetland is in trouble, one of the first things water quality specialists do is look at what is going on in its watershed. They make a list of watershed activities that are harming water quality and prioritize the list from the most harmful to the least. If it is decided to improve the body of water, an action plan is developed to assist people in changing from harmful watershed activities to ones that are more water friendly.

Do you know what watershed you live in? Do you know what river, lake or wetland your watershed activities have an impact on? To find out, go to the Minnesota Department of Natural Resources [watershed website](#). If more detailed information is needed than provided there, contact your local [Soil and Water Conservation District](#)

HARD SURFACES

Remember learning the water cycle in school? If you do, your memory probably goes something like this:

The sun shines on lakes and rivers, causing water to evaporate and form clouds. Clouds grow heavy and begin to rain down. Rain runs off the ground, back into lakes and rivers, where the cycle repeats.

Now brace yourself— what you learned is not entirely true! It includes the misleading concept that rain runs off the ground. Oh, in cities it runs off well enough (more on that soon), but in natural areas, only 10% of rain and snow actually runs off the land. Of the other 90%, 50% soaks into the ground and 40% evaporates. Instead of being taught that rain runs off the ground, we should have been taught rain soaks into the ground, since five times more soaks in than runs off.

Natural areas — landscapes covered by grasses, trees and other plants — are "soft" and act like a sponge soaking up water. As landscapes develop into cities, they become "harder," with the ground being covered by roads, parking lots and buildings. In downtown areas where almost all the ground is covered by hard surfaces, 55% of rain and snow runs off the ground, and only 15% soaks in. Notice the difference? Five times more water runs off of downtown areas than what runs off of natural areas.

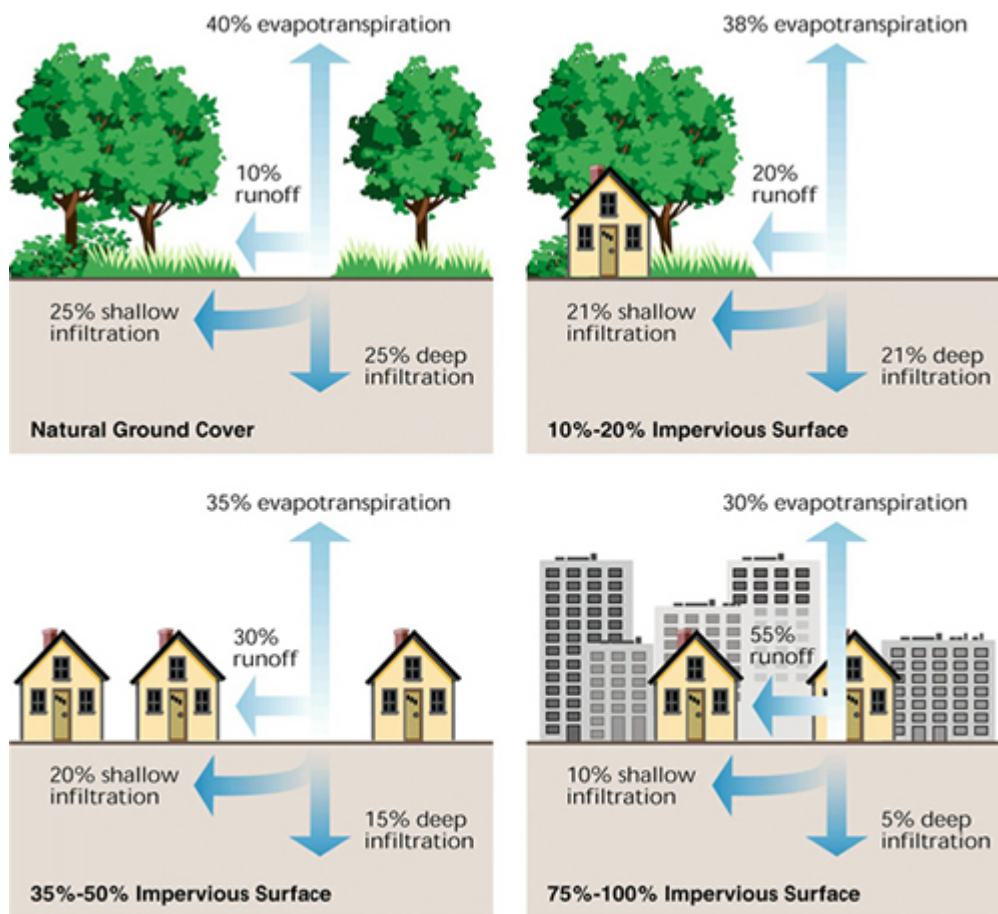


Fig. 3.21 -- Relationship between impervious cover and surface runoff. Impervious cover in a watershed results in increased surface runoff. As little as 10 percent impervious cover in a watershed can result in stream degradation.
In Stream Corridor Restoration: Principles, Processes, and Practices (10/98).
By the Federal Interagency Stream Restoration Working Group (FISRWG) (15 Federal agencies of the U.S.)

As landscapes are covered with hard "impervious" surfaces, the amount of water that soaks in (infiltrates) decreases and the amount that runs off increases.

Source: In Stream Corridor Restoration: Principles and Practices 10/98

(cont.) Hard surfaces such as streets, parking lots and roofs are called impervious surfaces — surfaces that water cannot pass through. Think of plastic wrap. Covering a landscape with impervious surfaces is like wrapping it in plastic — water cannot soak in, so must run off. This shift from soaking in to running off is at the center of water-quality problems cities experience.

Rivers and lakes are supplied with water in one of two ways: by water running off the surface of the ground, or by water seeping through it. Of the two, they are healthier when supplied by water seeping through the ground. Water seeping through the ground, or groundwater, runs cool, clean, steady and slow. In contrast, water running off the surface of the ground behaves entirely differently. It flows fast, warm in the summer, and dirty — carrying stormwater pollutants it picks up along the way.

Not surprisingly, rivers supplied mainly by surface runoff have health issues! Instead of having a steady flow throughout the seasons, they tend to behave erratically, running fast and full — sometimes flooding — when it is raining, and then going down to trickle when it is not. They also are dirtier, having to deal with stormwater pollutants that runoff water picks up along its way.

Because of the increased amounts of runoff coming from hard surfaces, flooding of city streets and neighborhoods would be common if it were not for storm sewers. Like a drain in a bathtub, storm drains in street curbs catch runoff water and take it by underground pipe to nearby rivers, lakes and wetlands. This solves the problem of flooded streets, but causes problems in the water bodies runoff goes to, by delivering too much water that is moving too fast and is too full of pollutants.

Whether called hard surfaces or impervious surfaces, streets, parking lots and buildings are at the center of water-quality problems in cities. As the amount of hard surfaces increases in a city, the amount of water-quality problems increases too. It is not surprising that efforts to improve water quality in cities often involve reducing hard surfaces, and creating "soft" areas where rain and snow runoff can be caught and soaked into the ground