Resource Management Guide

Harrison-Crawford State Forest **Compartment:23 Tract: 1**
Christine Martin **Date: 9/09**

Acres Commercial forest:	48	Basal Area ≥ 14 inches DBH: 58.4 sq/ft
Acres Noncommercial Forest:	29	Basal Area < 14 inches DBH: 31.7 sq/ft
Acres Permanent Openings:	0	Basal Area Culls: 1.6 sq/ft
Acres Other:	0	Total Basal Area: 91.7 sq/ft
Acres Total:	77	Number Trees/Acre: 242

Location

This tract is located in Harrison county Indiana, sec6 T4S R3E. This stand is located off Old Forest Road and Feller Road.

General Description

There are six different stands of timber on this tract of land. There are the oak-hickory stand, cedar stand, oak-hickory rocky stand, Virginia pine stand, shortleaf pine stand, and old field stand.

The largest stand is the oak-hickory stand type. There are 48 acres of this stand type on this tract. The main tree species are white, red and black oaks. There is also a lot of mortality in this stand primarily because of Hurricane Ike that struck in 2008, and the Ice storm that followed in January 2009.

The second largest stand is the cedar stand found in two separate places along this tract. Both of the two patches put together are 10 acres. The first pocket of cedar is found along Old Forest Road which is one acre in size. The second patch of cedar is found along the drainage to the south of tract. Both of the cedar pockets are mainly comprised of eastern red cedar with a myriad of mixed hardwoods growing throughout.

The third stand is the oak-hickory rocky stand type. This stand is 9 acres. The main tree species found in this stand type are white oak and yellow poplar. This stand also has rock outcroppings which make this stand inaccessible to logging equipment.

The fourth stand is the Virginia pine stand located along the road. This stand is 6 acres and has mainly Virginia pine growing in the stand.

The fifth stand is the shortleaf pine stand. This stand is 3 acres and is found off of the ridge near the center of the tract. The majority of the pine in this stand has blown down.

The last and final stand on this tract is the old field stand type. This stand has small pole sized mixed hardwoods growing in it. This stand is only one acre in size.

There were many ailanthus plants found near the adventure hiking trail near the Virginia pine stand. These ailanthus plants will have to be chemically treated before they become an epidemic problem.

History

This tract was last inventoried in 1973. There was a timber harvest performed on this tract in 1987. The harvest encompassed 36 acres. A total of 68,052 board feet was removed according to the Doyle scale. The top two tree species removed were black and white oak.

Landscape Context

This tract is surrounded by forested land. The forest land to the south and the east are part of the Harrison-Crawford State Forest. The private land to the north is also in forested land. There is cattle pasture bordering this tract, and more pasture located less than a quarter mile to the west of this tract.

The agriculture land is a break in the continuity of the forest cover and creates edge habitat for the wildlife. The roads that run along this tract also create edge habitat for the wildlife.

Topography, Geology, and Hydrology

This tract has many different slope aspects. There are some south, west, and east facing slopes. The main slope is the south facing slope. The bottom third of this slope has thin soil and is comprised mainly of rock outcroppings.

The rock outcroppings provide special habitat for certain wildlife. There are many cracks in the rocks where wildlife can use as habitat. This area can also be special habitat for any plants that require drier sites to grow.

There is a mapped intermittent stream that comprises the southern boundary of this tract. This intermittent stream will flow into Indiana Creek. There is a severe drainage that runs through the center of this tract that is not a mapped stream. This drain empties into the mapped intermittent stream which will eventually flow into Indian Creek.

