ST. FRANCIS RIVER
WATERSHED
INVENTORY AND ASSESSMENT

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Executive Summary

The St. Francis River originates in Iron County in Southeast Missouri and flows 225 miles to the Missouri/Arkansas border. In Missouri, the basin is equally divided (north and south) between the high-relief Ozark Plateau and the low-relief Mississippi Alluvial Plain. Wappapello Dam and Lake are located on the divide. For inventory and planning purposes, the basin is separated into two dissimilar subbasins: the upper subbasin above Wappapello Dam and the lower subbasin below Wappapello Dam.

The basin drains 1,839 square miles in Missouri. The headwater area is dominated by igneous rock in the Ozark uplift (St. Francois Mountains), followed in a downstream direction by sandstone and dolomites. The alluvial plain of the lower subbasin is topped with a layer of unconsolidated gravel, sand, silt, and clay and is bordered on the east by Crowleys Ridge. Drainage in the lower subbasin has been altered by a system of levees and drainage ditches. Most of the west bank of the lower St. Francis River is a levee, which prevents drainage into the river from the west.

The predominance of impervious rock in the upper basin limits infiltration and subsurface flows causing rapid runoff, flashy hydrographs, frequent flooding, and a poor aquifer that provides low, unstable base flows. Six dams are located in the upper subbasin which can affect flows and fish movement. These include Wappapello Dam and Lake (8,400 acres) and the dam at DiSalvo Lake on the mainstem and four dams located on mainstem tributaries. Flow in the lower subbasin is primarily regulated by water released through Wappapello Dam. However, extensive infiltration produces a good aquifer with abundant groundwater supplies.

Basin streams generally exhibit good water quality and most streams are classified as full use attainment. However, there have been some minor isolated problems with mining and smelting

activities and inadequate waste water treatment facilities in the upper subbasin. Two permitted water supply surface withdrawals exist in the upper subbasin. In the lower subbasin, headcutting, streambank erosion, and the resulting increased sediment load and deposition downstream adversely affect water quality. Irrigation is a major use of groundwater.

A statewide survey estimated 88,500 annual fishing trips in the St. Francis River basin, which ranked it 15th out of 38 basins surveyed. The basin was ranked 13th in total recreational worth in Missouri. In the lower subbasin, intense agriculture, poor land use, and channel modifications were cited as the primary problems that lowered recreational worth in the recreational value survey.

Historical land use in the upper subbasin includes mining, timber harvesting, annual burning, upland row cropping, and livestock grazing. Presently, land-use in the upper subbasin can be classified as 77 percent woodland, 10 percent grassland, 7 percent cropland, and 6 percent other uses. Wetland drainage, timber clearing, and flood control projects have converted the lower subbasin from an immense swampland forest to a vast agricultural area. Eighty eight percent of the lower subbasin is now used for crop land, followed by 7 percent woodland, and 3 percent grassland.

Public ownership in the basin totals more than 218,000 acres, with about 83 percent in the upper subbasin. The U. S. Forest Service is the largest landowner in the basin. The Missouri Department of Conservation owns 46,800 acres, which includes 28 Conservation Areas. Public lands provide 123 miles of stream frontages throughout the basin.

Streambank erosion is not a major problem in the upper subbasin, where riparian corridors are mostly forested and usually rated as good. Channel substrates are generally stable and diverse. Big Creek is the only upper subbasin stream with abundant gravel. Excessive streambank erosion and headcutting are serious problems in the channelized section of the lower subbasin mainstem and most of its tributaries. The quality of the riparian corridor varies considerably. The streambed is primarily composed of clay and sand, with very little diversity. Excessive sedimentation is occurring below the channelized sections.

There are 25 high-quality natural communities in the basin. Ten natural areas have been established in the basin to preserve, manage, and restore extant natural communities, ecological processes, and geological areas.

The basin exhibits good aquatic biodiversity. One hundred thirty fish species in 20 families have been collected. However, 23 fish species found in the basin are state-listed as species of conservation concern. Of these, one is considered extirpated from Missouri and six are listed as state endangered. No federally listed species exist in the basin.

Most streams support a diverse benthic invertebrate fauna. Forty eight mussel species have been identified, primarily from the mainstem. Eleven mussels are listed as species of conservation concern. One mussel species is state endangered, while no federally listed mussel species exist in the basin. Sixteen crayfish species have been collected, including the Big Creek and St.

Francis River crayfishes, which are endemic to the upper subbasin. An introduced crayfish may be a cause for concern. Six crayfish species are listed as species of conservation concern.

Angling is good for largemouth bass, spotted bass, smallmouth bass, shadow bass, a variety of sunfish, and channel catfish in the upper subbasin. Gigging for redhorse suckers is also good. Walleye have been stocked in the upper mainstem to restore the population. In the lower St. Francis River, fishing for spotted bass is good below Kennett, and fair throughout the remainder of the unchannelized portion of the lower river. Channel catfish, large buffalo fishes, gar, white bass, drum, and an occasional flathead catfish could be encountered anywhere on the river.

Four major goals for the basin are:

Goal I: Maintain or improve aquatic habitat conditions to meet the needs of native aquatic biota while accommodating society's demands for agricultural production and economic development.

Goal II: Maintain or improve water quality throughout the basin so that it is sufficient to support diverse aquatic biota.

Goal III: Maintain diversity of native aquatic organisms and improve the quality of fishing.

Goal IV: Improve the public's knowledge and appreciation of stream resources; recreational opportunities; and proper watershed, riparian corridor, and streambank management.

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