FOREST WILDLIFE STEWARDSHIP PLAN

FOR

FRENCH CREEK WILDLIFE AREA

A plan that will increase the diversity of forest wildlife and prioritize species of greatest concern

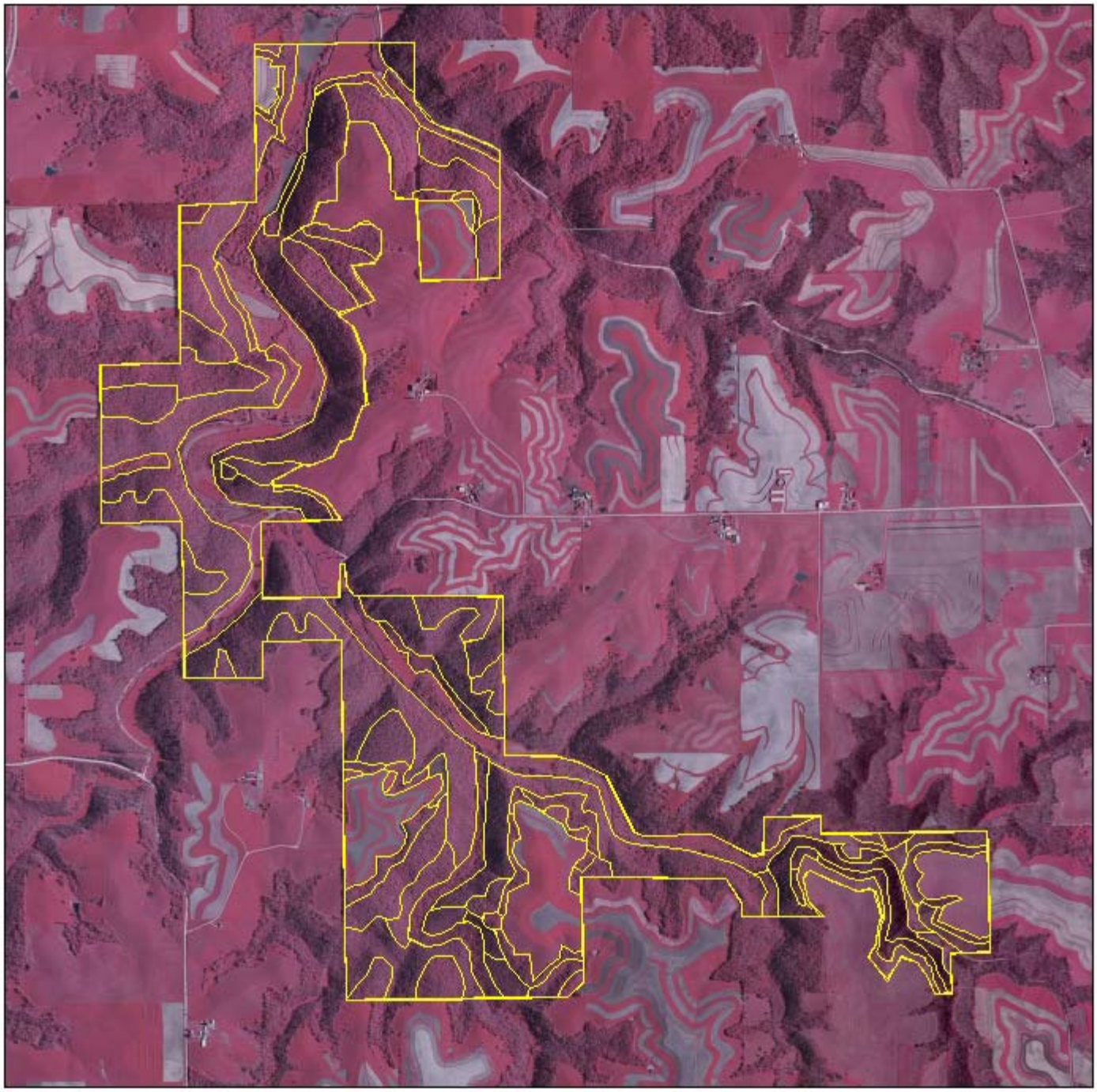
Developed by

Gary Beyer
District Forester

And

Terry Haindfield
Wildlife Biologist

FRENCH CREEK WILDLIFE AREA
1,462 ACRES



Sec. 11, 12, 14, 15, 23, 24, 25, and 26
French Creek Twsp., T99N-R5W,
Allamakee County

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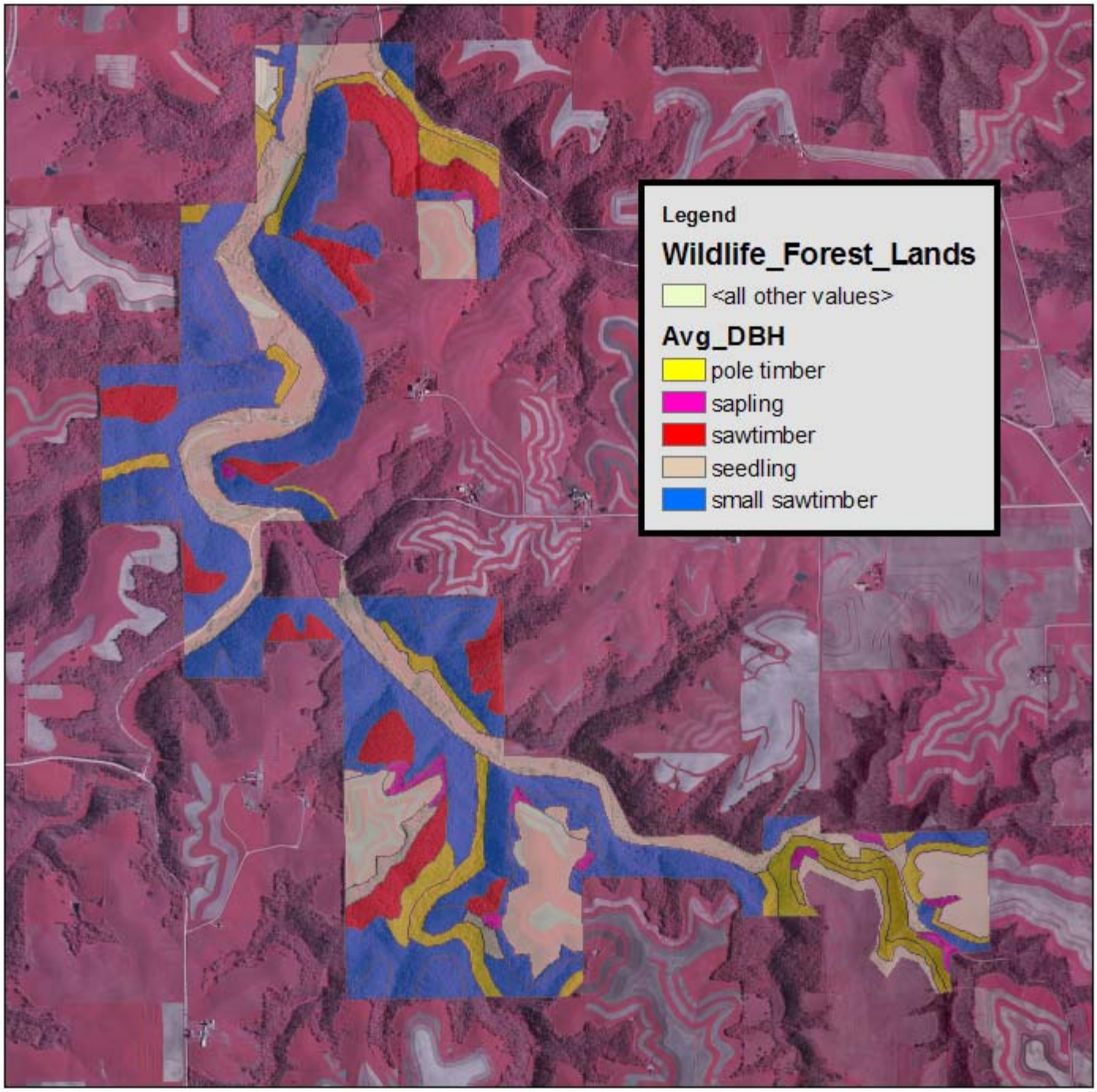
FRENCH CREEK WILDLIFE AREA
AVERAGE TREE SIZE



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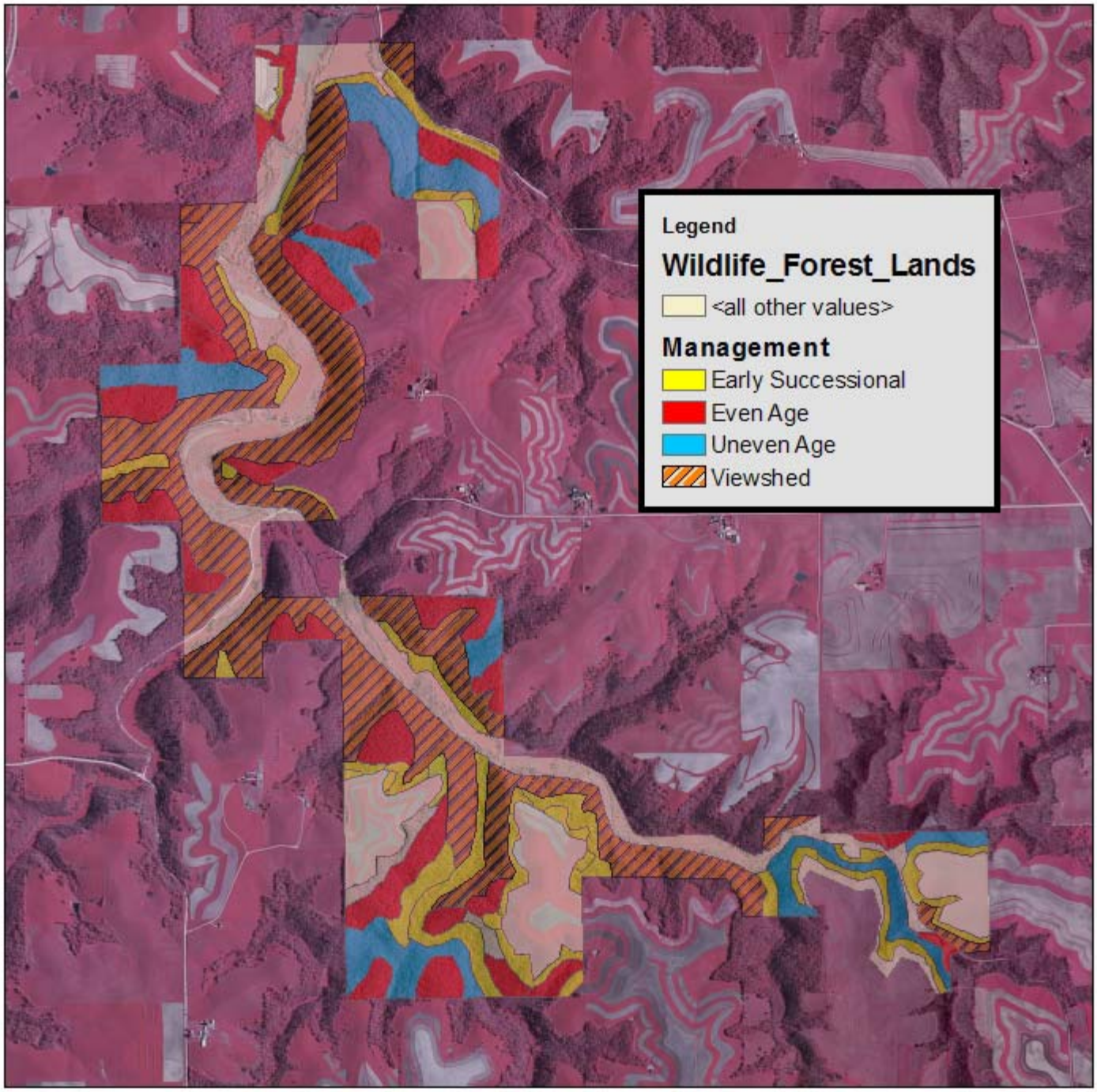
FRENCH CREEK WILDLIFE AREA
WOODLAND MANAGEMENT SYSTEMS



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DATE: 1/29/07

FOREST WILDLIFE STEWARDSHIP PLAN
FOR
FRENCH CREEK WILDLIFE AREA

MANAGER:

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Decorah, Iowa 52101

TELEPHONE: 563/382-4895

LOCATION: Sec. 11, 12, 14, 15, 23, 24, 25, and 26 French Creek Twsp., T99N-R5W, Allamakee County

TOTAL ACRES: 1,040

INTRODUCTION

In Iowa, the Department of Natural Resources (IDNR) is the government agency responsible for the stewardship of indigenous and migratory wildlife species found in the state. Many of these species live near and in IDNR Wildlife Management Area (WMA) forests. Forests are a relatively slow-changing landscape with some stands reaching maturity after a period of 100 years. This time span may extend through the careers of several wildlife managers. The longevity factor emphasizes the need for a Forest Wildlife Stewardship Plans (FWSP) in order to wisely manage our WMA forests.

There are 3 primary factors emphasizing the need for FWSP's for WMA's:
1) The continued succession of many forest stands past the oak-hickory stage to the shade tolerant stands of maple and basswood.
2) The loss of early successional forest stands and associated wildlife species.
3) The lack of proper management to secure mature forest stands with proper overstory and understory tree species for associated forest-interior wildlife species.

Some wildlife species use all of the forest age classes but others have very specific needs where one or two of particular forest age classes are needed to survive. Although the over-all change in forest succession is relatively slow, changes in the early stages of forest succession occur relatively fast. For example, some populations of indigenous and migratory bird species, dependent on these short-lived forest age classes, are experiencing dramatic declines.

In Iowa, they include the indigenous game bird, the ruffed grouse and the migratory game bird the American woodcock. Nation-wide declines of both species have been detected. Many migratory non-game birds including the gold-winged warbler, blue-winged warbler, black-billed cuckoo, yellow-billed cuckoo and eastern towhee are also dependent on this early stage of forest growth. Each of these species is showing populations declines.

Conversely, some species of Neotropical migratory birds are dependent upon mature, undisturbed woodlands. The Acadian flycatcher, Cerulean warbler, and the veery are some examples of bird species needing mature forests. Management objectives will attempt to either protect these types of sites or include needed management to secure these necessary habitats for the future.

The IDNR Wildlife Bureau's, State Comprehensive Wildlife Conservation Plan, identifies all of the above species and others as species of "greatest conservation needs". (Appendix – Tables 1-6).

Generally, the Wildlife Bureau manages state-owned forest for the greatest diversity of forest wildlife and esthetic value. The IDNR Wildlife Bureau's FWSP will prioritize the "species of greatest conservation needs," and the habitat needs of these wildlife species will be guiding factors to forest management decisions. Evaluations will be conducted to monitor the success of these management decisions. Forest and wildlife inventories will be conducted on each WMA and the information will be entered into a database. This database along with the "FWSP Definitions and Guiding Factors"(Appendix) will be used to make forest management decisions on the WMA's. The primary goal will be to maintain or increase populations of wildlife species of greatest conservation needs.

DESCRIPTION OF AREA

The 1,040 acres addressed in this plan are outlined on the attached aerial photo. The area is divided into 74 different areas or stands, labeled 1-74 on the map. Each area is described in this plan and recommendations outlined for woodland management.

