Resource Management Guide

Harrison-Crawford State Forest **Compartment: 19 Tract: 8**
Christine Martin **Date: 2/26/09**

Location

This tract is located in Crawford county Indiana, T3S R2E 35, 36 and T4S R2E 1, 2. This tract is located outside of O'Bannon woods State Park to the west of state road 462.

General Description

This tract has multiple stands of varying quality. There are three distinct stands according to the quality of timber, and 4 stands according to stand type. The quality of the stand is directly correlated with the previous ownership. There are two low grade mixed hardwoods stands on this tract. The first low grade stand is located to the south, next to Brown's field. Brown's field is a 28 acre maintained wildlife management opening. This field has had periodic prescribed burns to maintain the warm season grasses present and to discourage invasive woody vegetation. The second low grade area is located to the north, part of the acquisition from The Nature Conservancy. The middle of the tract is made up of an older acquisition with good quality timber growing on it. This section is comprised of two different stand types. There is the oak-hickory stand which is located along the ridge, and the mixed hardwood stand which is located half way down the slope and closer to the drainage.

History

This tract is made up of 4 different acquisitions. The first is from Mackintosh which is about 60 acres and was obtained in 1934. The second acquisition was from Rothrock which was about 50 acres in size and was obtained in 1940. These two parcels make up the better quality timber on this tract. There are various oaks that are larger and have good form.

The next parcel that was obtained was in 1982 from Breeden. This parcel is about 50 acres in size. This area was farmed and the portion that was not farmed has shown evidence of being high-graded just prior to the acquisition. This area still has not recovered from being high-graded in the past. There are still some very poor quality sugar maples growing in this area.

The last parcel of about 40 acres was obtained from The Nature Conservancy in 1999. This portion had been recently high-graded (1986) before it was sold to Harrison-Crawford. There are still low quality trees in this area, and they are of small size (10 inches in diameter).

There have been three separate timber sales on this tract. Two sales were veneer black walnut sales. The first sale was in 1971, which sold 1551 board feet, to Claude Underhill. The second veneer sale was in 1975 and sold 8206 board feet of black walnut. This sale was sold to Chester B. Stem. The timber sale was in 1989 and sold 232,329 board feet to

Phil Etienne. The main species harvested was chestnut oak and white oak. This sale was marked by Dwayne Sieg.

The last management guide was written in 1989 by Dwayne Sieg. The guide states that there is a total of 651,754 board feet according to the Doyle scale, and 278,775 board feet would be harvestable. There was follow-up TSI that was completed in the regeneration openings.

The 28 acre field has been burned periodically in the past to maintain an open field for wildlife management. The previous burn was completed in spring of 2004. Ailanthus control in the 1982 acquisition was completed in 2004.

Landscape Context

Most of the land surrounding this tract is forested, and is owned by the Harrison-Crawford State Forest, or O'Bannon woods State Park. At the south end of this tract there is a maintained open field. Within a mile of this tract there is some land that is owned privately. Less than a quarter acre to the south there is a pasture that is privately owned. To the west about a half mile there is some private land. This land is mainly forested but there are some fields that are in pasture.

Topography, Geology, and Hydrology

This tract is mainly a north slope. The northern boundary of this tract is comprised of a drainage that flows into the Blue River. The northern part of this tract runs along the blue river for about 600 feet. There are some steep slopes that run down to the blue river. At the bottom of the slope there is a flood plain. This flood plain has been flooded in recent years therefore there is not much growing in this area.

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

Tilsit Silt Loam (TlB2) Deep, gently sloping, modrately well drained soils on uplands. Fragipan in the lower part of the subsoil. Surface layer is dark yellowish-brown silt loam about 8 inches thick. Subsoil is about 38 inches thick. Depth to interbedded shale and sandstone bedrock is about 66 inches. Moderate in content of organic matter and low in natural fertility. Available water capacity is moderate and permeability is very slow. Runoff is medium.
Degree Slope: 2-6 %
Woodland Suitability Group: 3d9
Site Index: 70-80 (Upland Oaks)
Growth range potential (Upland oaks): 185-260 bd.ft./acre/year
Management Concerns: Erosion, wetness early in spring, available water capacity, lack of moisture in mid and late summer if rainfall is below normal.

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

This tract has great access. There is a firelane which comprises the southern boundary to this tract. This firelane is also a disabled hunter trail. These trails are in good shape with gravel. This lane needs some minor improvement in order to better facilitate water drainage. If this tract is to be logged in the winter there should be more gravel placed on the road, especially on the western portion.

