United States
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Forest Service

Mark Twain
National Forest,
Region 9

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SCOPING REPORT

SOUTHWEST PROJECT

Project Number: 21888
Houston/Rolla/Cedar Creek Ranger District
Mark Twain National Forest
Boone and Callaway Counties, Missouri

I. INTRODUCTION

This scoping document summarizes the Southwest project proposal with the intent to inform interested and affected parties and to solicit comments. Scoping is an integral part of environmental analysis that is intended to refine the proposed action, identify preliminary issues, explore possible alternatives and probable environmental effects, and identify interested and affected persons. A final decision is tentatively scheduled for Fall, 2008. Individuals and organizations that respond with comments during this scoping period or otherwise indicate an interest will be added to the project mailing list. Another opportunity to comment on this project will occur during the official 30-day comment period.

The Houston/Rolla/Cedar Creek Ranger District's primary objective of the Southwest project is to provide a wide variety of goods, uses, and services including wood products, other products, visual quality, developed and dispersed recreation opportunities, and habitat for a variety of terrestrial and aquatic wildlife, fish, and other biota. We want the vegetation to consist of a variety of stand sizes, shapes, crown closures, and age structures in patterns that simulate the structural variability of natural communities. It is clear that we cannot return to the original "Open Woodland" and "Woodland" natural communities (and others) as identified in the 2005 Mark Twain National Forest plan because forces are not acting on the land in the same way they were when our ancestors first arrived in the Ozarks. Many conditions have changed in the last 2 centuries that make it impossible to replicate these pre-settlement communities. However, what we can do is re-introduce traditional disturbances (such as fire), change vegetation structure and variety, and begin to re-establish a present day Open Woodland and Woodland communities. This would add a missing element back to the total biological diversity of the Ozark border landscape. More on the Southwest purpose and need is found later in this document.

II. SOUTHWEST PROJECT LOCATION

The Southwest project is located in the west and southwestern portion of the Cedar Creek Ranger District and, as identified in the current 2005 Forest Plan, consists of only Management Areas 2.1 and 6.3. The project consists of proposed activities on Federal lands within the Houston/Rolla/Cedar Creek Ranger District of the Mark Twain National Forest (MTNF) in both Boone and Callaway Counties, Missouri. The project contains approximately 27,922 acres total within these two management areas of which 5,946 acres is National Forest lands, 2,239 acres is State of Missouri lands and 19,737 acres is private land inside its boundary. The legal description of the project area is: Township 45 North, Range 12 West, sections 1, 2, 11, 12; Township 45 North, Range 11 West, sections 4-9, Township 46 North, Range 11 West, sections 4, 5, 7-9, 16-20, 29-33, and Township 47 North, Range 11 West, sections 4-5, 8-9, 14-17, 20-23, 27-29, 33, 34, Fifth Principal Meridian. Please refer to the attached vicinity map on the next page.

III. HISTORICAL BACKGROUND and SOUTHWEST PROJECT AREA SETTING

The Weeks Law, an Act of March 1911, enabled the Federal Government to look at suitable forest areas in Missouri for establishing National Forests. Prior to this legislation, all National Forests had been created from the public domain. Only in cooperation with the State of Missouri could the Federal Government begin buying land. Missouri had to pass enabling legislation implementing the provisions of the Weeks Law. It took another piece of Legislation – The Clark-McNary Act of June 7, 1924 – before Missouri would pass an enabling act. The Clark-McNary Act enabled the Secretary of Agriculture to work cooperatively with State officials for better forest protection, chiefly in fire control and water resources. It also provided for continuous production of timber.

(INSERT VICINTY MAP HERE)

Missouri was added to Region 9 of the U.S. Forest Service in 1930. During 1934 and 1935, eight separate purchase units, embracing over 3 million acres were established. By the start of World War II, slightly more than 1.25 million acres had been approved for purchase by the National Forests Reservation Commission; and two National Forests, the Clark and the Mark Twain, had been established. The lands in the Cedar Creek District were all privately owned prior to 1937. Intensive cultivation of farm lands caused severe depletion and erosion of the fragile soils and this area became land nobody wanted. The USDA Soil Conservation Service acquired some of this land in the 1940's and extensively reclaimed it. In 1953, these public lands were transferred to the USDA Forest Service for administration and management. The Mark Twain National Forest was combined with Clark National Forest as "The National Forests in Missouri" in 1973 and renamed "Mark Twain National Forest" headquartered in Rolla in 1976. Today, the Mark Twain National Forest is a direct result of the passage of time and active management and contains approximately 1.5 million acres under public ownership.

Since the transfer of this land to the Forest Service in the 1950's, numerous management activities have occurred in and around the Southwest project area. The last timber sales on Forest Service lands in the Southwest project area were approved in 1995 with the Conner Creek Area Environmental Assessment. Other projects prior to 1995 include Smith Creek area projects (1993) and the Big Branch Timber Sale Environmental Assessment (1991). The Smith Creek area project was just east of the southwest project area in Management 6.1. As a result of these three decisions, there were approximately 207 acres of commercial timber harvest activities (Uneven-aged group selection in Conner Creek and Big Branch), 622 acres of prescribed fire, and some Cedar Creek trail maintenance, relocation, and closure occurred where needed to protect the resource.

Three properties acquired by the Forest Service within the last 10 years are within the Southwest project boundary and are included for project proposals. These lands encompass 219 acres in Callaway County and 820 acres in Boone County for a total of 1,039 acres. The new properties help consolidate National Forest ownership in all three locations. Mowing has occurred on all three properties to maintain openland areas and a portion of the Cedar Creek trail has been relocated off county roads to improve safety and increase enjoyment for trail users.

In 2005, the Mark Twain revised the Forest Plan that is in existence today.

Southwest's Ecological Classification

Roughly speaking, the Eastern and Southern halves of the Southwest project area lie in the Outer Ozark Border subsection of the Ozark Highlands Section and the remaining portion of the Southwest project area lies in the Claypan Till Plains Subsection of the Central Dissected Till Plains Section. The Natural Divisions of Missouri is a map which divides the state into major regions based on geologic history, soils, topography, plant and animal distribution, and other natural features. The Natural Divisions of Missouri also provides the initial framework for characterizing the distribution of natural communities discussed below. As described in the Atlas of Missouri Ecoregions (Nigh and Schroeder, 2002), the Outer Ozark Border subsection "consists of a belt of deeply dissected hills and blufflands bordering the Missouri and Mississippi Rivers and several relatively smooth karst plains. Relief in the river hills is mostly 250-350 feet. Slopes are steep and bedrock exposures are common. Loess, occasionally very thick, mantles the uplands of the entire subsection. …The ecoregion was historically timbered in oak savanna and woodland, oak and mixed-hardwood forests, and occasional prairie and glade openings. …" The Claypan Till Plains Subsection "distinguishing feature….is the presence of well-developed claypan soils on a flat glacial till plain. Postglacial stream erosion has made little progress in this subsection, and most of the surface is flat or gently rolling with local relief less than 100 feet. Bedrock exposures are rare. Most of the subsection was formerly prairie, with narrow belts of timber along stream courses. …."

Southwest's Topography and Geology

Bedrock is commonly exposed in the Outer Ozark Border subsection and the Southwest project area because of the deep entrenchment of streams near the Missouri and Mississippi Rivers. As described in the Atlas of Missouri Ecoregions, "Several Loess-capped rock benches add variety to the blufflands of Callaway, Montgomery, and Warren Counties. … The northwestern end of this subsection (Boone and Howard Counties) extends into a region underlain by an alternating series of thin shales, sandstones, limestones, and coals of Pennsylvanian age. The land here is moderately dissected with relief of 150-250 feet. Small karst tracts occur in this area. This area was glaciated, but most of the ice-laid deposits have been removed by postglacial erosion. On some ridgetops, of the counties north of the Missouri River, glacial till may be 50 feet thick. It is associated with flattish summits, as at the Ameren UE Callaway Nuclear Power plant (Callaway County) and the Columbia Regional Airport (Boone County)."

As described in the Atlas of Missouri Ecoregions, The Claypan Till Plains Subsection "is underlain by horizontally bedded Mississippian and Pennsylvanian sedimentaries, but rarely are they exposed anywhere, and their influence on surface features is minimal. Overlying the sedimentaries are pre-Illinoisan glacial till and a thin veneer of loess (less then 5 feet thick). The surface is formed almost completely from glacial till. … The subsection has local relief less than 100 feet and over large areas does not exceed 20 feet within 1 mile. It is the largest area of low relief of any upland in Missouri."

