MANAGEMENT PROBLEMS AND OPPORTUNITIES

Action Plan

The following goals, objectives, and strategies help outline approaches, partners, and programs to assist citizens and agency personnel in conserving the aquatic resources of the Gasconade River watershed.

GOAL I: MAINTAIN AND IMPROVE WATER QUALITY IN THE GASCONADE RIVER WATERSHED SO ALL STREAMS ARE CAPABLE OF SUPPORTING HEALTHY NATIVE AQUATIC COMMUNITIES.

Status: Water quality in the Gasconade River watershed is generally good, with some exceptions, and room for improvement. In general, non-point source pollution in the form of sediment from erosion and organic wastes from livestock impairs water quality. In particular, organic wastes from livestock contribute to excessive algal production in watershed streams. The Upper Gasconade River hydrologic unit was rated as a Category I watershed by the Missouri Watershed Assessment Steering Committee in September 1998, although it did not rank in the top 10 watersheds in greatest need of improvement. Contaminant sampling for pesticide bioaccumulation in fish indicates that Gasconade River fish are safe for human consumption.

Objective 1.1: Streams within the watershed will meet state standards for water quality.

Strategy: Enforcement of existing water quality regulations and necessary revisions to these regulations will help reduce violations. Water quality problems must also be addressed through public awareness efforts and by encouraging good land use in riparian areas and within subwatersheds in the watershed. The citizen activism present in the watershed through STREAM TEAMs and a variety of related organizations should be encouraged. Working with related agencies to promote public awareness and incentive programs, cooperating with citizen groups involved with water quality issues in the watershed, and helping to enforce water quality laws will be among the most efficient ways to achieve this objective.

! Enhance people's awareness of 1) water quality problems affecting aquatic biota, 2) viable solutions to these problems, and 3) their role in implementing these solutions. Media contacts, personal contacts, special events, and literature development and distribution can be used to reach people throughout the watershed.

! Review Section 404, NPDES, and other permits and either recommend denial or appropriate mitigation for those that are harmful to aquatic resources. Related activities will include cooperating with other state and federal agencies to investigate pollution events and fish kills, assisting with the enforcement of existing water quality, mining, landfill, and dam safety laws, and recommending appropriate measures to protect and enhance aquatic communities.

! Work with the Missouri Department of Health and MDNR to reduce contaminant levels in fish by collecting fish for contaminant analysis, advising the fishing public about fish tissue contaminant levels, and identifying and eliminating sources of contamination.

! Work with MDNR and the Missouri Department of Health to monitor water quality, improve water quality, and ensure compliance with discharge permits. With training, volunteer groups, such as STREAM TEAMs, can assist with water quality monitoring and improvement. These volunteer groups are strong advocates for good water quality throughout the watershed. Further development of STREAM

TEAMs should be encouraged. Related monitoring efforts, such as MDC's newly developing Resource and Assessment Monitoring Program which will track aquatic biota and habitat trends statewide, should also be encouraged and directed to strategic locations.

Cooperate with MDNR in creating a Clean Water Action Plan for the Upper Gasconade River watershed as specified in the Missouri Unified Watershed Assessment Final Report which is based on section 303 of the Clean Water Act.

GOAL II. IMPROVE RIPARIAN AND AQUATIC HABITAT CONDITIONS IN THE GASCONADE RIVER WATERSHED TO MEET THE NEEDS OF NATIVE AQUATIC SPECIES.

Status: Stream habitat conditions within the Gasconade River and its tributaries are variable. To date public water use is quite limited and has not created instream flow concerns. The main stem has no channelized segments, although highway bridge and ford crossings are numerous within the watershed. In many streams the lack of adequate riparian corridors, excessive nutrient loading, streambank erosion, excessive runoff and erosion, and the effects of extensive instream gravel mining are among the problems observed. Grazing practices along many streams contribute to streambank instability, nutrient loading, and poor riparian corridor conditions. Approximately 19% of the stream corridors in the Upper Gasconade River hydrologic unit were found to be in poor condition by methodology described in the Habitat Conditions section.

Objective 2.1: Riparian landowners should be helped to understand the importance of good stream stewardship and where to obtain technical assistance for sound stream habitat improvement and good watershed management.

Strategy: Advertising and promoting stream programs, installing and maintaining demonstration projects, and providing educational opportunities to landowners will make them more aware of the reasons and techniques for protecting streams. Emphasizing economic advantages of stream improvements will encourage more landowners to participate.

! Work with MDC's Outreach and Education Division to develop stream management related materials and present related courses for elementary and secondary school teachers.

! Establish and maintain stream management demonstration sites.

! Promote good stream stewardship through landowner workshops and stream demonstration site tours.

Objective 2.2: Maintain, expand, and restore riparian corridors, enhance watershed management, improve instream habitat, and reduce streambank erosion throughout the watershed.

Strategy: High quality aquatic habitat is the critical factor in maintaining and improving natural stream communities. Stream habitat conditions will be improved by cooperating with and providing technical assistance to private landowners, working with other local, state, and federal agencies to manage stream frontages on their properties, and installing stream improvement and habitat enhancement projects on MDC lands within the watershed. Monitoring habitat conditions and using regulatory avenues to reduce impacts from development projects should also help to identify problems and minimize impacts on the stream resource.

! Ensure that all MDC areas are examples of good stream and watershed management by including appropriate recommendations and prescriptions in area plans, implementing these practices in a timely manner, and monitoring these practices throughout their life. These practices will include, but may not be limited to, riparian corridor re-establishment, riparian corridor management, and maintaining soil erosion levels at "T" (soil replacement level) or lower.