Boundary

The very southern boundary is made up of state road 462. From the 462 firelane 103 cuts northwest along the ridgetop, this is the southern boundary of the tract. The tract follows this firelane until it starts to head down slope. The tract then skirts the bottom of the slope in a northeast direction until the boundary hits the blue river. The blue river is the boundary of the tract for approximately 600 feet. The boundary cuts back up into the forest following a drainage. The drainage peters out after about ¾mile. The line then becomes hard to find. The last segment of boundary of this tract may require a GPS to navigate the exact location.

Wildlife

The wildlife in this tract is typical of what is found in Harrison county Indiana. The wildlife observed while inventorying were deer, turkey, squirrels, chipmunks, and song birds.

The Natural Heritage Database Review has shown that there are a few rare threatened or endangered species around this area. There are a couple mussels that have been found near the Blue River. There is also some vegetation, the sand grape found by the Blue River and the thread-like naiad found on the southern portion of this tract in a wildlife pond. The Indiana bat was also found on this tract.

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.

The Natural Heritage Database identified some rare, threatened, or endangered species on this tract. The Thread-like Naiad, a couple mussels found in the blue river, the sand grape, meadow spike moss, and the Indiana bat. Where all these species have been found there will not be a timber harvest located in that area.

Sand Grape

Sand grape occurs on calcareous gravelly banks, drystream bottoms and beds, washes, and gravel bars (NatureServe Explorer 2008, Missouri Plant Database 2008). This species has also been found on the margins of limestone glades and barrens (NatureServe Explorer 2008). In Indiana this species has been reported from dry chert and limestone streambeds (NatureServe Explorer 2008). Threats to this species include changes in water

level that result in inundation, water pollution, and aggressive competition and succession by other species (NatureServe Explorer 2008).

Thread Like-naiad

Thread-like naiad is a submersed aquatic plant that occurs in clear water of soft-water lakes (ODNR 2008) and ponds with mud or sandy bottoms (KSNPC 2008). Threats to this species include changes in water quality such as turbidity, water pollution, and eutrophication (ODNR 2008, KSNPC 2008).

Direct and Indirect Effects on Plants

Since these species are restricted to aquatic habitats, DoF does not expect any of the proposed alternatives to cause any direct, adverse affect to them or their populations. The DoF routinely applies Best Management Practices to each timber harvest which minimizes the effects of erosion and sedimentation. Additionally, in 2001 DoF established guidelines for harvesting near forested riparian corridors to better protect these important foraging areas for bats, such as the federally endangered Indiana and gray bats. The guidelines stipulate >100-foot wide limited management buffers be established and maintained on either side of all perennial streams and rivers. Only minimal cutting is allowed inside these riparian management zones and the structural integrity of the forested corridor is to be maintained at all times. Because harvesting is limited and carefully applied in riparian areas, and forested buffers are retained along streams, DoF anticipates the activities associated with all of the proposed alternatives will not adversely affect the habitats of these plants.

Cumulative Effects on Fish and Freshwater Mussels

Given the DoF's commitment and strict adherence to measures ensuring minimal impacts to regional water quality, no cumulative adverse changes are anticipated by the proposed activities.

*wildlife information sited from "*Draft Environmental Assessment Increased Emphasis on Management and Sustainability of Oak-Hickory Communities on the Indiana State Forest System"*

Recreation

There are a couple different opportunities for recreation on this tract. The first is the adventure hiking trail which cuts through this tract in two separate places. This hiking trail is 23 miles long and winds in a loop around the forest. The trail winds through many different stand types therefore provides a variety of scenery for the hiker.

Another trail that cuts through this tract is the upper blue river horse trail. This trail cuts through on the eastern side of this tract. This trail is a popular horse trail.

There is also hunting that predominates the recreational use of this tract. Firelane 103, which makes up the southern boundary, is a disabled hunter trail. This trail is used frequently by hunters. Hunters also like to use the 28 acres of maintained field to hunt smaller animals that live in the field.

Cultural

There were no cultural sites observed on this tract.

Summary Tract Silvicultural Description, Prescription and Proposed Activities

Field

There are about 28 acres in this stand type. The field is burned periodically to maintain an open grassy cover for wildlife and to control invasive woody species from encroaching on the field. There have been some warm season grasses that have been planted throughout this field, and burning also helps maintain these grasses. There are some clones of sumac, and some yellow poplars that are growing in this field.

Shrub

This area is located along the outside of the field. There are about 6 acres of this stand type found on this tract. Sassafras, eastern red cedar, and persimmon are the top species found in this area.