Southwest's Hydrology

As described in the Atlas of Missouri Ecoregions, the Outer Ozark Border "subsection is hydrologically extremely diverse. It includes numerous small streams, some intermittent and ephemeral, that drain directly into the Missouri and Mississippi Rivers. The subsection also includes the lowermost portions of the larger tributaries, like …Cedar Creek…and Apple Creek. Stream valleys are deeply entrenched into the river blufflands of the Missouri and Mississippi Rivers. Gradients of smaller streams are steep. Those streams carry bed loads of gravel and sand, and their channels are usually in gravel, except where close to the Missouri and Mississippi Rivers, where they are silty from backwaters. Stream flow is highest in spring and lowest in fall." Stream channels in the Claypan Till Plains Subsection "are virtually everywhere in silts and clays that are the weathered products of glacial till and loess. Since agricultural development, streams carry a high suspended-sediment load. Bedrock is rarely encountered. …In general, streamflow is highest in spring and early summer. Floods are common, and there are few flood control works to mitigate them. … The subsection has no natural ponds or lakes, although flat surfaces may be saturated for extended periods in late winter and spring due to the impeding of soil-water percolation by claypans."

Cultural Setting and Transformation of Natural Communities

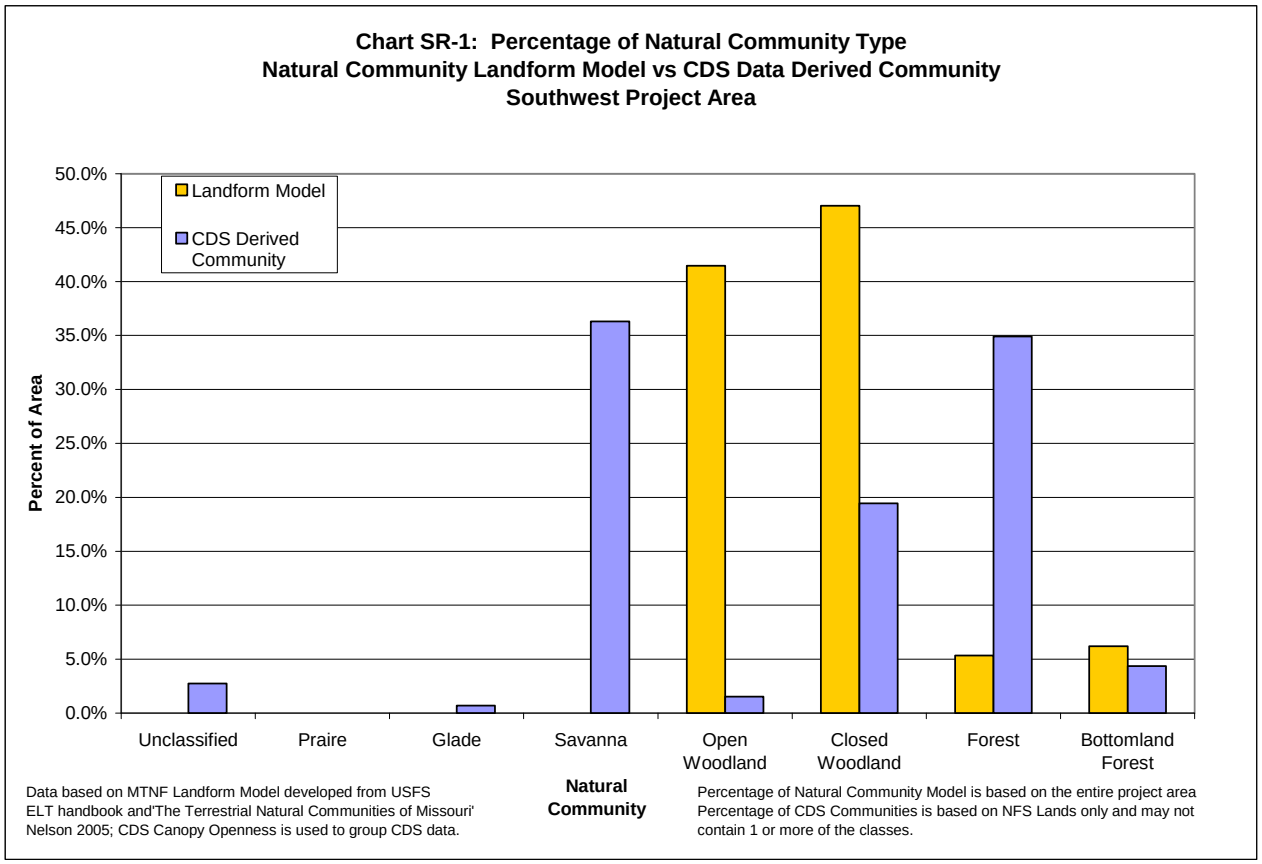
Missouri's historic natural communities provided an abundance of flora and fauna that provided humans with food, shelter, clothing, buildings, and many other products essential to a successful and productive lifestyle. Native Americans influenced their environment in two principle ways. The first transformed entire ecosystems across North America, primarily through their widespread burning of the landscape. The second pattern consisted of local effects resulting from agriculture, hunting, and building of shelters. Clearing for fields and widespread burning created varied forests and woodlands with greater biological diversity (Nelson, 2005). With the growing network of roads, valuable structures (i.e. fences, homes, barns, utility lines (associated with urban interface)), and the Smokey Bear Campaign over the last 50+ years (Only you can prevent forest fires); fire has been excluded from the landscape since the establishment of the existing forests. As a result, the species composition, stocking and biological diversity has changed from very early historic records. While uncontrolled wildfire can severely impact the landscape, fire under the right conditions is beneficial to many of the Mark Twain National Forest's natural communities.

Southwest's Historic and Current Terrestrial Natural Communities

According to the Missouri Department of Conservation website, the Southwest project is found in the Missouri River Watershed. In Missouri, this watershed extends from Kansas City on the west through the Cedar Creek Ranger District to St. Louis on the East.

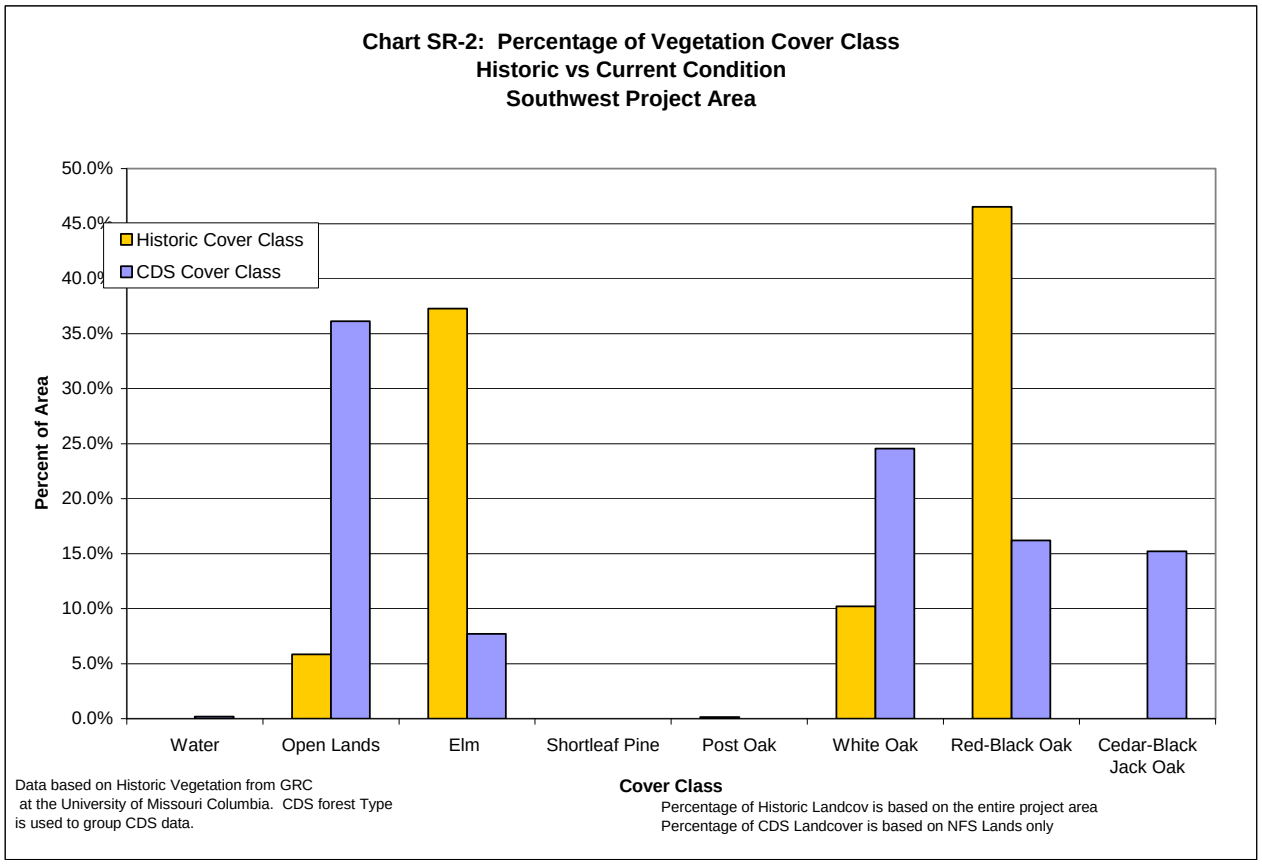
Historically one would have found mainly two natural community types in the present day Southwest project area: Open Woodland and Closed Woodland. In general, historically for the Cedar Creek District, open woodlands transitioned to Forest in the valleys and bottomlands and mostly prairies occurred on the flat ridges. Today one would find mainly fescue pastures with scattered cropland (mainly on private lands) and dense old-field thickets and second growth timber on the steeper slopes.

