

Danville Conservation Area

Ten-Year Area Management Plan
FY 2017-2026





Wildlife Division Chief

5 Oct 2016

Date

Danville Conservation Area Management Plan Approval Page

PLANNING TEAM

Jeff Demand, Wildlife Management Biologist

Chris Newbold, Natural History Biologist

Angela George, Resource Forester

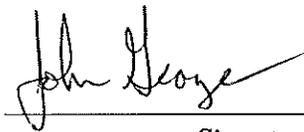
Craig Gemming, Fisheries Management Biologist

Matt Spurgeon, Conservation Agent

Jamie Barton, Private Land Conservationist

CENTRAL REGION

RCT Chair



Signature

9/15/2016

Date

WILDLIFE DIVISION

Wildlife Management Chief



Signature

9/22/16

Date

OVERVIEW

- **Official Area Name:** Danville Conservation Area, #6507; Thornhill and Schulze Annex, #8217; Baldwin Annex, #8218
- **Year of Initial Acquisition:** 1965
- **Acreage:** 3,136 acres
- **County:** Montgomery
- **Division with Administrative Responsibility:** Wildlife
- **Division with Maintenance Responsibility:** Wildlife
- **Statements of Purpose:**

A. Strategic Direction

The primary purpose of the Danville Conservation Area (CA) is to provide quality natural communities that support diverse wildlife populations and provide outdoor recreational activities for the public. Danville CA is managed to promote diverse grasslands, savannas, glades, woodlands, and forests.

B. Desired Future Condition

The desired future condition of Danville CA is a complex of quality natural communities suited for the various landforms and soils on the area. Maintaining and enhancing these natural communities provides for diverse populations of native plants and wildlife, ensuring a place for Missouri citizens to enjoy outdoor recreational activities.

C. Federal Aid Statement

- Thornhill and Schulze Annex, Baldwin Annex: NA
- Danville CA, or a portion thereof, was acquired with Pittman-Robertson Wildlife Restoration funds to restore and manage wildlife, conserve and restore suitable wildlife habitat and provide public access for hunting or other wildlife-oriented recreation.
- Danville CA, or a portion thereof, was developed with Land and Water Conservation Fund dollars to provide land or facilities for public outdoor recreation.

GENERAL INFORMATION AND CONDITIONS

I. Special Considerations

A. Priority Areas: Danville CA lies within the Missouri River Hills Terrestrial Conservation Opportunity Area that covers significant portions of Callaway, Montgomery, and Warren counties. This landscape is the largest contiguous block of forested land north of the Missouri River. Danville CA also lies within the Missouri River Hills priority geography as identified in the Comprehensive Conservation Strategy, which is a subset of the larger conservation opportunity

area. Other partners such as Audubon and The Nature Conservancy have also identified this important geography by designating it as an Important Bird Area and an Ecoregional Portfolio site respectively.

- B. Natural Areas:** In 1984, 48 acres on the area were designated as the Danville Glade Natural Area. In 2000, the natural area was expanded to its current size of 361 acres. The area is primarily made up of high quality limestone glades, dry limestone/dolomite woodlands, dry sandstone woodlands, sandstone glades, dry sandstone cliff, moist sandstone cliff, and dry-mesic limestone/dolomite forest.

II. Important Natural Features and Resources

- A. Species of Conservation Concern:** Species of conservation concern are known from this area. Area managers should consult the Natural Heritage Database annually and review all management activities with the natural history biologist.
- B. Caves:** None
- C. Springs:** None
- D. Other:** Danville CA is located within the Outer Ozark Border Subsection of the Ozark Highlands Ecological Section (Nigh & Schroeder, 2002). It occurs in the Montgomery-Warren Oak Woodland/Forest Rugged Hills Landtype Association. This landtype consists of narrow, loess-covered ridges that give way to steep slopes and deep narrow valleys. Historically, oak woodland on uplands graded into oak and mixed-hardwood forests in the valleys. Frequent limestone and sandstone glades and woodlands occurred on exposed slopes. Today, many of the ridges and bottoms of this land type are cleared pasture with limited cropland in the Loutre Valley or dense cedar hardwood, old-field thickets. Steeper lands are still largely timbered in second-growth forest with frequent overgrown limestone or sandstone glades.

III. Existing Infrastructure

- One designated camping area (Post Oak Camping Area) with six defined camp sites, fire rings, and Americans with Disabilities Act (ADA) accessible privy
- Three individual camp sites without amenities
- Five gravel parking lots
- 42 fishless ponds
- Two privies (one ADA accessible)
- 2.0 miles of interior gravel roads
- Danville Glades Trail: 3-mile hiking trail

IV. Area Restrictions or Limitations

- A. Deed Restrictions or Ownership Considerations:** None
- B. Federal Interest:**

- Thornhill and Schulze Annex, Baldwin Annex: Federal funds may be used in the management of this land. Fish and wildlife agencies may not allow recreational activities and related facilities that would interfere with the purpose for which the State is managing the land. Other uses may be acceptable and must be assessed in each specific situation.
- Danville CA: Uses of land acquired with federal funds may not interfere with the purpose for which it was acquired. Federal funds may also be used in the management of this land. Fish and wildlife agencies may not allow recreational activities and related facilities that would interfere with the purpose for which the State is managing the land. Other uses may be acceptable and must be assessed in each specific situation.
- Danville CA: This land must provide land/facilities for public outdoor recreation in perpetuity. Federal funds may also be used in the management of this land. Fish and wildlife agencies may not allow recreational activities and related facilities that would interfere with the purpose for which the State is managing the land. Other uses may be acceptable and must be assessed in each specific situation.

C. Easements:

- Montgomery County Road and Bridge owns a right of way that runs along Turkey Ridge Road on the west portion of the area.
- Ameren Missouri holds 40-footwide easements along the power lines in the north and east portions of the area.

D. Cultural Resources Findings: Yes, records kept with Missouri Department of Conservation (Department) environmental compliance specialist. Managers should follow best management practices for cultural resources found in the Department Resource Policy Manual.

E. Endangered Species: None observed.

F. Boundary Issues: None

MANAGEMENT CONSIDERATIONS

V. Terrestrial Resource Management Considerations

Danville CA includes dry to dry-mesic woodlands on exposed slopes and broad ridges, glades where thin soils are exposed to bedrock, forests along protected slopes and stream sides where shade-tolerant species are common.

Challenges and Opportunities:

- 1) Periodic disturbance is required to maintain the high quality natural communities that are found in the natural area and in portions of the conservation area.