Mixed Hardwood

This stand type comprises half of this tract with 105 acres. This stand has a current basal area of 83 square feet. If this tract were to be harvested there would be about 30,000 feet removed from this tract. The main species found in this stand type is sugar maple, white ash, and northern red oak. These trees average around 16 inches in diameter.

There are three distinct stand types of mixed hardwoods found in this tract. Two of these stand types are found in low quality stands. The first mixed hardwood stand is found on the southern portion of this tract next to Browns field. This property was previously owned by Breeden. This stand shows evidence that is has been high-graded in the past. There are a lot of poor quality sugar maples found in this area. If there is an improvement thinning in this area this stand could become a decent hardwood stand in the future.

The second low grade stand is in the northern portion of the tract. This stand was high-graded previously as well. There are a lot of small sugar maple poles in this area. There is not much sawtimber left. This area is going to need more time before it becomes commercially merchantable again. This stand could use some timber stand improvement to encourage the regeneration that has good potential from the poor quality regeneration.

The third mixed hardwood stand is located in the middle of the stand below the oak-hickory stand. This mixed hardwoods stand is better quality than the other two. There is less stocking in this area compared to the oak-hickory portion, but more that the other two mixed hardwood stands. This area could use a light thinning to groom out the poor quality trees to maintain healthy stand vigor.

Oak-Hickory

In the center of this tract located along the ridgetop is the oak- hickory stand. This stand is 69 acres in size. This is where the majority of the timber is located. This stand has about 8,000 board feet per acre. If there were to be a harvest about 2,000 board feet per acre would be removed, leaving about 6,000 board feet per acre for growing stock. The

square feet of basal area currently in this stand is 101. 24 square feet will be removed leaving 77 square feet in the stand.

There are chestnut oak located along the ridge, but disappear further down along the slope. Located along the ridge with the chestnut oaks are black walnuts that are growing. These walnuts are as small as 6 inches in diameter and as large as small sawtimber.

There are some areas in this stand where there are some large white and red oaks. These trees average about 24 inches in diameter. Some of these trees will have to remain in accordance with the bat rules. The rest of these trees will either be selected for harvest or remain for another cutting cycle.

The regeneration in this stand is mainly sugar maple. There are some white oak poles that will need to be released. There should be a harvest in this stand in order to promote the white oak regeneration that is growing. There should be some suppression of the sugar maple to promote the growth on the white oaks. In the areas where there is not any white oak regeneration present there should be an improvement thinning to improve the overall health of the stand.

While there is a timber harvest planned for this tract there should be some of 1907 marked along with this tract. 1907 has parts that are ready for a harvest, but it can not support a harvest alone. The northeast side of this tract along the firelane is what should be included with this sale.

Proposed Activities Listing

2011- Timber Harvest of 1908 in conjunction parts of 1907

2012- Timber stand improvement in any regeneration openings and various parts of the stand.

2029- Inventory and re-evaluate tract

To submit a comment on this document, click on the following link:
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You **must** indicate “Harrison-Crawford C19 T8” 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.

Acres Commercial forest: 174
Acres Noncommercial Forest: 6
Acres Permanent Openings: 28
Acres Other:

Acres Total: 208

Average Site Index: 77
Calculated annual Growth (bd. ft.): 209 bd. Ft./acre/year

Basal Area ≥ 14 inches DBH: 44.8
Basal Area < 14 inches DBH: 26.9
Basal Area Culls: 3.4
Total Basal Area: 75

Number Trees/Acre: 229

Stocking Level : Fully stocked (75%)