Chart SR-1, Percentage of Natural Community Type, below shows a comparison between the historic natural community type and the current Forest Service records (Combined Data System (CDS)) derived community type. As shown below in chart SR-1, historically, Open and Closed Woodland natural communities have transitioned into a denser Closed Woodland and Forest communities.



According to current Forest Service records (CDS) and Tree Association data (Chart SR-2, below) for the Southwest project, approximately 25% of the project area is categorized as white oak dominant, 16% is categorized as Northern red oak - Hickory dominant, 8% is categorized as elm dominant, and 15% is categorized as cedar/blackjack oak dominant. Similar inquiries of the Historic Land class data show only 10% being categorized as white oak dominant, 47% is categorized as Northern red oak - Hickory dominant, 37% is categorized as elm dominant, while 0% (0 acres) is categorized as cedar/blackjack oak dominant.

Chart SR-2, Percentage of Vegetation Cover Class, below shows a comparison between the historic Land Class Cover and the current conditions.



IV. FOREST PLAN ROLE, GOALS, AND DIRECTION

The 2005 Forest Plan provides guidance for all resource management activities on the Mark Twain National Forest. It establishes: forest-wide multiple-use goals and implementing objectives, forest-wide management requirements (known as Forest-wide Standards and Guidelines), management area direction and management practices, and desired conditions. A management area is a portion of a landscape with similar management objectives and a common management prescription. The Southwest project lies in Management Areas 2.1 and 6.3. A brief description (from the Mark Twain Forest Plan) of the Management Prescriptions themes, goals, and desired conditions is provided below to set the foundation for the Southwest project "Purpose and Need for the Proposed Action" coming up in Section V of this report.

Management Prescription 2.1 Theme - General Forest, Roaded Natural ROS (Forest Plan, page 3-11) This prescription emphasizes multiple use resource objectives while allowing for the enhancement of natural communities, improvement of forest health conditions, and roaded natural recreation experiences. Multiple use resource objectives provide a wide variety of goods, uses, and services including wood products, forage, other products, visual quality, developed and dispersed recreation opportunities, and habitat for a variety of terrestrial and aquatic wildlife, fish, and other biota.

Management Prescription 6.3 Theme – Candidate Wild, Scenic, Recreation Rivers (Forest Plan, page 3-41)
This prescription provides management for rivers identified as eligible for inclusion in the National Wild and Scenic Rivers System (NWSR).

Management Area Goals

Management Prescription 2.1 Goals (Forest Plan, page 3-11)
- Provide a variety of uses, products, and values by managing within the capability and resource potential appropriate to natural communities and the landscape.
- Manage terrestrial and aquatic natural communities to enhance and retain their characteristic ecological elements.
- Provide a wide diversity of habitats to meet the needs of plants, fish, and wildlife species distributed across the Forest.

Management Prescription 6.3 Goals (Forest Plan, page 3-41)
- Manage eligible rivers to maintain or enhance their outstanding remarkable values, free-flowing character, and potential for recommended classification.

Management Prescription Desired Conditions

Management Prescription 2.1 Desired Condition (Forest Plan, page 3-11)
- Vegetation consists of a variety of stand sizes, shapes, crown closures, and age structures in patterns that simulate the structural variability of natural communities.
- Areas exhibiting old growth characteristics comprise 8% to 12% of the management area.
- Regeneration openings comprise 8% to 15% of each management area. From 1% to 5% of these regeneration openings are $\leq$ 2 acres in size.
- Natural communities are distributed similar to historical vegetation patterns.
- Recreational opportunities provide for interaction between users ranging from moderate to high depending on the specific location.

Management Prescription 6.3 Desired Condition (Forest Plan, page 3-41)
- Rivers eligible for National River status are managed under the provisions for National Scenic and Recreation River classification. The unique attributes of the eligible rivers are maintained or enhanced. Facility development is the minimum necessary to reach the objective and designed so as not to preclude the rivers eligibility. Evaluations of projects on, directly affecting or invading the corridors or diminishing the Outstandingly Remarkable Values of these river segments adhere to the guidance of the Interagency Wild and Scenic Rivers Coordination Council.

Table SR-1 on the following page represents a range of desired conditions for Southwest natural community types found within the project area. Not all community types shown in the Forest Plan Appendix page A-3 can be currently found in the Southwest project area (i.e. All glade types, Fen, Savanna) or were historically present.

TABLE SR-1: DESIRED CONDITIONS FOR SOUTHWEST NATURAL COMMUNITY TYPES					
Natural Community Types (NCT)	Overstory Trees		Shrubs	Ground Cover Layer	
	% canopy	Basal area (sq. ft.)	Percent shrub layer	Ground organic layer	% ground cover
Prairie	<10	NA	<10	Scattered grasses, sedges and forbs	90-100
Open woodland	40 - 70	40 - 70	20-40	Scattered grasses, sedges and forbs; 30 –50% leaf litter cover	30 - 40
Closed woodland	70 - 90	80 - 100	5-10	Scattered sparse grasses, sedges and forbs; 100% leaf litter cover	20 - 30
Upland Forest	90 - 100	80 – 100	50% in 2 acre openings/wind gaps; < 5 % elsewhere	Moderately deep leaf litter; sparse ground cover	< 30
Bottomland forest	90-100	90-100	Multi-layered; uneven age; few gaps	Deep leaf litter; sparse ground cover	<30

V. SOUTHWEST PROJECT PURPOSE AND NEED FOR THE PROPOSED ACTION

Early vegetation records (Early 1800's) show the majority of the vegetation (approximately 84%) in either elm or red oak forest type. Elm is an early invader of openlands and the red oak group is the most intolerant of shade and fastest growing of the oak species. It is also characterized as the first oaks to invade openlands. Neither of these species is tolerant of fire. The fact that the earliest vegetation records contain such a high percentage of early invader species that are fire intolerant suggest that the vegetation was transitioning from a more open, fire driven vegetation, to a more woody, forested condition in the absence of fire and this change occurred with the earliest of western settlement of the area.

The vegetation on the landscape today reflects the progression of early invader hardwoods to a more late successional woodland comprised of more white oak, which is more shade tolerant and slower growing than the red oak group. The red oak group life span ranges from the shortest lived, scarlet and blackjack oaks of about 60-70 years, to the longest lived, red oak of about 100 years. In contrast the trees in the white oak group can obtain an average life span twice that of the red oaks. The regeneration requirements for both oak groups require full to nearly full sunlight.

The forest in this project area is primarily mature oak with little history of disturbance (i.e. wildfires, tornadoes, harvests). There is a lack of a distribution of differing age classes in the oak component and lack of oak regeneration in the existing stands. Maintaining oak trees beyond the life span of the current mature forest requires the introduction of younger oak trees or oak regeneration. Oak regeneration is disturbance oriented, requiring full sunlight conditions to obtain the quick growth necessary to compete with more shade tolerant species such as sugar maple that develop well with shade. A lack of openings large enough to provide full sunlight to the forest floor under the current stand of oaks is resulting in a species change to primarily sugar maple in the establishing younger trees. Past management has introduced a limited number of forest canopy openings large enough to allow full sunlight, however what has been done has proven successful in establishing new oak regeneration.