- 2) Control invasive species (sericea lespedeza, autumn olive, fescue, honey locust, black locust, Johnson grass, multiflora rose, eastern red cedar, sugar maple).
- 3) Maintain the open lands on the area in early vegetative successional stages.
- 4) Improve and maintain healthy forest, woodland, savanna, and glade natural communities for the purpose of ecological integrity and public demonstration.
- 5) Incorporate fire, where needed, to ensure that fire-dependent natural communities remain healthy and diverse.
- 6) Update Element Occurrence Records for amphibian, bird, and rare plant species.

Management Objective 1: Maintain structure and diversity of high-quality woodlands, savannas, and glades.

Strategy 1: Identify landscape-scale management units that encompass a complex of natural communities that can be easily managed as a single unit. (Wildlife)

Strategy 2: Conduct forest thinning by compartment to promote diverse natural communities as prescribed in the 2015 forest inventory. (Wildlife)

Strategy 3: Conduct prescribed burns to maintain diversity and control undesirable woody plant species in woodlands, savannas, and glades. (Wildlife)

Management Objective 2: Control invasive species.

Strategy 1: Monitor the area for bush honeysuckle, sericea lespedeza, autumn olive, tall fescue, Johnson grass, and any other potentially invasive species. (Wildlife)

Strategy 2: Apply appropriate herbicides to herbaceous and woody invasive species. (Wildlife)

Strategy 3: Implement forest management practices, as prescribed by the detailed forest inventory that may include removing undesired tree species, such as eastern red cedar and sugar maple. (Wildlife)

Management Objective 3: Maintain the open lands in early vegetative successional stages.

Strategy 1: Conduct prescribed burns to maintain diversity and control undesirable woody encroachment in grasslands and old fields. (Wildlife)

Strategy 2: Use mechanical means (chain saw and tree shear) to disturb overgrown shrub groups, fence rows, and brushy draws. (Wildlife)

Strategy 3: Use foliar and basal treatments to disturb overgrown shrub groups. (Wildlife)

Strategy 4: Edge feather timbered habitats using a chainsaw and/or tree shear. (Wildlife)

Management Objective 4: Improve and maintain healthy forest, woodland, savanna, and glade natural communities for the purpose of ecological integrity and public demonstration.

Strategy 1: Conduct forest inventory with an estimated re-entry time of 10 years or as needed. (Forestry)

Strategy 2: Implement forest management practices as prescribed by the detailed forest inventory. (Forestry)

Strategy 3: Utilize best management practices to maintain soil, water, and visual integrity. (Forestry)

Strategy 4: Conduct prescribed burns on a one-to-five-year rotation to maintain desired basal area and promote native forbs and grasses. (Wildlife)

Strategy 5: Evaluate the need for tree regeneration and recruitment into the over story in the woodland and savanna natural communities. When new tree recruitment into the over story is needed, implement strategies that will accomplish this goal. (Wildlife)

VI. Aquatic Resource Management Considerations

Stream Resources:

There are portions of 10 small stream drainages within the area (Figure 5). Most of these streams are considered transitional Ozark/Prairie streams with a wide diversity of fish species common to both types of habitat. Area streams drain into the Loutre River, directly south of the area boundary. As a result, some riverine fish species have also been found at the lower end of some of these streams at their confluence with the Loutre River.

There are approximately 9.9 miles of streams located within the area. Most of the area streams are intermittent with permanent pools, with the exception of Clear Creek, a third-order permanently flowing stream. There are 7.85 miles of first-order streams on the area (making up 80 percent of area streams); 1.8 miles of second-order streams, and 0.25 miles of third-order streams on the area (combined, making up 20 percent of area stream miles).

According to Department records, sampling done on Little Lost Creek, Lost Creek, Massie Creek, Bear Creek, and Dry Fork (since 1941) has yielded 70 fish species. The larger area streams (i.e., Clear Creek, Dishwater Creek, Pinch Creek, and Sallee Branch) also support diverse fish communities, similar to those found in the smaller streams. Additional fish sampling in the area streams is needed to adequately determine fish community status and appropriate fisheries management strategies.

Water quality, stream habitat, and riparian corridors within the area are adequate along most of the stream reaches. Maintaining and enhancing riparian corridors on the area's small first-order streams, which are most prevalent within the area, is a high priority. Implementing other best management practices in these watersheds is also critical to aquatic habitat improvement.

Stream Challenges and Opportunities:

- 1) Protect, enhance, and maintain area stream resources to support diverse aquatic biota.
- 2) Maintain and enhance the forested riparian corridor along area streams.

Management Objective 1: Survey area stream fish populations to determine diversity and quality of fish communities.

Strategy 1: Inventory the area's stream fish communities by electrofishing and seining to determine species composition and status. Sample streams every five to seven years, or as needed, to monitor status of fish community. (Fisheries)

Management Objective 2: Establish and maintain forested riparian corridors along area streams.

Strategy 1: Plant native bottomland tree species or use natural regeneration along streams, where needed, to widen the existing riparian corridors to a more functional and protective width. A minimum riparian corridor width of 100 feet on each side of the stream will be established on all area streams. (Wildlife)

Strategy 2: Inspect riparian corridors every five to seven years, or as needed. (Fisheries)

Management Objective 3: Maintain and enhance water quality and diverse stream fauna.

Strategy 1: Develop and implement management recommendations for stream bank erosion and nutrient loading problems as needed. (Fisheries)

Strategy 2: Maintain and improve area stream crossings, as needed. (Fisheries)

Pond and Wetland Resources:

Danville CA includes 42 small ponds or ephemeral wetlands, totaling 14 acres (Figure 5). All of the area ponds are less than 1 acre in size. Because of the small size and shallowness of the ponds, there is very limited potential for establishing any type of fishery.

Pond and Wetland Challenges and Opportunities:

- 1) Maintain all area ponds for wildlife watering and semi-aquatic wildlife use.

- 2) Control nuisance aquatic plants that threaten the integrity or function of the shallow-water ponds and wetlands.
- 3) Protect, enhance, and maintain area wetland resources.

Management Objective 4: Manage all fishless ponds on the area for amphibian and wildlife benefits.

