MOREAU RIVER WATERSHED

INVENTORY AND ASSESSMENT DOCUMENT

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JULY 31, 2002
CENTRAL REGION

EXECUTIVE SUMMARY

The Moreau River basin, a sub basin of the Missouri River, lies in the central Missouri counties of Cole, Miller, Moniteau, and Morgan. The Moreau River is formed by the union of North Moreau Creek and South Moreau Creek, and empties into the Missouri River just south of Jefferson City, MO. The watershed is approximately 584 square miles. The Moreau River has an average discharge of 381 cubic feet/second. It is an order 6 stream with an average gradient of 1.6 feet per mile.

The basin is underlain with Ordovician age cherty dolomite, thin beds of shale and minor deposits of sandstone. The surface has a stony red clay residuum and pockets of loess. Water penetration to the subsurface is poor and most runs off to surface streams. Stream base flows are poorly sustained (MDNR 1984).

Early settlement of the Moreau River basin began about 1812-1816 when settlers from Kentucky and Tennessee moved into the area. At the time of settlement, prairie occurred in the central and northern parts of Morgan County, the south and western parts of Moniteau County, and the northwest part of Miller County. Today, only two examples of prairie land remain (Hite Prairie C.A. and Newcomb Prairie).

Current land use in the basin is 2.6% urban, 5.8% woodland, 18.4% forest, 32.4% grassland, and 40.5% cropland. The cities of Jefferson City, California, Versailles, Tipton, Eldon, and Wardsville ring the perimeter of the basin. Cropland and grassland uses predominate in the western portion of the basin whereas forest, grassland and woodland predominate in the eastern half of the basin. In 1992, livestock sales accounted for greater than 75% of the total agricultural sales in Cole, Miller, Moniteau and Morgan counties (DuCharme and Miller 1996). In 1997, the combined production of beef, dairy, swine, and poultry animals was 237,247,000 pounds of live weight (Barney 2002, *personal communication*). Soils support cultivation of corn, soybeans, grain sorghum, and hay crops (Allgood and Persinger 1979).

Public boat ramps on the Moreau River are available at the Moreau 50 and Honey Creek accesses. Bank fishing access is available at Scrivner Road C.A. on South Moreau Creek and at Stringtown Bridge Access on North Moreau Creek. Major streams support fishing for largemouth bass, smallmouth bass, spotted bass, channel catfish, flathead catfish, bluegill, longear sunfish, crappie, white bass, sauger and walleye. All stream fishing is regulated under statewide fishing regulations.

A total of 71 fish species have been collected in this basin since 1940. The fauna is a blending of the Ozark-Missouri and Prairie-Lower Missouri faunal types. Aquatic biota also includes three species of crayfish and 25 species of mussels. Noted changes in the

fish fauna during the 1990's included the expansion in range of spotted bass and western mosquitofish, a decline in the abundance of common shiners and smallmouth bass, and absence of ghost shiners (a species once abundant in this watershed but which has become imperiled statewide) in fish collections. The decline of common and ghost shiners suggest some perturbation has occurred to their habitat in recent years.

Overall, fish species diversity is good and numerous intolerant species of fish (18) were widely distributed among streams. Based on this information, the Moreau basin fish communities appear to be in generally good condition at sites that were sampled. Streams worthy of further evaluation due to species present historically (Topeka shiner, common shiner, blacknose shiner, plains topminnow) or currently unique species (Ozark sculpin, southern redbelly dace) include Straight and Clark forks.

Fifty-five reaches of stream are designated for fish, wildlife and livestock watering, and aquatic life protections. All of the Moreau River and portions of the North Moreau, South Moreau, Smith Creek, Straight Fork and Willow Fork are satisfactory for whole body contact. In 2000, 61 municipal, industrial, and agricultural sites required National Pollution Discharge Elimination System outfall permits. All of these outfalls are potential sources of point-source pollution; however, relatively few problem areas exist. The two most serious impairments to streams occur downstream of the California South and Versailles waste-water treatment plants. Reaches of Straight Fork and North Moreau Creek downstream from these treatment plants are listed as EPA CWA Section 303(d) impaired waterbodies (EPA 1998). Renovations at the California plant are underway and improvement in water quality is expected in the near future. Illegal spillage of hog manure into waterways has been documented three times since 1995 resulting in high ammonia and BOD levels but no fish kills resulted. Waste spillage into receiving streams from confined animal feeding operations (CAFOs) in the basin is a potentially serious pollution problem. In 2002, there were 19 active swine, 16 poultry, one dairy, and one kennel facility in the watershed (MDNR 2002). As the number of CAFOs increase more animal related pollution problems may be expected to occur.

Non-point pollution in 1997 included soil erosion of 5.619 tons per acre per year from cropland and 1.322 tons per acre per year from pastureland (Barney 2002, *personal communication*). Other sources of pollution include in-stream erosion and nutrient-loaded runoff from crop fields, livestock pastures, and residential septic fields.

The clearing of riparian corridors contributes to streambank instability and allows sediment laden runoff to reach streams. Inspection of aerial photos of the mainstem Moreau River indicated 16% of streambanks had virtually no tree corridor and 40% had 1 row to 25 meters of continuous tree coverage. Forty-four percent had a tree corridor at least 26 meters wide. An appropriate goal for a wooded riparian border is 100-300 feet (33-99 meters) wide.

The most serious pollution threats to streams in the basin are due to contamination by human and animal wastes, soil erosion, and in-stream erosion. Agricultural and livestock interests are very high in this basin so their needs must be considered in management decisions. Efforts to improve water quality and maintain the quality of aquatic habitats and fauna in this basin center on improving riparian habitat, agricultural practices, livestock pasture and waste management techniques, and increasing citizen involvement.

The close proximity of the Moreau River to Jefferson City makes it a potentially valuable recreational resource. The addition of more public accesses to major streams, improved

management of the sport fishery and increased public awareness of this river could help boost its value.

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