French Creek Wildlife Area is 71% forested. The trout stream which runs through the area is one of the highest quality trout streams in the state. French Creek consists of steep bluffs along the trout stream and ridgetops. 45% of French Creek is mapped as viewshed. These are areas that are steep and along the trout stream.

Objectives -

The primary objectives for the area are improving wildlife habitat for a variety of wildlife species, recreation, water quality, and protecting endangered species. This Forest Wildlife Stewardship Plan strives to develop a forest ecosystem that has a diversity of tree sizes and species. Developing a diverse forest will benefit the widest variety of wildlife species. Wildlife species have diverse habitat requirements. Even on a Wildlife Management Area, what is productive habitat for one species may be unproductive for another.

Ruffed grouse, woodcock, and Eastern Towhee populations in northeast Iowa are declining due to a lack of early successional growth. Neotropical migratory birds dependent on early successional growth are also declining. Because much of French Creek is very steep, the field edges and ridge tops conducive to intensive management will be managed for early successional habitat. The steep slopes are not conducive to intensive forest management. These areas will slowly convert from oak to hard maple and basswood because of the lack of disturbance. On gentle slopes and ridgetops, management will strive to regenerate oak so that there remains an oak component on the area.

Income from Timber Harvests -

Harvesting is conducted to regenerate stands to desirable species and to achieve a diversity of tree sizes and species. Income from timber harvesting operations will be reinvested into the area to plant trees, thin young stands, and convert areas to more desirable species, and cut the early successional cuts. Harvesting is a very minimal portion of this plan. The majority of work recommended is to thin young stands so that the oak is not shaded out by other trees, remove undesirable species to encourage natural regeneration of desirable trees, complete the early successional work, and tree planting.

Current Distribution of Tree Size on the Area -

The woodland was stand mapped according to the average tree size as follows:

Tree Size	Acres	% of Total Area
Sapling (<4" dbh)	23	2
Pole size (5-12" dbh.)	162	16
Medium Size (14-18" dbh.)	683	66
Large (>20" dbh)	165	16
Totals	1,033	100

Proposed Management Systems for the Area -

Recommendations for each stand were based on whether the area will be managed to create early successional growth, or on an even age system, uneven age system, or as viewshed. The decision on what system would be used was based on the objectives for the area to maintain an oak component where feasible, develop a diverse woodland landscape, protect fragile sites, improve water quality in the trout stream, and increase the acres of early successional growth.

Based on my recommendations for French Creek Wildlife Area, the acres under each management system are as follows -

Management System	Acres	% of Total Area
Early Successional	186	18
Even Age	233	22
Uneven Age	161	15
Viewshed	460	45
Total	1,040	100

Early Successional Management -

Many species of birds such as ruffed grouse, American woodcock, gold winged warbler, blue winged warbler, black billed cuckoo, yellow billed cuckoo, and eastern towhee are dependent on the early stages of woody growth. The high stem density of both trees and shrubs provides suitable nesting habitat and protection from predators. Because aspen will sprout from the roots when the parent tree is cut, aspen is an excellent species to create the dense growth needed by these species. Aspen also is a short lived tree species, and cutting the aspen will rejuvenate and expand the aspen stands through root sprouting.

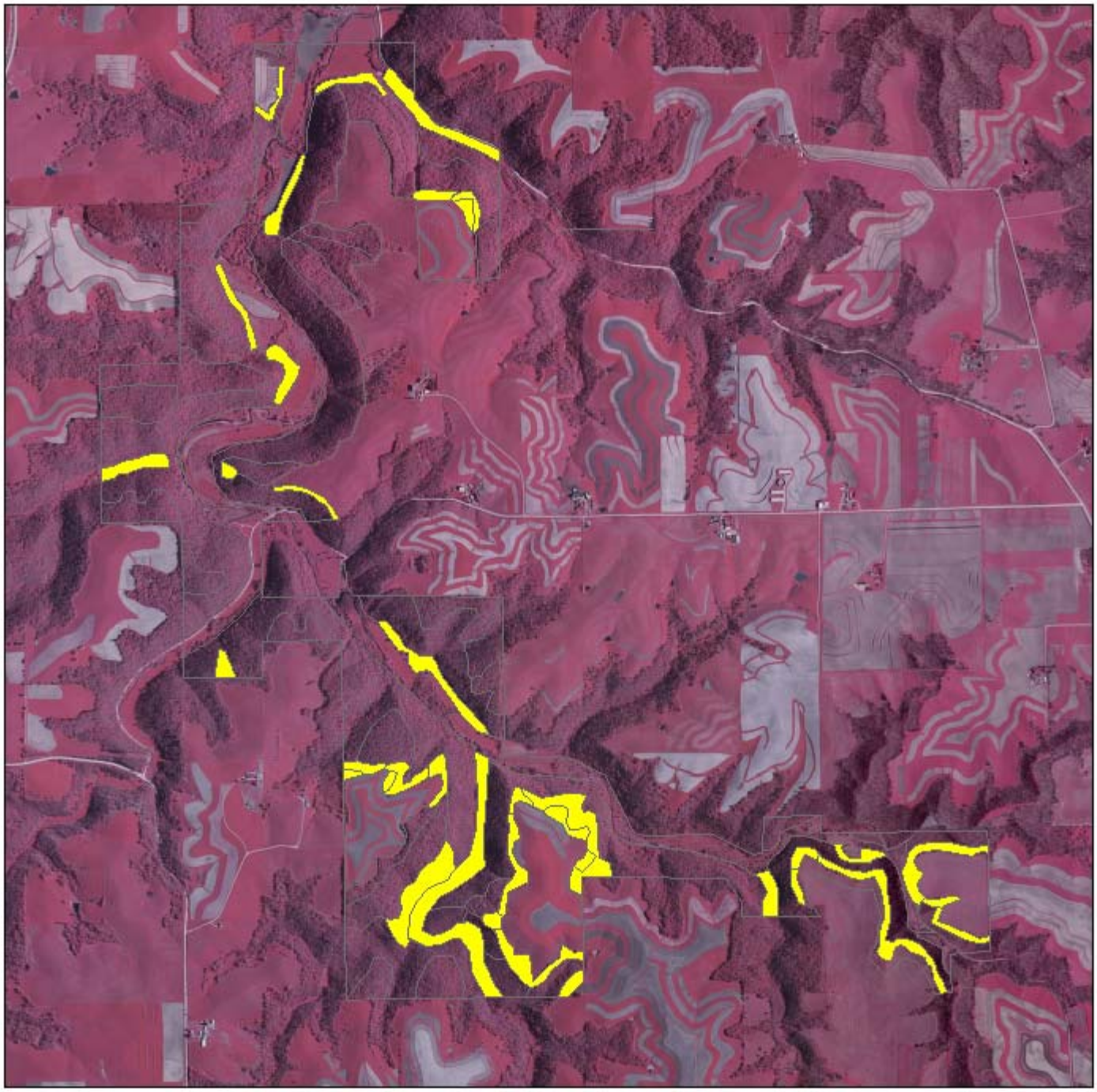
The majority of early successional management is on the woodland edges and aspen stands. This work will "feather" the edges and make a gradual transition from the field edges to the larger trees. Feathering or softening the edges results in less nest parasitism of interior forest bird species by brown-headed cowbirds.

Aspen provides critical habitat for ruffed grouse. Aspen is most easily regenerated by root suckering. Once aspen is allowed to become over mature, its ability to root sucker is decreased. The best method to maintain aspen and expand the aspen clone is to cut the stand while the trees are in a healthy condition. Ideally, 1/3 of the aspen would be sapling size (1-4" dia.), 1/3 pole sized (5-10" dia.), and 1/3 medium sized (12-16" dia.). Big tooth aspen will grow to 16-20" in diameter, but small tooth aspen generally begins to die at 14-16" in diameter.

The early successional management areas will be managed on a 15-20 year rotation. In other words, every 15-20 years the area will be cut to rejuvenate the aspen and create areas with high stem density.

French Creek has 186 acres scheduled for early successional management. Applying sustainable forestry guidelines, 62 acres could be cut every 5 years.

FRENCH CREEK WILDLIFE AREA
Early Successional Management - 186 acres



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Allamakee County

0 1,000 2,000 4,000 6,000 8,000 Feet

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Even Age Management -

Even age management is essential for wildlife species depending on oak/hickory forests. Even though large blocks of forest are needed on some Wildlife Management Areas for some wildlife species, each stage of an even age stand provides habitat for wildlife. For example, regenerating stands (1-10 years old) benefit the same species of birds as does early successional stands, golden-winged warbler, blue-winged warbler, black-billed cuckoo, yellow-billed cuckoo, Eastern towhee, along with ruffed grouse and American woodcock.

Sapling to small pole sized stands between 10 and 20 years old, may be used by black and white, Kentucky, and worm eating warblers. From age 20-60 years, pole to medium size trees tend to be used by canopy nesters such as scarlet tanagers, wood thrushes, and ground nesters such as ovenbirds and black and white warblers.

Mature stands of 60 to 125 years of age are used by birds such as the wood thrush, Acadian flycatcher, ovenbird, worm eating warbler, and scarlet tanagers.

Even age management involves growing a stand of trees which are close to the same age. At some point in the stands life, the area is clearcut which creates the even age structure. Even age management creates excellent habitat for deer, turkey, and grouse and is essential for regeneration of oak which require full sunlight. The only way that oak can be maintained as a component of the forest is by practicing some form of even age management.

Even age management involves clearcuttting and planting, clearcutting with regeneration already established, or a shelterwood system to develop desirable seedlings on the ground.

Shelterwood is a form of even-age management. The final cut is a clearcut, but several thinnings are done prior to the final cut. The large, healthy trees are left to provide seed for naturally reseeding the stand, and to create partial shade to inhibit the growth of weeds and brush until the desirable seedlings are well established. The final cut or clearcut is normally done when there are a sufficient number of desirable trees that are 3-5 ft. tall. The shelterwood system can take many years to develop a good stocking of desirable young trees. You may have to kill the undesirable species several times to favor the species you want. The final clearcut should not be made until you are satisfied with the stocking of desirable young trees.

Clearcutting to create full sunlight is essential at some point in the stands life to successfully regenerate oak. If stands are not clearcut, the oak component of the forest will be lost to shade tolerant species. Clearcuts also provide additional early successional habitat in the early stages. The area is in the brushy stage for a very short period, normally 10-15 years. After that time, the trees will totally shade the ground, and the area becomes a pole sized (5-10" dia.) stand of trees.

Fire is a tool in managing oak stands that is currently being studied. Frequent burning of the leaf layer in the woods will kill thin barked species such as hard maple, cherry, elm, bitternut hickory, and ironwood. Fire will expose mineral soil and open up the ground to sunlight. These conditions favor the natural regeneration of oak. Oak seedlings will tolerate light fires. The top will be killed by the fire, but the deep root systems survive and sprout. Fire will be utilized on a limited scale to encourage oak regeneration in oak stands. Once a good number of oak seedlings are present, these stands will have to be clearcut or the young oak will die from lack of sunlight.

There are 233 acres that will be managed as even aged woodlands to regenerate oak. Approximately 9 acres will be clearcut every 5 years.

FRENCH CREEK WILDLIFE AREA
Even Age Management - 233 acres

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Allamakee County

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Uneven Age Management -

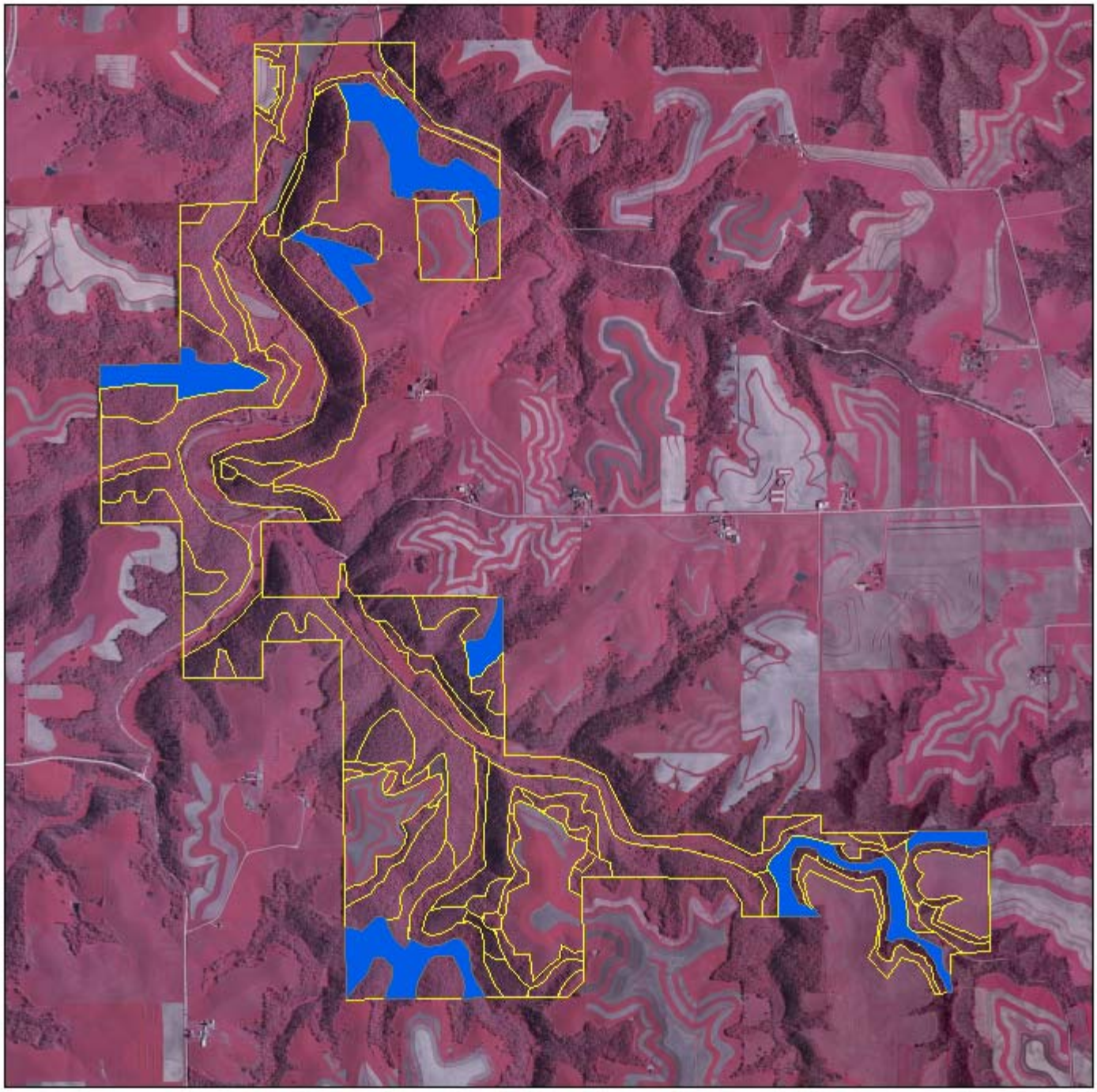
Uneven age management develops a stand of trees with all tree sizes represented. The stand structure is developed by selectively harvesting mature and defective trees, and removing unwanted small trees that are damaged or defective. Because uneven age stands always have large trees present, this system favors species that will grow in shade such as hard maple and basswood.