Strategy 1: Chemically renovate ponds, when needed, and maintain as fishless to promote amphibians, reptiles and other wildlife. Manage ponds as fishless based on recommendations provided in *Amphibian and Reptile Management on Conservation Department Impoundments* (Johnson, 1994), *The Amphibians and Reptiles of Missouri* (Johnson, 1997), and the *Amphibian and Reptile Management Guidelines* (Johnson, 1998). (Wildlife)

Strategy 2: Enhance fishless ponds with aquatic vegetation plantings or installing basking logs where needed. (Wildlife)

Strategy 3: Continue to maintain/enhance aquatic habitat in area ponds by establishing desirable aquatic vegetation, planting trees around shorelines, reducing siltation, and maintaining good water quality. (Wildlife)

Management Objective 5: Treat nuisance aquatic plants as needed.

Strategy 1: Use chemical, biological or mechanical methods to control aquatic vegetation, as deemed appropriate. (Fisheries)

VII. Public Use Management Considerations

Challenges and Opportunities:

- 1) Maintain the Danville Glades Trail to provide outdoor recreational opportunities for citizens.
- 2) Provide opportunities for a variety of public uses on the area.

Management Objective 1: Provide a safe and user-friendly trail for hiking.

Strategy 1: Maintain trail signage. (Wildlife)

Strategy 2: Continue maintenance on access roads throughout the year while being mindful of public safety along the hiking trail/access road. (Wildlife)

Strategy 3: Plan work days to provide a safe hiking trail by cutting blow downs, brushing back trails, and utilizing heavy machinery to fix washouts and roads, as needed. Utilize AmeriCorps or other volunteer groups to assist in trail/access road maintenance projects, as available. (Wildlife)

Management Objective 2: Provide area users with a variety of compatible opportunities for recreation, education, and information.

Strategy 1: Maintain accurate area information and regulations through the Atlas database, area brochures, posted information, and staff contacts with area users. (Wildlife)

Strategy 2: Promote compatible and safe uses of the area, such as hunting, birding, hiking, wildflower viewing, camping, and nature photography. (Wildlife)

Strategy 3: Monitor and document multiple use conflicts or concerns. Identify potential timing/seasonal use conflicts and modify special use permit conditions and dates as needed to minimize conflicts. (Wildlife)

VIII. Administrative Considerations

Challenges and Opportunities:

- 1) Maintain aging infrastructure and make area inviting to the public.
- 2) Deter restricted activities, such as littering, all-terrain-vehicle trespass, vegetation damage, vandalism, etc.
- 3) Consider acquisition of land, when available.

Management Objective 1: Maintain area infrastructure.

Strategy 1: Monitor and post area boundaries according to the pre-established schedule. (Wildlife)

Strategy 2: Maintain infrastructure on an as-needed basis to ensure that signage, parking lots, camping areas, trails, and privies are in good shape. (Wildlife)

Strategy 3: Review problem and solutions with Design and Development. (Wildlife)

Strategy 4: Budget and implement maintenance of area infrastructure, as able. (Wildlife)

Management Objective 2: Reduce the impact of detrimental public use on the area.

Strategy 1: Maintain good communication with neighbors and local staff to ensure that restricted public activities are noted and the necessary steps are taken to remedy and eliminate them. (Wildlife)

Lands Proposed for Acquisition:

When available, adjacent land may be considered for acquisition from willing sellers. Tracts that improve area access, provide public use opportunities, contain unique natural communities and/or species of conservation concern, or meet other Department priorities, as identified in the annual Department land acquisition priorities, may be considered.

MANAGEMENT TIMETABLE

Strategies are considered ongoing unless listed in the following table:

	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26
Terrestrial Resource Management										
<i>Objective 4</i>										
Strategy 1			X		X			X		
Strategy 2			X		X			X		

APPENDICES

Area Background:

Danville Conservation Area is in Montgomery County, southeast of the community of Danville on Route RB. Mostly wooded, this 3,136-acre area features numerous narrow ridges between the tributaries of the Clear, Pinch, and Dishwater creeks.

Limestone glades, dry limestone/dolomite woodlands, and dry sandstone woodlands are found on the area and offer unique habitat that is similar to the Ozarks south of the Missouri River. The dry glades support pale-purple coneflower, glade coneflower, prairie clovers, and Indian paintbrush among many other species.

The north central tract (1,035 acres) was purchased in 1965. Historically, the area was known as "The Snake Ranch" because of the purported abundance of snakes. The large ridge on the east side of the area was locally known as "The Dog Farm" because fox and wolf hounds were bred and raised there in the 1920s. Additional land purchases, such as the Baldwin Annex (700 acres), the Thornhill Schulze Annex (701 acres) and the Carlton tract (198 acres) were made in 1982. In 2014, the Wansong tract (492 acres) was purchased. Some portions of the area were donated to the Department and some were purchased with Conservation Commission funds while other portions were acquired through the Federal Pittman-Robertson Wildlife Restoration Act funds administered by the U. S. Fish and Wildlife Service.

Long-term management efforts include maintaining or improving glades and woodlands to increase the diversity of prairie plants. Natural resource management practices designed to improve wildlife habitat, maintain watershed quality, restore natural communities, and enhance tree growth and species composition are often implemented on the area. Wildlife habitat management practices include the creation of watering ponds; shallow water developments that will provide habitat for reptiles and amphibians; and woodland thinning followed by prescribed burning to open up the woodland canopy.

The area is popular with deer and turkey hunters as well as native plant enthusiasts. The unique geologic formations exposed on the area are best seen in the fall through the spring.

Current Land and Water Types:

Land/Water Type	Acres	Miles	% of Area
Savanna/Woodland	1,552		49
Upland Forest	363		12
Glade	318		10
Grassland	264		8
Bottomland/Riparian Forest	250		8
Old Field	209		7
Cropland	166		5
Ephemeral Wetlands	14		<1
Total	3,136		100
Stream Frontage		9.9	

Public Input Summary:

The draft Danville Conservation Area Management Plan was available for a public comment period June 1–30, 2016. The Missouri Department of Conservation received comments from nine respondents (Appendix A). The Danville Conservation Area Planning Team carefully reviewed and considered these ideas as they finalized this document. A brief summary of public input themes, including how they were incorporated or why they were not, can be found below. Rather than respond to each individual comment, comments are grouped into general themes and are addressed collectively.

Department responses to themes and issues identified through the Danville Conservation Area public comment period.

Suggests allowing horseback riding on area trails or developing a multi-use trail system.

We understand the desire that horseback riding enthusiasts have to utilize Danville CA in a new way. We are currently exploring the installation of new multi-use trails on Whetstone Creek Conservation Area, which is located 13 miles to the west and is equally accessible from Interstate 70.

Suggests allowing primitive camping with horses.

