## Threatened and Endangered Species and Unique Natural Communities

The Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531-1544) directs all federal agencies to use their existing authorities to conserve species listed as threatened and endangered, in consultation with the U.S. Fish and Wildlife Service (USFWS). The goal is to ensure that their actions do not jeopardize the listed species or destroy or adversely modify critical habitat. The Missouri Endangered Species Law (MO ST 252.240) protects any species listed for protection by the Missouri Department of Conservation (MDC) and species listed by the USFWS in the State of Missouri. Additional protected resources in Missouri include natural communities or areas of unique habitat as indicated by MDC.

Available online county-level information was accessed from MDC and USFWS to determine what state- and federally listed species have the potential to occur in Callaway County, Missouri (see Attachments for a copy of the county-level MDC and USFWS lists). In addition, a Missouri Natural Heritage Database (NHD) inquiry for the Callaway County Connector study area was provided via e-mail from Mr. Doyle Brown, MDC, on April 6, 2009 (see Attachments for a copy of the MDC correspondence). A USFWS response to MoDOT's request for comments on the Callaway County Connector study was provided in a letter from Mr. Charles M. Scott, USFWS, on March 16, 2009 (see Attachments for a copy of the USFWS correspondence). Information from both the NHD data provided by MDC and the letter from USFWS was used to determine what species have the potential to occur in the Callaway County Connector study area.

### Federally Listed Threatened and Endangered Species

Five species are currently federally listed as endangered in Callaway County, Missouri and, therefore, have the potential to be within the study area (USFWS, 2012). The Indiana bat (*Myotis sodalis*), gray bat (*Myotis grisescens*), pallid sturgeon (*Scaphirhynchus albus*), running buffalo clover (*Trifolium stoloniferum*), and Topeka shiner (*Notropis topeka*) are protected under the ESA (7 U.S.C. § 136, 16 U.S.C. § 1531 et. seq).

**Federally Listed Species in Callaway County, Missouri**

| Common Name | Scientific Name | Federal Status |
|---|---|---|
| **Gray bat** | *Myotis grisescens* | Endangered |
| **Indiana bat** | *Myotis sodalis* | Endangered |
| **Pallid sturgeon** | *Scaphirhynchus albus* | Endangered |
| **Running buffalo clover** | *Trifolium stoloniferum* | Endangered |
| **Topeka shiner** | *Notropis topeka* | Endangered |

Source: USFWS, 2012

Information on all five federally listed species is included below. However, USFWS indicated that they are primarily concerned with impacts to the Indiana bat (see Attachments for response letter from Mr. Charles M. Scott, USFWS, dated March 16, 2009). USFWS indicated that they have no records of federally listed, threatened or endangered species or critical habitat present

within the Callaway County Connector study area, but stated that the Indiana bat has been observed within the general area and could potentially be affected by the alternatives.

**Gray bat –** Gray bats are the largest of all the *Myotis* spp. in Missouri. However, gray bats can be difficult to distinguish from other bats species, including the federally listed as endangered Indiana bats (MDC, 2012a; Schwartz and Schwartz, 1981). Gray bats roost, breed, rear young, and hibernate in caves. Individuals migrate between summer and winter caves and will use transient or stopover caves along the way.

Most of the caves used by gray bats for hibernation have deep vertical passages with large rooms that function as cold air traps. Summer caves must be warm or have small rooms or domes that can trap the body heat of roosting bats. Summer caves are normally located close to rivers or lakes where the bats feed on flying insects. A few hundred to many thousands of pregnant females congregate to form maternity colonies from late May to June. Males and non-reproductive females gather in smaller groups to form what are known as bachelor colonies. Mothers and young rejoin the bachelor colonies in July and August. Gray bats exhibit great loyalty to their roosting and hibernating sites and will return to the same locations year after year.

Missouri contains about 20 percent of the total population of gray bats, and it is estimated that nearly all gray bats in Missouri use less than ten caves for hibernation. Most of the known gray bat caves are located south of the Missouri River in the Ozarks region, although a few exist north of the Missouri River. Neither the Preferred nor Southern Alternative would impact any known gray bat caves. The Missouri NHD inquiry for the study area included a record of a gray bat capture located in the southwest portion of the study area within the Mark Twain National Forest. The record indicates that an adult male was captured within the forested riparian habitat along the Middle River in August 2003 using mist net/harp trap sampling methods.

This recorded gray bat capture site is located within one mile of the Southern Alternative. Forested riparian habitat extends along the Middle River throughout this area. Because gray bats forage in riparian areas along streams, there is the potential for the Southern Alternative to have an indirect impact on the species by removing potential foraging habitat along the Middle River where the new roadway right-of-way will be cleared. The Preferred Alternative does not cross the Middle River and is located over three miles away from the recorded gray bat capture site. Therefore, the Preferred Alternative would not impact potential gray bat foraging habitat along the Middle River.

There is the potential for both alternatives to have an indirect impact on the gray bat by removing potential foraging habitat along other streams in the study area. The 500-foot wide corridor for the Preferred Alternative crosses nine streams, including Youngs Creek, Auxvasse Creek, and tributaries to Youngs Creek, Cow Creek, Auxvasse Creek, and Stinson Creek, for a total length of approximately 7,109 linear feet. The 500-foot wide corridor for the Southern Alternative directly or longitudinally crosses 13 streams, including Auxvasse Creek, Middle River, and tributaries to Stinson Creek, Auxvasse Creek, Hillers Creek, Middle River, and Snyder Creek, for a total length of approximately 8,605 linear feet. Many of these streams have forested riparian habitat in the location of the crossings.

**Indiana bat –** The Indiana bat is a federally listed endangered species that hibernates in caves during the winter months and roosts in trees during the summer months. The Indiana bat has brownish-gray fur and is similar in size (approximately 2 inches long) to other species of bats found in similar areas (MDC, 2012b; Schwartz and Schwartz, 1981).

From late fall through winter, Indiana bats in Missouri hibernate in caves in the Ozarks and Ozark Border Natural Divisions (Scott, 2009). During the spring and summer, Indiana bats utilize living, injured (e.g. split trunks and broken limbs from lightning strikes or wind), dead, or dying trees for roosting throughout the state. Indiana bat roost trees tend to be greater than nine inches diameter at breast height (dbh) (optimally greater than 20 inches dbh) with loose or exfoliating bark. Most important are structural characteristics that provide adequate space for bats to roost.