Uneven age management will maintain blocks of woodland that will always have larger trees. Uneven age management is desirable where the understory is mainly hard maple, on steep slopes, and on areas where always having large trees is important.

Uneven age management areas will provide continuous tracts of woodland with minimal disturbance. Large tracts of uneven age management will provide necessary habitat for neotropical migratory bird species such as cerulean, hooded, Canada, and Kentucky warblers. Selective harvesting will create small openings in the canopy, which will increase ground cover, and enhance stand structure. Den trees will be left to provide cavities for wildlife such as woodpeckers, bats, and squirrels, including the Northern myotis and red squirrel, species of greatest conservation need. Timber stand improvement and selective harvesting will create woody debris on the forest floor for reptiles and amphibians.

There are 161 acres that will be managed as uneven aged forests. 40 acres could be selectively harvested every 5 years under sustainable forestry guidelines.

FRENCH CREEK WILDLIFE AREA
Uneven Age Management - 161 acres



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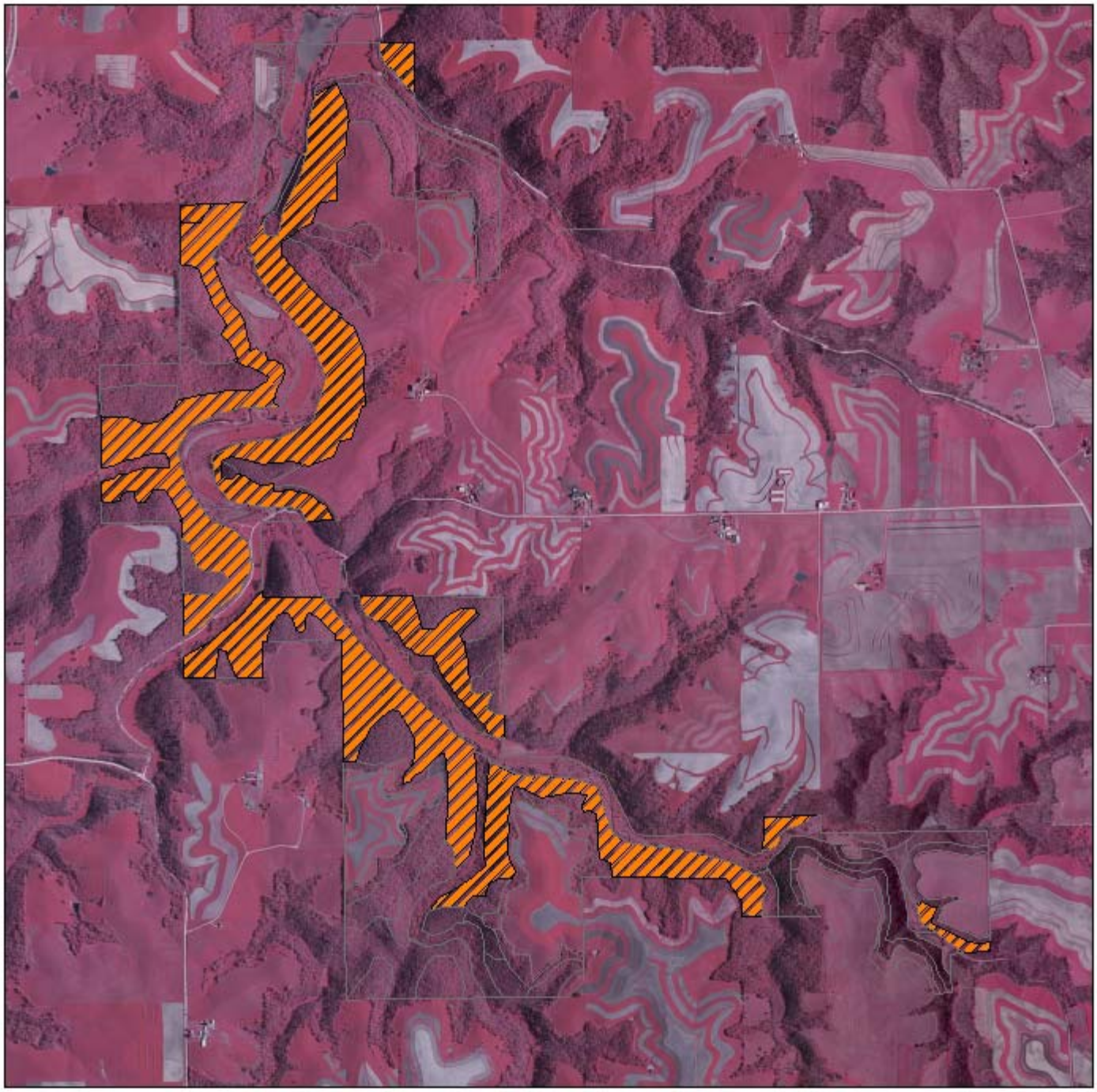
Viewshed Management -

Viewshed areas are typically steep slopes and areas along streams which are fragile and are best left to naturally progress through succession. Areas where endangered plant or animal species exist will also be under viewshed management. Management can take place on these areas where desirable, but the major objective is to have very minor disturbance if any.

Many neotropical birds will benefit greatly from the areas designated as viewshed. Algific slopes and maderate slopes will be under viewshed management which will protect 8 species of land snails listed as species of greatest conservation need.

Viewshed management is designated for 460 acres on the area, or 45% of the forest resource.

FRENCH CREEK WILDLIFE AREA
Viewshed Management - 460 acres



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0 1,000 2,000 4,000 6,000 8,000 Feet

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SOILS

The bottomland has Arenzville silt loams. These soils are moist, alluvial soils. They tend to be well drained and suitable for moist native trees.

The ridge tops and gentle slopes have Fayette and Paint Creek silt loam soils. These soils are well drained, fertile loams. These are good sites for upland hardwood trees such as red oak, white oak, bur oak, walnut, hard maple, basswood, and cherry.

Much of French Creek has steep slopes with LaCrescent soils. These steep slopes have shallow soils over limestone. Viewshed is recommended for much of this area.

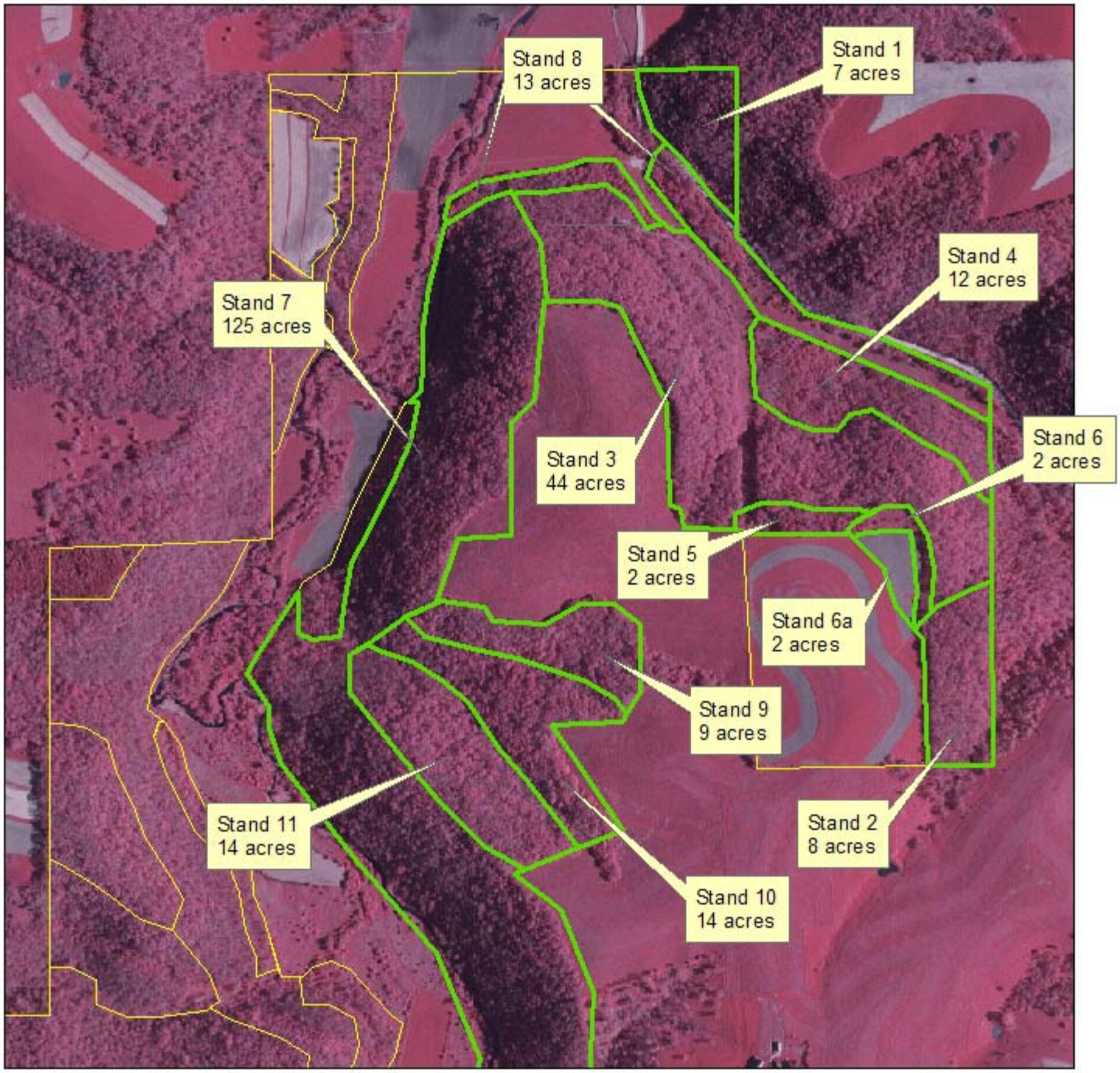
WORK PLAN

FOR

FRENCH CREEK WILDLIFE AREA

This is the "working plan" for French Creek designed to aid professional biologists and foresters in the implementation of forest management practices. It is written with the understanding that these professionals have a basic understanding of forest management principles and techniques. Every detail has not been outlined in the plan because the plan would become too long to be of practical use. This plan is intended to get work accomplished on the ground.

FRENCH CREEK WILDLIFE AREA
STANDS 1-11



Sec. 11, 12, 14, 15, 23, 24, 25, and 26
French Creek Twsp., T99N-R5W,
Allamakee County

0 335 670 1,340 2,010 2,680
Feet

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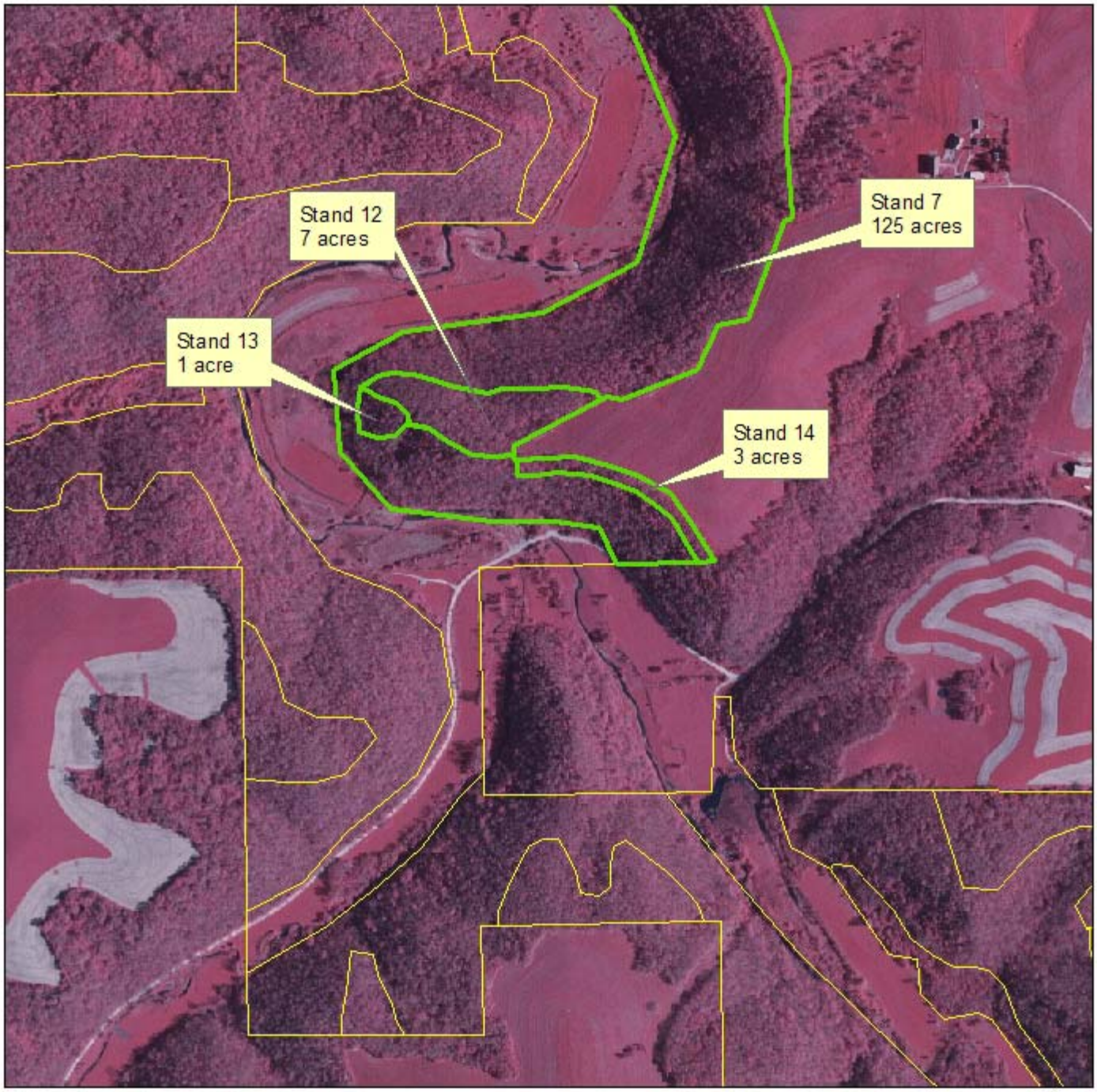
FRENCH CREEK WILDLIFE AREA
STANDS 12-14, AND 7