Post Oak campground on Danville CA is a primitive campground only offering fire rings and a pit toilet. Groups of more than 10 people must obtain a special use permit prior to camping. Horses are only permitted on roads open to public vehicles and are not permitted to feed on area vegetation.

References:

Johnson, T. R. (1994). *Amphibian and reptile management on conservation department impoundments*. Jefferson City, MO: Missouri Department of Conservation, Jefferson City, Missouri.

Johnson, T. R. (1997). *The amphibians and reptiles of Missouri*. Jefferson City, MO: Missouri Department of Conservation.

Johnson, T. R. (1998). *Amphibian and reptile management guidelines*. Jefferson City, MO: Missouri Department of Conservation.

Missouri Department of Conservation. (2011). *Conservation priorities decision support tool*. Jefferson City, MO: Missouri Department of Conservation.

Missouri Department of Conservation. (n.d.). *Natural Heritage database*. Jefferson City, MO: Missouri Department of Conservation.

Nigh, T. A., & Schroeder, W. A. (2002). *Atlas of Missouri ecoregions*. Jefferson City, MO: Missouri Department of Conservation.

Maps:

Figure 1: Area Map

Figure 2: Ecological Land Types

Figure 3: Current Cover Types

Figure 4: Burn Units

Figure 5: Aquatic Resources

Figure 6: Area Infrastructure

Figure 7: Area Easements and Federal Interest

Additional Appendices:

