Riparian Notes

Note Number 23, June 2007 ***Steve Nelle, NRCS, San Angelo, Texas***

What is a Creek?

If you were asked to throw a rock into the creek, the result would be a splash and ripples. We often think of "the creek" as the water. But a creek is much more than the visible water. These are the major parts / components that combine together to make the creek:

- Channel
- Floodplain
- Water Table
- Base Flow
- Flood Flow
- Vegetation
- Sediment
- Debris

The Channel contains and directs the water at base flow up to bankfull flow. The channel should be relatively stable, yet dynamic, with bank erosion being balanced with new bank formation.

The Floodplain is where out-of-bank flows are able to spread out and dissipate the energy of the floodwaters and trap sediments and build the Riparian Sponge.

The Water Table is part of the creek. In fact, it may be a much greater volume of water than what is visible in the channel. The water table is fed by the creek during flood events; and in turn the water table feeds the creek during base flow. They are in intimate contact with each other.

Base Flow is what we normally think of as "the creek". It is the water level for the majority of the year. On seasonal creeks, there is no base flow during parts of the year.

Flood Flow is a critical and essential part of creek health. Floods can do much damage, but they also build and rejuvenate creek systems. The more frequent floods, such as the 2 - 5 year events are actually more important than the infrequent 50 year events.

Vegetation is the most critical component of creek stability. The root masses of riparian grasses, sedges, forbs, shrubs and trees all work together to knit and reinforce the banks and floodplains. Vegetation also helps dissipate the energy of floodwaters so that sediment can settle out and be stabilized. Creeks have an amazing capacity to restore their own desirable vegetation as long as land management practices are adequate.

Sediment is what helps form new point bars, which add sinuosity and reduce stream energy. Trapped sediment is also what builds new and bigger floodplains, which in turn add water storage capacity to the Riparian Sponge. Erosion is often viewed as an undesirable process; however some riparian erosion is normal and desirable as it provides material for re-building channels, banks and floodplains.

Debris includes leaves, twigs, branches and large logs, which are lodged and deposited in the channel and floodplain. Such debris is important for organic enrichment of the riparian area and provides aquatic habitat. Large logs, which become partially or totally buried in sediment are extremely important for channel stability in many creeks.

Next time you go down to the creek, think bigger than the pools and riffles. Think about the entire system working together. When the system is in good working order, the many values and benefits we all appreciate about a creek will be present.