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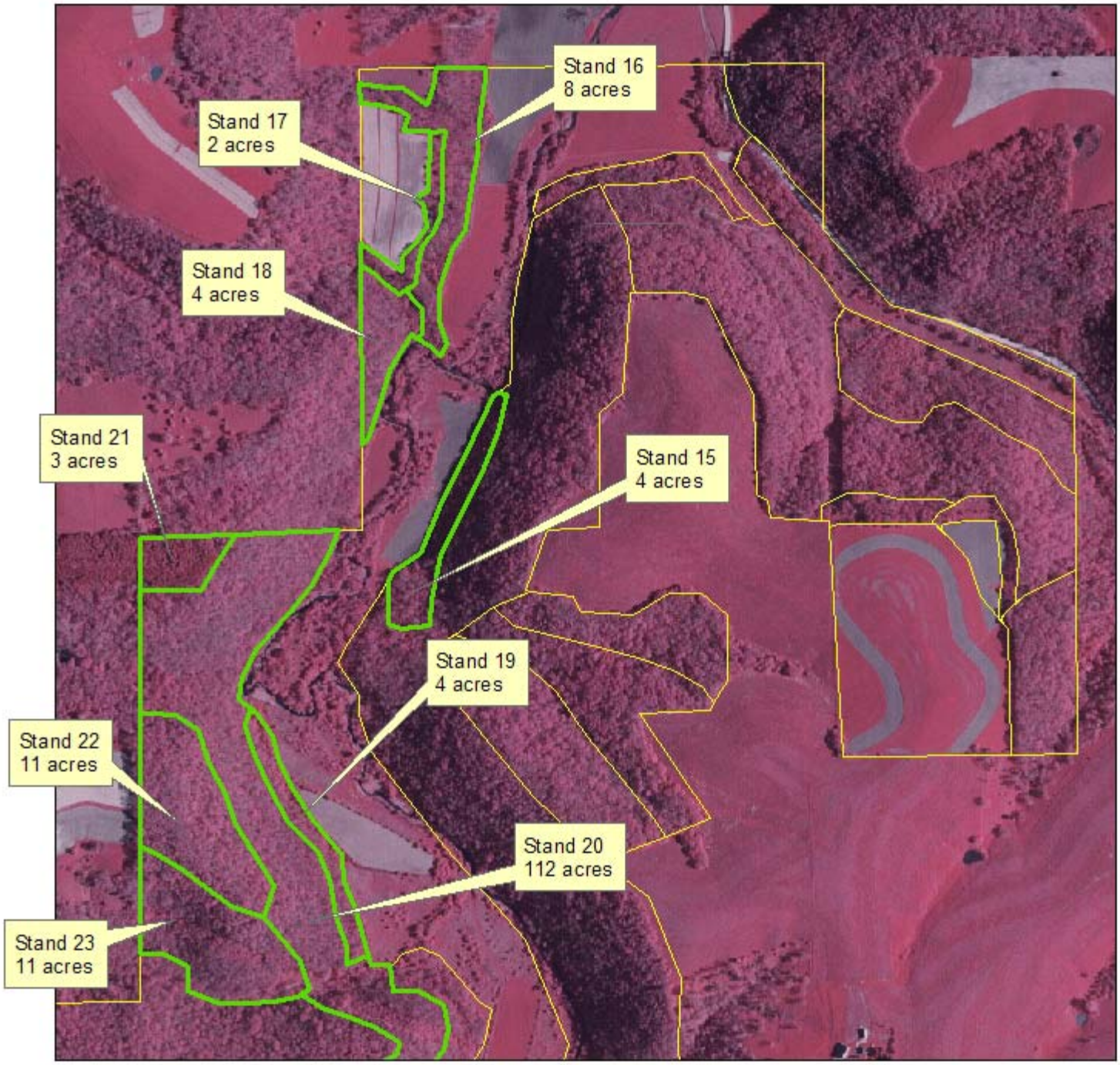
FRENCH CREEK WILDLIFE AREA
Stands 15-23



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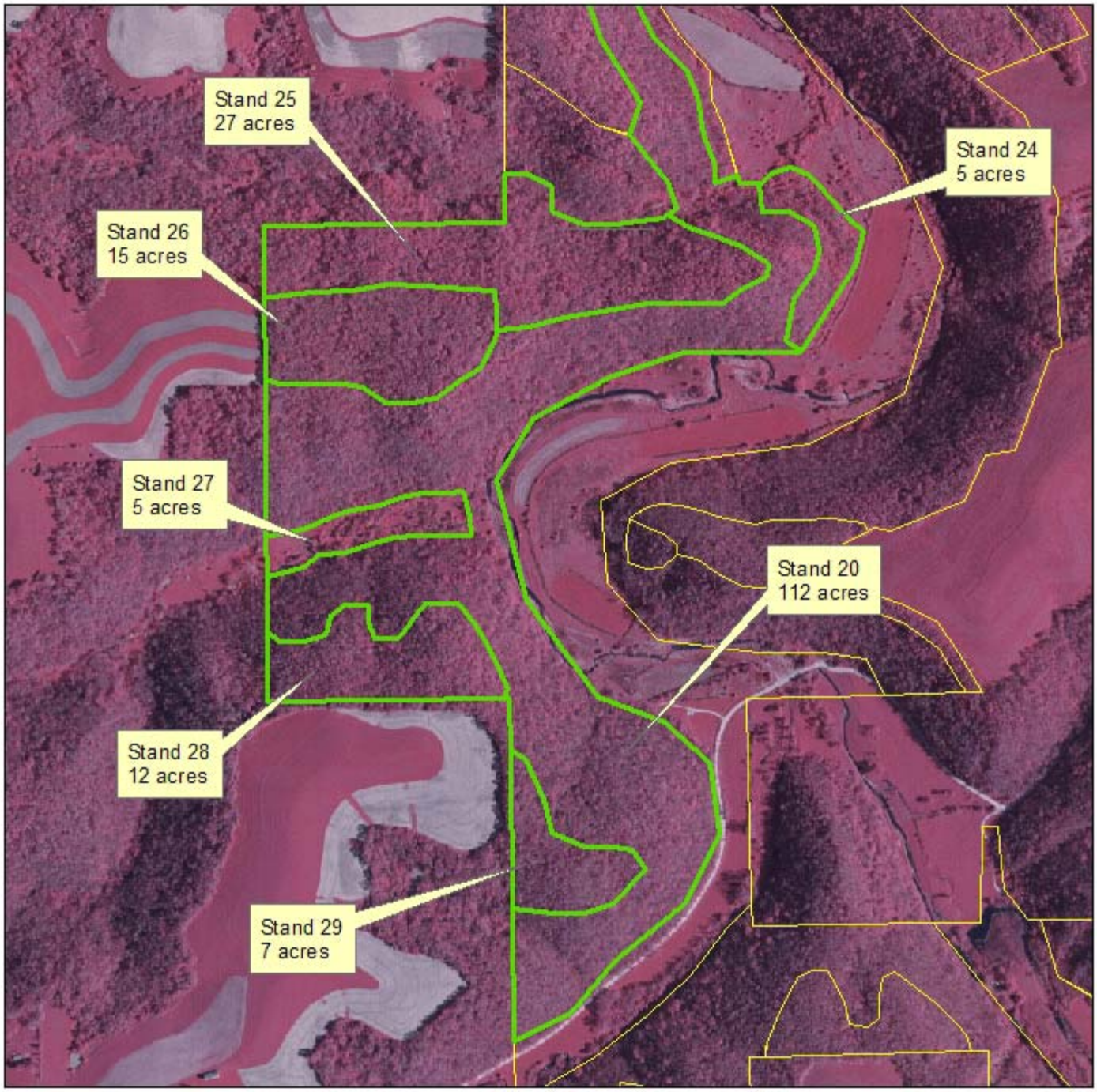
FRENCH CREEK WILDLIFE AREA
Stands 24-29



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Feet

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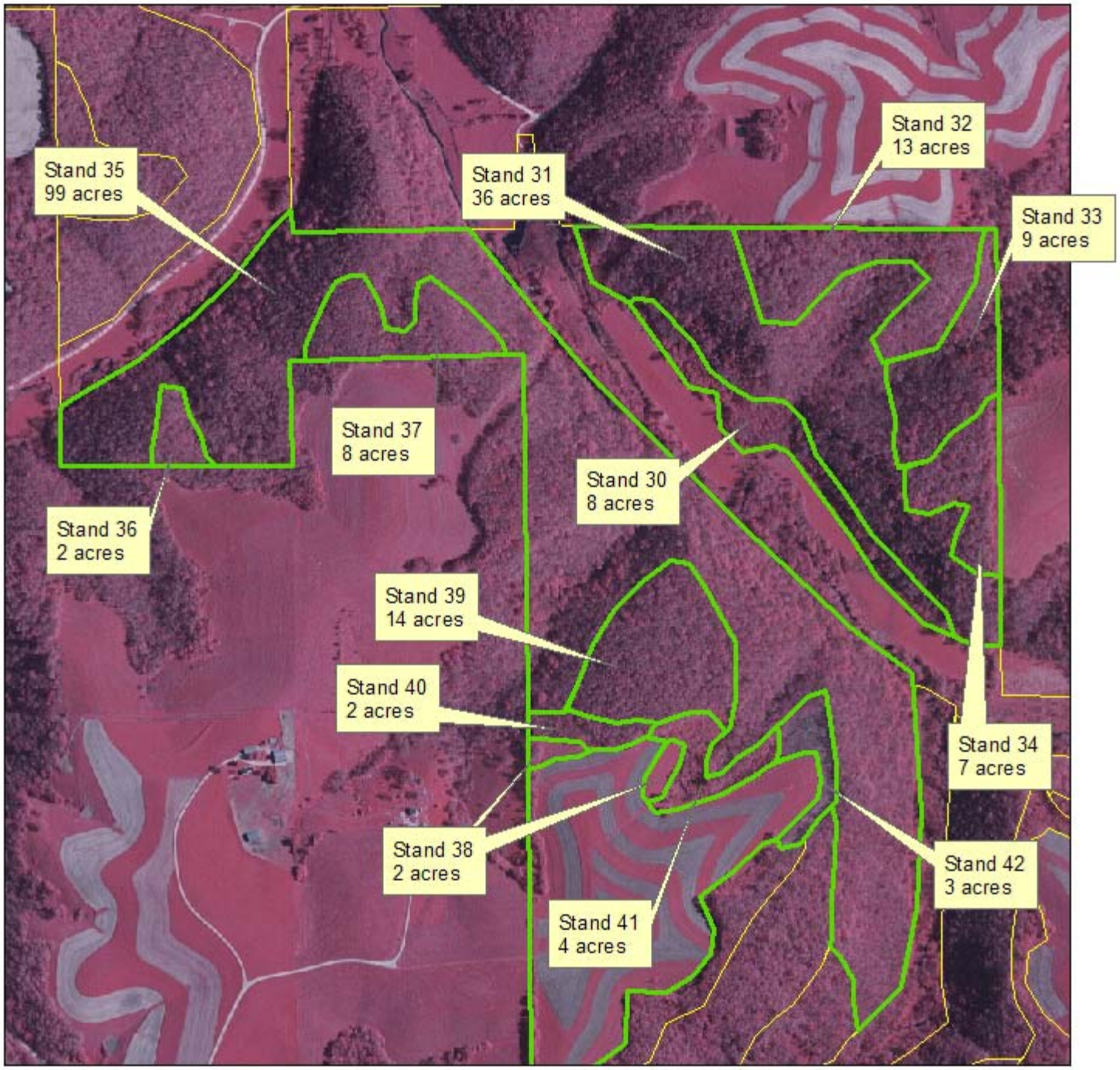
FRENCH CREEK WILDLIFE AREA
Stands 30-42



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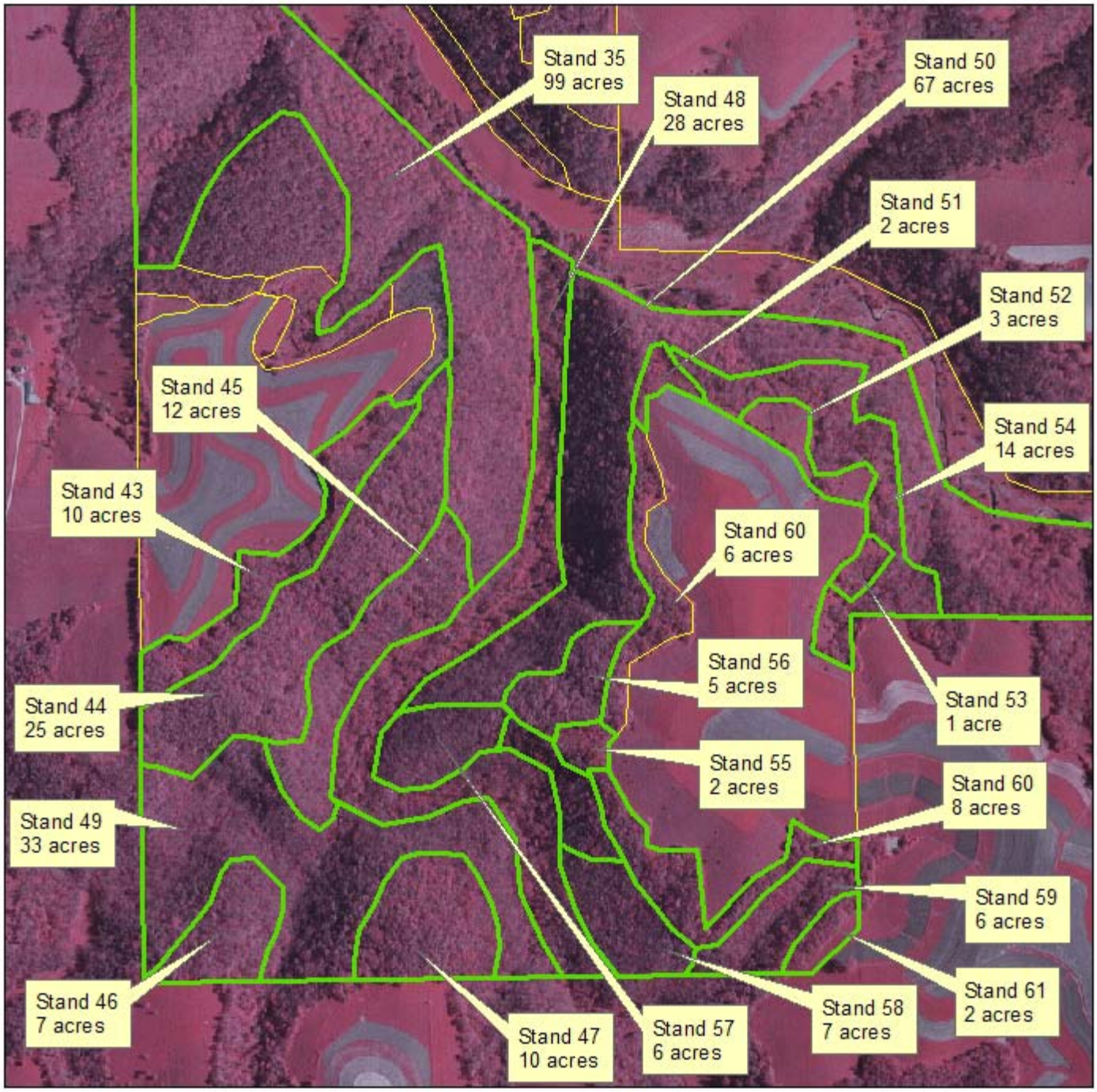
FRENCH CREEK WILDLIFE AREA
Stands 43- 61



