

## Major Rangeland Watershed Issues Affecting Texans

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K. Brian Hays and Brandon J. Leister, Larry D. White and Barron S. Rector, and Robert W. Knight (respectively Extension Assistants-Water Conservation, Extension Range Specialists, and Associate Department Head, Department of Rangeland Ecology and Management)

Texas rangelands are the major source of water for human use in Texas. Traditionally, Texas rangelands have been managed for wildlife, livestock, and environmental benefits. These traditional uses have not emphasized the management of rangelands for providing water for Texans. The current and future demand for water is changing the way we will manage our range watersheds. Maximizing rangeland products such as livestock, wildlife, and water cannot be achieved simultaneously.

Why should citizens be concerned about conserving water, the water supply, and managing rangeland in Texas? Only now when the demand for water has exceeded the available supply, has water become a critical issue in this state. Growth, competition for water supplies, environmental impacts, and cost of infrastructure development are just a few of the factors that will affect management decisions.

Water use in Texas already exceeds the dependable renewable water supply in many

areas of the state. In addition, the population of Texas is expected to double by the year 2050, and water use by municipalities and industry will increase. Everyone will be affected by this competition for the limited surface and groundwater resources. The occurrence of droughts magnify the scope of these issues and problems we face, including potential changes in water law and private and public property rights. Issues concerning the allocation and use of this limited resource will become more common.

Senate Bill 1 was passed by the Texas Legislature in 1997 to address the development and management of the water resources of the state. This bill provides a framework for the management of water resources, including drought planning, water rights regulation, financial and technical assistance and data collection (Legislative Budget Board, Fiscal Note, May 30, 1997). Sixteen regional citizen water planning groups have been organized to implement planning and management of the water resources of Texas.

How we manage and what we manage our rangeland watersheds for will play a major role in our current and future water planning efforts. Management decisions will affect water quantity of surface flow and groundwater recharge, water quality, wetlands, endangered species, riparian zones, and instream and estuary flows.

### Water Quantity

The amount of water available to Texans is directly related to the amount and intensity of rainfall. In years of above normal rainfall, water not retained in the soil profile either runs off into streams and rivers or percolates to recharge groundwater supplies. Management of the

vegetation and soil surface directly affects the amount of water evaporated and transpired back to the atmosphere. In some cases altering the vegetation canopy, structure, and species composition will reduce this loss thus making more water available at the soil surface. In addition, some plant species utilize larger quantities of water at different times of the year, i.e., evergreen woody vegetation utilizes



water year round compared to grasses that are seasonally dormant. Management of the vegetation at the soil surface largely determines the amount of infiltration versus runoff, and sediment and nutrient production, as nonpoint source (NPS) pollution. Senate Bill 1 may provide cost share programs for landowners to control brush to increase water yields from Texas rangelands.

### Water Quality

The quality of water entering streams and aquifers, from rangelands, are of major concern to the citizens of Texas. In general, rangelands have significantly lower nutrient and pesticide losses (below EPA standards for water quality) compared to other land uses. Sediment production however can produce significant detrimental effects on surface waters of the

state. Sediment accumulation is decreasing the water holding capacity of many reservoirs and altering stream flow. High runoff rates, associated with inadequate vegetative cover, increase the force of water in stream channels resulting in increased streambank erosion and down stream flooding.



Many stream sections and lakes in Texas are classified as impaired water bodies which require the development of TMDLs (Total Maximum Daily Loads). A TMDL is a technical term meaning the amount of pollution a water body can receive and still meet standards for its intended uses. After a TMDL is developed for a specific watershed, a watershed action plan will be developed and implemented to address NPS loadings from urban areas, construction sites and from agricultural and silvicultural operations. Currently, identified water pollution problems can result in agency action which requires landowner remediation. Many Texas municipalities are required to develop and implement storm water management plans.

### **Wetlands/Riparian Zones**

Wetlands and riparian zones are important vegetation types that serve as filter strips (remove nutrients, sediment, and pesticides

from surface flow before it enters streams, lakes, and estuaries) and critical habitat for many indigenous and migrating wildlife species. These land resource areas are much more productive than an equivalent amount of adjacent upland. Overgrazing, clearing, development, etc. of these areas: 1) increases their vulnerability to the erosive force of water, 2) increases loss of organic matter in soils, 3) reduces water storage capacity, 4) increases stream water temperature, 5) encourages invasion of undesirable plants, 6) accelerates runoff, and 7) reduces filtration of sediment necessary for wetland and riparian zone maintenance. "These things typically result in loss of livestock forage, reduced numbers of fish and wildlife, degraded water quality, reduced property value, and frequently cause serious property damage" (Livestock Grazing on Western Riparian Areas, July 1993, EPA, Denver, Colorado).

### **Endangered Species**

Both terrestrial and aquatic endangered species require specific habitats that are affected by rangeland watershed management. Adequate groundwater supplies that result in spring flow are essential for some species, e.g., the Fountain Darter in Comal Springs.



Adequate instream flows of quality water are essential for aquatic and riparian endangered species. Terrestrial species can be adversely affected by altering vegetation composition and structure in their critical habitat. A potential conflict exists with efforts to increase water quantity and quality for Texans in areas where these species occur.

### **Instream and Estuary Flows**

Water flowing into streams and estuaries must be maintained at minimal levels and quality to protect these important natural resources. Sufficient inflow of freshwater is necessary for the protection and maintenance of Texas estuaries. Estuaries play a vital role in the life cycle of the State's marine fisheries.

### **Current /Future Rangeland Management**

Current and future management to provide multiple benefits from rangeland watersheds will need to maintain healthy rangeland ecosystems with diverse native plant and animal populations, soil integrity, and stable hydrologic function. Water production from rangeland can not be increased indefinitely without significant degradation of the resource. Other water sources may be required to meet future demands. Texans must learn to conserve water on the landscape, in homes, and municipalities.

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