Preferred roost sites are located in forest openings, at the forest edge, or where the overstory canopy allows some sunlight exposure to the roost tree, which is usually within 0.6 mile of water. Indiana bats forage for flying insects (particularly moths) in and around the tree canopy of floodplain, riparian, and upland forests (Scott, 2009).

There are no known hibernacula or maternity resources for the Indiana bat within the Callaway County Connector study area. There could, however, be suitable roosting habitat for Indiana bats in almost any forested part of the state with the right maternity roost characteristics. The 500-foot wide corridor for the Preferred Alternative includes approximately 274 acres of forestland, and the 500-foot wide corridor for the Southern Alternative includes approximately 258 acres of forestland. These forested areas may contain suitable Indiana bat roosting habitat.

Surveys will be conducted for suitable Indiana bat roosting habitat along the project corridor during the design phase of the project, as advised by USFWS (see Attachments for response letter from Mr. Charles M. Scott, USFWS, dated March 16, 2009). If surveys indicate that suitable Indiana bat habitat is present along the project corridor, further coordination with USFWS would be required prior to construction. Removal of potentially suitable roost trees would be limited to a fall and winter timeframe to avoid potential impacts to Indiana bats on summer maternity and swarming habitat.

**Pallid sturgeon –** The pallid sturgeon is very similar in appearance to the shovelnose sturgeon (*Scaphirhynchus platorynchus*). Pallid sturgeons prefer the bottoms of large river systems that are diverse in topography, turbidity, flow, and habitat types (e.g., braided channels, gravel bars, wing dams, etc.). The pallid sturgeon is found primarily in the Missouri and Mississippi River systems. There has been very little successful natural reproduction and recruitment of the species in the lower Missouri River. USFWS has implemented a pallid sturgeon stocking program in both river systems to supplement the native populations (USFWS, 2007a).

The study area includes a region that approaches the Missouri River; however, the 500-foot wide corridors for the Preferred and Southern Alternatives do not cross this area. The Missouri River will not be directly impacted by the project, and, therefore, neither of the alternatives would have a direct impact on the pallid sturgeon. Auxvasse Creek would be crossed by the Preferred and Southern Alternatives approximately 8.5 miles and 8 miles, respectively, upstream of its confluence with the Missouri River. Water quality impacts to Auxvasse Creek could result in indirect impacts on the pallid sturgeon. However, because of the distance of the project from the

Missouri River and because BMPs will be implemented at the Auxvasse Creek crossing to minimize the introduction of additional sediment and pollutants in the water, the Preferred and Southern Alternatives should not affect the pallid sturgeon.

**Running buffalo clover –** Running buffalo clover is a perennial plant that grows from 4 to 20 inches tall, blooming generally from mid-May through June. It produces runners similar to stolons that extend from the base of erect stems and run along the surface of the ground. Running buffalo clover grows in rich, moist soils on areas that have a pattern of periodic disturbance, such as mowing, trampling, grazing, or light bank scouring (USFWS, 2007b). This species historically grew along bison trails, which often followed major streams and rivers. The bison probably dispersed the seeds and also created habitat for this species by periodically disturbing areas.

In Missouri, running buffalo clover is generally found in riverine settings, along the first wooded terrace or bench above the river. Very few populations of this species are known to persist within the state (MDC, 2012c). There are only a few watersheds in Missouri known to support running buffalo clover, including the Lower Missouri-Moreau Watershed (Watershed Code 10300102) that contains the Callaway County study area (NatureServe, 2011). At this time, there are no known locations of running buffalo clover within the study area, and, therefore, none of the alternatives should impact this species.

**Topeka shiner –** The Topeka shiner is a small minnow that is dependent on small, clear, perennial upland streams with a hard bottom, pool, and riffle habitat. The species may use the intermittent portions or habitat characteristics of the watershed as well (MDC, 1999; Pflieger, 1997). At this time, only two Topeka shiner populations are known to exist in Missouri with a few other scattered occurrences reported (MDC, 2010a). The two self-sustaining populations are located in the Moniteau Creek watershed (in Cooper and Moniteau Counties) and the Sugar Creek watershed (in Harrison and Daviess Counties). Based on data from the Missouri NHD inquiry, there is one historical record of this species within the project study area from a survey conducted in 1941 in the Middle River, and located within one mile of the Southern Alternative. However, repeated sampling attempts in 1994 and 1995 failed to find this species in this waterway. At this time, there are no known populations or occurrences of Topeka shiner within the study area, and, therefore, none of the alternatives should impact this species.

**State-listed Threatened, Endangered, and Sensitive Species**

Five species are state-listed as endangered in Callaway County, Missouri, including the flathead chub (*Platygobio gracilis*), gray bat (*Myotis grisescens*), lake sturgeon (*Acipenser fulvescens*), pallid sturgeon (*Scaphirhynchus albus*), and running buffalo clover (*Trifolium stoloniferum*) (MDC, 2012d).

In addition to the five species state-listed as endangered for Callaway County, there are 30 additional state species of conservation concern in Callaway County. Species of conservation concern have a designated state-level numeric rank of relative endangerment: S1 is critically imperiled, S2 is imperiled, S3 is vulnerable, S4 is apparently secure, and S5 is secure (MDC, 2010b). The state species of conservation concern for Callaway County include 9 fish, 3 birds, 1 mammal, 2 amphibians, 7 flowering plants, 4 ferns, and 4 insects (MDC, 2012d; see Attachments for MDC county-level list).

| State-Listed Species in Callaway County, Missouri | | |
|---|---|---|
| **Common Name** | **Scientific Name** | **State Status** |
| **Flathead chub** | *Platygobio gracilis* | Endangered |
| **Gray bat** | *Myotis grisescens* | Endangered |
| **Lake sturgeon** | *Acipenser fulvescens* | Endangered |
| **Pallid sturgeon** | *Scaphirhynchus albus* | Endangered |
| **Running buffalo clover** | *Trifolium stoloniferum* | Endangered |

Source: MDC, 2012d

Results of the Missouri NHD inquiry for the Callaway County Connector study area, which were provided via email from Mr. Doyle Brown, MDC, on April 6, 2009, are included in the table below. The results included a record for the federally and state-listed gray bat, in addition to records for the federally and state-listed Topeka shiner. Records for four state species of conservation concern were also included in the Missouri NHD inquiry for the study area, and included the blacknose shiner (*Notropis heterolepis*), umbrella flatsedge (*Cyperus diandrus*), western silvery minnow (*Hybognathus argyritis*), and yellow false mallow (*Malvastrum hispidum*).