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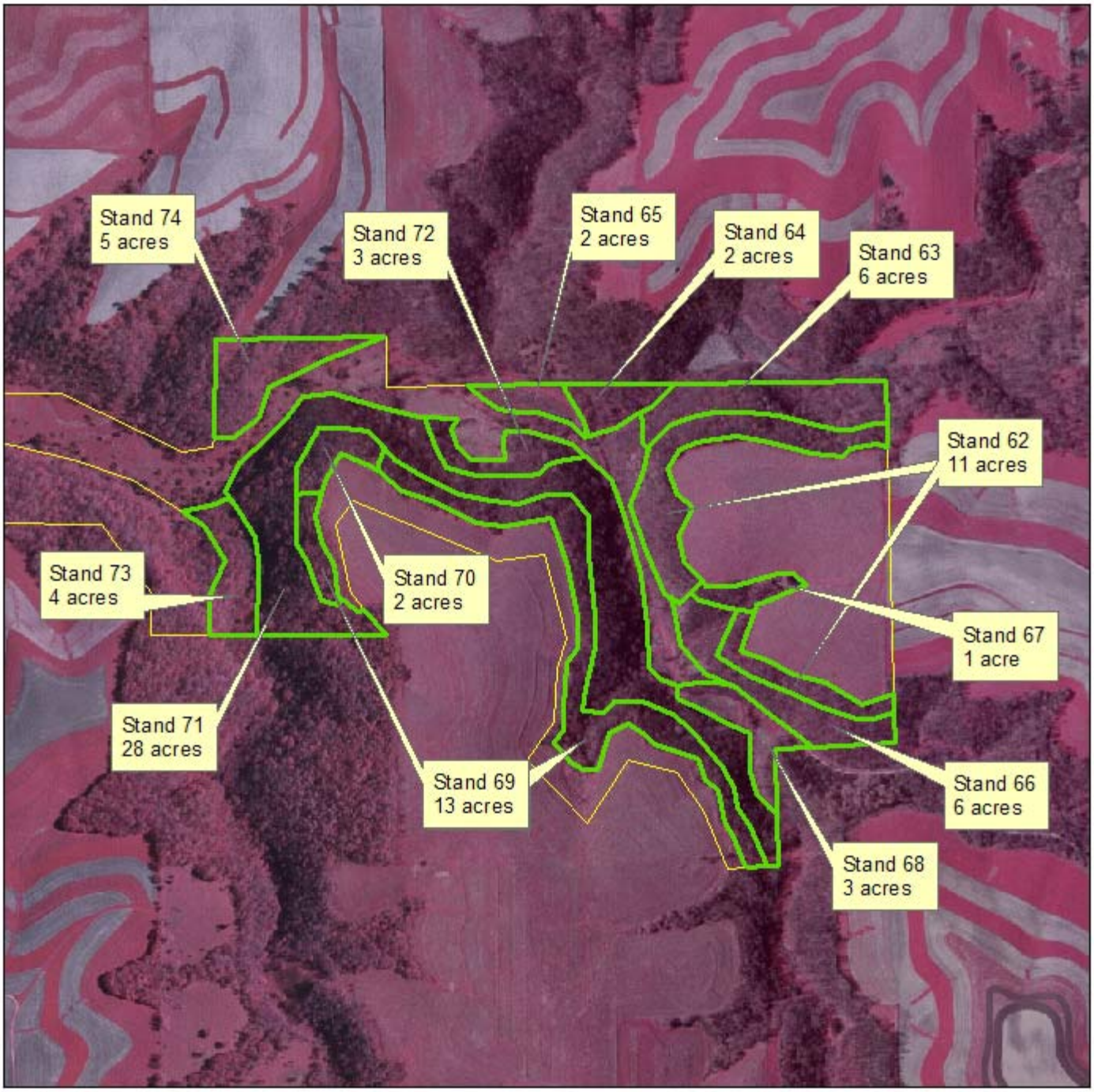
FRENCH CREEK WILDLIFE AREA
Stands 62-74



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DESCRIPTION AND RECOMMENDATIONS FOR INDIVIDUAL STANDS

Stand 1: 7 acres

Site Description -

Steep, southwest facing slope bordering gravel road.

Woodland Description-

The area is medium sized (12-18" dia.) bur oak with scattered, red cedar. There is a small goat prairie on the area.

Management Recommendations – Viewshed

This area can be managed to promote the goat prairie. Remove the cedars and burn as needed.

Stand 2: 8 acres

Site Description -

East facing slope with Paint Creek, Village, and Fayette soils.

Woodland Descripton -

Medium sized (14-18" dia.) white oak, black oak, shagbark hickory, red oak, and scattered aspen. The understory is ironwood, elm, and cherry. There is minor storm damage to the larger trees.

Management Recommendations – Even Age

In 10-15 years, the stand could be clearcut and replanted to establish oak. All merchantable trees would be sold. Following the harvest, all remaining trees 1 inch and larger in diameter should be felled. The stumps of undesirable species such as ironwood, elm, bitternut hickory, and boxelder should be treated with Pathfinder II to prevent sprouting. The area could then be planted with 50 large oak seedlings per acre. Red oak, white oak, and bur oak are suitable species. Each seedling should be protected with a 4 ft. tall, vented tree shelter to protect the trees from deer and rabbits.

Stand 3: 40 acres

Site Description –

Steep, north and east facing slope with shallow soils. There is a field access road running through the area.

Woodland Description -

Large red oak, bur oak, and white oak. The stand is 80-90% red oak. The understory consists of ironwood, elm, and hard maple.

Management Recommendations –Uneven Age

In approximately 10 years, the area could be selectively harvested to remove the damaged and declining trees.

Following the harvest, kill the undesirable species in the understory to encourage the natural regeneration of hard maple and basswood. The undesirable species such as elm, ironwood, bitternut hickory, and boxelder could be killed. The trees should be cut off or girdled. Pathfinder II should be applied to the cut surface to prevent resprouting. This work can be done anytime except spring during heavy sap flow. Remove undesirable species that are 1" and larger in diameter.

In addition, desirable species that are poor formed or damaged should be coppiced. This is cutting the trees at ground level so the stumps will sprout. No herbicide should be used on the stumps of desirable species.

Stand 4: 12 acres

Site Description –

North facing slope with LaCrescent soils.

Woodland Description -

Pole sized (5-10" dia.) ironwood, elm, birch, red oak, bur oak, walnut, and boxelder.

Management Recommendations – Even Age

The scattered, young oak and walnut are being crowded out by the other species. The area could be thinned to provide more growing space for the oak and walnut. Locate the oak and walnut trees that are in good condition. Remove trees with crowns that are touching or overtopping the crowns of the selected trees.

The thinning will improve the health and vigor of the oak and walnut, and result in acorn production at a younger age from the oaks.

Stand 5: 2 acres

Site Description -

Ridge top and slight north facing slope.

Woodland Description -

Medium size (12-18" dia.) shagbark hickory, white oak, and red oak. The understory is ironwood, elm, boxelder, hackberry, and ash.

Management Recommendations – Early Successional

This area could be cut to feather the edge of the woods. This will provide a good, brushy zone between the crop field and the larger trees. Clearcut the area. The larger trees could be sold. Following the harvest, all remaining trees 1 inch and larger in diameter should be felled. The stumps of unwanted species should be treated with Pathfinder II to prevent sprouting.

Stand 6: 2 acres

Site Description -

Ridge along crop field.

Woodland Description –

Sapling sized ash, elm, aspen, and red oak.

Management Recommendations – Early Successional

The area was clearcut in 1999. The area should be cut again to maintain dense, young growth in 2015.

Stand 6a: 2 acres

Site Description -

Crop field with Fayette silt loam soils.

Management Recommendations – Early Successional

Plant area with red cedar to provide winter cover. Plant the cedars on a 12 x 12 ft. spacing or 300 trees per acre.

Competing vegetation must be controlled for a minimum of 3 years. After the trees are planted and before any vegetation emerges, spray a 4 ft. wide band down each row with Princep 4L and Pendulum herbicides. Apply 3 quarts of Princep 4L and 3 quarts of Pendulum per acre treated.

Each spring before any vegetation emerges, apply Princep and Pendulum again for the next season's weed control. The area between the rows should be mowed 2-3 times per year.

A couple of post emergents that can be used if the pre-emergents aren't effective are transline and fusilade. Transline can be applied over the trees while they are actively growing to control broadleaf problems. Apply Transline at a rate of 0.5 pints/ac. Fusilade can be applied over the trees while they are actively growing to control grass problems. Apply Fusilade at a rate of 1 pint/ac plus a non-ionic surfactant. Both herbicides need to be applied when the vegetation is 8" or less.

Stand 7: 125 acres

Site Description -

Steep, west facing slope bordering the trout stream in areas.

Woodland Description –

Medium size (14-18" dia.) red oak, shagbark hickory, bur oak, white oak, and elm. There are scattered red cedar. The predominant species is red oak. The understory consists of ironwood, elm, basswood, ash, hackberry, and shagbark hickory.

Management Recommendations – Viewshed

Because of the steep slopes, this area can be left as is. This will protect the fragile slopes from erosion.

Stand 8: 13 acres

Site Description -

Field edge and bottom along gravel road. There is a power line running through the area.

Woodland Description –

Pole sized (5-10" dia.) boxelder, elm, and a few walnut. The area is mainly boxelder.

Management Recommendations – Early Successional

Clearcut roughly ½ of this area every 7-8 years to maintain dense, young growth.

Stand 9: 9 acres

Site Description –

South facing slope with Paint Creek and LaCrescent soils.

Woodland Description -

Medium sized (14-18" dia.) shagbark hickory, bur oak, red oak, black oak, and white oak. The understory is ironwood, basswood, cherry, and elm. There are large oak seedlings present on the area.

Management Recommendations – Even Age

Stand 9 could be managed on a "Shelterwood" system of management. Kill the undesirable species now to allow more sunlight to reach the ground. Fell or girdle the undesirable species and apply Pathfinder II on the cut surface. In addition, fell desirable species that are stunted, poor formed, or damaged. Do not treat the desirable species with herbicide. The stumps will sprout producing a better tree.

In 10-15 years, the stand could be clearcut to provide full sunlight for the young oak to develop.

Stand 10: 14 acres

Site Description –

Northwest facing, steep slope.

Woodland Description -

Large (20"+ dia.) red oak, white ash, white oak, and shagbark hickory. The understory is hard maple, ironwood, and basswood.

Management Recommendations – Uneven Age

Hard maple and basswood are established in the understory. Because of the steep slopes, this area could be managed as an uneven aged forest to minimize erosion. The area will gradually convert to a predominantly hard maple and basswood forest.

Timber Stand Improvement - The undesirable species such as elm, ironwood, bitternut hickory, and boxelder could be killed. The trees should be cut off or girdled. Pathfinder II should be applied to the cut surface to prevent resprouting. This work can be done anytime except spring during heavy sap flow. Remove undesirable species that are 1" and larger in diameter.

In addition, desirable species that are poor formed or damaged should be coppiced. This is cutting the trees at ground level so the stumps will sprout. No herbicide should be used on the stumps of desirable species.

In 10-15 years, the stand can be selectively harvested along with Stand 9.

Stand 11: 14 acres

Site Description –

Ridge top with Paint Creek, Fayette, and LaCrescent soils.

Woodland Description -

Medium size (14-18" dia.) white oak, red oak, and shagbark hickory. The understory is ironwood, bitternut hickory, and elm.

Management Recommendations – Even Age

In approximately 20 years, this area could be clearcut harvested and regenerated with oak.

Stand 12: 7 acres

Site Description -

Ridge top and north facing slope.

Woodland Description –

Large (20"+ dia.) white oak, black oak, red oak, and shagbark hickory. Understory consists of ironwood, elm, ash, and hazel.

Management Recommendations – Even Age

Clearcut and plant the area now. Plant the area with 30 large oak seedlings per acre. Protect each seedling from deer and turkey with a 4 ft. tall, vented tree shelter.

Access to this area is through private land.

Stand 13: 1 acre

Site Description -

South facing, rocky slope.

Woodland Description -

The area was clearcut in 2001. The stand is sapling aspen. The understory is gray dogwood. This is good early successional habitat.

Management Recommendations – Early Successional

Clearcut this area again in 10 years to maintain early successional habitat.

Stand 14: 3 acres

Site Description -

Edge along a field on private land.

Woodland Description -

Pole sized (5-10" dia.) aspen, red cedar, shagbark hickory, bur oak, and elm. The understory is gray dogwood, cherry, and nannyberry.

Management Description – Early Successional

Clearcut this area to feather the timber edge and create early successional habitat.

Stand 15: 4 acres

Site Description –

Edge of woods along bottomland field.

Woodland Description –

Pole sized basswood, cherry, black ash, boxelder, and elm. There are scattered, larger white oak, red oak, and basswood.

Management Recommendations – Early Successional

Clearcut the stand to feather the edge and create dense, young, growth. The scattered, merchantable trees could be sold prior to the cutting of the smaller trees.

Stand 16: 8 acres

Site Description -

East facing slope with sandy soils.

Woodland Description -

Medium sized (12-18" dbh) walnut, bur oak, and shagbark hickory. The area is mainly low quality walnut. The understory is elm, raspberry, hackberry, and boxelder. There are walnut seedlings and saplings in the open areas.

Management Recommendations – Even Age

Stand 16 could be managed on a Shelterwood system of even age management. The mature walnut could be harvested. Following the harvest, the undesirable species and poor formed trees could be killed. The combination of harvesting and timber stand improvement will open up the understory and encourage natural reseeding of oak and walnut. This thinning will also increase ground cover for wildlife.

Stand 17: 2 acres

Site Description –

Edge along crop field.

Woodland Description -

Pole sized (5-10" dia.) walnut, elm, and black oak. There are scattered, medium sized walnut and oak.

Management Recommendations – Early Successional

The merchantable trees can be sold along with the Shelterwood harvest in Stand 16. Following the harvest, the remaining trees 1 inch and larger in diameter could be felled to create dense, young, growth.

Stand 18: 4 acres

Site Description -

East facing slope with LaCrescent soils.

Woodland Description -

Pole sized (5-10" dia.) walnut, elm, bitternut hickory, red oak, black oak, and basswood.

Management Recommendations – Even Age

In pole-sized stands (4-10" dia.), potential crop trees can be selected and released. At maturity, there is room for 35-50 trees per acre. Now you can select the trees you want to comprise your future stand of mature trees and thin around them to give them more growing space. Select a crop tree every 30-35 ft. apart. Remove trees with crowns that are touching or overtopping the crowns of your crop trees. Crop trees can be selected based on criteria that meets your objectives. Normally, the crop trees will be a desirable species, show good form without large side limbs, and be free of major defects. Species normally favored are black walnut, red oak, white oak, white ash, basswood, cherry, and hard maple.

Locate your good quality trees. Do not waste your time and money on poor quality trees. If there are no high quality trees present on an area, go on to an area with good trees. You can not create high quality trees. Either they are present or not. Be selective and work with only your best trees.

The trees to be removed can be felled or double girdled. No herbicide is necessary.

Stand 19: 4 acres

Site Description -

East facing slope along woodland edge.

Woodland Description –

Medium sized (14-18" dia.) red oak, walnut, bur oak, and elm. The understory is boxelder, blue beech, ironwood, and bitternut hickory.

Management Recommendations – Early Successional

The stand could be clearcut to create early successional habitat. The larger trees could be sold. Following the harvest, fell all remaining trees 1 inch and larger in diameter. Treat the stumps of elm, ironwood, boxelder, and blue beech with Pathfinder II to prevent sprouting.

Stand 20: 112 acres

Site Description -

Steep, rocky, east facing slope. Portions of the area border the trout stream.

Woodland Description -

Medium sized (12-18" dia.) red oak, walnut, basswood, white oak, and bur oak. The understory is hard maple, basswood, bitternut hickory, elm, ironwood, and ash.

Management Recommendations – Viewshed

Stand 20 is on steep, fragile slopes that should be left as is with no management.

Stand 21: 3 acres

Site Description -

Ridge top that was planted with white pine and red pine 35 years ago.

Woodland Description –

Pole sized white pine and red pine.

Management Recommendations – Viewshed

The health and vigor of the pines could be improved by thinning the stand. Remove every 3rd row. Fell the trees and buck them up so they lie flat on the ground.