! Provide technical recommendations to all landowners that request assistance and who are willing to reestablish and maintain an adequate riparian corridor.

! Work with NRCS and SWCD boards to help them address watershed management concerns with their programs.

! Improve landowner stewardship of streams by promoting and implementing cost share programs that include streambank stabilization, alternative watering provisions, and establishment and maintenance of quality riparian corridors within subwatersheds cooperatively selected by MDC, NRCS, and the SWCD boards. Possibilities include Little Piney, Third, Second, Roubidoux, Whetstone, and Woods Fork creeks.

! Assist the US Army Corps of Engineers in their Section 404 regulatory activities, especially those pertaining to gravel mining and bridge replacements. Assistance shall be in the form of reporting unauthorized activity as well as participating in pre-application meetings and commenting as requested on 404 permit applications.

! Utilize contacts with landowners, contractors, developers, and municipal and county officials as opportunities to educate people about how to obtain sand and gravel according to accepted guidelines and to control construction site erosion by utilizing practices that minimize damage to stream systems.

GOAL III: MAINTAIN DIVERSE AND ABUNDANT POPULATIONS OF NATIVE AQUATIC ORGANISMS WHILE ACCOMMODATING ANGLER DEMANDS FOR QUALITY FISHING.

Status: The Gasconade River watershed has a diverse assemblage of 103 fish species collected from 1900 to 1999. These species are distributed among 49 genera and 21 families of fish ranging from the ancient Petromyzontidae (lampreys) to the more modern Percidae (perches) and Sciaenidae (drums). The dominant families and the number of genera in each are: Cyprinidae (16 genera), Catostomidae (6 genera), Ictaluridae (4 genera), Centrarchidae (4 genera), and Percidae (3 genera). Despite the high number of fish species in the Gasconade River watershed, 9 species are listed on the Missouri Species of Conservation Concern Checklist of June 2000 as critically imperiled, imperiled, or rare. The crystal darter (*Crystallaria asprella)* is classified as a state endangered species, and the bluestripe darter (*Percina cymatotaenia*) is a state imperiled species.

A total of 46 mussel species were collected in 1980-94 and again from July 21, 1998 and September 16, 1999 from Roubidoux Creek, Osage Fork, and the main stem Gasconade River. These species were distributed among 27 different genera. The dominant genera were *Lampsilis* (6 species), *Quadrula* (3 species), and *Fusconaia* (2 species). The pocketbook mussel *(Lampsilis cardium)* was the most widely distributed mussel in the watershed. Species that are much less abundant include three state-listed endangered mussel species, the elephant ear *(Elliptio crassidens)*, ebonyshell *(Fusconaia ebena)*, and the pink mucket *(Lampsilis abrupta)*. The pink mucket is also classed as federally endangered.

Seven species of crayfish have been collected in the Gasconade River watershed and three genera comprise the five species. *Orconectes* was the dominant genus and comprised over 99% of the crayfish

composition. Devil crayfish *(Cambarus diogenes)* were collected in Roubidoux Creek, and digger crayfish *(Fallicambarus fodiens)* were collected in the lower Gasconade River. The rare Salem cave crayfish (*Cambarus hubrichti*) is located in some caves of the watershed.

Objective 3.1: Evaluate, maintain, and where feasible, improve sportfish populations, with primary emphasis on smallmouth bass, largemouth bass, spotted bass, rock bass, and rainbow trout.

Strategy: Assess the quality of populations of sportfishing management emphasis species and take steps to maintain or improve their populations through public education, regulations, habitat improvement, and other methods.

Objective 3.2: Maintain populations of native non-game fishes and aquatic invertebrates at or above present levels throughout the watershed.

Strategy: Assess the status of fish and invertebrate communities through systematic, periodic sampling. Techniques to maintain or improve non-game fish or invertebrate communities will depend on the community in decline and the causative agent.

! Develop standard sampling techniques for assessing fish and invertebrate communities, including the use of indicator species, and implement a monitoring program to track trends in species diversity and abundance.

! Maintain aquatic biodiversity and protect or enhance fish and invertebrate species diversity and abundance using regulations, stocking, habitat improvement, and related techniques.

! Cost share priority areas emphasizing practices designed to protect water quality and promote stream system integrity should be pursued with agricultural agencies and interested landowners in subwatersheds of importance to sensitive species such as the crystal darter and bluestripe darter.

GOAL IV. IMPROVE THE PUBLIC'S APPRECIATION FOR STREAM RESOURCES IN THE GASCONADE RIVER WATERSHED.

Status: Streams in the watershed are used extensively for fishing, floating, motor boating, and other recreational activities occur as well. Twenty-three MDC stream access sites are located in the watershed. While landowner participation in Streams for the Future programs has been limited, public participation in the STREAM TEAM program has been good.

Objective 4.1: Increase the general public's awareness of stream recreational opportunities, local stream resources, and good watershed and stream management practices.

Strategy: The public will be made aware of stream related recreational opportunities and issues through media outlets, fair exhibits, and MDC publications. Increased appreciation of stream resources should follow enhanced public awareness and education. More concern about the quality of water and habitat within the watershed's streams should follow, and greater citizen involvement and advocacy in related environmental issues should result. Newspaper articles, presentations, and special events highlighting streams should help foster this awareness.

! Working with MDC's Education Division, use streams for aquatic education programs. Identify stream locations appropriate for educational field trips near participating schools.

! Provide a stream resource emphasis at public events such as local fairs.

! Promote the formation of STREAM TEAMs and STREAM TEAM associations within the watershed.

! Make the Gasconade River Watershed Inventory and Assessment available to the public on the internet.