Indiana Department of Natural Resources
Division of Forestry
RESOURCE MANAGEMENT GUIDE

Martin State Forest	Compartment 07 Tract 12
Forester: Alex Gust	Date: 10/17/2022 Acres 124
Management Cycle End Year: 2042	Management Cycle Length: 20 Years

Location
Tract 12, also known as 6360712, is located on the north side of Mill Road in Martin County, Indiana, T3N R3W Section 26. The nearest town is Shoals, Indiana, about 4 miles west of this tract.

General Description
This tract consists primarily of a single ridge with a fair amount of gentle to moderately steep slopes. The entirety of this tract is forested. Within the tract the acreage is split between two cover types, mesic oak-hickory, and mixed hardwoods.

History

- 1948 – The state purchased the area for this tract in. It was part of a sale that included 160 acres. Walton Albright sold the land to the State of Indiana for $1,040.00
- February 10,1976 – a forest inventory was conducted by Ben Hubbard which reported an estimated volume of 210,952.5 board feet on 58 acres, 3,637.11 board feet/acre. The top three species by volume were white oak, sugar maple, and pignut hickory.
- April 30, 1984– a forest inventory was conducted by Janet Eger which reported an estimated volume of 395,527.1 board feet on 58 acres, 6,819.43 board feet/acre. The top three species by volume were sugar maple, pignut hickory, and white oak.
- February 06, 1990 – a timber harvest was conducted which contained 458 trees containing an estimated 108,852 board feet which was sold for $27,413.00
- 2003 – Tract boundaries were adjusted within this compartment adding 56 acres to the west half of the tract bringing the tract acres to 124.
- July 10, 2007 – a forest inventory was conducted by Jim Lauck which reported an estimated volume of 770,090 board feet, 6,210.4 board feet/acre. Top three species by volume were white oak, yellow poplar, and sugar maple.

Landscape Context
All the land adjacent to this tract is forested. The areas to the east are other tracts managed by Martin State Forest. There is some Hoosier National Forest land in the vicinity. The areas beyond public land ownership are private property. Much of the private property nearby has been harvested within the last 15 years. There are some residential homes in the vicinity and some pastureland. The only change foreseeable is the possibility of a few more residences, but no major developments and no change to the land uses.

Topography, Geology and Hydrology
There is a mapped intermittent stream that runs northwest on the west side of the tract, where the west half of the tract drains into. The rest of the tract drains north and east into a mapped intermittent stream that also runs in a northwest direction. Two main ephemeral drains are located on the tract. One flows west and the other flows north. All the water from this tract eventually flows into Beaver Creek to the northwest.

Soils
Most of the tract has a soil type of WpfG. Next most abundant by area is WhfD2, and AgrC2. The least abundant soil in this tract is GacAW (see map on page 12.)

WpfG- Wellston-Tipsaw-Adyeville complex, 18 to 70 percent slopes
This moderately sloping to very steep, deep, well drained complex is found on side slopes in the uplands. It is well suited to trees. Equipment limitations and erosion hazards are management concerns that should be considered when planning sale layout and implementing Best Management Practices for Water Quality. Wellston has a site index of 81 for northern red oak and 90 for yellow poplar, Tipsaw has a site index of 70 for black and northern red oak, and Adyeville has a site index of 64 for white oak.

WhfD2- Wellston silt loam, 12 to 18 percent slopes, eroded
This strongly sloping, well-drained soil is on narrow ridgetops and on side slopes of the uplands. It is well suited to trees. This soil has a site index of 71 for northern red oak and 90 for yellow poplar.

AgrC2- Apalona-Zanesville silt loam, 6 to 12 percent slopes, eroded
This moderately sloping, deep, moderately well drained soil is found on sideslopes in the uplands. It is well suited to trees. A fragipan is present at 20 to 40 inches below soil surface that restricts drainage. Erosion hazards are main management concern that should be considered during implementation of Best Management Practices for Water Quality. This soil has a site index of 60 for white and black oak.

GacAW- Gatchel loam, 0 to 2 percent slopes, occasionally flooded, very brief duration
This nearly level, deep, somewhat excessively drained soil is found on flood plains and alluvial fans. It is well suited to trees and has not been evaluated for site index.

Access
This tract is accessible by fire lanes 7G and 7D, 7D runs east west along the northern tip of the tract and dead ends into private property in the west. 7G enters the tract from the southeast and is the best access to this tract for management purposes. Both fire lanes are maintained as access routes.

Boundary
Starting at county surveyor pin in the southwest corner of the tract, the property corner, and progressing clockwise the tract boundary heads north along private property to an old stone in the northwest corner. From there, the boundary turns east along another private property line to the top of the ridge to a property corner. Next, the boundary line turns north to where it intersects

with a mapped intermittent stream, and heads southeast along the stream to where the stream forks. Then, it follows stream southwest to the property corner with surveyor pin. Lastly, the boundary heads west along private property back to the starting point.

Ecological Considerations

Wildlife use this tract heavily and many species were observed during the inventory. Those observed were White-tailed deer, fox and red squirrels, chipmunks, various songbird species, red-tailed hawks, turkey vultures, and box turtles. There are numerous mast-producing trees on the tract, especially hard mast. Several den trees or potential den trees were seen during the inventory.

The Division of Forestry has developed compartment level guidelines for important wildlife structural habitat features such as snags and legacy trees. Snags are standing dead or nearly dead trees. Snags provide value to a stand in the form of habitat features for foraging activity, den sites, decomposers, bird perching, and bat roosting. Snags eventually contribute to the future pool of downed woody material, which provides habitat for many ground-dwelling species and contributes to healthy soils. Legacy trees are live trees of a certain species and diameter class, that have potential future value to various wildlife species, if retained in the stand. Current assessments indicate the abundance of these habitat features meet or exceed recommended maintenance levels.