Stand 22: 11 acres

Site Description -

Ridge top with Paint Creek, Village, Fayette, and LaCrescent soils.

Woodland Description -

Medium sized (14-18" dia.) black oak, walnut, ash, and white oak. The understory is bitternut hickory, shagbark hickory, cherry, elm, and hazel.

Management Recommendations – Even Age

Stand 22 can be managed to regenerate oak. In 10-15 years, the stand could be clearcut and planted with large oak seedlings.

Stand 23: 11 acres

Site Description -

South facing slope and drainage.

Woodland Description –

Medium sized (14-18" dia.) bur oak, basswood, ash, black oak, and walnut. The understory is elm, ash, cherry, hard maple, and basswood. There are large oak seedlings and saplings present.

Management Recommendations – Even Age

There are large oak seedlings and saplings present. Clearcutting the stand will provide full sunlight so that the young oak present would have sufficient sunlight to grow. All trees 14" and larger in diameter could be sold. Following the harvest, all remaining trees 1 inch and larger in diameter should be felled. Treat the stumps of undesirable species with Pathfinder II to prevent sprouting.

Stand 24: 5 acres

Site Description -

Lower east facing slope next to field edge.

Woodland Description -

Pole sized (5-10" dia.) red oak, black oak, cherry, and elm. There are scattered, merchantable red oak and bur oak.

Management Recommendations – Early Successional

Clearcut the area to develop dense, young growth. The scattered merchantable trees could be sold.

Stand 25: 27 acres

Site Description -

Steep, north facing slope with Fayette, Paint Creek, and LaCrescent soils.

Woodland Description -

Medium sized (14-18" dia.) red oak, hard maple, and white oak. The understory is ironwood, hard maple, and ash.

Management Recommendations – Uneven Age

The stand could be managed to create an all age forest. Selective harvesting and removal of undesirable species creates small openings. These small openings naturally regenerate with hard maple. Over time, as the stand is selectively harvested every 20 years, different age classes of trees develop in the openings created, resulting in a multi age stand.

The stand could be selectively harvested now. Following the harvest, the undesirable species such as elm, ironwood, bitternut hickory, and boxelder could be killed. The trees should be cut off or girdled. Pathfinder II should be applied to the cut surface to prevent resprouting. This work can be done anytime except spring during heavy sap flow. Remove undesirable species that are 1" and larger in diameter.

In addition, desirable species that are poor formed or damaged should be coppiced. This is cutting the trees at ground level so the stumps will sprout. No herbicide should be used on the stumps of desirable species.

Stand 26: 15 acres

Site Description -

Ridge top with Paint Creek and Fayette silt loam soils. This is a good site for growing oak and walnut.

Woodland Description -

Large (20"+ dia.) white oak, red oak, black oak, and cherry. The understory is elm, bitternut hickory, shagbark hickory, cherry, white oak, and ironwood.

Management Recommendations – Even Age

Clearcut the stand and plant with large oak seedlings. Plant 30 oaks per acre with a 4 ft. tall vented tree shelter on each tree to protect them from rabbits and deer.

Stand 27: 5 acres

Site Description -

Bottomland with Arenzvil-Volney soils. These soilsare poorly drained.

Woodland Description -

Pole sized elm, boxelder, willow, and a few walnut. There are patches of wild plum.

Management Recommendations – Early Successional

Clearcut this area to create dense, young growth. Plant the open areas with aspen to increase the diversity on the area. Plant the aspen 8 ft. apart, or 700 trees per acre.

Control competing vegetation by spot spraying a combination of Roundup and Pendulum herbicides. Protect the seedling from the spray and spray an area 4 ft in diameter around each tree. Apply 2 quarts of Roundup and 4 quarts of Pendulum per acre treated. The herbicides must be applied when the vegetation is actively growing.

Stand 28: 12 acres

Site Description -

Ridge top and north facing slope with Village and Paint Creek soils.

Woodland Description -

Medium sized (12-18" dia.) black oak, red oak, white oak, and shagbark hickory. The understory is elm, cherry, white oak, shagbark hickory, boxelder, hackberry, and ironwood. The stand was high graded 25-30 years ago.

Management Recommendations – Even Age

In approximately 10 years, the stand could be clearcut and planted with oak.

Stand 29: 7 acres

Site Description -

Ridge with Paint Creek soils.

Woodland Description -

Large white oak, black oak, red oak, and shagbark hickory. The understory is ironwood, cherry, shagbark hickory, ash, elm, and scattered red oak poles.

Management Recommendations – Even Age

Stand 29 can be managed on a "Shelterwood" system to establish young oak under the large trees. The undesirable species such as ironwood, elm, and bitternut hickory should be killed now. In addition, desirable species that are poor formed or stunted should be coppiced. This thinning in the understory will provide additional sunlight for the oak that are present and encourage additional natural reseeding. In 10-15 years, the stand could be clearcut to provide full sunlight for the young oak.

Stand 30: 8 acres

Site Description -

Bottom of west facing slope bordering a grass field.

Woodland Description -

Pole sized (5-10" dia.) elm and boxelder. There are scattered, large bur oak and elm.

Management Recommendations – Early Successional

Clearcut this area to create early successional habitat. There are scattered bur oak and elm that could be sold.

Stand 31: 36 acres

Site Description -

Steep, rocky west facing slope.

Woodland Description -

Medium size (12-18" dia.) bur oak, elm, white oak, shagbark hickory, and scattered red cedar. The understory is elm, ironwood, shagbark hickory, honeysuckly, and stunted white oak.

Management Recommendations – Viewshed

Due to the steep slopes, this area should be managed as viewshed and left as is.

Stand 32: 13 acres

Site Description -

Ridge top with Fayette silt loam soils.

Woodland Description -

Medium size (12-18" dbh) white oak, red oak, black oak, shagbark hickory, and a clump of aspen. The understory is ironwood, elm, shagbark hickory, hard maple, and white oak.

Management Recommendations – Even Age

Manage this stand on a "Shelterwood" system of management. Kill the undesirable species and coppice the poor formed trees now to encourage oak regeneration. In 10-15 years, the stand could be clearcut.

Stand 33: 9 acres

Site Description -

North facing slope with LaCrescent soils.

Woodland Description -

Large (20"+ dbh) red oak and white oak. The understory is ironwood, elm, and hard maple. There is wind damage and the large trees are beginning to deteriorate.

Management Recommendations – Uneven Age

Selective harvest the area to remove the mature and damaged trees. Following the harvest, he undesirable species such as elm, ironwood, bitternut hickory, and boxelder should be killed. The trees should be cut off or girdled. Pathfinder II should be applied to the cut surface to prevent resprouting. This work can be done anytime except spring during heavy sap flow. Remove undesirable species that are 1" and larger in diameter.

In addition, desirable species that are poor formed or damaged should be coppiced. This is cutting the trees at ground level so the stumps will sprout. No herbicide should be used on the stumps of desirable species.

Stand 34: 7 acres

Site Description -

Ridge top bordering a crop field on private land.

Woodland Description -

Large red oak, white oak, basswood, shagbark hickory, black oak, and cherry. Understory is shagbark hickory, elm, and ironwood.

Management Recommendations - Even Age

Stand 34 can be managed on a shelterwood system. A partial harvest to open up the canapy should be done along with the selective harvest in Stand 33. Following the harvest, kill the undesirable species and coppice damaged trees. The stand could be clearcut in 10-15 years.

Stand 35: 99 acres

Site Description -

Steep east facing slopes along the trout stream.

Woodland Description -

Medium sized hard maple, red oak, and white oak. The understory is hard maple, blue beech, elm, and ironwood.

Management Recommendations – Viewshed

Leave this area as is to protect the fragile soils and minimize sedimentation in the trout stream.

Stand 36: 2 acres

Site Description -

Ridge top adjacent to a field on private land.

Woodland Description -

Medium sized (12-18" dia.) white oak, black oak, and one large walnut. Understory consists of elm, hackberry, cherry, and aspen.

Management Recommendations – Early Successional

Clearcut the area along with Stand 37. Following the harvest, fell all remaining trees 1 inch and larger in diameter. Treat the stumps of undesirable species with Pathfinder II herbicide to prevent sprouting. This will expand the aspen on the site.

Stand 37: 8 acres

Site Description -

Ridge top and north facing slope with Village soils.

Woodland Description -

Large (20"+ dbh) red oak, black oak, white oak, cherry, and a few walnut. The understory is hard maple, cherry, elm, and basswood.

Management Recommendations – Even Age

Clearcut the stand and replant with large oak seedlings. Plant 30 large red and white oak per acre. Protect each tree with a 4 ft. tall vented tree shelter.

Stand 38: 2 acres

Site Description –

Idle area in field that is weeds and brome grass.

Management Recommendations – Early Successional

Mow the area in August. In September, broadcast spray the two sites with Roundup herbicide to kill the existing vegetation. Plant the area with red cedar on a 12 X 12 ft. spacing.

Competing vegetation must be controlled for a minimum of 3 years. After the trees are planted and before any vegetation emerges, spray a 4 ft. wide band down each row with Princep 4L and Pendulum herbicides. Apply 3 quarts of Princep 4L and 3 quarts of Pendulum per acre treated.

Each spring before any vegetation emerges, apply Princep and Pendulum again for the next season's weed control. The area between the rows should be mowed 2-3 times per year.

Stand 39: 14 acres

Site Description –

Ridge with Fayette and Village soils.

Woodland Description –

Large black oak, white oak, red oak, aspen, elm, cherry, and butternut. The understory is elm, hackberry, and bitternut hickory.

Management Recommendations – Even Age

Clearcut the stand and plant large oak seedlings. Following the harvest, fell all remaining trees 1 inch and larger in diameter. Treat the stumps of unwanted species with Pathfinder II to prevent sprouting. Plant the area with 30 large oak seedlings per acre. Protect tree with a vented tree shelter.

Stand 40: 2 acres

Site Description -

South edge of woods.

Woodland Description -

Medium sized (12-18" dia.) white oak, black oak, red oak, and elm. The understory is elm, hackberry, and bitternut hickory.

Management Recommendations – Early Successional

Clearcut to feather the edge and create dense, sapling growth. This will be a commercial sale that can be sold with the harvest in Stand 39.

Stand 41: 4 acres

Site Description –

South edge of woods.

Woodland Description -

Sapling (1-4" dia.) elm, aspen, cherry, and black oak. This area was cut to create early successional habitat in 1999.

Management Recommendations – Early Successional

Cut the area again in 2015 to maintain early successional habitat.

Stand 42: 3 acres

Site Description -

Ridge along the edge of the woods.

Woodland Description -

Sapling cherry, aspen, white oak, and boxelder. Aspen is the dominant species.

Management Recommendations – Early Successional

Stand 42 was clearcut in 2001. Cut this area again in 2018 to maintain dense, young growth.

Stand 43: 10 acres

Site Description –

Edge of woods along field with Fayette and Village soils.

Woodland Description -

Large (20"+ dia.) white oak, black oak, red oak, and cottonwood. There are scattered, clumps of aspen. The understory is elm, boxelder, shagbark hickory, and gray dogwood.

Management Recommendations – Early Successional

Clearcut this area to feather the edge of the woods and create dense, young growth. This will be a commercial timber harvest. Following the harvest, fell all remaining trees 1 inch and larger in diameter. Treat the stumps of undesirable species with Pathfinder II to prevent sprouting. This will expand the aspen clones along the edge of the woods.

Stand 44: 25 acres

Site Description –

East facing slope with Fayette, Village, and LaCrescent soils.

Management Recommendations – Even Age

Stand 44 could be managed on an even age system to regenerate oak. I recommend dividing the area into three areas, roughly 8 acres each. Clearcut the first 8 acres along with Stand 43 to increase the area of early successional habitat. Plant the area with 30 large oak seedlings per acre. Protect each seedling with a 4 ft. tall vented tree shelter.

The remainder of the area can be prepared for future harvest with prescribed burning. Fire will eliminate the undesirable species in the understory and encourage natural oak regeneration. After the second burn, undesirable species not killed by the fire can be cut and treated with Pathfinder II herbicide. When an area has oak seedlings which are 3-4 ft. tall, the area should be clearcut to provide full sunlight for the oak.

Stand 45: 12 acres

Site Description -

Steep, south facing slope with small goat prairies.

Woodland Description -

Pole sized aspen, red cedar, bur oak, and small goat prairies.

Management Recommendations – Early Successional

Clearcut the area to create dense, young growth and expand the aspen. Remove all trees on the goat prairies to encourage the native grasses and forbs.

Stand 46: 7 acres

Site Description -

Ridge top adjacent to crop field.

Woodland Description -

Medium size (14-18" dia.) black oak, white oak, and shagbark hickory. Understory is shagbark hickory, black oak, elm, and gray dogwood.

Management Recommendations – Even Age

Clearcut in 10-15 years to regenerate oak.

Stand 47: 10 acres

Site Description -

Ridge top adjacent to crop field.

Woodland Description -

Medium sized white oak, black oak, shagbark hickory, and aspen. The stand was logged heavy 25 years ago when the high quality trees were removed. The understory is boxelder, elm, hard maple, cherry, shagbark hickory, and white oak.

Management Recommendations – Even Age

Clearcut the area in approximately 5 years and replant with large oak seedlings.

Stand 48: 28 acres

Site Description -

Bottom between steep slopes. Soils are Arenzville and Chaseburg.

Woodland Description -

Pole sized elm, boxelder, cherry, willow, and a few walnut. There are patches of wild plum and raspberry.

Management Recommendations – Early Successional

Clearcut approximately 1/3 of this area every 5 years to maintain dense, young growth. Treat the stumps of the boxelder and elm with Pathfinder II to prevent sprouting. The cutting will encourage the wild plum to expand throughout the bottom.

Stand 49: 33 acres

Site Description –

Steep slopes with LaCrescent soils.

Management Recommendations – Uneven Age

Stand 49 could be selectively harvested in 20 years. This area will convert to predominantly hard maple and basswood.

Stand 50: 67 acres

Site Description -

Steep, rocky north and west facing slopes.

Woodland Description -

Medium size (12-18" dia.) red oak and hard maple. The understory is hard maple, elm, and ironwood.

Management Recommendations – Viewshed

Leave this area to protect the fragile soils from erosion.

Stand 51: 2 acres

Site Description -

Edge along crop field.

Woodland Description -

Sapling (1-4" dia.) aspen. The area was clearcut in 2000.

Management Recommendations – Early Successional

Clearcut the area in 2018 to maintain dense, young growth.

Stand 52: 3 acres

Site Description -

Brome grass with Village soils.

Management Recommendations – Early Successional

Mow the area in August. In early to mid September, broadcast spray the field with Roundup to kill the brome. Plant the area with red cedar on a 12 X 12 ft. spacing. Control competing vegetation for 3 years.

Stand 53: 1 acre

Site Description -

Edge along the west side of the woods.

Woodland Description -

Sapling aspen. The area was clearcut in 2000.

Management Recommendations – Early Successional

Clearcut the area in 2018 to maintain early successional habitat.

Stand 54: 14 acres

Site Description -

North and east facing slope with Village and Lacrescent soils.

Woodland Description -

Medium sized (12-18" dbh) hard maple, red oak, and white oak. There are pole sized elm and aspen along the edge of the woods.

