

Creek, Stream, or Branch

What is the difference between a creek, stream or a branch, and when does a spring become one of them? Let me introduce you to the world of stream classification.

To begin at the beginning, streams have their origin high up in their watershed. A watershed is that area in which precipitation falls and collects into water bodies. On a large scale, Mitchell, Yancey, and Avery Counties drain into the French Broad River Basin. Within these river basins are many sub-basins or smaller watersheds that drain into tributaries or creeks. When rainfall hits the earth it either infiltrates and recharges groundwater or it runs off and goes into a stream. Most infiltrating rainfall enters shallow groundwater which feeds year-round streams, which is why year-round, or perennial streams and rivers run with water even in dry weather. Old hand dug or bored (shallow) wells tap into shallow ground water, which is why shallow wells can dry-up during prolonged droughts. Of the approximately 40-55 inches of annual rainfall that Mitchell, Yancey, and Avery Counties receive in an average year, only one inch penetrates into the deep groundwater on which most drilled wells depend.

If a stream runs wet only during rainfall events, it is called an ephemeral stream. Ephemeral streams depend upon stormwater runoff for water. These streams are perched above the shallow water table, so when rain stops falling, they dry up. The second level of stream is called an intermittent stream. Intermittent streams run with water only during part of the year, typically during winter and spring when shallow water tables are highest. When water tables are high, ground water is perched near the surface of the soil and this is called a seasonal high water table. The reason seasonal high water tables occur in the winter and spring is cooler temperatures mean less evaporation and transpiration by plants, and rainfall in the cooler months tends to be long and slow versus short and fast summer thunderstorms. Shallow groundwater seeps are called springs, and springs used to be common water sources before the days of widespread well digging.

A stream that runs year-round is called a perennial stream. Groundwater is the primary source of water for perennial streams though they are also fed by stormwater from intermittent and ephemeral streams. A perennial stream exhibits biological, hydrological, and physical characteristics that allow for classification systems to be applied to them. A 'branch' is a stream that flows into a larger stream, and is a southern colloquial term for a perennial stream. When in doubt about the classification of a stream consult an expert. A simple way is to consult a USGS (United States Geological Survey) map of your county and see if the stream in question is a 'blue line stream'. USGS maps indicate perennial streams with solid blue lines. If questions persist, call the N.C. Division of Water Quality or the U.S. Army Corps of Engineers for a determination. These organizations use a key to identify biological, hydrological, and physical characteristics that determine stream type.

In many river basins perennial streams are subject to riparian protection zones. Riparian areas are those areas immediately adjacent to streams, including the stream banks. Vegetated riparian areas protect stream banks from erosion by stabilizing the banks. Vegetate riparian areas also

filter overland water flowing to streams from development or agricultural fields. The root zones in riparian areas provide a mechanism to purify shallow groundwater flowing towards streams, contributing a carbon source to a process called denitrification, which converts nitrate nitrogen to harmless atmospheric nitrogen.

Streams, creeks, branches, springs, and riparian areas are all part of the natural water cycle and they all function together to support aquatic life and to provide clean water for drinking and recreation.

Toe Talk is a monthly article series sponsored by the Toe-Cane Partnership highlighting watershed and community news. The Toe-Cane Partnership is working to improve water quality and gain associated economic benefits in the watershed by providing education and technical resources and implementing on-the-ground projects.” For more information, see us on Facebook: <http://www.facebook.com/ToeCanePartnership/>

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