| Missouri Natural Heritage Database Inquiry Results for the Callaway County Connector Study Area | | | |
|---|---|---|---|
| **Common Name** | **Scientific Name** | **Group Name** | **State Rank/Status** |
| **Blacknose shiner** | *Notropis heterolepis* | Vertebrate Animal | S2 |
| **Gray bat** | *Myotis grisescens* | Vertebrate Animal | S3/Endangered |
| **Topeka shiner** | *Notropis topeka* | Vertebrate Animal | S1/Endangered |
| **Umbrella flatsedge** | *Cyperus diandrus* | Vascular Plant | S1 |
| **Western silvery minnow** | *Hybognathus argyritis* | Vertebrate Animal | S2 |
| **Yellow false mallow** | *Malvastrum hispidum* | Vascular Plant | S3 |

Source: Brown, 2009

Following is a discussion of state-listed threatened or endangered species and state species of conservation concern that have the potential to occur in the study area, as identified by the Missouri NHD inquiry, as well as the state-listed threatened or endangered species that have the potential to occur in Callaway County, as determined by the MDC state list for the county.

**Blacknose shiner –** The blacknose shiner is ranked as S2 in Missouri (MDC, 2010b). The species is a small minnow found in small and relatively clear streams with diverse habitat that includes vegetation, soft bottoms, as well as gravel and rock. The calm pool areas of the stream are critical to the survival of the species (Pflieger, 1997). Based on data from the Missouri NHD inquiry, there is one recent and one historical record of this species within the study area. The

historical record is from a survey conducted in 1941 in the Middle River, and located within one mile of the Southern Alternative. The recent record is from a survey conducted in 1994 in Auxvasse Creek, located within one mile and two miles of the Preferred and Southern Alternatives, respectively. Both the Preferred and Southern Alternatives could result in direct impacts to riparian habitat associated with Auxvasse Creek or other waterways that may potentially support the blacknose shiner. Both alternatives could also result in temporary impacts from sedimentation of these waterways as a result of construction activities. Both alternatives would follow MoDOT standards for stream crossing construction.

**Flathead chub –** The flathead chub is state-listed as endangered and has a state rank of S1 (MDC, 2010b). The species is a small fish that occurs in diverse habitats. It may be found in pools of small creeks with moderately clear water over gravel and bedrock bottom, or in large, turbid rivers with swift current and bottom of fine sand and gravel. In Missouri, the flathead chub mainly occurs in the Missouri and Mississippi Rivers. Both the Preferred and Southern Alternatives would cross tributaries to the Missouri River, including Auxvasse Creek. Water quality impacts to Auxvasse Creek could result in indirect impacts on the flathead chub. However, because of the distance of the project from the Missouri River and because BMPs will be implemented at the Auxvasse Creek crossing to minimize the introduction of additional sediment and pollutants in the water, the Preferred and Southern Alternatives should not affect the flathead chub.

**Gray bat –** The gray bat is state-listed as an endangered species as well as ranked as S3 (MDC, 2010b). As previously discussed, there was a recorded gray bat capture in 2003 along the Middle River within the study area. There is the potential for both alternatives to have an indirect impact on the gray bat by removing potential foraging habitat along the Middle River and other streams in the study area with potentially suitable foraging habitat.

**Lake sturgeon –** The lake sturgeon is state-listed as endangered and has a rank of S1 (MDC, 2010b). This fish has a long, streamlined, shark-like body, and at a length of 8 feet and a weight of up to 300 pounds, it is the largest of Missouri's three sturgeons. Lake sturgeons inhabit larger rivers, preferring firm, silt-free bottoms of sand, gravel, and rock. This species is primarily a bottom feeder, although it can be a scavenger at times, feeding on dead animal matter. It mainly occurs in the Mississippi and Missouri Rivers but has also been known to occur in larger tributaries of these two rivers. Neither the Preferred nor Southern Alternative would cross the Missouri River; the nearest tributary to the Missouri River that would be spanned is Auxvasse Creek. The Preferred and Southern Alternatives would cross the Auxvasse Creek at a location approximately 8.5 miles and 8 miles upstream of its confluence with the Missouri River, respectively. Water quality impacts to Auxvasse Creek could result in indirect impacts on the lake sturgeon. However, because of the distance of the project from the Missouri River and because BMPs will be implemented at the Auxvasse Creek crossing to minimize the introduction of additional sediment and pollutants in the water, the Preferred and Southern Alternatives should not affect the lake sturgeon.

**Pallid sturgeon –** The pallid sturgeon is state-listed as endangered and has a rank of S1 (MDC, 2010b). As previously discussed, the Preferred and Southern Alternatives should not affect the pallid sturgeon because of the distance of the project from the Missouri River and because BMPs will be implemented at the Auxvasse Creek crossing to minimize the introduction of additional sediment and pollutants in the water.

**Running buffalo clover –** Running buffalo clover is a plant that is state-listed as endangered and ranked as an S1 species (MDC, 2010b). At this time, there are no known locations of running buffalo clover within the study area, and, therefore, none of the alternatives should impact this species.

**Topeka shiner –** The Topeka shiner is state-listed as an endangered species and ranked as S1 (MDC, 2010b). At this time, there are no known populations or occurrences of Topeka shiner within the study area, and, therefore, none of the alternatives should impacts this species.

**Umbrella flatsedge –** Umbrella flatsedge is an annual sedge that is state-ranked at S1 (MDC, 2010b). Based on the Missouri NHD inquiry, there is one historical record from 1946 of this wetland species within the project study area. There have not been any recent records of the umbrella flatsedge documented by MDC within the study area. Therefore, neither the Preferred nor Southern Alternatives should impact this species.

**Western silvery minnow –** The western silvery minnow is ranked as S2 in Missouri (MDC, 2010b). This species prefers calm areas of large river systems, such as the Missouri or Mississippi Rivers (Pflieger, 1997). Distribution into other smaller river systems was once more common. There is one historical record of the western silvery minnow within the study area based on data from the Missouri NHD inquiry; however, no recent records have been documented. The historical record is from a survey conducted in 1962 in Auxvasse Creek within one mile and two miles of the Preferred and Southern Alternatives, respectively. Both the Preferred and Southern Alternatives could result in direct impacts to riparian habitat associated with Auxvasse Creek and temporary impacts from sedimentation of this waterway as a result of construction activities. Both alternatives would implement BMPs and follow MoDOT standards for stream crossing construction.