Soils

Corydon Stony Silt Loam (CoF) Shallow, moderately steep to very steep, well-drained, stony soils on uplands. Surface layer is about 3 inches. Subsurface is about 6 inches thick. Subsoil about 9 inches thick. The depth to hard limestone bedrock is about 18 inches. High in organic matter and low in natural fertility. Runoff is rapid or very rapid. Soil type is characterized by limestone outcrops, with as much as 15% on benches which are deeper than 20 inches to bedrock.
Degree Slope: 20-60 %
Woodland Suitability Group: 3d7
Site Index: 65-75 (Upland oaks)
Growth range potential (Upland oaks): 155-220
Management concerns: Runoff and erosion

Crider Silt Loam (CrB2, CrC2, CsB3, CsC3, CtC2) Deep, gently sloping and moderately sloping well-drained soils on uplands. Surface layer is dark-brown silt loam about 8 inches thick. Subsoil is about 62 inches thick. Moderate in content of organic matter and in natural fertility. Available water capacity is high and permeability is moderate. Typically, these soils are eroded. Runoff is medium to rapid.
Degree Slope: 2-12%
Woodland Suitability Group: 1o1
Site Index: 85-95 (Upland Oaks)
Growth range potential (Upland oaks): 300-375 bd.ft./acre/year
Management Concerns: Runoff and erosion

Gilpin Silt Loam (GlD2, GlD3, GlE2, GpF) Moderately deep, strongly sloping to steep, well-drained soils. Surface layer is very dark grayish-brown silt loam about 3 inches thick. Subsurface layer is pale brown silt loam about 9 inches thick. Subsoil is about 17 inches thick. Depth to hard sandstone and shale bedrock is about 29 inches. Moderate in organic matter. Available water capacity is low and permeability is moderate. Runoff is rapid to very rapid.
Degree Slope: 12-30 %
Woodland Suitability Group: 3o10 or 3r12
Growth range potential (Upland oaks): 185-260 bd.ft./acre/year
Site Index: 70-80
Management Concerns: Runoff and erosion

Hagerstown Silt Loam (HaC2, HaD2, HgC3, HgD3, HgE3) Deep, moderately sloping to moderately steep, well-drained soils on uplands. Surface layer is dark yellowish brown silt loam about 6 inches thick. The subsoil is about 46 inches thick. The depth to limestone is about 52 inches. Characteristically, this soil is eroded to severely eroded. Moderate in content of organic matter and medium in natural fertility. Available water capacity is moderate or high, and permeability is moderate. Runoff is rapid to very rapid.
Degree Slope: 6-25 %
Woodland Suitability Group: 1o1 or 1r2
Site Index: 85-95 (Upland Oaks)
Growth range potential (Upland oaks): 300-375 bd.ft. /acre/year
Management Concerns: Runoff and erosion

Haymond Silt Loam (Hm) Deep, nearly level, well-drained soils on bottom lands and in basins of sinkholes in uplands. Surface layer is dark-brown about 9 inches thick. Subsoil dark yellowish-brown about 17 inches thick. Underlying material is dark yellowish-brown stratified silt loam that contains less prominent layers of loam. Moderate in content of organic matter. Available water capacity is high, and permeability is moderate. Runoff is slow.
Degree Slope: 0%
Woodland Suitability Group: 1o8
Site Index: (95-105- no rating for upland oaks)
Growth range potential (Tulip poplar-no rating for oaks): 375-450 bd.ft./acre/year
Management Concerns: Flooding between December and June

Weikert-Berks Channery Silt Loam (WbF) Shallow, very steep, well-drained, channery soils on uplands. Surface layer is very dark grayish-brown and dark grayish-brown and about 8 inches thick. Subsoil is about 10 inches thick and is yellowish brown channery heavy silt loam and 35-50 % sandstone rock fragments. Depth to the interbedded hard sandstone and shale is about 18 inches. Moderate in content of organic matter and low in available natural fertility. Available water capacity is very low, and permeability is moderately rapid. Runoff is very rapid.
Degree Slope: 35-60 %
Woodland Suitability Group: 5r14
Site Index: 45-53 (Virginia pine-no rating for hardwoods)
Growth range potential (Virginia or shortleaf pine-no rating for hardwoods): 75-200 bd.ft./acre/year

Wellston Silt Loam (WeC2, WeC3, WeD2, WeD3) Moderately deep and deep, moderately sloping and strongly sloping, well draineds soils on uplands. Surface layer is about 9 inches thick and yellowish-brown. The subsoil is about 31 inches thick. Depth to hard sandstone bedrock is about 40 inches. Moderate in content of organic matter and low in natural fertility. Available water capacity is moderate or high, and permeability is moderate. Runoff ranges from medium to very rapid.
Degree Slope: 6-18 %
Woodland Suitability Group: 3o10
Site Index: 70-80 (Upland oaks)
Growth range potential (Upland oaks): 185-260 bd.ft./acre/year
Management Concerns: Runoff and erosion