Appendix A: Danville Conservation Area Management Plan Public Comments

Figure 1: Area Map

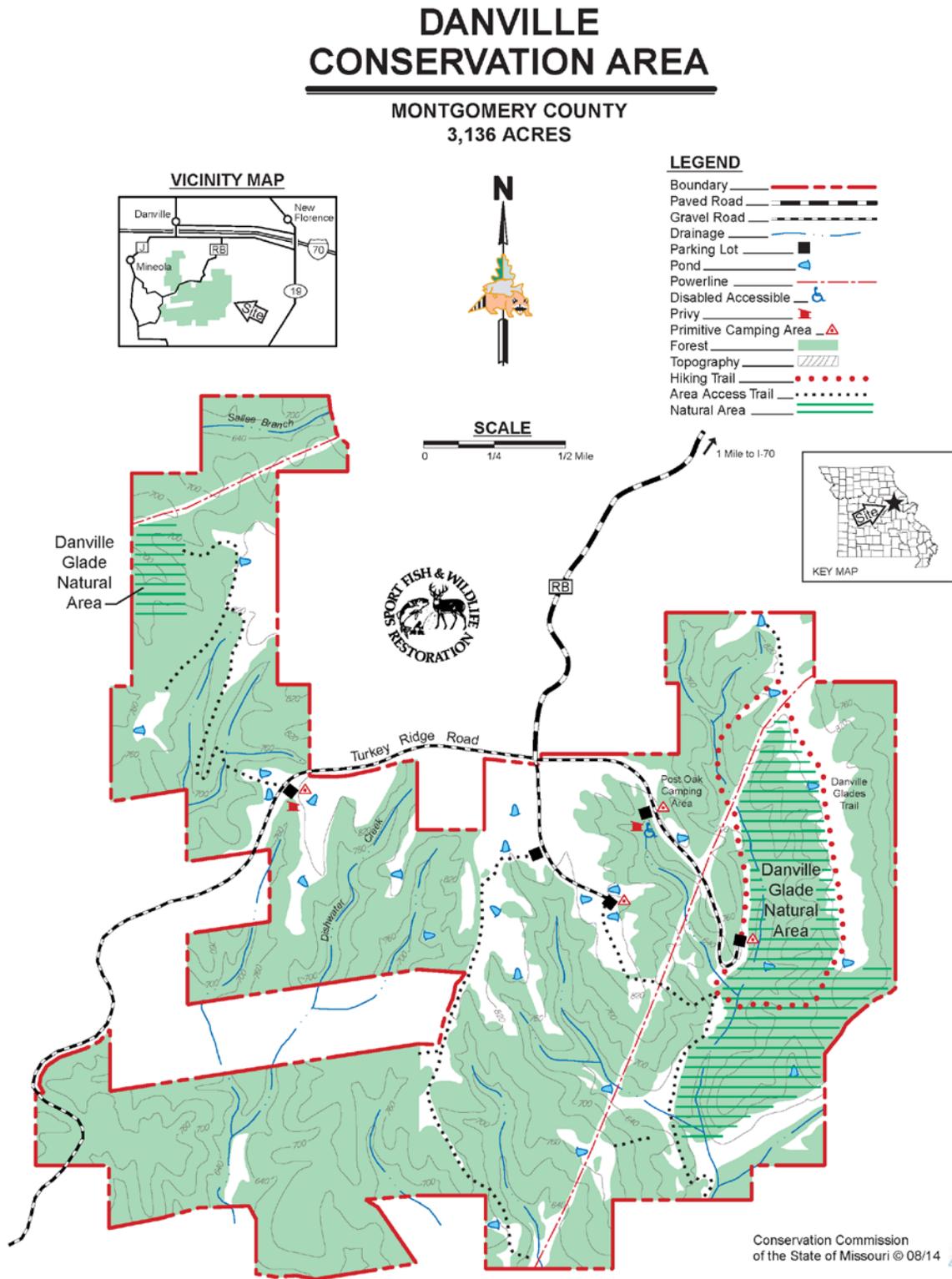


Figure 2: Ecological Land Types