**Yellow false mallow –** Yellow false mallow is ranked as S3 in Missouri (MDC, 2010b). The annual herb is found in prairie areas with habitat characteristics such as exposed limestone, sandstone, and gravel, on the edges of bluffs, and open alluvial ground (McGregor et al., 1986; Yatskievych, 1999). One historical record of yellow false mallow was documented within the study area in 1937. There have not been any recent records of the yellow false mallow documented by MDC within the study area. Therefore, neither the Preferred nor Southern Alternatives should impact this species.

**Unique Natural Communities**

The State of Missouri also includes numerous unique habitat and community types that contain characteristics, micro-ecosystems, and species diversity that are considered to be important and rare by MDC. The high quality status of the terrestrial natural communities is often a result of topography, geology and soils, land use, preservation, human access, and natural processes. The plant and animal communities within these areas may be unique relative to the surrounding environments in terms of species diversity and abundance (MDC, 2010b). These areas are frequently where threatened, endangered, and other sensitive terrestrial species are documented. A state ranking system is used for these areas, similar to the state ranking system for species.

In Callaway County, there are 14 unique natural communities of conservation concern, including 2 woodlands, 6 forests, 4 cliff communities, 1 prairie, and 1 glade (MDC, 2012d; see Attachments for MDC county-level list). Based on the Missouri NHD inquiry for the study area,

three of these unique natural communities have been recorded within the study area (Brown, 2009; see Attachments for copy of correspondence). These include dolomite glade, dry-mesic sandstone forest, and dry limestone/dolomite woodland.

**Missouri Natural Heritage Database Inquiry Results for Unique Natural Communities within the Study Area**

| Common Name | Private or Public Area | State Rank |
|---|---|---|
| **Dolomite glade** | Private | S3 |
| **Dry limestone/dolomite woodland** | Private/Public | S3 |
| **Dry-mesic sandstone forest** | Private | S3 |

Source: Brown, 2009

**Dolomite glade –** One dolomite glade was recorded by MDC within the study area, based on the Missouri NHD inquiry. This privately owned area is state-ranked as S3 (MDC, 2010b). Glades are characterized by exposed bedrock and shallow soils and can contain unique flora relative to the surrounding area. The dolomite bedrock feature for this glade is a formation of rock that does not dissolve or erode easily with water over time, unlike sandstone and limestone commonly found in the region. This glade system occurs on south and southwest facing slopes. Dry dolomite woodland is interspersed with the glades and is found upslope of the glades. Downslope of the glade system is mesic dolomite forest. The glades extend approximately 0.75 mile and are 300 feet wide. There are numerous oak species (*Quercus* spp.), upland grasses, and forbs in this area. Both the Preferred and Southern Alternatives have been routed to avoid this natural community, and, therefore, it would not be directly impacted by either alternative.

**Dry limestone/dolomite woodland –** Based on data from the Missouri NHD inquiry, a large dry limestone/dolomite woodland natural community is located within the study area, adjacent to the dolomite glade. This privately and publicly owned sensitive natural community has a rank of S3 in Missouri (MDC, 2010b). The foundation bedrock for the area is a limestone/dolomite formation. However, different from the nearby dolomite glade, the foundation bedrock is not exposed in numerous areas. Plant species identified in the natural community are characteristic of a diverse woodland habitat, including hundreds of species of forbs, woody plants, and wetland obligate plants. Both the Preferred and Southern Alternatives have been routed to avoid this natural community and the associated dolomite glade, and, therefore, it would not be directly impacted by either alternative.

**Dry-mesic sandstone forest –** One dry-mesic sandstone forest natural community is present within the study area, based on the Missouri NHD inquiry. The privately owned area has a state-rank of S3 (MDC, 2010b). Characteristics of this type of natural community include upland grass and forb species that persist in areas of shallow soil structures within a woodland setting. Wetland environments are also lacking. Upland forests are unique habitat types within the Ozark area. An additional characteristic of this natural community is the sandstone bedrock formation. Neither the Preferred nor Southern Alternative would directly impact this natural community.

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# Attachments

**MDC County-Level List**

# Heritage Program

## Heritage Results for Callaway County

| Name | State Rank | Global Rank | State Status | Federal Status |
|---|---|---|---|---|
| Dolomite glade | Vulnerable Code: S3 | Not Ranked Code: GNR | | |
| Dry chert cliff | Vulnerable Code: S3 | Not Ranked Code: GNR | | |
| Dry chert woodland | Apparently secure Code: S4 | Not Ranked Code: GNR | | |
| Dry limestone/dolomite cliff | Secure Code: S5 | Not Ranked Code: GNR | | |
| Dry limestone/dolomite woodland | Vulnerable Code: S3 | Not Ranked Code: GNR | | |
| Dry-mesic limestone/dolomite forest | Vulnerable Code: S3 | Not Ranked Code: GNR | | |
| Dry-mesic loess/glacial till forest | Vulnerable Code: S3 | Not Ranked Code: GNR | | |
| Dry-mesic sandstone forest | Vulnerable Code: S3 | Not Ranked Code: GNR | | |
| Hardpan prairie | Imperiled Code: S2 | Not Ranked Code: GNR | | |
| Mesic bottomland forest | Imperiled Code: S2 | Not Ranked Code: GNR | | |
| Mesic limestone/dolomite forest | Vulnerable Code: S3 | Not Ranked Code: GNR | | |
| Moist chert cliff | Imperiled Code: S2 | Not Ranked Code: GNR | | |
| Moist sandstone cliff | Vulnerable Code: S3 | Not Ranked Code: GNR | | |
| Ozark - Warmwater - Creek | Unrankable nranked Code: S? | Not Ranked Code: GNR | | |
| | Unrankable | | | |

Quick Links
- Conservation Contractors
- Fire Reporting
- Grow Native!
- Heritage Program