Zanesville Silt Loam (ZaC2, ZaC3, ZaD2) Deep, moderately sloping and strongly sloping, well-drained soils on uplands. Avery firm fragipan in the lower part of the subsoil. Surface layer is very dark grayish-brown silt loam about 3 inches thick. The subsurface layer is about 5 inches thick and dark yellowish-brown. Subsoil is about 42 inches thick. The depth to sandstone bedrock is about 65 inches Moderate or low in content of organic matter and low in natural fertility. Available water capacity is high, and permeability is very slow. Runoff is medium to rapid.
Degree Slope: 6-18%
Woodland Suitability Group: 3d9
Site Index: 70-80 (Upland Oaks)
Growth range potential (Upland oaks): 185-260 bd.ft./acre/year
Management Concerns: Runoff and erosion. Fragipan limits the available water capacity.

Access

There is good access to this tract. The northern boundary is comprised of Old Forest Road, and the eastern boundary is Feller Road.

Boundary

The northeast boundary line is the intersection of Feller and Old Forest Road. There is a corner stone found at the northwest corner. Old Forest follows the boundary line for approximately ¼ mile. The west line has a fence running south starting from Old Forest Road. The south line is comprised of an intermittent stream. The southern half of the east line is comprised of private property. The north half of the east line follows Feller Road.

Wildlife

The proposed activities that would affect the wildlife would be a timber harvest and some timber stand improvement. The harvest would be a single tree selection with some possible group selection openings. The single tree selection would focus on grooming out the trees in low vigor. Taking out the trees of poor quality will help the stand be healthier. When the overall stand is healthier the wildlife will thrive better.

With single tree selection there should not be any disturbance to the corridors or the overall continuity of the forest. There will be more sunlight that will reach the ground thereby increasing the understory vegetation. The increased vegetation increases habitat and possible food sources for the wildlife. There may be some group selection opening that will provide a more diverse habitat for the wildlife. A few years after the harvest the canopy will start to close in and the vegetation will return to what it was before the harvest took place. This will revert most of the forest ecosystems back to pre-harvest conditions.

Indiana Bat

Timber harvest activities may have both positive and negative effects on the Indiana bat. While undetected but occupied roost trees could be cut during spring, summer or fall, the probability of disturbance or direct injury or death to bats is extremely small. Timber harvest could create conditions that are beneficial to Indiana bats. Roads and/or skid

trails provide improved canopy foraging conditions by reducing clutter. Roosting habitat could also be improved by reducing clutter around roost trees. Edges of log landings and regeneration openings could provide roost trees with improved solar exposure, thus improving microclimate/thermal conditions for roosting areas. This would improve reproductive success and fitness, contributing to local population stability or increase. In cases of maternity trees this could provide conditions that increase growth and activity rates of young bats, leading to reduced time for parental care.

Suitable roost trees such as large diameter snags or live trees with loose or exfoliating bark will be retained in sufficient numbers to provide continuing roosting habitat for the Indiana bat

According to the inventory of this tract there are a sufficient number of live trees per acre to support a timber harvest and still meet the requirements for the Indiana Bat Habitat Guideline. The inventory shows that there are an insufficient number of snags on this tract required for the bat. If it is decided that there should be more snag trees for the bat, a post- harvest TSI could generate the snags needed. This could be done by girdling the cull trees, especially the ones with the desirable bark characteristics.

Recreation

The adventure hiking trail runs through this tract. The adventure hiking trail is a well used hiking trail. This tract can also be used for hunting, foraging for edible plants, and deer sheds in the respective seasons. This tract is located very close to the road therefore may be used more frequently than other tracts of the Harrison-Crawford.

Cultural

Cultural resources may be present on the tract but their location is protected. Adverse impacts to significant cultural resources will be avoided during any management or construction projects.