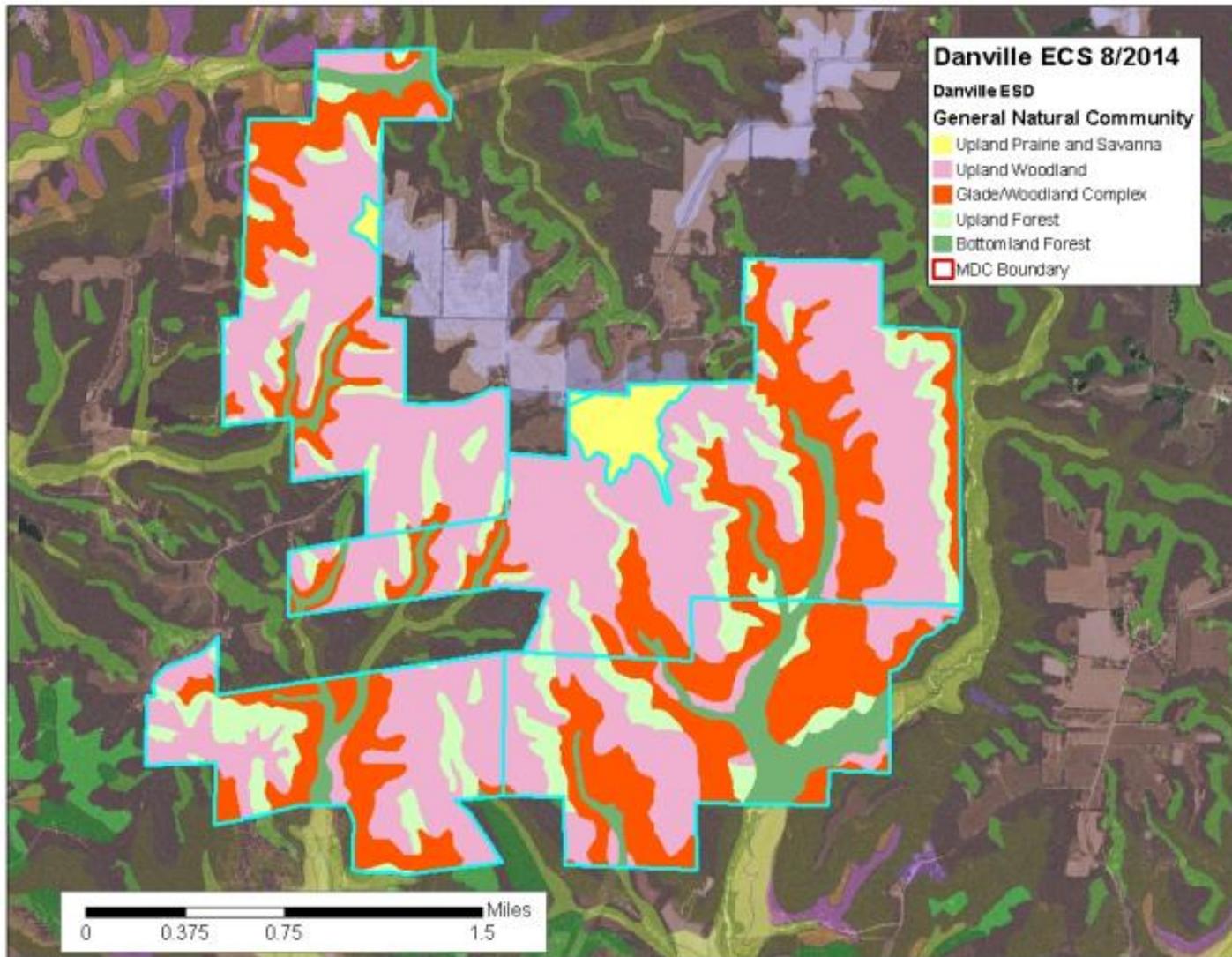


Figure 3: Current Cover Types

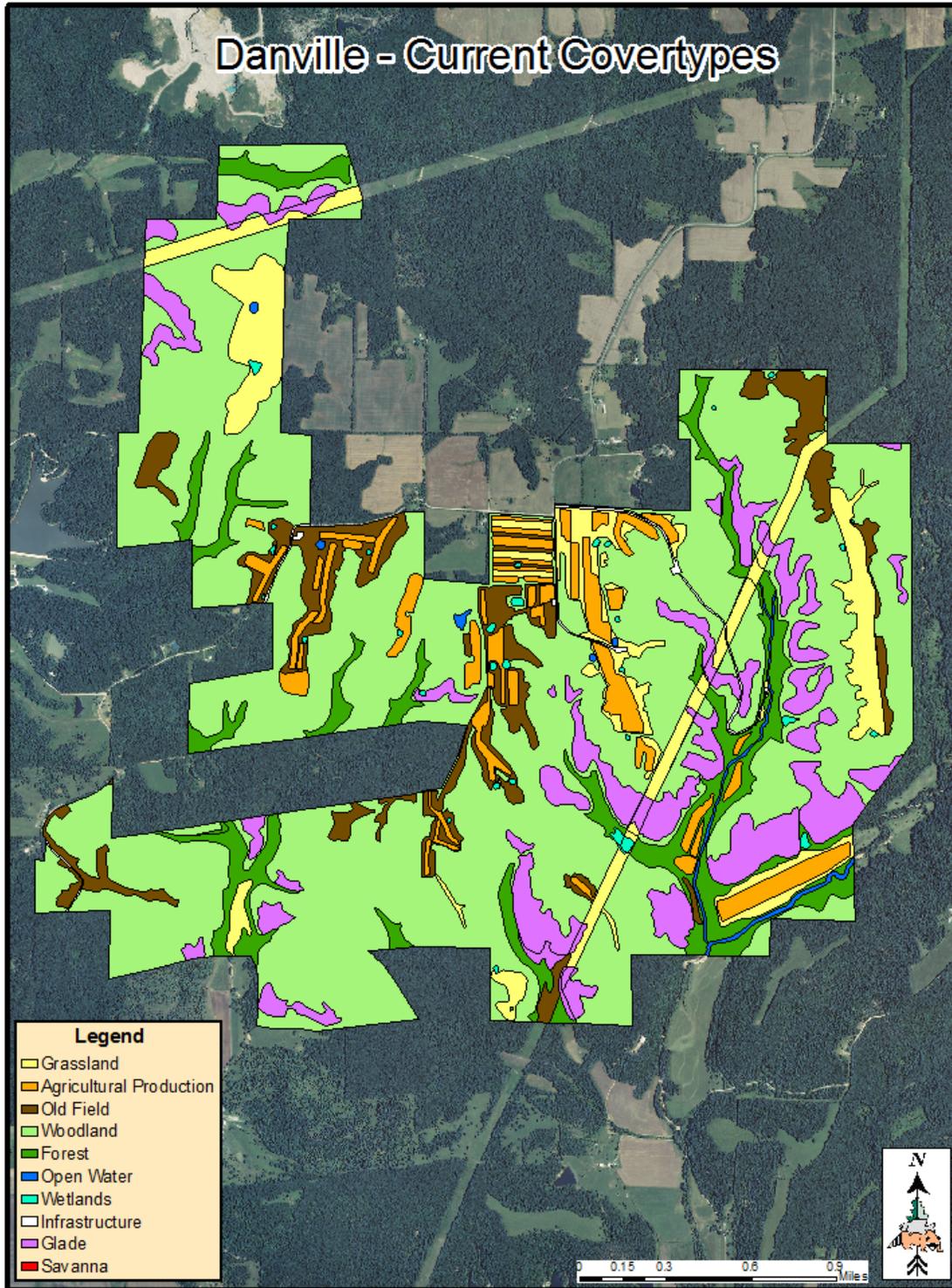


Figure 4: Burn Units

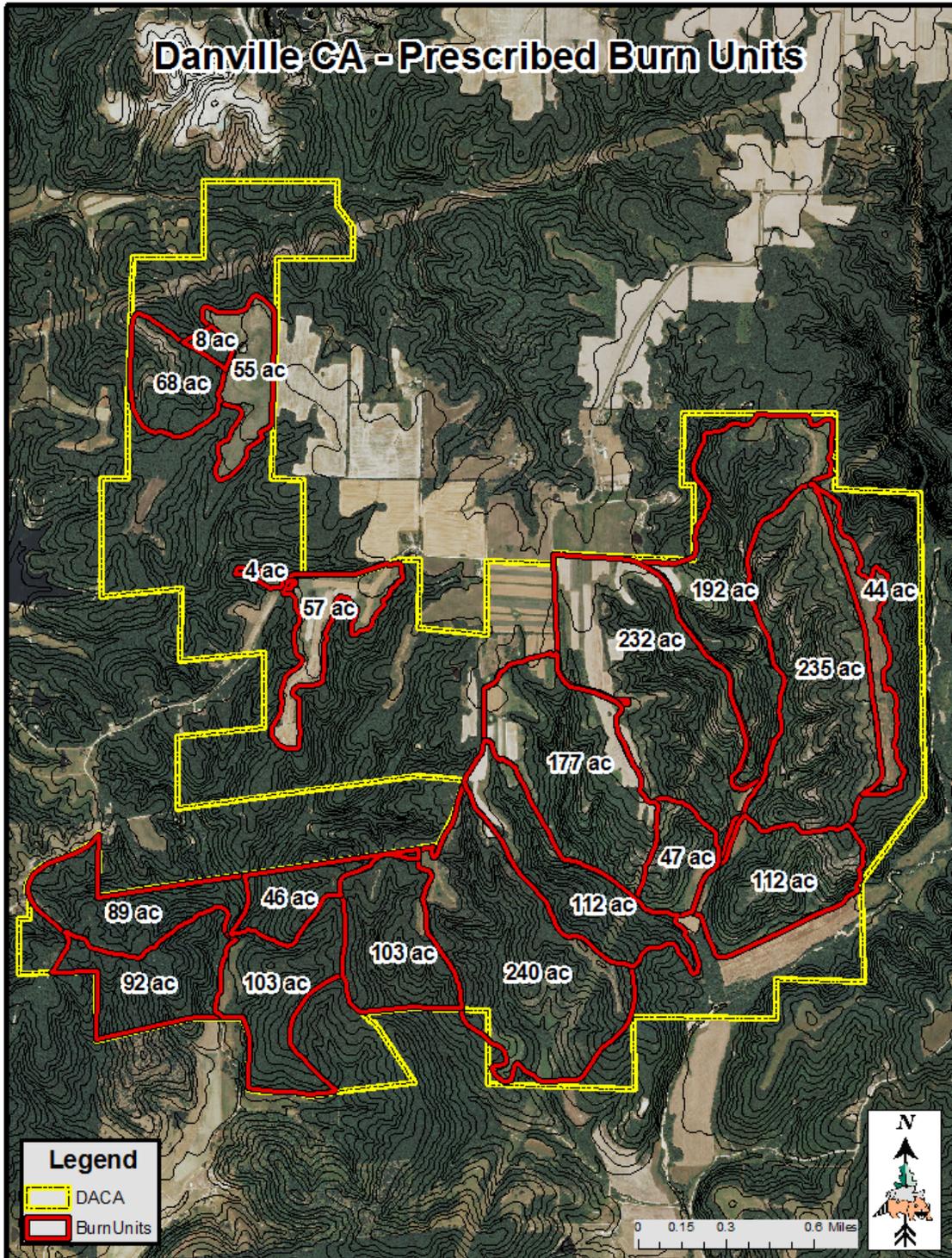