Openlands today are not remnants of the very early fire maintained openings. Instead they are woodlands that have been cleared and planted to grass or cropped. The re-establishment of vegetation in these

openings is mostly with exotic species such as fescue or grain crops. The abandoned farming practices are now going through succession back to a woody landscape. The primary invader being eastern red cedar, mixed with shrubs, briars and short lived hardwoods such as sassafras and honey locust. This successional stage is prime habitat for the non-native invasives (*Sericea lespedeza*) and noxious weed species (multiflora rose).

SOUTHWEST NEEDS

In order to meet the Desired Condition for MA's 2.1 and 6.3 the following needs were identified for this project:

Need 1: Enhance natural communities and improve forest health by encouraging a variety of desirable native species in various age distributions and stocking rates. The Forest Service is responsible for ensuring a sustainable flow of renewable resources (recreation, timber, water, range, and wildlife) without impairment to the productivity of the land (Multiple Use/Sustained Yield Act). Forest health is essential to providing a sustainable yield of the forest's resources.

Oak/hickory management/regeneration

The woodlands of the Southwest project area consist of the oak/hickory timber type. The most common trees comprising the forest in the Southwest project area are the white oak group (including post and chinkapin oak). The predominant hickory is the shagbark hickory type. White oak stands comprised of trees over 150 years old are characterized by a lack of disturbance. The light reaching the understory is some degree of shaded. This reduced light favors the development of shade tolerant species such as sugar maple. The sugar maple component of the timber stands is increasing beyond the scattered occurrence it held historically. Nearly pure sugar maple mid-stories are developing where the full sunlight needed to establish new oak seedlings is lacking. Wherever the possibility exists to coordinate with fire management of openlands, a proposed frequent burn schedule to kill sugar maple mid-stories in mature white oak stands is needed. After maple control is accomplished prescribed fire would cease and openings large enough to provide full sunlight to the forest floor would be created through timber harvest. These harvests are either Uneven-age harvests where regeneration openings are emphasized with a minimal of thinning between openings or Shelterwood harvests that provide full sunlight conditions necessary for the development of oak seedlings.

Prescribed fire is not possible or desirable in all oak stands. Therefore there are situations where the regeneration cuts are prescribed without the fire control measures listed above. Experience from the recent past management in the area has shown oak and hickory will become a part of the regeneration mix if the sunlight conditions necessary for their development are met. The type of regeneration cut prescribed is dependent upon the age structure, age and condition of the existing stand. Some pockets of mature red oak group still remain in some stands. These are generally high risk, meaning life expectancy of the remaining trees is short. Regeneration harvests are prescribed to capture the mortality expected, to prevent build-up of insect and disease populations and to obtain oak sprouting to help the oaks establish. Once a tree dies, it does not produce stump sprouts. In a few instances all trees are scheduled to be removed to establish a new young stand of trees. This even-age technique provides unique temporary opening habitat that has been rare in these management areas over the life of the previous Forest Plan. It is a method of management used when the residual trees are not expected to live long enough to be retained for future management cycles in numbers necessary or where access is difficult and not possible for frequent small management actions.

Removals and thinnings

Not all management of timbered lands involves establishing a new age class of desirable trees. Some stands are well stocked with young trees. Often these trees become overcrowded as they grow larger due to the need for more space and resources. Thinnings or removal of residual larger trees suppressing

the younger stand helps provide the growing space needed for the remaining trees to grow faster, remain healthy and produce more mast for wildlife. Trees of good growth and desirable species are chosen as leave trees and given the needed growing space by removing trees from around them.

Establishing new forest land through planting
Some current openlands are not planned to be maintained as open. Rather than let these succeed to hardwoods over a long period of time, they need to be planted. Besides taking 50 years longer, natural succession stages may include large numbers of non-native invasive and noxious weeds such as *Sericea lespedeza* and multiflora rose and undesirable tree species such as cedar and locust.

Need 2: Enhance Recreation Opportunities

Three trailheads for the Cedar Creek Trail System are located at Pine Ridge, Dry Fork and Ginn Lane areas, but the trails can be accessed at many places where county roads intersect the routes. The Cedar Creek Trail provides an excellent opportunity to view the restored lands of the 16,500 acre Cedar Creek Ranger District. Before 1940, private landowners intensively cultivated this land, resulting in depleted and eroded soils. In the 1940s, the Soil Conservation Service began purchasing and rebuilding it, stabilizing gullies and planting trees and grasses. It has been managed by the U.S. Forest Service since 1953, and now provides a variety of wildlife habitats and recreational opportunities in the transition zone between oak-hickory forests and tall grass prairies. Foot travel, horseback and mountain bike activities occur on different sections of this trail system with most of the surface of the trail consisting of native materials. Several sections of trail utilize county maintained roads where Federal ownership is broken. As with any facility, maintenance of the Cedar Creek trail system (including parking access areas) is needed to protect sensitive resources and prevent site deterioration. Heavy use of the trail has led to trail degradation, trenching and user made trails difficult to traverse. Newly acquired tracts would provide opportunities for existing trail to be moved to National Forest lands and improve safety to the trail users as well as a more enjoyable recreational experience.

Cedar Creek was placed in Management Area (MA) 6.3 whose prescription "provides management for rivers identified as eligible for inclusion in the National Wild and Scenic Rivers System." Even though this stream falls in MA 6.3, it is not eligible for inclusion in the National Wild and Scenic, Rivers system but is managed as recreation segments in order to protect an outstanding or remarkable feature. Recreation opportunities associated with Cedar Creek include such things as boating during spring run-off, wading, and fishing. Cedar Creek supports a healthy fish population similar to other mid-Missouri streams. Currently there are no public access points to reach Cedar Creek on Federal land.

The Cedar Creek District is utilized extensively for recreational hunting, particularly for fall deer, spring turkey and squirrel seasons. There is a need to maintain and enhance mast production through vegetative management.

Various ponds exist throughout the project area, some of them stocked with fish for recreational fishing, but also used in conjunction with watering tanks for cattle. Access to one of the larger ponds needs to be improved so more users can enjoy this opportunity.

Need 3: Provide and protect a wide diversity of habitats to meet the needs of plants, fish and wildlife species.

Grasslands and Openland habitat
Openlands are important habitats for approximately 200 species. These areas provide a vegetative composition and structure that differs from predominately forested environments. These habitats are

constantly declining due to plant succession (which is often the result of fire exclusion on the landscape). Therefore there is a need to maintain some of these open areas.

Currently, succession is reducing the amount of grasslands and open rangeland habitat in the Southwest project area. This often includes the invasion of species such as cedar and non-native invasive species such as *Sericea lespedeza* in savannas, glades, rangeland pastures and warm season grass fields. In order to achieve the desired condition in the Southwest project area, the quality of the open characteristics in existing grasslands and openlands need to be enhanced. Maintaining these grasslands and openland habitat in the Southwest project area would provide the habitat needs of wildlife species such as quail and turkey.

Lands acquired by the Forest Service over the past 10 years include two properties in Boone County and one in Callaway County. These acquisitions contain about 392 acres of openland habitats which have been managed primarily as cool season grass-legume pastures and hayfields. Common management practices prior to acquisition by the Forest Service within these openlands had been mowing, haying, brush hogging, chemical weed treatment, fertilizing, and grazing. Therefore there is a need to maintain these open areas.

Waterholes
Currently there are some scattered small ponds in the Southwest project area. Many of these ponds are located on National Forest lands in active grazing allotments. There are also some scattered ponds located in a forested environment. In both cases, some of these have become clogged with vegetation and have become silted in. Some ponds have trees that are growing on the edges of some of the pond dams (The trees roots can lead to failure of the dams). There is a need to maintain these existing waterholes to provide a diverse habitat for amphibians (in some ponds) as well as other wildlife species and cattle. Since some of the ponds are stocked with fish, this action would also enhance the dispersed recreation experience in the Southwest project area.

Old growth
One of the key habitat components to support the range of native terrestrial wildlife species is old growth habitat, which includes large, old trees, downed material, snags, varying structure. The age at which old growth develops and the specific structural attributes that characterize old growth will vary widely according to natural community type, local site conditions and the ecological disturbance factors (wind, fire, insects, ice storms) (Forest Plan FEIS, page 3-91). In order to meet desired condition goals for old growth in MA 2.1 and 6.3 (old growth characteristics should comprise 8-12% of the management area), approximately 479-718 acres of old growth would be needed. Criteria for designating old growth can be found on page 2-8 of the 2005 Forest Plan.

