



No Forests – No Rivers

By Gary Shellhorn, Forest Hydrologist

It all starts with a raindrop. Most of us have been taught the hydrologic cycle -- raindrops to earth, runoff to the streams, streams to rivers, rivers to the ocean, evaporation back into the clouds and raindrops again. Here in the west, the public's National Forests are where the hydrologic cycle occurs. In the Gunnison River Basin, National Forest lands comprise the headwaters for the entire basin. These headwaters are where precipitation in winter accumulates as snow pack and summer thunderstorms produce runoff that forms streams, creating the web of drainages we call the Gunnison River watershed.

When Congress set aside the public lands comprising the National Forests which includes the Grand Mesa, Uncompahgre and Gunnison (GMUG) National Forests, there was an expressed intent to comply with the 1897 Organic Act that cited "securing favorable conditions of water flows" from these lands as a management goal.

The snow pack on the National Forests is important to the ecology of the forested landscapes that consist of streams, wetlands, riparian areas, grazing lands, and forested lands. The "raindrops" falling on the National Forests sustain those ecological systems which in turn provide runoff and stream flow that feed rivers such as the Gunnison River.

The Forest Service calculates that about 2,900,000 acre-feet of stream flow comes from GMUG National Forest lands. According to State records, about 25% of that runoff is diverted from the streams to supply and sustain agricultural production in the Gunnison basin. About 1,200 of those points of diversions occur on the National Forest lands and convey the water to lower elevation private lands for agricultural use. The GMUG has more of these on-forest diversions than most other forests.

Only a small percentage of the stream flow that originates on the National Forest is diverted for drinking water, but it is the source of water for 32 domestic water systems supplying about 175,000 people who reside in the Gunnison basin. What is not consumed within the basin flows on down the Colorado River where there are countless other downstream users that benefit from the surface water flowing from our National Forest.

Storing water on the National Forests is another important aspect meeting the "favorable conditions of flow" mandate. On the GMUG there are over 450 permitted reservoirs storing water for agriculture and domestic users. The higher elevations of the National Forest lands allow water users to take advantage of the less expensive gravity-powered systems of ditches and pipelines to convey water, as well as the lower evaporation rates, a result of cooler temperatures at higher elevations. In addition to these supply reservoirs which provide important recreation opportunity and fish habitats, there are thousands of constructed ponds that capture small volumes of water across for livestock and wildlife.

Sustaining watershed function is a key component of the “multiple use” management prescription for the National Forest. A properly functioning forest watershed will store snow fall, recharge groundwater, saturate wetlands, and result in higher quality runoff. When watershed conditions are good, the result is an ecological system with higher quality water, sustained stream flows, productive rangeland and healthy, diverse forest vegetation.

Watershed conditions on the GMUG are good. Using the National Forest Service classification system for evaluating watershed condition on the 223 sub-watersheds on the GMUG, 80% of our sub-watersheds rated as good and properly function while only 20% rated as fair and potentially functioning at risk. None are rated poor. One purpose of the Forest Service Watershed Condition Classification system is to help Forest managers identify watershed restoration needs and/or watershed protection priorities. This classification system considers 23 components that relate to watershed function, allowing Forest Service managers to numerically and systematically assess the existing watershed function and identify potential risks. From this information the GMUG managers work to develop and complete various watershed restoration projects or protection efforts that will improve conditions related to water quality, fish habitat, wetlands and riparian vegetation, erosion, and upland vegetative health and sustainability.

The connection between watershed management and sustaining streams on our National Forests is best characterized by this quote from Gifford Pinchot, the first Chief of the Forest Service, who said “the connection between the Forests and the rivers is like that between father and son, no forests, no rivers.”