Figure 5: Aquatic Resources

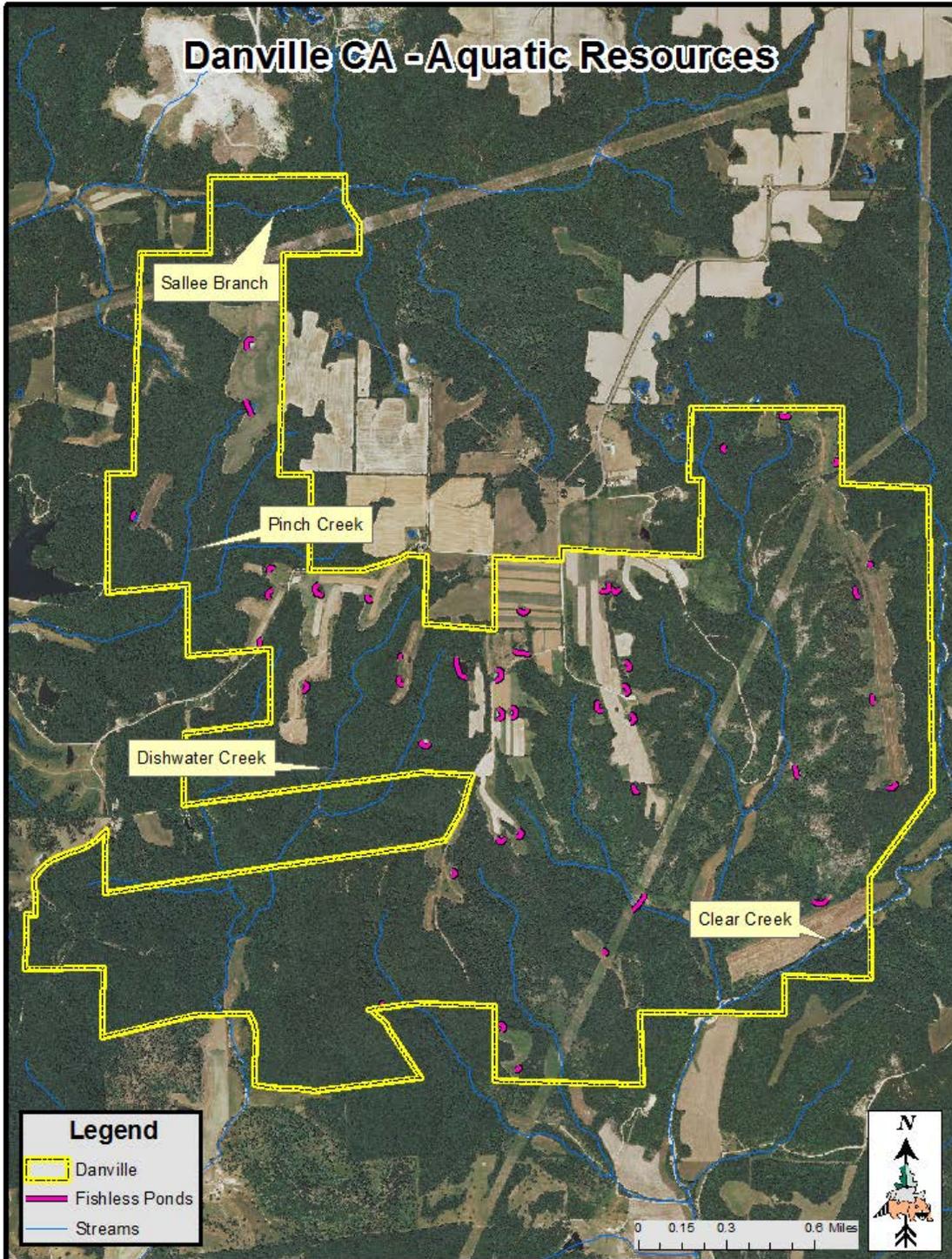


Figure 6: Area Infrastructure

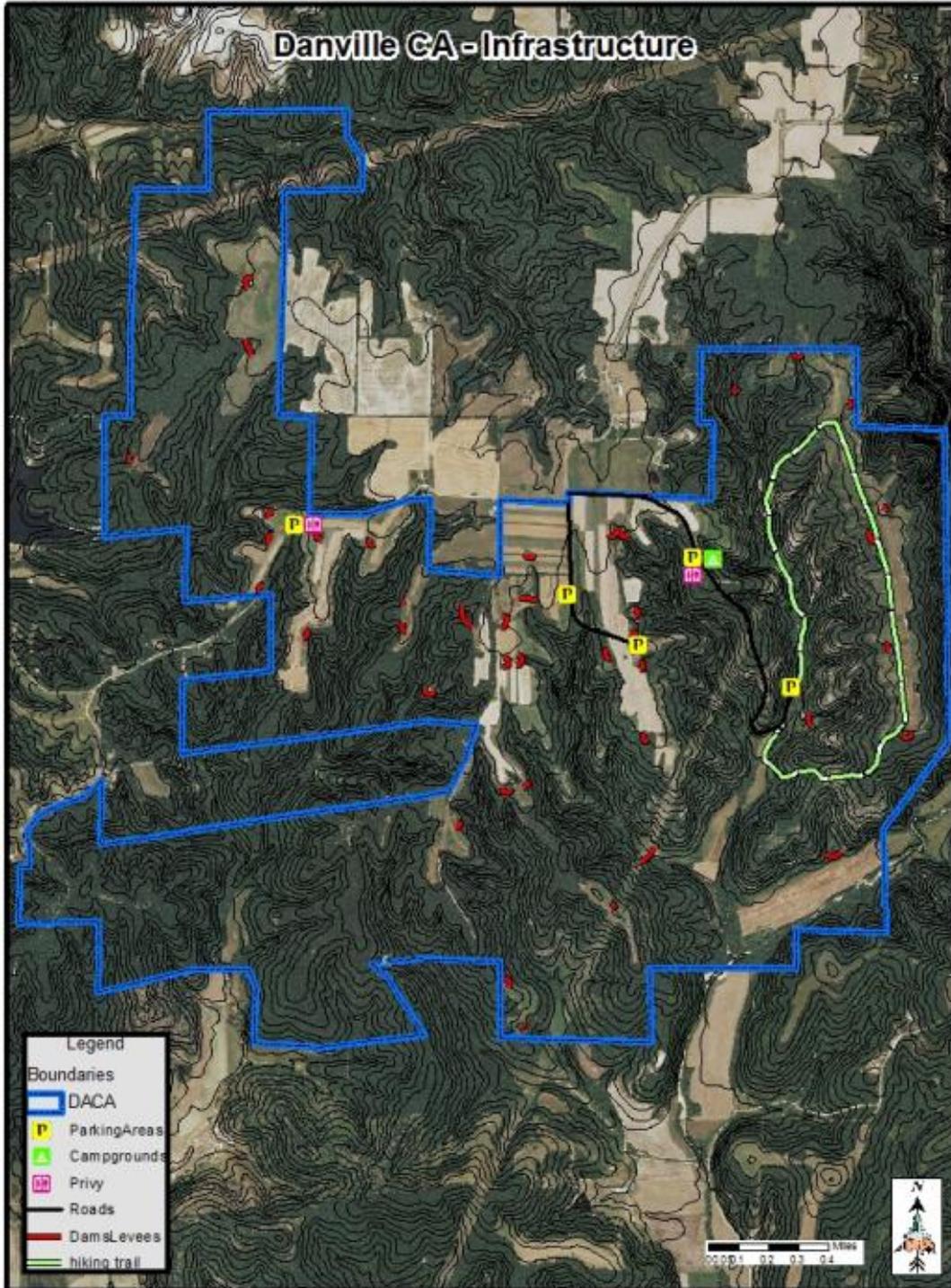
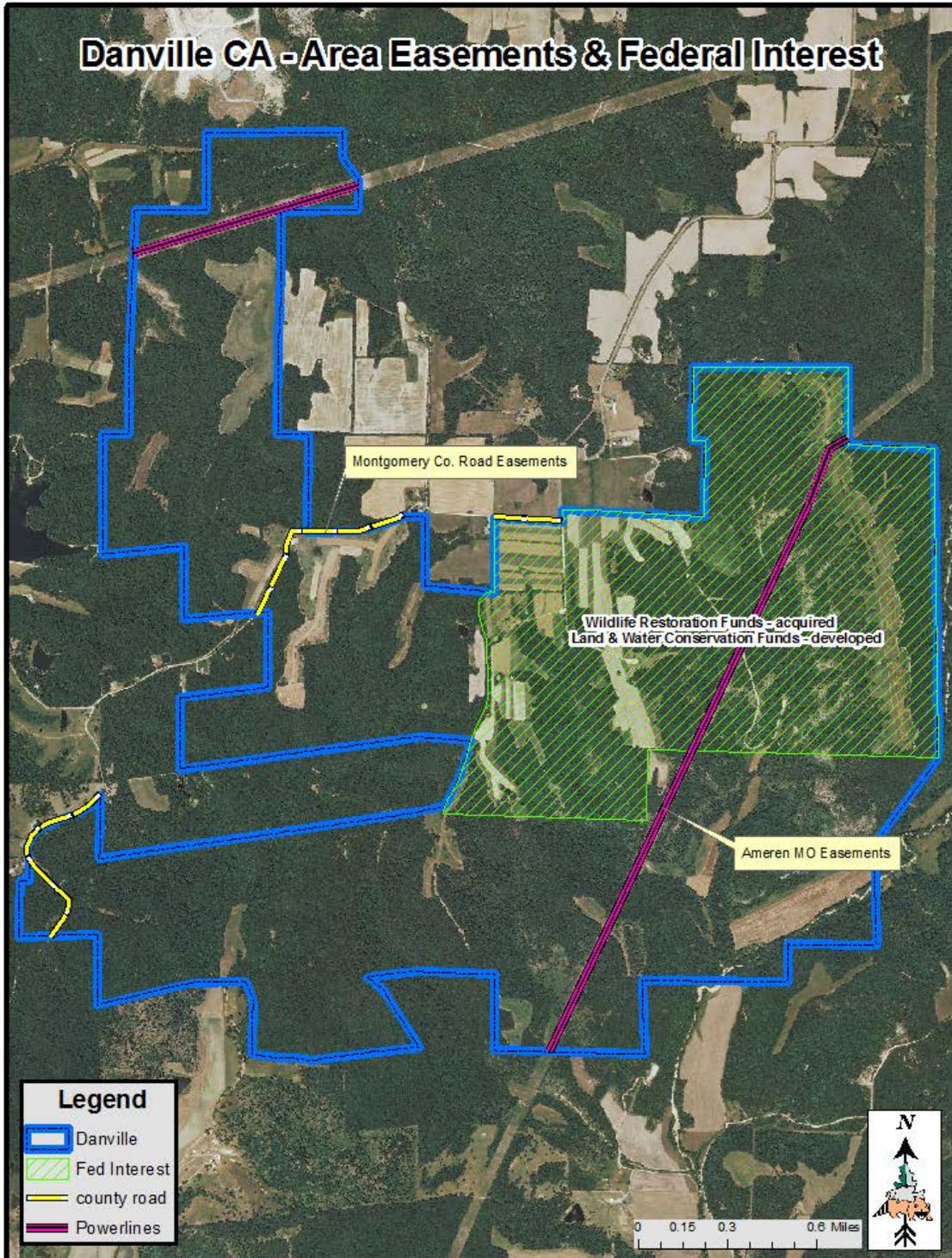