Summary Tract Silvicultural Description, Prescription and Proposed Activities

Oak-Hickory

This tract is 48 acres in size and has 93 square feet/acre of basal area. The main tree species are white, red, and black oaks. There is approximately 5370 board feet according to the Doyle scale per acre in this stand type.

The average size tree is in the small sawtimber range. The stocking of trees in the sawtimber size class is low. There are a lot of dead and dying trees in this stand type. Most of the damage occurred from Hurricane Ike and then the ice storm that followed a couple months later. The regeneration in this stand is comprised mainly of maple and American beech. There are some oaks seedlings found in the understory.

There could be a light improvement harvest conducted in this stand. There is a lot of mortality and damaged trees that should be removed. Some of the dead trees will remain

for wildlife habitat. Where there is opportunity the small oak seedlings will be released so there would be advanced oak regeneration in the future.

Shortleaf Pine
This stand is approximately 3 acres located on the side of the ridge. This stand has mostly blown down. There are some pines still standing around the outside, but mainly the pine stand is no longer in existence. This stand can be left so the mixed hardwood regeneration will take over.

The down woody debris that will be left in this stand is good for ground wildlife habitat.

Old Field
This stand is in between the shortleaf pine stand that has blown over and the Virginia pine stand. There are a lot smaller diameter trees in this area. The predominant species is sassafras. This area has some oaks that are in the overstory that are 20 inches in diameter.

This area could use some timber stand improvement to remove the invasive sassafras and let the maples take over and become a mixed hardwood stand. The maples that are currently growing are good form.

This stand looks like it has not grown much since the last harvest therefore is a prime candidate for some timber stand improvement to improve the growth of this stand.

Virginia Pine
There is 55 square feet/acre of basal area in this stand. There are 10,200 board feet according to the Doyle scale. There are 6 acres in this stand type, located along the road.

This stand occurs along Old Forest Road. This stand has pockets of blowdown. The pines range in diameter from 10-14 inches. The pines have stagnated and are now declining. The regeneration in this stand is mainly American beech and sugar maple.

The pines are degraded and be best if left to decline and fall down by themselves. These pines will provide benefits to the ecosystem while dead and dying. The down material will be good coarse woody debris for the wildlife that like large down wood. The trees that are dead and remain standing will provide excellent habitat for other wildlife like to have there habitats be above ground.

To the south of this stand, close to the adventure hiking trail there was some ailanthus plants found. These plants will need to be sprayed before any timber harvesting can take place.

Cedar
This stand type has a total of 93 square feet/acre of basal area. The main tree species is eastern red cedar. There are a myriad of mixed hardwood regeneration growing in conjunction with the cedar. There are two different stand types found on this tract. The first is found along the road and the second is found along the drainage.

The cedar patch along the road is comprised of one acre. This patch of cedar has many different pockets of sassafras. The cedar in this stand is of small diameter. The regeneration is mainly maple. These maples are small diameters, 2-6 inches.

The second pocket of cedar is near the drainage. This pocket is 9 acres in size. The eastern red cedar is larger in this patch than the first. The cedars are 8-14 inches in diameter. This stand has mainly American beech regeneration. There are also some yellow poplars growing intermixed this stand. There are some oak and maples poles scattered throughout this stand.

The cedar patch along the road could use some timber stand improvement to get rid of the invasive sassafras. Once the sassafras is removed the maple will overtake the stand. This stand will become a mixed hardwoods stand. The second stand by the drainage could also have some timber stand improvements. The oak and maple regeneration that is present could be released by removing the beech and cedar that are competing with it. With some intensive TSI this stand can become a mixed hardwoods stand type.

Oak-Hickory Rocky
This stand has 110 square feet of basal area. There is a total of 7400 board feet according to the Doyle scale.

The main tree species are white oak and yellow poplar. These trees in this stand are in the medium sawtimber range. The regeneration is comprised of American beech and maple. This area is comprised of rock outcroppings. This area is limiting to logging.