Regs and Areas
- Conservation Areas
- Buy e-Permit
- Find a Hunter Ed Class
- Permits
- Regulations
- Report Illegal Activity
- Seasons

| | | |
|---|---|---|
| Ozark - Warmwater - Large river | nranked<br>Code: S? | Not Ranked<br>Code: GNR |
| Riverfront forest | Apparently secure<br>Code: S4 | Not Ranked<br>Code: GNR |
| A Bladderfern<br>***Cystopteris tenuis*** | Critically Imperiled<br>Code: S1 | Apparently Secure<br>Secure<br>Code: G4G5 |
| A Clubmoss<br>***Lycopodium digitatum*** | Imperiled<br>Code: S2 | Secure<br>Code: G5 |
| Alabama Shad<br>***Alosa alabamae***<br>More information | Imperiled<br>Code: S2 | Vulnerable<br>Code: G3 |
| American Badger<br>***Taxidea taxus*** | Unrankable<br>Code: SU | Secure<br>Code: G5 |
| Bald Eagle<br>***Haliaeetus leucocephalus***<br>More information | Vulnerable<br>Code: S3 | Secure<br>Code: G5 |
| Barn Owl<br>***Tyto alba***<br>More information | Vulnerable<br>Code: S3 | Secure<br>Code: G5 |
| Black Rail<br>***Laterallus jamaicensis***<br>More information | Unrankable<br>Code: SU | Apparently Secure<br>Code: G4 |
| Black-seeded Mountain Rice<br>***Oryzopsis racemosa*** | Critically Imperiled<br>Code: S1 | Secure<br>Code: G5 |
| Blacknose Shiner | Imperiled | Apparently |

| | | | | |
|---|---|---|---|---|
| ***Notropis heterolepis***<br>More information | Code: S2 | Secure<br>Code: G4 | | |
| Bristled Cyperus<br>***Cyperus setigerus*** | Critically Imperiled<br>Code: S1 | Vulnerable<br>Secure<br>Code: G3G5 | | |
| Common Mudpuppy<br>***Necturus maculosus maculosus***<br>More information | Unrankable<br>Code: SU | Secure<br>Taxonomic Subdivision:<br>Secure<br>Code: G5T5 | | |
| Field Sedge<br>***Carex conoidea*** | Critically Imperiled<br>Code: S1 | Secure<br>Code: G5 | | |
| Fir Clubmoss<br>***Huperzia porophila*** | Imperiled<br>Code: S2 | Apparently Secure<br>Code: G4 | | |
| Flathead Chub<br>***Platygobio gracilis***<br>More information | Critically Imperiled<br>Code: S1 | Secure<br>Code: G5 | Endangered<br>Code: E | |
| Ghost Shiner<br>***Notropis buchanani***<br>More information | Imperiled<br>Code: S2 | Secure<br>Code: G5 | | |
| Gray Bat<br>***Myotis grisescens***<br>More information | Vulnerable<br>Code: S3 | Vulnerable<br>Code: G3 | Endangered<br>Code: E | Endangered<br>Code: E |
| Hairy-fruited Sedge<br>***Carex trichocarpa***<br>More information | Critically Imperiled<br>Code: S1 | Apparently Secure<br>Code: G4 | | |
| Highfin Carpsucker<br>***Carpiodes velifer***<br>More information | Imperiled<br>Code: S2 | Apparently Secure<br>Secure<br>Code: G4G5 | | |
| Lake Sturgeon<br>***Acipenser fulvescens***<br>More information | Critically Imperiled<br>Code: S1 | Vulnerable<br>Apparently Secure<br>Code: G3G4 | Endangered<br>Code: E | |
| Netted Chain Fern<br>***Woodwardia areolata***<br>More information | Imperiled<br>Code: S2 | Secure<br>Code: G5 | | |
| Northern Crawfish Frog<br>***Lithobates areolatus circulosus***<br>More information | Vulnerable<br>Code: S3 | Apparently Secure<br>Taxonomic Subdivision:<br>Apparently Secure<br>Code: G4T4 | | |
| Oriental Tick-seed<br>***Corispermum villosum*** | Unrankable<br>Code: SU | Apparently Secure<br>Inexact Numeric Rank<br>Code: G4? | | |
| Pallid Sturgeon<br>***Scaphirhynchus albus***<br>More information | Critically Imperiled<br>Code: S1 | Imperiled<br>Code: G2 | Endangered<br>Code: E | Endangered<br>Code: E |

| | | | | |
|---|---|---|---|---|
| Plains Minnow ***Hybognathus placitus*** More information | Imperiled Code: S2 | Apparently Secure Code: G4 | | |
| Plains Topminnow ***Fundulus sciadicus*** More information | Vulnerable Code: S3 | Apparently Secure Code: G4 | | |
| Regal Fritillary ***Speyeria idalia*** | Vulnerable Code: S3 | Vulnerable Code: G3 | | |
| Round-tipped Conehead Katydid ***Neoconocephalus retusus*** | Apparently secure Unrankable nranked Code: S4? | Not Ranked Code: GNR | | |
| Running Buffalo Clover ***Trifolium stoloniferum*** More information | Critically Imperiled Code: S1 | Vulnerable Code: G3 | Endangered Code: E | Endangered Code: E |
| Starhead Topminnow ***Fundulus dispar*** More information | Imperiled Code: S2 | Apparently Secure Code: G4 | | |
| Sturgeon Chub ***Macrhybopsis gelida*** More information | Vulnerable Code: S3 | Vulnerable Code: G3 | | |
| Swamp Metalmark ***Calephelis muticum*** | Vulnerable Code: S3 | Vulnerable Code: G3 | | |
| Two-voiced Conehead Katydid ***Neoconocephalus bivocatus*** | Vulnerable Code: S3 | Not Ranked Code: GNR | | |
| Western Silvery Minnow ***Hybognathus argyritis*** More information | Imperiled Code: S2 | Apparently Secure Code: G4 | | |
| Wild Sarsaparilla ***Aralia nudicaulis*** | Imperiled Code: S2 | Secure Code: G5 | | |
| Woodland Strawberry ***Fragaria vesca var. americana*** | Critically Imperiled Code: S1 | Secure Taxonomic Subdivision: Secure Code: G5T5 | | |

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# Missouri

## County Distribution of Federally-Listed Threatened, Endangered, Proposed, and Candidate Species

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For more information about threatened and endangered species in Missouri, please contact the U.S. Fish & Wildlife Service office at 101 Park DeVille Dr., Suite A, Columbia, Missouri 65203 (573/234-2132)

### Bald Eagle

Bald eagles are no longer protected under the federal Endangered Species Act and Section 7 consultation with the U.S. Fish and Wildlife Service is no longer necessary. However, the bald eagle remains protected under the Bald and Golden Eagle Protection Act.