Need 4: Improve open woodland and woodland natural communities.

Ecosystem Enhancement
As stated earlier, historically, fire played an important role in the natural communities that were present. With the growing network of roads, valuable structures (i.e. fences, homes, barns, utility lines (associated with urban interface)), and the Smokey Bear Campaign over the last 50+ years; (Only you can prevent forest fires!) fire has been excluded from the landscape since the establishment of the existing forests. Currently, there is a need to re-introduce prescribed fire to the ecosystem to improve structural conditions reminiscent to historic open woodland and woodland natural communities, increase vegetative diversity and reduce the risk of wildland fire to the urban interface. This activity would help to create openings under dense crown canopies, and create small open areas by killing trees.

Fuel Reduction and wildland fire risk
Land ownership patterns in Missouri are changing as large ownerships are broken up into subdivisions and small farms and woodlots. This is especially evident on private lands in the rapidly growing area of the Cedar Creek unit of the Mark Twain National Forest. The term wildland/urban interface describes any area where potentially dangerous wildland fuels, such as forests, old fields and grasslands, are found next to homes and other outbuildings. Because of their location, private structures (homes, barns and out buildings), private hay fields, and livestock are extremely vulnerable to fire should a wildfire occur in the surrounding area. The Missouri Department of Conservation reports that arsonists deliberately set 50 percent of the wildfires in the state each year, careless trash burning accidentally starts 40 percent and another 10 percent start from miscellaneous causes. Because of all the development occurring in the area and to reduce the risk of wildland fire risk there is a need to reduce flashy fuels within a forest and openland setting.

Treat Non-native invasive weeds
The Chief of the USDA Forest Service has identified invasive species as one of the four critical threats to our nation's ecosystems. Infestations of Non Native Invasive Plant (NNIP) species increasingly threaten the integrity of the ecosystems and biodiversity on the Mark Twain National Forest (MTNF). Approximately 27 percent of the plants that occur in Missouri are non-native species (Yatskievych, 1999), and that same percentage is true for the MTNF. Of particular concern are those NNIP's that are successful at invading natural habitats. Invasive plants can alter natural ecosystems by displacing native species, inducing changes in water or fire regimes, causing changes in soil characteristics, adding a new or displacing an existing wildlife food source, and altering erosion and sedimentation processes (Westbrooks, 1998, p. 57). Throughout the Southwest project, NNIP are most abundant in regularly disturbed areas such as roadsides and old fields. Treatment is needed to eliminate the spread of these Non-native invasive plants.

Need 5: Provide a safe and efficient Transportation system that meets the implementation needs of the Southwest project area.

Forestwide Goal 2.3 (Forest Plan, page 1-5) states: "Develop and maintain a transportation system which provides the minimum permanent road access needed to meet resource management objectives." There are numerous roads with differing jurisdictions in the Southwest project area. This includes: a State highway, County roads, Forest System roads, Forest Non-system roads and Private roads. Therefore, there is a need to provide and maintain a safe and efficient transportation system that meets the needs of the Southwest project.

There are also some associated or connected actions needed to implement these five emphasis areas in the Southwest project. They include fireline construction for the numerous prescribed burns, and temporary roads needed to facilitate the removal of timber in the Southwest project area.

VI. PROPOSED ACTION

The Houston/Rolla/Cedar Creek Ranger District is proposing these actions for the purpose of enhancing natural communities providing a wide diversity of habitats to meet the needs of plants, fish and wildlife species, improving forest health, improving species composition and stocking, reducing hazardous fuels, providing a variety of timber products and enhancing the project areas dispersed recreation experience.

The management of the woodland portion of the project area is aimed at addressing the following conditions: The mature red oak component present is reaching the end of its natural life cycle. The

probability is high that the remaining trees in this age bracket will be dead in the next ten years. The majority of the white oak component is mature and stagnant. No regeneration events have occurred for many decades, providing fully shaded ground conditions. This has led to the development of shade tolerant understory species (i.e. Sugar maple). Stimulation of the sugar maple component occurs with increased light. Development of the sugar maple exclusively is obtained when light levels are increased to an extent less than what is needed to develop the regeneration of shade intolerant oaks.

A combination of commercial timber harvest, non-commercial timber, wildlife, and prescribed fire treatments and activities are designed to move the project area toward a desired condition that consists of a variety of stand sizes, shapes, crown closures, and age structures in a pattern that simulates the structural variability of natural community types similar to historical vegetative patterns. Through implementation of the proposed actions identified in the next section, the Southwest project would improve the health of oak and oak/hickory forest, native plant communities such as prairies, and open and closed woodlands. Forest Service system roads that are needed for long-term management and public access are reconstructed and maintained to standard. Non-system roads that are not needed for long-term access, pose a threat to public safety, and/or are contributing to poor watershed conditions are decommissioned.

The following proposed actions were identified from the above needs to enhance the Southwest project areas Wild Turkey and Quail habitat, historic natural communities, improve forest and watershed health, enhance recreation opportunities, and protect a wide diversity of other habitats that move the Southwest project area towards the Desired Condition as outlined in the 2005 Mark Twain National Forest LRMP. These proposed actions are within the 2005 Forest Plan standard and guides and are compliant with the Programmatic Biological Opinion and the Forest Plan. All of the proposed actions below are letter and number coordinated to match the need statements described in the previous section of this document. The following management actions listed in the document have been identified and are given with approximate measures. Several management actions may occur over the same acres. In addition, some of the proposed actions may meet more than one need.

Need 1) Enhance natural communities and improve forest health by encouraging a variety of desirable natural species at a desirable stocking rate.

Proposed Action 1A: Clearcut with reserves: Create regeneration openings through the Clearcut silvicultural system.
Ensure the perpetuation of oak species by clearcutting 4 different areas for a total of 33 acres. All four of these clearcuts are less than 11 acres in size. This action would provide 33 acres of regeneration openings. This action would provide some regeneration openings that would contribute to the desired condition of 8-15% regeneration openings in Management Prescription 2.1. This action would also meet Need: 3) provide and protect a wide diversity of habitats to meet the needs of plants, fish and wildlife species.

Proposed Action 1B: Shelterwood with reserves: Open up dense oak canopies with Shelterwood harvest to enhance structural conditions reminiscent of historic open woodland natural communities.
Shelterwood harvest would occur in 7 areas on a total of 165 acres that have an existing dense crown closure. This action would also meet Needs: 3) provide and protect a wide diversity of habitats to meet the needs of plants, fish and wildlife species, and 4) Improve Open Woodland and Woodland Natural Communities.

Proposed Action 1C: Shelterwood Removal: Shelterwood removal harvest to reduce overwood competition.
Shelterwood removal harvest would occur in 3 areas on a total of 32 acres where established regeneration is competing with the overstory. This is the last phase of a previous shelterwood harvest. This action would also meet Needs: 3) provide and protect a wide diversity of habitats to meet the needs of plants, fish and wildlife species, and 4) Improve Open Woodland and Woodland Natural Communities.

Proposed Action 1D: Uneven-aged Management (Group Selection): Open up the dense oak canopies with Group Selection cuts to provide structural conditions more reminiscent of historic open woodland natural communities.
Uneven-aged management (group selections and thinning between the groups) would occur in 59 areas on a total of 930 acres that have a dense crown closure. This action would provide some regeneration openings that would contribute to the desired condition of 8-15% regeneration openings in Management Prescription 2.1. This action would also meet Needs: 3) provide and protect a wide diversity of habitats to meet the needs of plants, fish and wildlife species, and 4) Improve Open Woodland and Woodland Natural Communities.

Proposed Action 1E: Salvage: Salvage/Removal of Dead and Dying Red oak group
Mechanically salvage in 6 areas on approximately 82 acres of dead and dying red oak group as a result of advanced oak decline. This action would provide some regeneration openings that would contribute to the desired condition of 8-15% regeneration openings in Management Prescription 2.1. This action would also meet Needs: 3) provide and protect a wide diversity of habitats to meet the needs of plants, fish and wildlife species, and 4) Improve Open Woodland and Woodland Natural Communities.

Proposed Action 1F: Improvement cut: Open up dense oak canopies with Improvement cuts to provide structural conditions reminiscent of historic open woodland natural communities.
Mechanically treat (Improvement cut) in 5 areas on approximately 72 acres of oak, pine and cedar stands with an existing dense crown closure to provide structural conditions reminiscent to historic open woodland natural communities. This action would also meet Needs: 3) provide and protect a wide diversity of habitats to meet the needs of plants, fish and wildlife species, and 4) Improve Open Woodland and Woodland Natural Communities.