Proposed Activities Listing

2010- Ailanthus control

2010- Light Timber Harvest

2012- Timber Stand Improvement

2030- Re-Evaluate and inventory to write new guide

Average Site Index: 82 Stocking Level : Fully stocked (83%)
Calculated annual Growth (bd. ft.): 225

Species	Harvest	Leave	Total
White Oak	7630	157010	164640
Black Oak	24150	38670	62820
Northern Red Oak	9380	28440	37820
Yellow Poplar	6670	26260	32930
Sugar Maple	3220	17440	20660
American Beech	2270	9470	11740
White Ash	2110	9590	11700
Pignut Hickory	1960	8760	10720
Eastern Red Cedar	0	9870	9870
Chestnut Oak	4000	3760	7760
Virginia Pine	0	5220	5220
Shagbark Hickory	0	5170	5170
Basswood	0	3380	3380
Scarlet Oak	0	1090	1090
Red Maple	0	950	950
Total	**61390**	**325080**	**386470**
Total/Acre	**797.2727**	**4221.818**	**5019.091**

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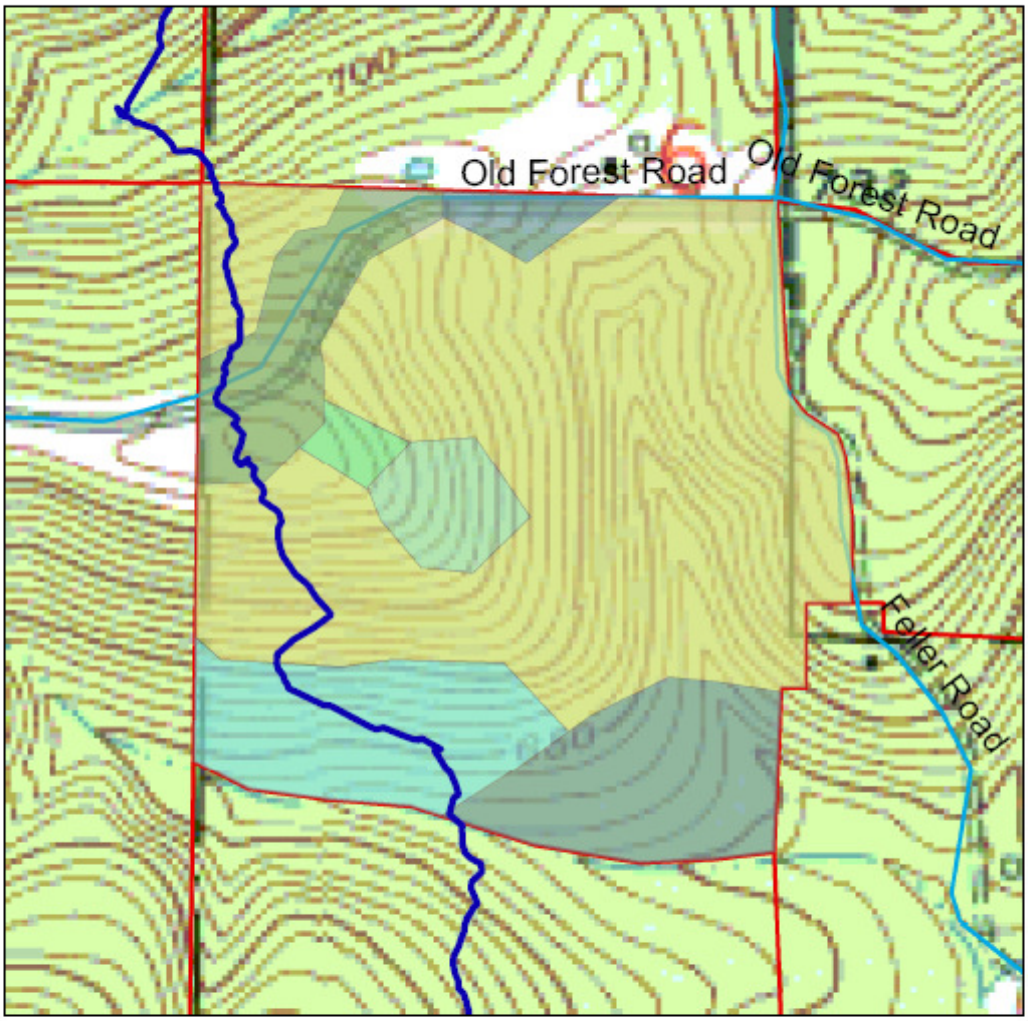
You **must** indicate State Forest Name, Compartment Number and Tract Number in the "Subject or file reference" line to ensure that your comment receives appropriate consideration. Comments received within 30 days of posting will be considered.

