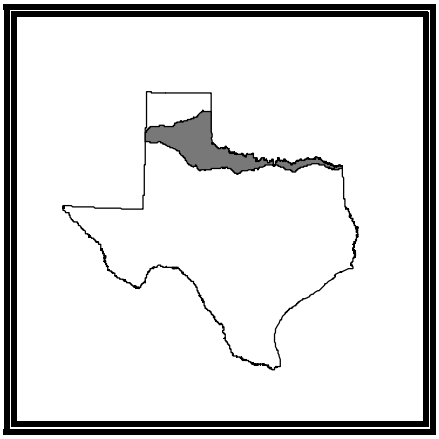
Basin 02

Red River



Red River Basin Narrative Summary

Second in length of Texas rivers only to the Rio Grande, the Red River originates in the high plains of eastern New Mexico and flows eastward across the Caprock Escarpment to form the Texas-Oklahoma border for 400 miles. It continues as the Texas-Arkansas border for 40 miles before it flows into Arkansas. Total basin drainage area in Texas is 24,463 square miles. Major tributaries to the Red River are North Fork of the Red River, Pease River, and the Wichita River.

The Red River has been divided into 30 classified segments, which consist of 1,601 stream miles and 11 major reservoirs, which cover 145,169 acres. An additional 19 unclassified segments comprise 541 miles of streams and 1365 acres of lakes. Eighty surface water quality monitoring stations at which water quality data are collected have been established in the basin.

The economy of the area is based on oil and gas production, manufacturing, tourism, and agriculture in the western portion of the basin where extensive crop irrigation occurs. Larger cities in the basin include Amarillo, Wichita Falls, Sherman, and Denison.

Under low flow conditions, excessive concentrations of chloride, sulfate, and TDS are a general problem in most streams of the Red River Basin. The high salt concentrations are caused, in large part, by natural conditions due to the presence of salt water springs, seeps, and gypsum outcrops. Salt water springs are located in the western portion of the basin in the upper reaches of the Wichita River, the North and South Forks of the Pease River, and the Little Red, which is a tributary to the Prairie Dog Town Fork of the Red River. Gypsum outcrops are found in the area ranging westward from Wichita County to the High Plains Caprock Escarpment. The water from these areas usually contains extremely high levels of dissolved solids. At times, the total dissolved solids are comparable to those found in sea water. Increased chloride, sulfate, TDS concentrations are concerns for public water supply in Lake Texoma and high TDS concentrations have resulted in the Little Wichita River not supporting general use.

Occasional violations of the standards occur throughout the basin, but are usually the result of natural conditions. Low dissolved oxygen levels, primarily due to the sluggish nature of the stream, lack of inflow, and low re-aeration capacity, have led to partial support of the aquatic life use in two segments, non-support in the Upper Prairie Dog Town Fork of the Red River, and concerns in two unclassified streams. During periods of low flow and high evaporation, many shallow stretches of the river exhibit wide swings in dissolved oxygen due to high rates of algal metabolism. High algal growth and increased nutrient levels contributed to secondary concerns for ten stream segments and was likely responsible for a pH concern in Lake Pat Mayse.

Elevated water temperatures occur during summer months in stream segments with clear, shallow water where energy from the sun is easily absorbed. Elevated water temperatures led to concern for and non-support of the general use designation in the Upper Pease and the Middle Fork of the Pease River, respectively.

Increased fecal coliform densities found in tributary streams originate mostly from unidentified non-point sources. Four unclassified streams are not supporting their contact recreation designations and three others have concerns due to high bacteria levels.

Low precipitation totals and high evaporation rates contribute to the increased concentration of natural elements. The North and Middle Forks of the Wichita River do not support the aquatic life use designation due to high levels of selenium. There is also a sediment contaminant concern for nickel in one classified segment.