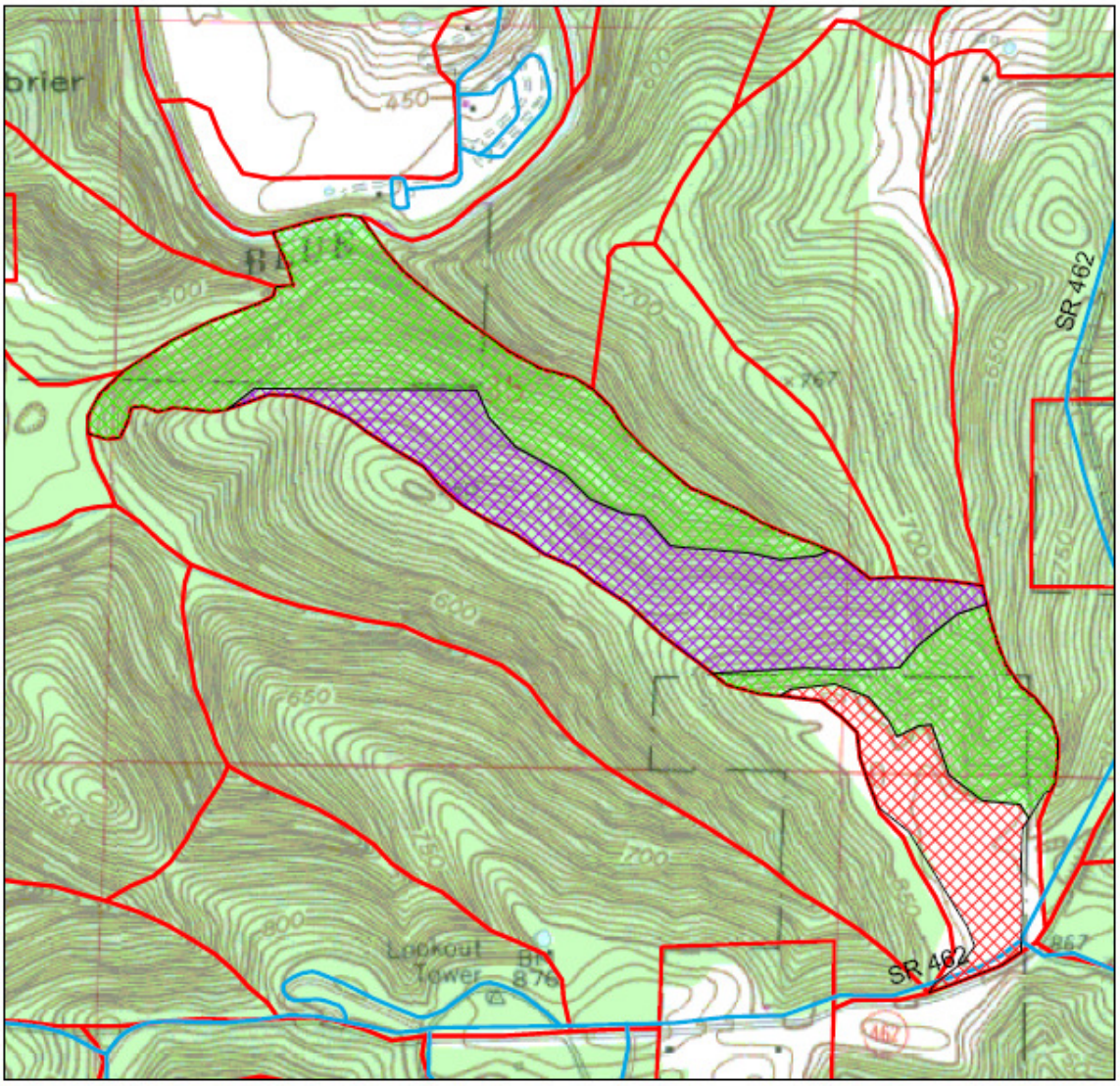
Harvest from Oak-Hickory Stand Type alone

Species	Harvest	Leave	Total
White Oak	89460	299730	389190
Chestnut Oak	41900	4530	46430
Northern red Oak	19900	19870	39770
Black Oak	8700	17170	25870
Chinquapin Oak	4530	12180	16710
Sugar Maple	2200	10610	12810
Shagbark Hickory	0	9660	9660
Red Elm	0	3870	3870
Pignut Hickory	0	6010	6010
Black Walnut	0	4880	4880
American Beech	0	13120	13120
Totals	**166690**	**401630**	**568320**
Totals/Ac	**2415**	**5820**	**8236**

Harvest Tally from Entire Tract

Species	Harvest	Leave	Total
White Oak	71920	265670	337590
Chestnut Oak	33680	31390	65070
Northern Red Oak	21040	57620	78660
Black Oak	10920	18810	29730
Sugar Maple	6480	120920	127400
Pignut Hickory	5870	25590	31460
White Ash	5040	37960	43000
Chinkapin Oak	3640	41210	44850
Red Elm	3640	9100	12740
Black Walnut	1770	5700	7470
American Beech	0	33,160	33,160
American Sycamore	0	2800	2800
Basswood	0	4710	4710
Blue Ash	0	4710	4710
Hackberry	0	4710	4710
Mockernut Hickory	0	5040	5040
Persimmon	0	1770	1770
Shagbark Hickory	0	33480	33480
Yellow Poplar	0	11090	11090
Scarlet Oak	0	17710	17710
Totals	**164000**	**733,150**	**897,150**
Totals/Arcre	**788**	**3524**	**4,313**
Eastern RedCedar	0	9,590	9,590