Figure 7: Area Easements and Federal Interest



Appendix A: Danville Conservation Area Management Plan Public Comments

Received during public comment period (June 1-30, 2016):

As I was reading your plan, I noticed no mention of equestrian usage. Seeing that you have over 3,000 acres in this area, you have 5 parking lots, and some existing trails, please consider allowing equestrians on the Danville CA. I understand topography, soil types, and the presence of marshes and wetlands could limit the length of trails. But, I think the sensitive areas can be avoided, which is what the Back Country Horsemen mission is all about.protecting our trails for future generations.

Please consider allowing horse/mule use on existing trails, or allowing the planning, building and maintenance of separate trails. I'm sure the SMMBCHA would help in all phases of any projected new or existing trails.

This area appears to be a great opportunity to bring more wildlife areas to the avid hiker, bicyclists and an equestrian trail in the Central Region of Missouri (which is currently lacking in trails). I would like to see a multi-use trail along with camping facilities for both primitive and equestrian camping. The close proximity to the highway would make travel easier for every visitor. Thank you.

Please consider the multi-use area to include horseback riding. This region of the state is somewhat lacking in this resource and would greatly benefit. As I'm sure you're very well aware my organization BCHA can prove to be a very valuable asset to your overall plan. I look forward to hearing more about the progress of the project. Thanks in advance.

I would love to see some additional trails added that would include multi use trails. Most trails (horse trails) have heavy use so if we had more I feel it would spread the usage out. In reviewing the map it appears there are some area's outside the glade area where this might work. I realize we need the right type of soil so hopefully it would work in this area.

First, thank you for the opportunity to comment on the Danville CA Draft Management Plan. Equestrian trail riders in Montgomery, Callaway, and Audrain Counties and are underserved with respect to public land riding opportunities. To address this lack of opportunity Danville CA is on a priority list of Conservation Areas recommended for multi-use trail development in the 2015 "Expanding Public Land Multi-Use Trails in Missouri" proposal by Show-Me Missouri Back Country Horsemen. This is consistent with the purpose of providing outdoor recreation opportunities as required by the use of Land and Water Conservation Fund monies on Danville CA.

Danville CA exhibits most desirable characteristics for development of a multi-use trail system. Strong points in favor of trail development are size of the CA (adequate for a minimum of 10-12 miles of trails), topography and landscape (predominantly upland), a variety of cover types, and a minimum of conflicting uses. The presence of extensive glades offers opportunity for trail

users to view a landscape and ecosystem that is uncommon in North Missouri. The location, near Interstate 70, would provide safe and convenient access to the CA via very good roads.

SMMBCH offers our services (availability of volunteers permitting) to help decide on the best location and then clear and mark the trails. We further offer to assist the Area Manager to develop a partnership with local trail users to assist with development and maintenance with the trails and associated infrastructure.

Thank you again for the opportunity to comment.

We very much enjoying riding in Missouri and would be interested in more trails and a place to camp. Primitive camping would be okay. We appreciate your considering opening trails for equestrian.

Thank You

I am a proponent of trail development on the Danville CA. Many citizens recreate by using trails, not only for hunting, but also for geocaching, hiking, horse riding, and other diverse activities. Multi-use trails would make this conservation area beneficial for many purposes. The trails can be single track, and of adequate length to provide a day of outdoor recreation. Thank you for the opportunity to comment on the Danville Conservation Area Management Plan.

Hi,

I would like to ask you if you would please consider developing horse trails on the Danville Area? The horse trails at the Rudolph Bennitt Conservation Area are very popular with horseback riders and we need the same thing in the Danville Area.

Thanks for your consideration of the needs for riding trails for Missouri horse lovers and owners.

I would like to see the existing hiking trail made a multi use trail for cyclists and horses. Also expanding the trail would be a way for more people to enjoy the area. Thank you.