Information about Bald Eagles
Information about Eagle Permits and the Bald and Golden Eagle Protection Act

| County | Species | Status | Habitat |
|---|---|---|---|
| **Adair** | Indiana bat (*Myotis sodalis*) | Endangered | Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests |
| | Mead's milkweed (*Asclepias meadii*) | Threatened | Virgin prairies |
| **Andrew** | Indiana bat (*Myotis sodalis*) | Endangered | Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests |
| | Pallid sturgeon (*Scaphirhynchus albus*) | Endangered | Missouri and Mississippi Rivers |
| **Atchison** | Indiana bat (*Myotis sodalis*) | Endangered | Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests |
| | Pallid sturgeon (*Scaphirhynchus albus*) | Endangered | Mississippi and Missouri Rivers |
| | Western prairie fringed orchid (*Plantantera praeclara*) | Threatened | Wet prairies & sedge meadows |
| **Audrain** | Indiana bat (*Myotis sodalis*) | Endangered | Hibernacula = Caves and mines; Maternity and foraging habitat |

| | | | |
|---|---|---|---|
| | | | well developed riparian woods; upland forests |
| | Curtis' pearlymussel (*Epioblasma florentina curtisi)* | Endangered | Little Black River |
| | Pink mucket (*Lampsilis abrupta*) | Endangered | Rivers |
| | Rabbitsfoot (*Quadrula cylindrica cylindrica*) | Candidate | Rivers |
| | Pondberry (*Lindera melissifolium*) | Endangered | Bottomland hardwood forest |
| **Caldwell** | Indiana bat (*Myotis sodalis*) | Endangered | Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests |
| | Topeka shiner (*Notropis topeka*) | Endangered | Small prairie (or former prairie) streams in pools containing clear, clean water. Most Topeka shiner streams are perennial (flow year-round), but some are small enough to stop flowing during dry summer months. In these circumstances, water levels must be maintained by groundwater seepage for the fish to survive. Topeka shiner streams generally have clean gravel, rock, or sand bottoms. |
| **Callaway** | Gray bat (*Myotis grisescens*) | Endangered | Caves |
| | Indiana bat (*Myotis sodalis*) | Endangered | Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests |
| | Pallid sturgeon (*Scaphirhynchus albus*) | Endangered | Mississippi and Missouri Rivers |
| | Topeka shiner (*Notropis topeka*) | Endangered | Small prairie (or former prairie) streams in pools containing clear, clean water. Most Topeka shiner streams are perennial (flow year-round), but some are small enough to stop flowing during dry summer months. In these circumstances, water levels must be maintained by groundwater seepage for the fish to survive. Topeka shiner streams generally have clean gravel, rock, or sand bottoms. |

| | | | |
|---|---|---|---|
| | Running buffalo clover (*Trifolium stolonifereum)* | Endangered | Disturbed bottomland meadows |
| **Camden** | Gray bat (*Myotis grisescens*) | Endangered | Caves |
| | Indiana bat (*Myotis sodalis)* | Endangered | Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests |
| | Niangua darter (*Etheostoma nianguae*) | Endangered and Critical Habitat | Rivers |
| **Cape Girardeau** | Indiana bat (*Myotis sodalis)* | Endangered | Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests |
| | Least tern (interior population) (*Sterna antillarum)* | Endangered | Large rivers. Nest on sandbars |
| | Pallid sturgeon (*Scaphirhynchus albus*) | Endangered | Mississippi River |
| | Decurrent false aster (*Boltonia decurrens*) | Threatened | Disturbed alluvial soils |
| **Carroll** | Indiana bat (*Myotis sodalis)* | Endangered | Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests |
| | Pallid sturgeon (*Scaphirhynchus albus*) | Endangered | Mississippi and Missouri Rivers |
| **Carter** | Gray bat (*Myotis grisescens*) | Endangered | Caves |
| | Indiana bat (*Myotis sodalis)* | Endangered | Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well developed riparian woods; upland forests |
| | Ozark hellbender *(Cryptobranchus alleganiensis bishopi)* | Endangered | Rivers and streams of the Ozark Plateau |
| | Running buffalo clover (*Trifolium stolonifereum)* | Endangered | Disturbed bottomland meadows |
| | Eastern prairie fringed orchid (*Platanthera leucophaea*) | Threatened | Mesic to wet prairies and meadows |
| **Cass** | Indiana bat | Endangered | Hibernacula = Caves and |

| | | | |
|---|---|---|---|
| | Ozark hellbender *(Cryptobranchus alleganiensis bishopi)* | Endangered | Rivers and streams of the Ozark Plateau |
| | Scaleshell *(Leptodea leptodon)* | Endangered | Meramec River |
| | Virginia sneezeweed *(Helenium virginicum* | Threatened | Sinkhole ponds under stressed conditions (i.e., variable hydroperiod, low pH soils, high levels of aluminum and arsenic, low levels of macronutrients and boron) |

*Revised May 2012*

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Back to State and County Distributions
**Midwest Endangered Species Home**

Last updated: May 14, 2012

**MDC Correspondence/NHD Inquiry**

## Bell, Jennifer

**From:** Doyle Brown <Doyle.Brown@mdc.mo.gov>
**Sent:** Monday, April 06, 2009 1:18 PM
**To:** Bell, Jennifer
**Cc:** Herleth, Michael; Jason.vanderfeltz@modot.mo.gov
**Subject:** RE: Callaway County Connector Project - Agency Scoping Meeting Minutes
**Attachments:** highway_study_area.zip; Auxvasse NA Forest Management Plan.docm

Jennifer,

Sorry I was unable to get back to you quicker. I have attached the shape files along with the Natural Area Plan for the Auxvasse Natural Area.

Call if you have questions or if you did not get the attachments.

Doyle

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**From:** Bell, Jennifer [jbell@burnsmcd.com]
**Sent:** Wednesday, March 11, 2009 10:25 AM
**To:** Doyle Brown
**Cc:** Herleth, Michael; Jason.vanderfeltz@modot.mo.gov
**Subject:** RE: Callaway County Connector Project - Agency Scoping Meeting Minutes

Doyle,

We are currently working on compiling all the environmental data for the Callaway County Connector Project. As discussed in the scoping meeting, you indicated that you could provide us with GIS data for various items, including conservation areas, boat ramp locations, Heritage database hits, and 303(d) listed streams. Could you please provide us this data as well as any other applicable GIS data or information on constraints within the project study area? Please let me know if you have any questions.