6452301
Stand Map

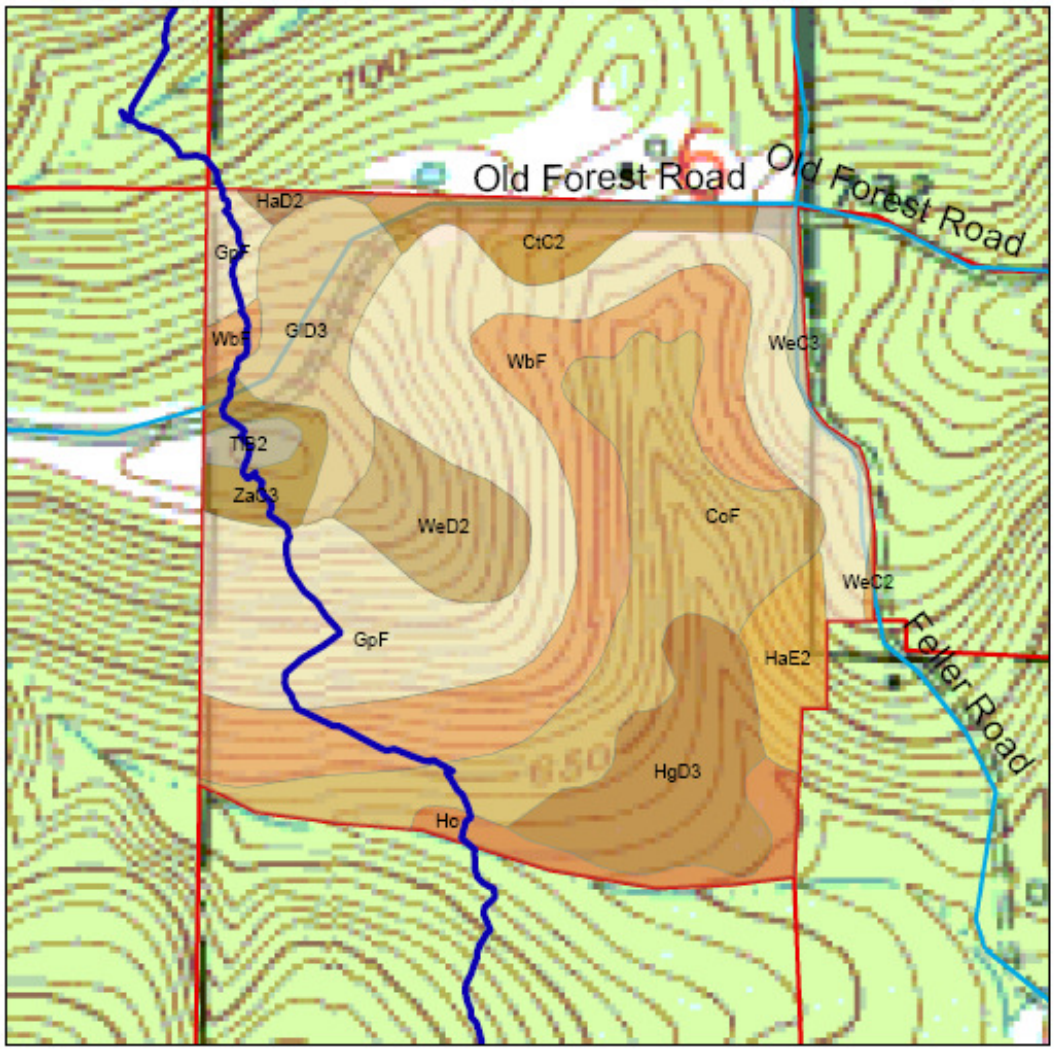


stands
- Old Field
- Cedar
- Oak-Hickory
- Oak-hickory (Rocky)
- Shortleaf Pine
- Virginia Pine