Proposed Action 1G: Open up dense canopies with Commercial thinnings to provide structural conditions reminiscent of historic open woodland natural communities.
Decrease the existing dense crown closure to a 50-70 percent crown closure by mechanically thinning, in 25 areas on approximately 382 acres (approximately 49 acres of eastern red cedar stands, approximately 239 acres of oak stands, approximately 77 acres of cedar/hardwood stands, 12 acres of cottonwood, and 5 acres of lowland hardwoods) to provide structural conditions reminiscent to historic open woodland natural communities. This action would also meet Needs: 3) provide and protect a wide diversity of habitats to meet the needs of plants, fish and wildlife species, and 4) Improve Open Woodland and Woodland Natural Communities.

Proposed Action 1H: Open up dense oak canopies with Pre-Commercial thinnings to provide structural conditions reminiscent of historic open woodland natural communities.
Mechanically thin dense oak canopies in 4 areas on 31 acres of previously oak regenerated stands. These areas have a high basal area and this activity would improve vegetative composition, structural condition, and forest health. This action would also meet Needs: 3) provide and protect a wide diversity of habitats to meet the needs of plants, fish and wildlife species, and 4) Improve Open Woodland and Woodland Natural Communities.

Proposed action 1I- Native hardwood tree planting.
Old fields along the county road in the intermittent drainage are inviting off road use and dumping. These fields are still in a grass stage. Succession to timber is a long process usually transitioning through shrubs, cedar, than the climax hardwoods. Reduce the successional time frame by planting desirable bottomland hardwoods i.e. pin oak, hackberry, ash, silver maple, and walnut. Plant trees in existing old fields (5 areas on approximately 25 acres) that are not planned to be maintained as openlands. Control existing vegetation in strips to be planted with an appropriate chemical that contains both emergent and pre-emergent control. Plant trees parallel to roadway to discourage entry into the fields. Plant hardwoods on approximately 12 X 12 foot spacing or 300 trees/ac. Mow between rows the first couple years after planting to help young seedlings compete with vegetation.

Need 2) Enhance Recreation Opportunities

Proposed Action 2A: Existing trail maintenance.
Maintain approximately 10 miles of the Cedar Creek Trail system. The Cedar Creek Trail System is extensively used by hikers, mountain bikers, and horseback riders. It traverses woodlands, open fields and old fields crowded with cedars. Trail trenching, trails staying wet by shading of trees, and compaction have led to some sections difficult to traverse. There is a need to do minor relocation, trail tread improvements, and brushing throughout the trail. Active volunteer groups including scouts, hikers, horseback riders and mountain bike groups would assist with this proposed action.

Proposed Action 2B: Construct new trail.
New acquisitions to federal land in Boone and Callaway Counties offers opportunities to construct new trail to improve and enhance the recreational experience for the trail user. In Boone County, approximately 2 miles of existing trail (a part of The Cedar Creek Trail System) would be moved to improve the safety and users experience off of a county maintained road (Clinkenbeard Road) and would be constructed on these newly acquired land acquisitions. In Callaway County, the proposal would be to add a short loop, (approximately 1.5 miles long) in the new acquisition in Callaway County to enjoy the visual experience near the bluffs of Cedar Creek (Cedar Bluffs Trail).

Proposed Action 2C: Provide river access with parking.
The district has never had river access to Cedar Creek to allow recreational users access for wading, fishing or boating. All access has been walk in or from private ownership. With recent acquisition of lands in Callaway County bordering Cedar Creek, opportunities exist to improve an old road bed (reconstruct approximately 0.5 miles) and provide a small parking area for access to Cedar Creek. This parking area would also allow access to the Cedar Bluff Trail proposed in Action 2B and for other dispersed recreational uses such as hunting, bird-watching, mushroom-gathering, etc.

Proposed Action 2D: Improve parking access to Cedar Creek Trail System.
Three trailheads exist in the eastern and southern portions of the district, but trailhead parking for the Moon Loop is limited to several small parking areas. With recent completion of this loop in Boone County, there is a need for improve parking by enlarging an existing trailhead. With acquisition of federal lands in Callaway County, there is opportunity to provide improved access and a parking area not only for trail users but for hunters and other users of this area. Improving the existing parking lot on Clinkenbeard Road would provide access for the proposed new section of trail in Boone County. (See proposed Action 2B)

Proposed Action 2E: Improve access to recreational fishing pond
Access to a 2-acre scenic pond could be improved for more users by extending an existing road and moving a closure gate.

Need 3) Provide and protect a wide diversity of habitats to meet the needs of plants, fish, and wildlife species.

Proposed Action 3A: Cedar thinning/removal: Open up dense oak canopies with Cedar tree removal to improve wild turkey and quail habitat, and provide structural conditions reminiscent to historic open woodland (glade/savanna/grassland) natural communities.
Commercially thin cedar stands in 14 areas on 288 acres. If a commercial product is not available, these non-commercial trees would be simply cut and dropped over a period of years. Once the cedar trees are dropped, this proposed action would maintain and/or improve the warm season grassland components of these openlands. This action would improve habitat for wild turkey and quail (A MIS species on the Mark Twain National Forest) and would maintain existing openings which are disappearing due to the invasion of cedar trees. This action would also meet Need: 4) Improve Open Woodland and Woodland Natural Communities. In addition to the tree cutting, prescribed burning is proposed under Proposed Action 4A. To mitigate the potential spread of the invasive *Sericea lespedeza*, spot treatment with herbicide and mowing may be necessary.

Proposed Action 3B: Burn openlands not associated with grazing
Use prescribed fire to treat 34 acres (1 stand) of existing warm season grasslands. This would help to maintain grasslands providing structural conditions reminiscent to historic open natural communities. To mitigate the potential spread of the invasive *Sericea lespedeza*, spot treatment with herbicide and mowing may be necessary. For some, this activity would also enhance the dispersed recreation experience in the Southwest project area.

Proposed Action 3C: Mow/hay openlands not associated with grazing (Maintaining warm season grassland habitat.)
Mechanically maintain (mowing and brush hogging) 34 acres (3 stands) of existing native warm season grasslands to improve habitat for wild turkey, bobwhite quail, and provide structural conditions reminiscent to historic open natural communities. For some, this activity would also enhance the dispersed recreation experience in the Southwest project area.

Proposed Action 3D: Maintain openland habitat within existing Rangeland Management Units (RMU's)

The management of the openlands is aimed at controlling the invading woody species, noxious weeds and increasing the native grass species component present.

Maintain openlands and adjacent transition zones (Proposed action 3H) with an integrated combination of tools to improve habitat for wild turkey, bobwhite quail, and provide openland structural conditions similar to historic prairie while providing sustainable forage for domestic livestock.

Continue to maintain and improve 1,266 acres of openland within existing RMU's by use of the following tools and practices: prescribed grazing, mowing, haying, burning, watershed improvement, fence maintenance/reconstruction, inter-seeding/over-seeding, and fertility application. Within existing RMU's two variations of openland habitats currently exist. Openlands managed as cool season grass-legume habitats and openlands managed as native warm season grass habitats. Of these 1,266 acres, about 744 acres is being managed to enhance native warm season grasses and forbs while 522 acres are being managed as mix of cool season grasses and forbs.

Pastures managed as warm season habitat contain a variety of desired native warm season grasses and forbs as well as undesirable grasses such as tall fescue. Use prescribed grazing to reduce the competition between desired native species and tall fescue to allow native grasses to favorably compete

with tall fescue. Warm season grasslands may be seeded with native grasses and forbs to improve the stand. Pastures managed as cool season habitats contain of a variety of grasses and legumes common to many of Missouri improved pastures. These grasses and legumes include tall fescue, Orchard grass, Kentucky bluegrass, red clover, Ladino clover, and several varieties of lespedeza. Cool season areas would be over-seeded with legumes.

A combination of prescribed mowing and grazing would be used to suppress existing *Sericea lespedeza* infestations. Mowing around the flower bud stage of *Sericea lespedeza* followed by grazing the next spring to further stress *Sericea lespedeza*, reduces the amount of seed set, and slows the rate of spread. Additionally, an integrated combination of manual, mechanical, cultural, chemical (Glyphosate, Triclopyr, Fluroxypor), and prescribed fire, treatments would be used to suppress and eradicate *Sericea lespedeza*, multiflora rose and tall fescue on existing warm season grasslands. On cool season openlands only *Sericea lespedeza* and multiflora rose would be treated.