Thank you,

Jennifer Bell
Environmental Studies & Permitting
Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114
816-333-9400 x2328
jbell@burnsmcd.com

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**From:** Doyle Brown [mailto:Doyle.Brown@mdc.mo.gov]
**Sent:** Wednesday, March 04, 2009 1:38 PM
**To:** Herleth, Michael; Casey, Peggy; Jane Beetem; james.k.pointer@usace.army.mil; Gayle.Unruh@modot.mo.gov; Kyle.Grayson@modot.mo.gov; Grothe, Thomas J.; Cryderman, Pat M; Rice, Rick L.; Jason.Vanderfeltz@modot.mo.gov
**Cc:** Knauer, Greg; Hurt, David; Bell, Jennifer; Ortiz, Joab; Betty Burry
**Subject:** RE: Callaway County Connector Project - Agency Scoping Meeting Minutes

Michael,

Thanks for the minutes. I will try and get a more formal letter out on MDC's behalf. To clarify a point involving the Auxvasse Natural Area, while it may be beneficial for future access to the public, currently because it is part of a living trust and because our primary purpose for acquiring this parcel was primarily for wildlife and sensitive natural community protection and restoration, MDC would be concerned about a road corridor being proposed adjacent to or within proximity of the parcel.

I will work on getting you and Jennifer Bell more information. Please let me know if you need additional information.

Doyle

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**From:** Herleth, Michael [mherleth@burnsmcd.com]
**Sent:** Wednesday, March 04, 2009 9:25 AM
**To:** Casey, Peggy; Jane Beetem; Doyle Brown; james.k.pointer@usace.army.mil; Gayle.Unruh@modot.mo.gov; Kyle.Grayson@modot.mo.gov; Grothe, Thomas J.; Cryderman, Pat M; Rice, Rick L.; Jason.Vanderfeltz@modot.mo.gov
**Cc:** Knauer, Greg; Hurt, David; Bell, Jennifer; Ortiz, Joab; Betty Burry
**Subject:** Callaway County Connector Project - Agency Scoping Meeting Minutes

Attached are the minutes, sign-in roster, and copy of materials that were handed out at the agency scoping meeting on February 17th, 2009. If you have any corrections or additions, please let me know.

Thank you

Michael E. Herleth, P.E.
Senior Transportation Engineer
Burns & McDonnell Engineering Company, Inc.
Street Address: 9400 Ward Parkway; Kansas City, MO 64114-3319
Mailing Address: P.O. Box 419173; Kansas City, MO 64141-6173
Phone: (816) 822-3161
Fax: (816) 822-3514
Mobile: (660) 651-0127
Web Site: www.burnsmcd.com

**USFWS Correspondence**

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
Columbia Ecological Services Field Office
101 Park DeVille Drive, Suite A
Columbia, Missouri 65203-0057
Phone: (573) 234-2132 Fax: (573) 234-2181

March 16, 2009

Ms. Gayle Unruh
Missouri Department of Transportation
P.O. Box 270
Jefferson City, Missouri 65102

Dear Ms. Unruh:

Please refer to your January 28, 2009, letter requesting comments on the proposed Callaway County Connector project, Callaway County, Missouri. The U.S. Fish and Wildlife Service (Service) has reviewed that information and submits the following comments under the authority of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.), the National Environmental Policy Act of 1969 (42 U.S.C. 4321-4327), and the Endangered Species Act of 1973 (ESA), (16 U.S.C. 1531-1543).

Floodplain, wetland, and riparian areas associated with the Auxvasse Creek and its tributaries provide quality fish and wildlife habitat in the project area. We recommend that the project alignments be designed to avoid impacts to these sensitive environmental areas by using existing right-of- way to the maximum extent possible. To minimize adverse affects to fish and wildlife habitat, please implement the measures provided in the enclosed Missouri Department of Conservation *Management Recommendations for Construction Projects Affecting Missouri Streams and Rivers*.

The 7,044 acre Reform Conservation Area (CA) surrounds Ameren UE's Callaway Power Plant and is included in the far eastern section of your identified corridor. The area encompassing the Reform CA is owned by Ameren UE and leased to MDC under a cooperative agreement to manage the majority of the property as a public wildlife use area. We recommend that MoDOT work closely with MDC's Policy Coordination during the planning of this project to implement measures to avoid, minimize, and compensate impacts to the Reform CA.

**Federally-listed Species and Candidate Species**

We have no records of federally-listed, threatened or endangered species or critical habitat present at the specific project site. However, the following federally listed species

has been observed within the general project area and could potentially be affected by the proposed action.

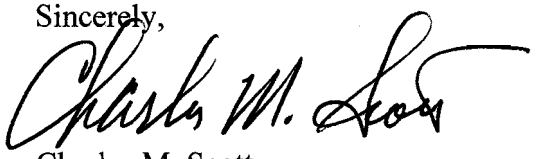
**Indiana bat *(Myotis sodalis)*, Endangered** – From late fall through winter Indiana bats in Missouri hibernate in caves in the Ozarks and Ozark Border Natural Divisions. During the spring and summer, Indiana bats utilize living, injured (e.g. split trunks and broken limbs from lightening strikes or wind), dead or dying trees for roosting throughout the state. Indiana bat roost trees tend to be greater than 9 inches diameter at breast height (dbh) (optimally greater than 20 inches dbh) with loose or exfoliating bark. Most important are structural characteristics that provide adequate space for bats to roost.

Preferred roost sites are located in forest openings, at the forest edge, or where the overstory canopy allows some sunlight exposure to the roost tree, which is usually within 1 km (0.6 mi.) of water. Indiana bats forage for flying insects (particularly moths) in and around the tree canopy of floodplain, riparian, and upland forests.

The Service recommends that an Indiana bat summer habitat survey be conducted to determine if suitable roosting habitat occurs within alternative route alignments in the corridor. If surveys indicate that habitat for Indiana bats is present in the project area further consultation with the Service under section 7 of the Act will be required.

We appreciate the opportunity to provide comments on the proposed project. If you have questions or need additional information, please contact Hilary Shaw (573-234-2132, extension 174) of my staff.

Sincerely,



Charles M. Scott
Field Supervisor

Enclosure

cc: MDC, Policy Coordination, Jefferson City, MO (Brown)

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## Introduction

The streams and rivers of Missouri support a wide and diverse community of wildlife that includes many species of mammals, birds, fishes, mussels, crayfish, and insects. The continued diversity and health of this community is dependent upon how well Missourians manage and protect this resource. While water quality is essential, maintaining a diverse array of habitat features also is essential for aquatic wildlife to persist. Since implementation of the Clean Water Act, point source pollution has been greatly reduced, but polluted and sediment-laden runoff (non-point source) from rural and urban development is still a serious problem.