Legend
- Adventure Hiking Trail
- County Roads
- HCSF Tracts

0 0.045 0.09 0.18 0.27 0.36 0.45 0.54 Miles

6452301
Soil Map



Legend

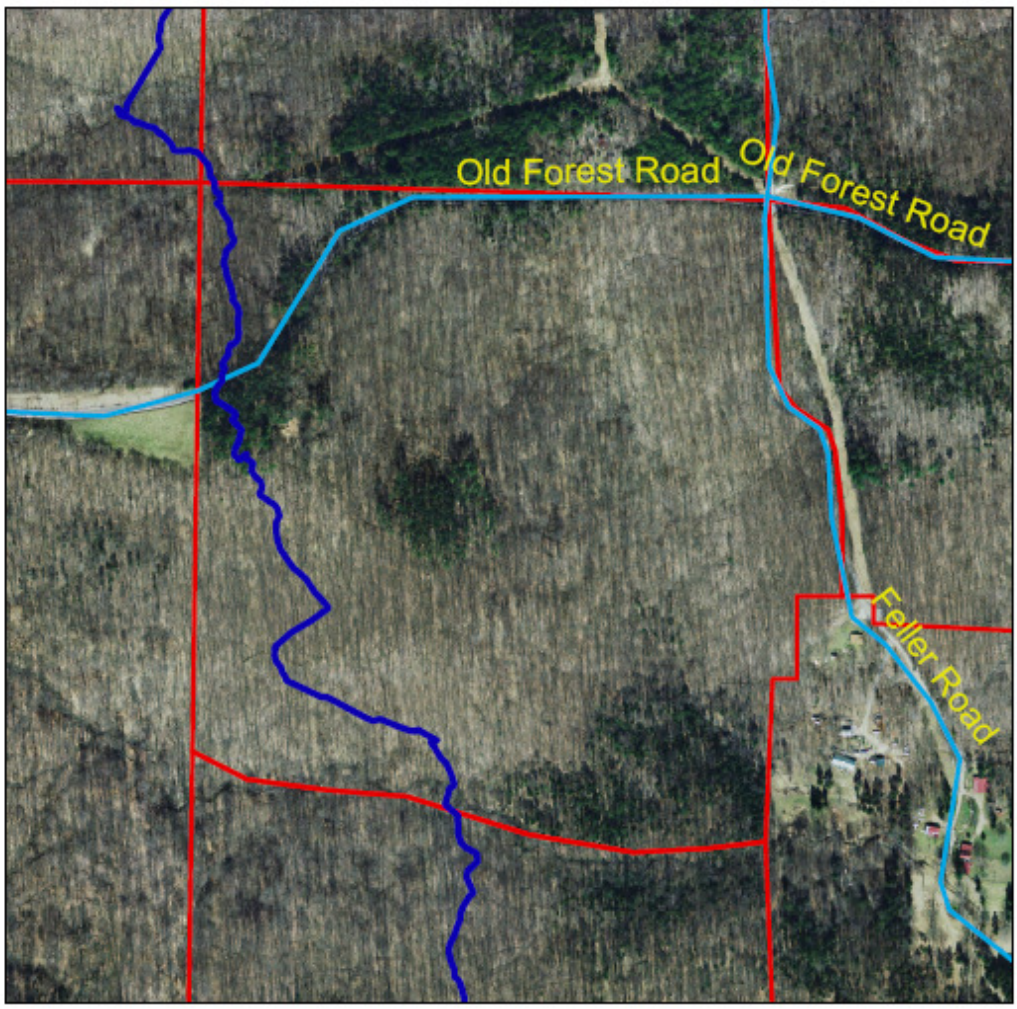
- Adventure Hiking Trail
- County Roads
- HCSF Tracts

Soil Type

CoF	HaE2	
CtC2	HgD3	WeC2
GlD3	Ho	WeC3
GpF	TlB2	WeD2
HaD2	WbF	ZaC3

0 0.045 0.09 0.18 0.27 0.36 0.45 0.54 Miles

6452301
Air Photo Map



Legend

- Adventure Hiking Trail
- County Roads
- HCSF Tracts

0 0.045 0.09 0.18 0.27 0.36 0.45 0.54 Miles