Management Recommendations – Early Successional

This area could be clearcut to provide a dense edge along the crop field. There are several merchantable trees that could be sold on a commercial sale.

Stand 55: 2 acres

Site Description –

Ridge top bordering field.

Woodland Description -

Sapling boxelder and aspen. The area was clearcut in 2000.

Management Recommendations – Early Successional

Clearcut the area again in 2018 to maintain a dense stand of young aspen.

Stand 56: 5 acres

Site Description -

West facing slope with Lacrescent soils.

Woodland Description -

Large (20"+ dia.) white oak, red oak, and black oak. The understory is hackberry, elm, shagbark hickory, hard maple, and basswood.

Management Recommendations – Even Age

Stand 56 could be clearcut harvested. Following the harvest, fell all remaining trees 1 inch and larger in diameter. Treat the stumps of undesirable species with Pathfinder II to prevent sprouting. Plant the area with 30 large oak seedlings per acre. Protect each tree with a vented tree shelter.

Stand 57: 6 acres

Site Description -

West facing bench area.

Woodland Description -

Medium sized bur oak, shagbark hickory, and black oak. The understory has black oak and shagbark hickory.

Management Recommendations – Even Age

Steps could be taken to encourage the development of young oak and hickory on the area. The undesirable species should be killed. In addition, the stunted and poor formed oak and hickory should be cut off near ground level so that they will resprout. The area could be clearcut in 10-15 years, once there is a good stocking of young oak and hickory.

Stand 58: 7 acres

Site Description -

West facing slope.

Woodland Description -

Medium sized bur oak, black oak, elm, aspen, and cherry. The understory is elm, hazel, ironwood, and shagbark hickory.

Management Recommendations – Even Age

In 10-15 years, the stand could be clearcut and replanted with oak.

Stand 59: 6 acres

Site Description -

Ravine and side slopes.

Woodland Description -

Medium size (12-18" dia.) red oak, black oak, white oak, cherry, and basswood. Smaller trees are elm and basswood.

Management Recommendations – Even Age

In 20 years, the stand could be clearcut and regenerated with oak.

Stand 60: 14 acres

Site Description -

Edge of woods along crop field.

Woodland Description -

Medium sized black oak, bur oak, white oak, and cherry. The understory is elm, boxelder, and ironwood. There are clumps of aspen along the edge.

Management Recommendations – Early Successional

Clearcut this area to feather the edge and create a dense, young stand of aspen. This would be a commercial harvest.

Stand 61: 2 acres

Site Description -

Edge of woods with Village soils.

Woodland Description -

Pole sized aspen, black oak, and shagbark hickory.

Management Recommendations – Early Successional

This area has a good aspen component. Clearcut the stand to create dense, young growth and increase the aspen component.

Stand 62: 11 acres

Site Description -

South and east edge of woods with Lacrescent soils. The area has north and west facing slopes.

Woodland Description -

Pole sized (5-10" dia.) elm, ironwood, cherry, basswood, aspen, and shagbark hickory.

Management Recommendations – Early Successional

Clearcut the area to feather the woodland edge and create dense, shrubby growth along the edge of the woods. Cut ½ of the area every 7-8 years.

Stand 63: 6 acres

Site Description -

North facing slope.

Woodland Description -

Medium sized hard maple, bur oak, elm, and red oak. The understory is elm, hard maple, ironwood, and basswood.

Management Recommendations – Uneven Age

Because of the steep slope and dominant hard maple component, this area could be best managed on an uneven age system. The undesirable species and poor formed trees should be removed now. This will increase the ground cover and encourage additional reseeding of hard maple. In 20-25 years, the stand could be selectively harvested to remove the mature and defective trees.

Stand 64: 2 acres

Site Description -

South facing slope and bottomland.

Woodland Description –

Pole sized (5-10" dia.) walnut, elm, and cherry. There are a few larger bur oak along the north property line.

Management Recommendations – Even Age

The stand could be thinned to provide more growing space for the best trees. Locate the best tree every 30 ft. apart, or 50 trees per acre. Remove trees with crowns that are touching or overtopping the crowns of the selected trees. The walnut trees could be pruned to improve their potential.

Stand 65: 2 acres

Site Description –

Bottomland that was direct seeded in 2001. The soils are Huntsville loams. These soils are somewhat poorly drained.

Woodland Description –

Sapling (1-2" dia.) ash, walnut, and boxelder. There are scattered bur oak and red oak present, but they have been browsed heavily by deer and are much shorter than the surrounding trees.

Management Recommendations – Even Age

Maintain an oak component in this direct seeding by locating 20 oaks per acre. Place a vented tree shelter over the tree to protect them from deer. Remove surrounding trees to provide adequate sunlight for the oak to grow. Treat the stumps of the removed trees with Pathfinder II to prevent sprouting.

In 10 years, the stand will need thinning to release the crop trees.

Stand 66: 6 acres

Site Description –

Steep southwest facing slope with rock outcrops.

Woodland Description –

Medium sized (14-18" dia.) bur oak, aspen, and red cedar. The understory is elm, hackberry, ironwood, and shagbark hickory. There is spreading juniper in this area.

Management Recommendations – Viewshed

Leave this area as is. The steep slope and rock outcrops make this area not conducive to management.

Stand 67: 1 acre

Site Description -

Small finger of woods that was clearcut in 2002.

Woodland Description -

Sapling aspen and elm.

Management Recommendaions – Early Successional

Clearcut this area again in 10 years.

Stand 68: 3 acres

Site Description –

Bottomland with Huntsville soils. Area was direct seeded in 2001.

Woodland Description -

Sapling walnut, ash, and boxelder.

Management Recommendations – Even Age

In 8-10 years, the stand can be thinned. At time the trees will be 4-6 inches in diameter. In pole-sized stands (4-10" dia.), potential crop trees can be selected and released. At maturity, there is room for 35-50 trees per acre. You can select the trees you want to comprise your future stand of mature trees and thin around them to give them more growing space. Select a crop tree every 30-35 ft. apart. Remove trees with crowns that are touching or overtopping the crowns of your crop trees. Crop trees can be selected based on criteria that meets your objectives. Normally, the crop trees will be a desirable species, show good form without large side limbs, and be free of major defects.

Stand 69: 13 acres

Site Description –

Ridge top and southern edge of the woods.

Woodland Description -

Pole sized (5-10" dia.) elm, shagbark hickory, boxelder, aspen, cherry, and ironwood.

Management Recommendations – Early Successional

Clearcut 1/3 of the edge every 5 years to create a brushy edge. This will create a transition zone from the field to the larger trees in the woods.

Stand 70: 2 acres

Site Description -

Ridge top along the field edge.

Woodland Description –

Sapling (1-4" dia.) aspen. The area was clearcut in 2001 to create early successional habitat.

Management Recommendations – Early Successional

Clearcut the area again in 2018 to maintain dense, young growth.

Stand 71: 28 acres

Site Description –

North and northeast facing slopes with Lacrescent soils.

Woodland Description -

Pole sized (5-10" dia.) elm, ironwood, cherry, shagbark hickory, hard maple, and basswood. There are a few larger bur oak and black oak. The understory is elm, ironwood, and hard maple. This stand was logged heavy 30 years ago.

Management Recommendations – Uneven Age

Stand 71 could gradually be developed into an uneven age or all age stand of trees. The first step is to kill the undesirable species. Cut the elm, ironwood, bitternut hickory, and boxelder. Treat the stumps with Pathfinder II to prevent sprouting. In addition, cut desirable species that are poor formed and damaged. Do not treat the stumps of the desirable species so that they will sprout and grow a better tree. The thinning will increase the density of the understory and improve the species composition of the woods.

In roughly 30 years, the stand could be selectively harvested.

Stand 72: 3 acres

Site Description -

East facing slope bordering a grass opening in the woods.

Woodland Description -

Pole sized aspen, elm, and black oak.

Management Recommendations – Early Successional

There is a good component of aspen in Stand 72. This would be a good area to clearcut to create dense, young habitat.

Stand 73: 4 acres

Site Description -

Bottomland in a small drainage running through the woods.

Woodland Description -

Pole sized (5-10" dia.) elm, hawthorn, and hard maple. There are scattered pockets of wild plum and prickly ash.

Management Recommendations – Early Successional

Clearcut this area to create habitat for early successional species. This would make a great area for woodcock.

Stand 74: 5 acres

Site Description -

Steep, rocky, south facing slope. This is a very droughty site.

Woodland Description -

Medium sized (12-18" dia.) bur oak and shagbark hickory. The smaller trees are elm, basswood, and hackberry.

Management Recommendations – Viewshed

This area is very steep and should be left as is.

SUSTAINABLE FORESTRY GUIDELINES

Sustainable forestry is managing a forest to maximize the distribution of age classes on the property, and insure there is a balanced distribution of tree sizes. With even age management, the acres of even age management divided by the rotation age is the allowable cut per year. The target rotation age for the area is 125 years. This insures that large oaks will always be present on the area.

Early Successional Management -

The early successional areas will be managed on a 15 year rotation. There are 186 acres designated for early successional management. The allowable cut is 12.4 acres per year (186 acres divided by 15 yrs.). With a working cycle of 5 years, approximately **62 acres could be cut every 5 years**.

Even Age Management Area –

There are 233 acres under even age management. Dividing 233 acres by 125 years, yields an allowable cut of 1.9 acres per year, or **9-10 acres every 5 years**.

Uneven Age Management Area –

Stands can be selectively harvested every 20 years to remove mature and defective trees. There are 161 acres under uneven age management. The allowable harvest is **40 acres of selective harvest every 5 years**.

HIGH PRIORITY PROJECTS

Open Tree Planting -

Stand #	Acres	Prescription
6a	2	Plant red cedar
38	2	Plant red cedar
52	3	Plant red cedar
65	2	Plant red cedar
Total	9	

Timber Stand Improvement – Crop Tree Release

Stand #	Acres
4	12
18	4
64	2
Total	18

Timber Stand Improvement – Weed Tree Removal

Stand #	Acres
9	9
10	14
29	7
32	13
63	6
71	28
Total	77

Early Successional Clearcuts – 15 yr. rotation

Stand #	Acres	Comments
5	2	Commercial timber sale
8	4	
15	4	Commercial timber sale
17	2	Commercial timber sale
19	4	Commercial timber sale
24	5	Commercial timber sale
30	8	Commercial timber sale
40	2	Commercial timber sale
43	5	Commercial timber sale
45	6	
48	9	
60	7	Commercial timber sale
61	2	
62	6	
69	4	
72	3	
73	4	
Total	77	

Even Age Clearcuts – 125 yr. rotation

Stand #	Acres	Prescription
16	8	Shelterwood harvest to remove mature and poor quality walnut
39	14	Clearcut and plant
44	8	Clearcut and plant
Total	30	

Selective Harvest – 20 yr. cycle

The selective harvests should be adjacent to clearcuts to feather the woodland edges and increase ground cover over a larger area. There are no uneven age management areas adjacent to clearcuts for the first work cycle on the area.

Prescribed Burning to Encourage Oak Regeneration -

Stand	**Acres**
44	17

APPENDIX

HOW THE FOREST WILDLIFE STEWARDSHIP PLAN WAS DEVELOPED

The Wildlife Biologist is the manager of the area and determines the objectives for each wildlife area. Objectives address the habitat needs of "Species of Greatest Concern" and the woodland condition of each area. Seventy five per cent of the total area managed by the Wildlife Bureau is woodland. Managing woodland is essential to improve the areas for wildlife and recreation.

Management of wildlife areas is a cooperative effort by the wildlife and forestry bureaus to enhance state owned areas for a diversity of wildlife species. The property is walked by the biologist and forester. Stands are identified by tree species, tree size, topography, and management system. The biologist and forester discuss the options for each stand and how management of that stand will fit into the overall management for the area. Forester recommendations are designed to manage the stand to reach the goals and objectives of the biologist.

The Wildlife Biologist is the manager of the wildlife area. Foresters are assisting the Wildlife Bureau to implement woodland management practices.

FRENCH CREEK WILDLIFE AREA

SUMMARY OF WOODLAND STANDS

No.	Acres	Timber Type	TreeSize	Mngt. System	Prescription	Priority	Year Complete	Comments
1	7	Bur oak Cedar	Medium	View shed				
2	8	Oak Hickory	Medium	Even Age	Clearcut and plant	High	2018	
3	44	Red Oak White Oak	Large	Uneven Age	Selective harvest and kill weed trees	Low	2018	Steep slopes
4	12	Mixed Oak & Elm	Pole	Even Age	TSI – Crop Tree Release	Medium	2008	
5	2	Oak Hickory	Medium	Early Successional	Clearcut	High	2008	Commercial Sale
6	2	Aspen Elm Oak	Sapling	Early Successional	Clearcut	High	2015	
6a	2	Cropland		Early Successional	Plant red cedar	High	2008	
7	125	Oak Hickory	Medium	View Shed				
8	13	Boxelder Elm	Pole	Early Successional	Cut 4 acres every 5 years	High	2008	
9	9	Oak Hickory	Medium	Even Age	Shelterwood – TSI – kill weed trees	High	2008	Clearcut in 10-15 years
10	14	Oak Hickory	Large	Uneven Age	TSI – kill undesirable species	Medium	2008	Selective harvest in 10-15 years
11	14	Oak Hickory	Medium	Even Age	Clearcut	High	2028	
12	7	Oak Hickory	Large	Even Age	Clearcut and plant	High	2013	

No.	Acres	Timber Type	TreeSize	Mngt. System	Prescription	Priority	Year Complete	Comments
13	1	Aspen	Sapling	Early Successional	Clearcut	High	2018	
14	3	Aspen	Pole	Early Successional	Clearcut	High	2013	
15	4	Red Oak White Oak	Pole	Early Successional	Clearcut	High	2008	Commercial Sale
16	8	Oak Walnut	Medium	Even Age	Shelterwood Harvest – Sell mature walnut	Medium	2008	Lumber quality Walnut
17	2	Oak Walnut	Pole	Early Successional	Clearcut	High	2008	Commercial Sale
18	4	Oak Walnut	Pole	Even Age	TSI – Crop Tree Release	High	2008	
19	4	Oak Walnut	Medium	Early Successional	Clearcut	High	2008	Commercial Sale
20	112	Mixed Oak	Medium	View Shed				
21	3	White, Red Pine	Pole	View Shed	TSI – Remove every 3rd row	Low	2013	
22	11	Oak Walnut	Medium	Even Age	Clearcut	High	2023	
23	11	Mixed Oak	Medium	Even Age	Clearcut No planting needed	High	2013	
24	5	Red Oak Bur Oak Elm	Pole	Early Successional	Clearcut	High	2008	Commercial Sale
25	27	Oak Hard Maple	Medium	Uneven Age	Selective Harvest & TSI	Medium	2013	
26	15	Mixed Oak	Large	Even Age	Clearcut & Plant	High	2013	
27	5	Elm Boxelder	Pole	Early Successional	Clearcut & Plant Aspen	High	2013	
28	12	Oak Hickory	Medium	Even Age	Clearcut & Plant	High	2018	