There are management practices that can be implemented to prevent degradation of our streams and rivers. By adapting these best management practices we can prevent the loss of species diversity and maintain the quality of our lives as well. Preventative measures may require extra effort initially, but they provide long-term dividends by eliminating costly damage resulting from poor management practices.

## Access and Staging Area Management Recommendations

Staging areas are those short- or long-term sites within a construction or development area where most equipment and materials are stored. These areas often are accessed frequently; and when fuel and oil are stored here, the potential for runoff and erosion in these areas may be high.

→ Erosion and sediment controls should be installed and maintained to prevent discharge from the site.

→ Staging areas for crew, equipment, and materials should be established well away from streams and rivers or highly erodible soils.

→ Stationary fuel and oil storage containers should remain within a staging area or another confined area to avoid accidental spills into the stream systems.

→ Excess concrete and wash water from trucks and other concrete mixing equipment should be disposed of where this material cannot enter the stream systems.

→ If temporary roadways must be built, ensure that roadways are of low gradient with sufficient roadbed and storm water runoff drains and outlets. Containment basins, silt fences, filter strips, etc. should be included for retention of storm water runoff for reducing sediment introduction into natural waterways.

→ Avoid stream crossings. If unavoidable, temporary crossings should be used. Temporary crossings should not restrict or interrupt natural stream flow. If temporary in-channel fill is necessary, culverts of sufficient size should be employed to avoid water impoundment and allow for fish passage.

## Riparian Corridor Management Recommendations

The riparian corridor is the vegetation adjacent to a stream or river. This area is critical to the health and quality of the aquatic environment because of its ability to slow and reduce sediment and chemical runoff into the stream or river channel. A riparian corridor with a minimum width of 100 feet from the edge of the stream or river should be maintained along both sides of streams and rivers.

→ Limit clearing of vegetation, including both standing and downed timber, to that which is absolutely necessary for construction purposes.

→ Heavy equipment use within the riparian corridor should be restricted to minimize vegetation destruction and compaction of soils. Flagging or fencing areas that are not to be disturbed is helpful in alerting construction personnel.

→ General application of pesticides, herbicides, or fertilizers within the riparian corridor should be prohibited to avoid water contamination due to over-spray or runoff. Fertilizer use or spot application of pesticides and herbicides is acceptable if appropriate non-restricted chemicals are used.

→ Riparian areas located down slope of construction zones should be physically screened with sediment controls, such as silt fences or filter strips. Sediment controls should be monitored after rain and maintained for the duration of the project.

→ All riparian corridors disturbed by the project should be revegetated immediately following or concurrent with project implementation. Appropriate native bottomland or riparian trees, shrubs, and grasses should be planted to ensure long-term stability in areas where the soil erosion threat is not critical. Annual non-native grasses such as rye or wheat may be planted in conjunction with native species to provide short-term erosion control. Areas judged to be subject to immediate soil loss due to steep slopes or other factors causing critical erosion conditions may be planted with non-native mixtures to assure rapid establishment and erosion control.

→ Post-construction evaluation of vegetation establishment should be conducted at one month intervals for at least three months after completion of the project. Any recommended sediment controls should be inspected at these times. If determined beneficial to soil stability and not adversely impacting site function and/or aesthetics, recommended sediment controls should remain permanent.
→ All temporary erosion and sediment controls should be removed (unless removal would cause further disturbance) and properly disposed of within 30 days after final site stabilization is achieved or after temporary practices are no longer needed.

## Bank and Channel Management Recommendations

The structure of a bank is an important feature of a stream or river. It defines and provides stability for the channel.
→ Bank stability will vary depending on height, slope, and soil conditions. Project engineers and hydrologists should thoroughly investigate the physical properties and hydrologic record of the proposed site before construction begins.
→ Limit clearing of vegetation, including both standing and downed timber, to that which is absolutely necessary for construction purposes.
→ Projects in which bank alteration is necessary should employ, to the highest degree possible, erosion prevention measures before actual excavation activities begin. These preventative measures should be monitored regularly and maintained for the duration of the project.
→ Use of riprap for stream bank stabilization should be limited to those areas that could experience substantial erosion before adequate vegetation becomes established. The material for the rock blanket should consist of durable stone or broken concrete that is well graded. It is preferable that 40-60 percent of the material be as large as the thickness of the blanket, with enough smaller pieces of various sizes to fill the larger voids. It should not contain more than 10 percent of earth, sand, shale, and non-durable rock. Bank stabilization materials should allow for continuous passage of fish and other aquatic species.
→ No permanent fill materials, other than design-approved structures and related bank stabilization materials, should be placed in the stream channel. Avoid channelization. Excavated materials should not be stored or stockpiled below the high bank.
→ Work should be conducted during low flow periods when possible.
→ Care should be taken to keep machinery out of the waterway as much as possible.
→ Do not alter or remove natural stream features, such as riffles and pools.
→ Large woody debris is an important habitat component of a stream and should not be removed unless absolutely necessary for construction and maintenance purposes.

## Information Contacts

For further information regarding regulations for development near streams and rivers, contact:

Missouri Department of Conservation
Policy Coordination Section
P.O. Box 180
2901 W. Truman Blvd.
Jefferson City, MO 65102-0180
Telephone: 573/751-4115

Missouri Department of Natural Resources
Division of Environmental Quality
P.O. Box 176
Jefferson City, MO 65102-0176
Telephone: 573/526-3315

U.S. Army Corps of Engineers
Regulatory Branch
700 Federal Building
Kansas City, MO 64106-2896
Telephone: 816/983-3990

U.S. Environmental Protection Agency
Water, Wetlands, and Pesticides Division
901 North 5th Street
Kansas City, KS 66101
Telephone: 913/551-7307

U.S. Fish and Wildlife Service
Ecological Services Field Office
101 Park DeVille Drive, Suite A
Columbia, MO 65203
Telephone: 573-234-2132

## Disclaimer

These Best Management Practices were prepared by the Missouri Department of Conservation with assistance from other state agencies, contractors, and others to provide guidance to those people who wish to voluntarily act to protect wildlife and habitat. Compliance with Best Management Practices is not required by the Missouri wildlife and forestry law nor by any regulation of the Missouri Conservation Commission. Other federal, state or local laws may affect construction practices.

2/2000