Other management practices within these openlands include planting prairie cordgrass (in swales), edge feathering, and cedar piling (mechanical treatments) to add transition zones for other wildlife habitats.

Proposed Action 3E: Maintain openland habitat on New Rangeland Management Units (RMU's)
Maintain openlands and adjacent transition zones in proposed new RMU's (Proposed action 3H) with an integrated combination of tools to improve habitat for wild turkey, bobwhite quail, and provide openland structural conditions similar to historic prairie while providing sustainable forage for domestic livestock.

Continue to maintain and improve about 372 acres of openlands within proposed new RMU's by use of the following tools and practices: prescribed grazing, mowing, haying, burning, watershed improvement, fence construction/maintenance, inter-seeding/over-seeding, and fertility application. Currently these openlands are predominately a mix of cool season grasses. In order to diversify these openland habitats about 111 acres would be converted to native warm season grasses and forbs and 261 acres would be managed to increase legumes within remaining cool season grass acres.

Openlands converted to warm season habitat would contain a variety of desired native warm season grasses and forbs as well as undesirable grasses such as tall fescue. Prescribed grazing would be used to reduce competition between desired native species and tall fescue to allow native grasses to out compete tall fescue. Warm season grasslands may be seeded with native grasses and forbs to improve the stand. Pastures managed as cool season habitats would contain of a variety of grasses and legumes common to many of Missouri improved pastures. These grasses and legumes include tall fescue, Orchard grass, Kentucky bluegrass, red clover, Ladino clover, and several varieties of lespedeza. Cool season areas would be over-seeded with legumes.

A combination of prescribed mowing and grazing would be used to suppress existing *Sericea lespedeza* infestations. Mowing around the flower bud stage of *Sericea lespedeza* followed by grazing the next spring to further stress *Sericea lespedeza*, reduces the amount of seed set, and slows the rate of spread. Additionally, an integrated combination of manual, mechanical, cultural, chemical (Glyphosate, Triclopyr, Fluroxypor), and prescribed fire, treatments would be used to suppress and eradicate *Sericea lespedeza*, multiflora rose and tall fescue on converted warm season grasslands. On cool season openlands only *Sericea lespedeza* and multiflora rose would be treated.

Other management practices within these openlands include: planting prairie cordgrass (in swales), edge feathering, and cedar piling (mechanical treatments) to add transition zones and other wildlife habitats.

Proposed Action 3F: Maintain ponds: Maintain existing waterholes in a forested and openland environment.
Maintain 29 existing waterholes in a forested and openlands environment. Many of the existing waterholes have filled in with sediment, and/or are becoming clogged with vegetation. In addition some of the dams are not working properly and trees are growing on the dam faces themselves (which can result in future dam failure). Continue to maintain the existing waterholes, some of which could provide a diverse habitat for amphibians as well as other wildlife species (including Indiana and Gray bat). For some, this action would also enhance the dispersed recreation experience in the Southwest project area.

Proposed Action 3G: Old growth: Maintain and/or designate old growth habitat.
Designate approximately 588 acres (32 stands) of old growth habitat in the Southwest project area. Of this total, 234 acres fall in Management Area 2.1 and approximately 354 acres fall in Management Area 6.3. These acres include a variety of forest types, ages and block sizes to provide a diversity of old growth forest conditions now and in the future at sustainable levels. Designating old growth would also meet Need 1): Enhance natural communities by encouraging a variety of desirable natural species at a desirable stocking rate. For some, this activity would also enhance dispersed recreation opportunities.

Proposed Action 3H: Openland habitat transition zone: Diversify plant structure and species composition along border of openlands and forest.
Improve 325 acres of transition from openlands (Proposed actions 3D and 3E) to forest to enhance habitat for a variety wildlife species including bobwhite quail, eastern wild turkey, and a variety of non-game species. Diversity of plant structure and species composition along edges has a direct effect on the quantity and diversity of wildlife populations.

Much of this existing edge may be enhanced for wildlife habitat by edge feathering or selective cutting and dropping woody openland and forest invaders such as eastern red cedar. Feathering may extend inward, about 50 feet, from the openland edge, particularly those fringes within a pasture drainage.

Additional management practices may also occur within and along openland and transition zone boundaries. These practices include; implementation of a variety of watershed improvement and maintenance practices such as fence construction, planting prairie cordgrass, erosion stabilization, pond (waterhole) and water system maintenance.

Need 4) Improve Openlands, Open woodland and Woodland Natural Communities

Proposed Action 4A: Conduct Ecosystem Enhancement and Regeneration Burns.
Prescribed burn approximately 1,323 acres (715 acres(Ginn RX) and 608 (Epple RX)) of a variety of structural conditions and forest types to provide structural conditions reminiscent to historic open woodland and woodland natural communities. This activity would help to maintain openings in the dense crown, and existing small open areas which would favor bat movement. To mitigate the potential spread of the invasive *Sericea lespedeza*, spot treatment with herbicide and mowing may be necessary. This activity would also meet Need: 3) provide and protect a wide diversity of habitats to meet the needs of plants, fish and wildlife species.

Proposed Action 4B: Maple control via prescribed burn
Control existing maple (in 3 stands covering 63 acres) mid-stories with a sequence of prescribed burns and/or mechanical treatments. Sugar maple is a shade tolerant hardwood species occurring throughout the Southwest project area woodlands. The sugar maple component of the timber stands is increasing beyond the scattered occurrence it held historically and nearly pure sugar maple mid-stories are

developing where the full sunlight needed to establish new oak seedlings is lacking. In some stands, maple shades out more desirable oak/hickory species reducing future stands of mast producing species. Where possible to coordinate with fire management of openlands, a proposed frequent burn schedule to kill sugar maple mid-stories in mature white oak stands is needed. After maple control is accomplished prescribed fire would cease and openings large enough to provide full sunlight to the forest floor would be created through timber harvest. Treatment is needed to control this maple competition.

Proposed Action 4C: Mowing for Fuel reduction
Reduce grassy fuels on approximately 1,682 acres (24 pastures) to reduce the threat of wildfire in the wildland/urban interface. This would be accomplished by mowing dried, cured, high flashy openland fuels, during the driest parts of summer and fall when high volatile fire behavior may be present.

Proposed Action 4D: Invasive plant eradication.
Using an integrated combination of manual, mechanical, cultural, chemical (Glyphosate, Triclopyr, Fluroxypor), prescribed fire and biological control, treat non-native invasive plants on approximately 50 acres (2 stands) of existing warm season grasslands to provide structural conditions reminiscent to historic open natural communities. For some, this activity would also enhance the dispersed recreation experience in the Southwest project area.

Need 5) Provide a safe and efficient Transportation System that meets the implementation needs of the Southwest project area.

Proposed Action 5A: Provide a safe and efficient Transportation system.
There are approximately 1.2 miles of Forest Service system roads (FR) in the Southwest project area. Forest Service system roads are under the jurisdiction of the Forest Service and determined to be needed for long-term motorized access. There are approximately 3.9 miles of non-system roads in the Southwest project area. Non-system roads (NS) are roads on National Forest System lands that are not managed as part of the Forest Transportation System. The implementation of the actions below would also improve watershed health since all roads can contribute to sedimentation.
In summary this action includes:

- Convert/Construct 0.5 miles of existing non-system roads to System roads in the transportation system. (FR-1677, FR-7507)
- Reconstruct 0.7 miles of roads (FR-1678, NS-1677, NS-7507) to facilitate access to the treatment area and improve access to the recreational pond near FR-1678. The conditions of these roads have deteriorated over time and currently do not meet Forest Service standards. Road reconstruction consists of the improvements to the original surface material and reconstructing drainage features. During reconstruction, small pools (which do not present a watershed concern) may be left since they may provide temporary watering sources for the Indiana bat. In some cases, realignment of the road may be necessary.
- Decommission 0.6 miles of System roads (FR-1687, and FR-1678) and 3.2 miles of non-system roads from the transportation system that are no longer needed. All other non-system roads in the project area would be decommissioned unless under special use permit. Road decommissioning would result in the stabilization and restoration of unneeded roads to a more natural state. Decommissioning activities may include blocking access with earthen or rock berms, boulders, gates, or slash piles, re-contouring, and re-vegetation by seeding, planting, and fertilizing.
- Maintain 0.4 miles of existing Forest System roads (FR-1685).