No.	Acres	Timber Type	TreeSize	Mngt. System	Prescription	Priority	Year Complete	Comments
29	7	Oak Hickory	Large	Even Age	Shelterwood – TSI – kill undesirable species	High	2008	Clearcut in 10-15 years
30	8	Elm Boxelder	Pole	Early Successional	Clearcut	High	2008	Commercial sale of elm and bur oak
31	36	Oak Hickory Cedar	Medium	View Shed				
32	13	Red Oak White Oak Hickory	Medium	Even Age	Shelterwood – Kill weed trees	High	2008	Clearcut in 10-15 years
33	9	Red Oak White Oak	Large	Uneven Age	Selective Harvest	Medium	2013	
34	7	Red Oak White Oak Hickory	Large	Even Age	Shelterwood harvest & kill undesirable species	Medium	2013	
35	99	Red Oak White Oak Maple	Medium	View Shed				
36	2	Black Oak White Oak	Medium	Early Successional	Clearcut	High	2013	
37	8	Red Oak White Oak Walnut	Large	Even Age	Clearcut & Plant	High	2013	
38	2	Weeds & Brome		Early Successional	Plant Red Cedar	High	2008	
39	14	Mixed Oak	Large	Even Age	Clearcut & Plant	High	2008	
40	2	Mixed Oak	Medium	Early Successional	Clearcut	High	2008	Commercial Sale
41	4	Elm Aspen	Sapling	Early Successional	Clearcut	High	2015	
42	3	Aspen	Sapling	Early Successional	Clearcut	High	2018	
43	10	White Oak Red Oak Aspen	Large	Early Successional	Clearcut 5 acres every 7-8 years	High	2008	Commercial Sale
44	25	Red Oak White Oak Aspen	Large	Even Age	Clearcut & Plant 8 ac. Prescribe burn 17 ac.	High	2008	

No.	Acres	Timber Type	Tree Size	Mngt. System	Prescription	Priority	Year Complete	Comments
45	12	Aspen Bur Oak	Pole	Early Successional	Clearcut 6 acres every 7-8 years	High	2008	
46	7	Black Oak White Oak Shagbark Hickory	Medium	Even Age	Clearcut and Plant	Medium	2023	
47	10	White Oak Black Oak Hickory	Medium	Even Age	Clearcut & Plant	High	2013	
48	28	Elm Boxelder	Pole	Early Successional	Clearcut 9 acres every 5 years	High	2008	
49	33	Bur Oak Red Oak Elm	Medium	Uneven Age	Selective Harvest	Low	2028	Steep slopes
50	67	Red Oak Maple	Medium	View Shed				
51	2	Aspen	Sapling	Early Successional	Clearcut	High	2018	
52	3	Brome Grass		Early Successional	Plant red Cedar	Medium	2008	
53	1	Aspen	Sapling	Early Successional	Clearcut	High	2018	
54	14	Red Oak White Oak Maple	Medium	Early Successional	Clearcut	High	2013	Commercial sale
55	2	Aspen	Sapling	Early Successional	Clearcut	High	2018	
56	5	White Oak Red Oak	Large	Even Age	Clearcut and Plant	High	2018	
57	6	Bur Oak Black Oak Hickory	Medium	Even Age	Shelterwood – Kill undesirable species	Medium	2018	Clearcut in 20 years
58	7	Bur Oak Black Oak	Medium	Even Age	Clearcut and Plant	Medium	2023	
59	6	Red Oak Black Oak White Oak	Medium	Even Age	Clearcut	Medium	2028	
60	14	Black Oak Bur Oak	Medium	Early Successional	Clearcut 7 acres every 7-8 years	High	2008	Commercial Sale

No.	Acres	Timber Type	Tree Size	Mngt. System	Prescription	Priority	Year Complete	Comments
61	2	Aspen Black Oak	Pole	Early Successional	Clearcut	High	2008	
62	11	Aspen Elm Ironwood	Pole	Early Successional	Clearcut 5-6 acres every 7-8 yrs.	High	2008	
63	6	Oak Maple	Medium	Uneven Age	Kill Weed Trees	High	2008	Selective harvest in 2028
64	2	Walnut Elm Cherry	Pole	Even Age	TSI – Crop Tree Release	Medium	2008	
65	2	Ash Walnut	Sapling	Even Age	Protect oak from deer & rabbits	Medium	2008	
66	6	Bur Oak Red Cedar	Medium	View Shed				
67	1	Aspen	Sapling	Early Successional	Clearcut	High	2018	
68	3	Walnut Ash	Sapling	Even Age	TSI – Crop Tree Release	High	2018	
69	13	Elm Hickory Aspen	Pole	Early Successional	Clearcut 4 acres every 5 years	High	2008	
70	2	Aspen	Sapling	Early Successional	Clearcut	High	2018	
71	28	Maple Basswood Oak	Pole	Uneven Age	TSI – kill weed trees.	Medium	2008	Selective cut 30 years
72	3	Aspen Elm Black Oak	Pole	Early Successional	Clearcut	High	2008	
73	4	Elm Maple Hawthorn	Pole	Early Successional	Clearcut	High	2008	
74	5	Bur Oak Hickory	Medium	View Shed				

Table 1. Forest Breeding Birds of Greatest Conservation Need in NE Iowa

Common Name	Scientific Name
Bald eagle	*Haliaeetus leucocephalus*
Red-shouldered hawk	*Buteo lineatus*
Broad-winged hawk	*Buteo platypterus*
Peregrine falcon	*Falco peregrinus*
Ruffed grouse	*Bonasa umbellus*
American woodcock	*Scolopax minor*
Black-billed cuckoo	*Coccyzus erythropthalmus*
Yellow-billed cuckoo	*Coccyzus americanus*
Long-eared owl	*Asio otus*
Whip-poor-will	*Caprimulgus vociferus*
Red-headed woodpecker	*Melanerpes erythrocephalus*
Acadian flycatcher	*Empidonax virescens*
Willow flycatcher	*Empidonax traillii*
Least flycatcher	*Empidonax minimus*
Brown creeper	*Certhia americana*
Veery	*Catharus fuscescens*
Wood thrush	*Hylocichla mustelina*
Blue-winged warbler	*Vermivora pinus*
Cerulean warbler	*Dendroica cerulea*
Black-and-white warbler	*Mniotilta varia*
Prothonotary warbler	*Protonotaria citrea*
Worm-eating warbler	*Helmitheros vermivorus*
Louisiana waterthrush	*Seiurus motacilla*
Kentucky warbler	*Oporornis formosus*
Hooded warbler	*Wilsonia citrina*
Eastern towhee	*Pipilo erythrophthalmus*

Table 2. Forest Migratory Birds of Greatest Conservation Need in NE Iowa

Common Name	Scientific Name
Golden-winged warbler	*Vermivora chrysoptera*
Canada warbler	*Wilsonia canadensis*

Table 3. Forest Mammals of Greatest Conservation Need in NE Iowa

Common Name	Scientific Name
Northern myotis	*Myotis septentrionalis*
Red squirrel	*Tamiasciurus hudsonicus*
Woodland vole	*Microtus pinetorum*
Spotted skunk	*Spilogale putorius*
Southern Flying Squirrel	*Glaucomys volans*

Table 4. Forest Reptiles and Amphibians of Greatest Conservation Need in NE Iowa

Common Name	Scientific Name
Cricket Frog	*Acris crepitans*
Northern Prairie Skink	*Eumeces septentrionalis*
Bullsnake	*Pituophis catenifer sayi*
Timber Rattlesnake	*Crotalus horridus*

Table 5. Forest Land Snails of Greatest Conservation Need in NE Iowa (Restricted to Algific Talus Slopes and Maderate Slopes)

Common Name	Scientific Name
Iowa Pleistocene Snail	*Discus macclintocki*
Frigid Ambersnail	*Catinella gelida*
Minnesota Pleistocene Succinea	*Novasuccinea n. Sp. Minnesota a*
Iowa Pleistocene Succinea	*Novasuccinea n. Sp. Minnesota b*
Briarton Pleistocene Snail	*Vertigo brierensis*
Hubricht's Vertigo	*Vertigo hubrichti*
Iowa Pleistocene Vertigo	*Vertigo iowaensis*
Bluff Vertigo	*Vertigo occulta*

Table 6. Forest Butterflies of Greatest Conservation Need in NE Iowa

Common Name	Scientific Name
Pepper and Salt Skipper	*Amblyscirtes hegon*
Sleepy Duskywing	*Erynnis brizo*
Dreamy Duskywing	*Erynnis icelus*
Columbine Duskywing	*Erynnis lucilius*
Silvery Blue	*Glaucopsyche lygdamus*
Hickory Hairstreak	*Satyrium caryaevorum*
Edward's Hairstreak	*Satyrium edwardsii*
Striped Hairstreak	*Satyrium liparops*

FWSP DEFINITIONS AND GUIDING FACTORS

Upland Forest Wildlife – Representative tree species include oak, hickory, hard maple, cherry, elm, walnut, ash, and red cedar. This habitat factor will provide habitat for wildlife such as ruffed grouse, woodcock, songbirds and woodpeckers, deer, turkey, raptors, owls, squirrels, and associated furbearing predators.

Floodplain Forest Wildlife –Characterized by species such as silver maple, cottonwood, walnut, green ash, elm, hackberry and willows. This habitat factor will benefit wildlife such as songbirds and woodpeckers, furbearers, raptors, reptiles and amphibians on relatively level areas inundated by water from time to time.

Woodland Edge – An area of habitat transition that consists of vegetation (herbaceous and woody) of different heights and densities. This habitat factor will favor early successional vegetation for wildlife benefiting from edge cover.

Conifer/Wildlife Plantation – A conifer or tree/shrub planting designed for wildlife habitat. This habitat factor will provide nesting sites, food and cover for wildlife. Conifers are also important to wildlife during the winter providing thermal benefits and areas of decreased snow depths.

Restoration – A new planting of seedlings, direct seeding, or regeneration of roots. This habitat factor will create new forest habitat that will be of higher quality for wildlife.

Conversion – An existing shade tolerant forest stand converted to nut and fruit bearing species of trees and shrubs to provide more food and cover. This habitat factor is a timber stand improvement increasing the forest quality. It will begin forest succession from early stages to old growth.

Riparian Buffer – Woodland next to streams, lakes, and wetlands that is managed to enhance and protect aquatic resources from adjacent fields. This habitat factor will provide a woody cover buffer to enhance soil and water conservation while providing wildlife habitat.

Old Growth – Natural forests that have developed over a long period of time, generally at least 120 years, without experiencing severe, stand-replacing disturbance---a fire, windstorm, or logging. This habitat factor will provide necessary wildlife habitat for species requiring mature woodlands.

Viewshed – A physiographic area composed of land, water, biotic, and cultural elements which may be viewed from one or more viewpoints and which has inherent scenic qualities and/or aesthetic values as determined by those who view it. Viewshed's are a habitat factor that will be primarily a "hands-off" area for aesthetics, proper soil and water conservation, along with providing special wildlife habitats.

Unique Natural Sites – Sites that contain unusual or rare natural components that should be preserved for their unique characteristics, such as algific slopes. This habitat factor will identify these uncommon sites for management considerations.

Preserve Status – An area of land or water formally dedicated for maintenance as nearly as possible in its natural condition though it need not be completely primeval in character at the time of dedication or an area which has floral, fauna, geological, archeological, scenic, or historic features of scientific or educational value. This habitat factor will recognize the quality of preserve sites and apply proper maintenance to protect its integrity.

Recreation –Leisure activities involving the enjoyment and use of natural resources. This habitat factor will favor hunting activities while taking into consideration secondary activities such as wildlife watching, mushroom picking, photography, and hiking.

Special Restrictions – Certain limitations or conditions on the use or enjoyment of a natural resource area. This habitat factor will take into consideration these limitations or conditions to select proper management.

EXPLANATION OF TIMBER MANAGEMENT PRACTICES:

Timber Stand Improvement:

Timber stand improvement (TSI) is the removal of undesirable or low value trees. Removing these unwanted trees will provide more space and sunlight for desirable trees to grow. Timber stand improvement is a "weeding" to increase the growth of your forest.

Weed Tree Removal-

In older timber, the undesirable species can be killed to encourage the natural reseeding of desirable species. The removal of the "weed" trees allows sunlight to reach the ground so that seedlings can become established. The undesirable species can be killed standing by cutting flaps in the trunk and applying Tordon RTU or Pathway into the cuts. The cuts must be in a circle around the trunk and overlapping. The trees can also be cut off and the stumps treated with Tordon RTU or Pathway to prevent resprouting. Wet the outer rim of freshly cut stumps. The work can be done anytime except spring during heavy sap flow.

Desirable trees that are poor formed or damaged should also be removed. These trees should not be treated with herbicide. The stumps will resprout and produce another tree. Cut the stumps close to the ground so that the sprout will originate near the ground.

Crop-Tree Release-

In pole-sized stands (4-10" dia.), potential crop trees can be selected and released. At maturity, there is room for 35-50 trees per acre. Now you can select the trees you want to comprise your future stand of mature trees and thin around them to give them more growing space. Select a crop tree every 30-35 ft. apart. Remove trees with crowns that are touching or overtopping the crowns of your crop trees. Crop trees can be selected based on criteria that meets your objectives. Normally, the crop trees will be a desirable species, show good form without large side limbs, and be free of major defects. Species normally favored are black walnut, red oak, white oak, white ash, basswood, cherry, and hard maple.

Walnut Pruning-

Walnut trees that are 2-12" in diameter can be pruned to promote veneer quality trees. You should prune during the dormant season. Limbs less than 1 inch in diameter are providing foliage which produces food for the tree and should be left. When the limbs approach 1 1/2 to 2" in diameter, they should be removed. Do not remove over 1/3 of the live crown in any one year. At least 50% of the total height of the tree should be maintained in live crown.

Harvest:

Uneven-Age Management:

Uneven-age management can be implemented to manage shade tolerant species. The timber is selectively harvested to remove mature, damaged, and defective trees. Because large trees are always present in the timber, only species that can grow in the shade can reproduce. Hard maple and basswood can be managed on an uneven-age system of management. Uneven-age management involves maintaining a good distribution of all tree sizes in your timber. It is critical that following a selective harvest, the smaller trees are thinned to remove the trees damaged by logging, poor formed trees, and low value species. The thinning following the harvest insures that you have high quality trees ready to replace the older trees as they are harvested.

Even-Age Management:

Even-age management involves a clearcut at some point in the stands rotation. Clearcutting creates full sunlight to the ground. All trees 2" and larger in diameter are felled. Oak, ash, hickory, and walnut require full sunlight to grow. Even-age management must be applied to successively manage these species. Clearcutting creates stands of trees all the same age. The trees compete equally for sunlight and are forced to grow straight and tall, resulting in high quality timber. Clearcutting also provides excellent browse and cover for wildlife.

Shelterwood:

Shelterwood is a form of even-age management. The final cut is a clearcut, but several thinnings are done prior to the final cut. The large, healthy trees are left to provide seed for naturally reseeding the stand, and to create partial shade to inhibit the growth of weeds and brush until the desirable seedlings are well established. The final cut or clearcut is normally done when there are a sufficient number of desirable trees that are 3-5 ft. tall.

The first thinning can be a killing of the undesirable species such as ironwood, elm, bitternut hickory, and boxelder. This removes the seed source for the undesirable species and opens up the ground to sunlight.

The mature and defective trees can be harvested if additional sunlight is needed for the development of desirable seedlings. The harvest should be light, removing the trees that are deteriorating and leaving the high quality trees for seed.

The shelterwood system can take many years to develop a good stocking of desirable young trees. You may have to kill the undesirable species several times to favor the species you want. The final clearcut should not be made until you are satisfied with the stocking of desirable young trees.