Compartmnet 19 Tract 8
T3S R2E 35, 36
T4S R2E 2, 1
Stand Map

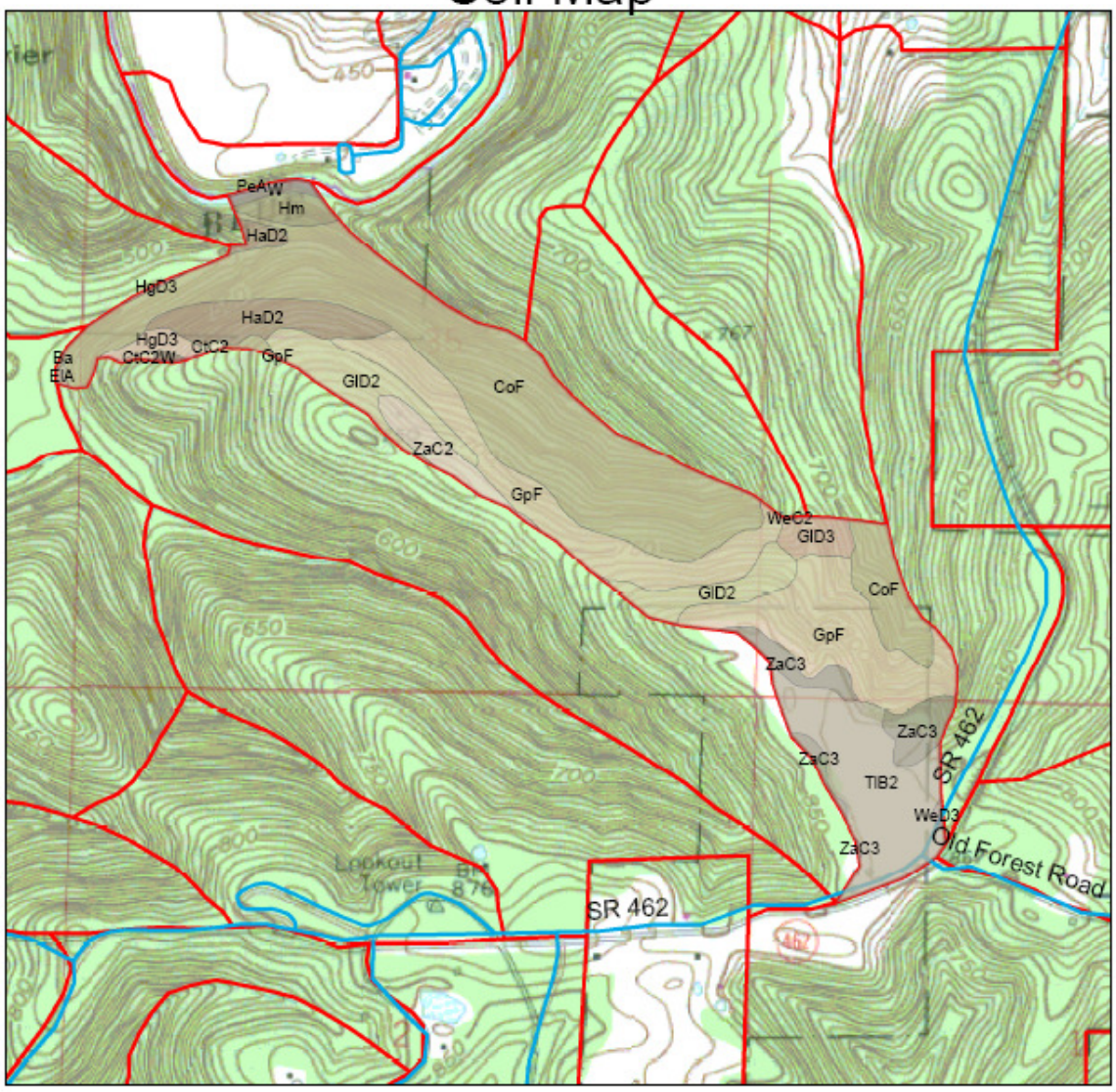


stands
- Field
- Mixed Hardwoods
- Oak-Hickory

5

0 0.15 0.3 0.6 0.9 1.2 Miles

Compartmnet 19 Tract 8
T3S R2E 35, 36
T4S R2E 2, 1
Soil Map



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Compartmnet 19 Tract 8
T3S R2E 35, 36
T4S R2E 2, 1
High-Graded Map