Associated and Connected Actions

Proposed Action AC1: Fireline construction
In order to implement proposed actions 3B, 3D, 3E and 4A, mechanically construct approximately 2.0 miles of dozer line, and 0.75 miles of hand or leaf blower line.

Proposed Action AC2: Temporary road construction and access through openland fields
Construct approximately 7.5 miles of temporary road which are needed to facilitate access to the treatment area. In addition, 6.5 miles of existing roads through fields would be utilized to facilitate access to the treatment area. These new temporary roads would be rehabilitated after the timber sale. Small pools (which do not present a watershed concern) may be left since they may provide temporary watering sources for the Indiana bat.

In summation if this project is approved:
The Southwest project covers approximately 5,946 acres of National Forest System lands on the Cedar Creek Ranger District. Of this, approximately 34% (2,032 acres, Proposed Actions 1A-1H, 3A) of National Forest System lands within the project area would have vegetative management (timber) using commercial or non-commercial harvest. Commercial harvest activities would be used to implement a variety of silvicultural prescriptions to achieve the desired condition for each stand.

Approximately 10 miles of existing horse, mountain bike, and hiking trail would be maintained and 3 miles of new trail would be constructed and parking areas improved. Approximately 10% (588 acres) of the area has been identified for old growth designation. Prescribed fire is planned on approximately 22% (1,323 acres) of NFS lands within the project area with most of the acres being treated on a 3 to 5 year interval to maintain and enhance the plant vigor and diversity of fire dependent native plant communities (such as open woodlands, glades, and savannas conditions). Approximately 50 acres infested with non-native invasive and noxious weeds have been identified for physical, mechanical, and/or chemical treatments (Glyphosate, Triclopyr, Fluroxypor). Non-native invasive plant species and noxious weeds include: *Sericea lespedeza* and multiflora rose. Approximately 3.8 miles of system and non-system roads would be decommissioned to improve watershed conditions. And finally, activities such as: mowing, grazing, waterhole and openland habitat maintenance, would protect and enhance habitat conditions to meet the needs of plants, fish, and wildlife species on approximately 39% (2,336 acres) of the Southwest project area.

Through implementation of the proposed actions, this project would:

- Provide a variety of goods, uses and services including wood products, visual quality, and dispersed recreation opportunities.
- Enhance the condition of open woodland and woodland natural communities.
- Provide enhanced recreational use in the project area.
- Reduce hazard fuels through the use of prescribed fire.
- Re-establish fire to its role into the ecosystem.
- Reduce and control some existing populations of non-native invasive plant species that threaten native plant communities.
- Provide the range of natural habitats necessary to support populations of existing native plant and animal species.
- Maintain a transportation system, which provides the minimum permanent road access needed to meet resource management objectives.
- Decommission unneeded system and non-system roads and user created trails that pose the greatest risk to public safety and/or are contributing to poor watershed conditions.

Table SR-2 on the below summarizes the Southwest project needs and activities identified in the proposed action.

TABLE SR-2: Proposed Action Summary	
1) Enhance natural communities and improve forest health by encouraging a variety of desirable natural species at a desirable stocking rate.	**Measures (Estimated)**
A) Clearcut with reserves (4 stands)	33 ac.
B) Shelterwood with reserves (7 stands)	165 ac.
C) Shelterwood removal (3 stands)	32 ac.
D) Group selection (Uneven-aged management) (59 stands)	930 ac.
E) Salvage (6 stands)	82 ac.
F) Improvement cut (5 stands)	72 ac.
G) Commercial thinning (25 stands)	382 ac.
H) Precommercial thinning (4 stands)	31 ac.
I) Native hardwood tree planting (5 stands)	25 ac.
2) Enhance recreation opportunities	**Measures (Estimated**
A) Existing trail maintenance	10 miles
B) Construct new trail	3 Miles
C) Provide river access with parking	1 Site
D) Improve parking access to Cedar Creek trail system	3 Sites
E) Improve pond for fishing	2 ac. pond
3) Provide and protect a wide diversity of habitats to meet the needs of plants, fish, and wildlife species.	**Measures (Estimated)**
A) Cedar removal (14 stands)	288 ac
B) Burn openlands not associated with grazing (1 stand)	34 ac.
C) Mow openlands not associated with grazing (3 stands)	34 ac.
D) Maintain openland habitat with rangeland management (29 stands)	1266 ac.
E) Maintain openland habitat with new rangeland units (13 stands)	372 ac
F) Maintain ponds	29 ponds
G) Old growth (32 stands)	588 ac.
H) Openland habitat transition zone	325 ac.
4) Improve open woodland and woodland natural communities	**Measures (Estimated)**
A) Ecosystem enhancement burn (90 stands)	1323 ac.
B) Maple control via prescribed burn (3 stands)	63 ac.
C) Mowing for fuel reduction (24 pastures)	1682 ac.
D) Invasives and noxious weed eradication (2 stands)	50 ac.

TABLE SR-2: Proposed Action Summary	
5) Provide a safe and efficient Transportation System that meets the implementation needs of the Southwest project area.	**Measures (Estimated)**
A) Safe and efficient Transportation System	
Add non-system roads to system: 1677 (0.2 mi.), 7507 (0.3 mi.),	0.5 miles
Road reconstruction: 1678 (0.2 mi.), 1677 (0.2 mi.), 7507 (0.3 mi.),	0.7 miles
Decommission system roads: 1687 (0.2 mi.), 1678 (0.4 mi.),	0.6 miles
Maintain Forest System roads: 1685 (0.4 mi.)	0.4 miles
Decommission non-system roads: Decommission all non-system roads unless needed for Special use permit.	3.2 miles
Improve safety and parking access	3 sites
Provide access road to Cedar Creek	0.5 mile
Associated and Connected Actions	**Measures (Estimated)**
ACA1) Fireline construction	2.75 miles
ACA2) a) Temporary road construction	7.5 miles
b) Access through existing openland fields	6.5 miles

Additional information can be found on the Mark Twain National Forest internet web site http://www.fs.fed.us/r9/forests/marktwain/projects/index such as:

1) Project Maps # 1-12 which show stand locations and proposed actions.
2) Southwest project map # 13 which shows the locations of compartments within the Southwest project.
3) Table SR-3 which summarizes the activities in the proposed action on a compartment and stand basis.

VII. DECISION TO BE MADE

The District Ranger, of the Houston/Rolla/Cedar Creek Ranger District is the responsible official for selecting an alternative for the Southwest project area. Based on the environmental analysis, Forest Plan direction, and the results of public involvement, the responsible official must decide whether or not to proceed with a specific action. If an action alternative is selected, the decision may include mitigation measures in addition to the Forest Plan Standards and Guidelines.

The decision is not one of land allocation, nor is the analysis intended to look at every possible combination of activities. The scope of the decision will be confined to a reasonable range of alternatives that will meet the project's purpose and need.

VIII. HOW TO COMMENT

If additional site specific information is desired on this project, it may be obtained in a number of ways:

- Telephone: Contact, Mark Hamel at the Rolla Ranger District Office during business hours (8:00 a.m. – 4:30 p.m. CST) at 573-341-7443.
- In writing: Contact, Houston/Rolla/Cedar Creek Ranger District, 108 S. Sam Houston Blvd., Houston, Missouri 65483. Attention: Mark Hamel. A comment form is attached for your convenience.
- Facsimile requests: Address to: Mark Hamel, NEPA Coordinator at 573-341-6844.
- Submit any E-mail responses to: comments-eastern-mark-twain-rolla@fs.fed.us.

  Please include the project name (Southwest Project #21888) in the subject line of the e-mail. Acceptable formats for electronic comments are text or HTML e-mail, Adobe Portable Document Format (PDF), or formats viewable in Microsoft Office applications.

PUBLIC COMMENT FORM

SOUTHWEST PROJECT

Houston/Rolla/Cedar Creek Ranger District
Mark Twain National Forest

You are invited to comment on this proposal. If you have concerns specific to this project, or if you desire to be kept informed please complete this form and mail it to following address. You may also respond electronically to the following email address: comments-eastern-mark-twain-rolla@fs.fed.us (subject line: Southwest Project #21888). If you have any questions, please contact Mark Hamel at (573) 341-7443.

Elrand D. Denson – District Ranger
Houston/Rolla/Cedar Creek Ranger District
108 S. Sam Houston Blvd.
Houston, Missouri 65483

Please return your comments by May 16, 2008.

Name:
Address:
Phone #:

Comments: