

Stormwater impacts more than we realize

Marilyn Hawkeye – published 7/22/20 in The Connection

As we all know, the laws of nature will prevail and gravity is “king of the hill!” We’ve chosen to live in a mountainous, water rich region. All our water comes from snow melt and rain. In the Tellico Watershed, natural creeks and streams together with our man-made swales, ditches and pipes direct storm water runoff through common and private property to the lowest elevation and ultimately to Tellico Lake.

In our home design and construction, so many of us miss, or do not plan well for the inter-relationships between elevation, gravity and water on our lot and from homes that were, or are to be built, higher up the hill and whose runoff flows directly onto our property. One day we awaken to water at our front door, in our basements, or to torrents of water racing alongside our homes carving out gullies and eroding the soil.



The Watershed Association of the Tellico Reservoir (**WATeR**) and residents are concerned, and rightly so, about storm water runoff. Water damage to homes and land can impact individual property values as well as neighboring homes and streets. All parties must work together to find insightful and creative solutions and adopt best management practices to solve the problem.

Here’s the problem. In the past, open land and abundant trees in the Tellico Watershed embraced this water and carried it down gently to the

lake. Five thousand or more homes later, commercial business development, new roads and highways, have left us with much less open land. What is the effect of our residential homes on storm water runoff? Assume that each home's lot averages $1/3^{\text{rd}}$ of an acre. Also assume that the roof, driveway, sidewalks and patios are impervious surfaces that cover about 0.1 acres per developed lot and where water runs right off. Five thousand homes at 0.1 acre each is 500 acres of non-absorbing surface. The Walmart parking lot in Lenoir City is about 7.2 acres. Five hundred acres of impermeable surfaces due just to homes is equivalent to 70 Walmart parking lots! We add about 150 homes per year or another 15 acres equal to two more Walmart "parking lots" per year. Think about those numbers! And because so many residents clear-cut their lot, we've lost thousands of water-absorbing trees where one tree can consume 100 gallons of water and discharge it into the air as oxygen and water vapor. Impermeable surfaces don't hold storm water runoff! This water has to be managed by a variety of techniques that channel it to the lake without damaging homes and property.



So, how much water do we collect if 1" of water falls on one acre of land? Answer, about 27,000 gallons. How much water runs off? Answer, about 30% of the rain or 8,100 gallons soaks into grass, woodlands and shrubs. 100% of the remaining 70% of the water or 18,900 gallons that falls on impermeable surfaces runs off and flows downhill directly to the lake. Runoff is about 6,000 gallons per lot for 1-inch of rain. The swimming pool at the Tellico Village Wellness Center holds 120,000 gallons of water. Multiplied by five thousand homes, 1" of water is about 30 million gallons or 250 Wellness Center swimming pools! Due to urban development and clear-cutting, our watershed area produces a huge amount of storm water runoff.

Governing associations are inclined to reject complete responsibility for solving storm water runoff. **WATeR** proposes that each individual home owner take responsibility to solve the problem. The solution is to direct as much water as possible back into the ground and control what we cannot. For example, homeowners may work with a professional to improve their lot's grading. Restructure your landscape and install swales and low areas to hold back runoff water and give it time to soak into the ground. Lake front homes can install riparian (water) gardens at the shoreline like the riparian gardens demonstrated at Tanasi Restaurant and Rarity Bay's Rocky Point. Plant many trees and shrubs to hold soil and retain water. Replace concrete driveways with pervious pavers that move water back into the ground. These physical solutions will increase water's percolation back into the soil, and trees will help hold and absorb water and reduce the risk of erosion.

When runoff is excessive, such as on steep slopes, large retention ponds are ideal but we have no land. In Tellico Village, the original plan was small houses on small lots. What developed over time were large houses on small lots. Water absorbing land and trees were lost. Our watershed communities are nearly built-out. Excess storm water is increasing. Creating mechanisms to slow down water runoff and give it time to soak into the ground is a long and expensive process. Riprapping swales and piping water directly to the lake may have to be done to protect our homes and reduce sediment flowing down onto our downhill neighbors. A revenue producing stormwater utility

fee may be the fair and equitable solution to pay for the cost of controlling excess runoff. Homeowners and their respective community governing boards have to work together to find solutions. We cannot undo the past, but we can utilize best management practices to incrementally improve the future. Get involved! Work with your neighbors! Take action! At least plant shrubs and trees! We caused the problem and, through joint ventures, we can minimize the problem!

To learn more, visit WATeR's web site at www.Tellicowater.org. WATeR is an all-volunteer not-for-profit organization. Contact us at Tellicowater@aol.com. Become a member and sustain WATeR's effort to protect and improve the quality of water in the Tellico Reservoir and Watershed.