The tract is nearly entirely forested. The dominant cover type is mesic oak-hickory which covers about 65 acres and is found on the ridgetop and most of the slopes. Mixed hardwood cover type is present on the remaining 59 acres.

The mesic oak-hickory community overstory is mostly white oak with representation from black and northern red oak and some hickories (e.g., shagbark, pignut, bitternut). Mid-story in this community is composed of various oak species (northern red, black, white) and pignut hickory with maple and beech also having a presence. Throughout the tract there are some oak saplings but mostly dominated by red and sugar maple, American beech, and some white ash. The non-woody community of the stand is a mixture of species commonly associated with this forest type which includes but not limited to, green brier, and viburnum.

For the mixed hardwood community, the overstory is mostly yellow poplar with sugar and red maple, American beech, and some oak (white, black, northern red), and pignut hickory. In the midstory it is mostly red and sugar maple, American beech, with a few pignut hickory and white oaks. For the understory it is almost exclusively sugar maple and American beech with some red maple, and white ash. The non-woody community of the stand is a mixture of species commonly associated with this forest type which includes but not limited to, spicebush, viburnum, and various species of grasses.

A formal Ecological Review process, which includes a search of Indiana's Natural Heritage Database, is part of the management planning process. If Rare, Threatened, or Endangered species were found to be associated with this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the population viability of those species or communities.

Recreation
The most common form of recreation within this tract is hunting. Tree stands were observed at the time of inventory field work. There are no dedicated recreation trails in this tract. Fire lanes will be maintained to keep the tract accessible for management and recreational activities.

Cultural
Cultural resources may be present, but their location is protected. Adverse impacts to significant cultural resources will be avoided during any activities.

Tract Subdivision Description and Silvicultural Prescription
This tract can be split into two different cover types with most of the tract being classified as mesic oak-hickory and the remaining area being classified as mixed hardwoods.

Mesic Oak-Hickory- 65 acres
A current forest resource inventory was completed on 10/17/2022 by resource specialist Alex Gust. A summary of the estimate tract inventory results is in the tables below.

Mesic Oak-Hickory Summary Data

(Trees > 11" DBH)

Category	Estimate
Stand Acres (Forested)	65
Gingrich Stocking Percent (%)	82
Trees Per Acre	82
Basal Area Per Acre (SQFT)	107.3
Volume Per Acre (BDFT)	12,281

Tract Summary Data (Trees > 11" DBH)

Species	# Sawtimber Trees	Estimated Total Bd. Ft.
White Oak	955	348,990
Pignut Hickory	427	70,880
Northern Red Oak	142	68,270
Shagbark Hickory	272	63,260
Sugar Maple	430	59,670
Black Oak	199	59,020
Bitternut Hickory	152	38,610
American Beech	173	28,030
Chinkapin Oak	45	20,510
Yellow Poplar	51	18,310
Red Maple	70	13,860
American Sycamore	14	4,470
Blackgum	10	4,400
Total	**2,940**	**798,280**

Inventory data for this cover type estimates a total volume of 798,280 BF with a suggested removal of 144,891 – 196,029 BF through a timber harvest. The midstory is predominantly white oak and hickory (pignut and shagbark) with a few black and red oak throughout. Some sugar and red maple are present in the midstory as well. The understory is dominated by red and sugar maple and American beech. There are some oak and hickory saplings present but far fewer and more scattered. With the canopy now closed the midstory oak and hickory are starting to decline due to the lack of sunlight and available space. This portion of the tract could use an improvement harvest to release midstory oak and hickory and to capture mortality in the larger black oaks which show signs of decline. The harvest would primarily focus on poor quality, damaged, low vigor, and poor health trees. Prior to or shortly after the harvest the area would benefit from a prescribed fire regime with the goal of improving ground conditions for seed germination, survival, and advancement while reducing the amount of shade tolerant saplings. Areas of focus would be those with the greatest potential for oak and hickory regeneration This would promote the establishment of less shade tolerant species such as oak and hickory to ensure they remain a strong component of the composition of species long term.

Mixed Hardwood- 59 acres

A current forest resource inventory was completed on 10/17/2022by resource specialist Alex Gust. A summary of the estimate tract inventory results is in the tables below.

Mesic Oak-Hickory Summary Data (Trees > 11" DBH)

Category	Estimate
Stand Acres (Forested)	59
Gingrich Stocking Percent (%)	74
Trees Per Acre	69
Basal Area Per Acre (SQFT)	100.5
Volume Per Acre (BDFT)	11,413

Tract Summary Data (Trees > 11" DBH)

Species	# Sawtimber Trees	Estimated Total Bd. Ft.
Yellow Poplar	378	212,820
Sugar Maple	549	120,680
American Beech	350	85,630
White Oak	127	49,100
Black Oak	98	42,810
Blackgum	193	31,530
Shagbarck Hickory	130	21,690
Pignut Hickory	98	18,050
American Sycamore	40	17,590
Northern Red Oak	75	17,540
Red Maple	118	13,320
Bitternut Hickory	45	11,550
Chinkapin Oak	43	10,130

Basswood	32	6,750
Black Cherry	12	4,330
Hackberry	15	3,870
American Elm	14	3,040
Persimmon	21	2,960
Total	**2,338**	**673,390**

Inventory data for this stand estimates a total volume of 673,390 Board Feet (BF) with a suggested removal of 156,264 – 211,416 BF through a timber harvest. The midstory is predominantly yellow poplar, red and sugar maple, and American beech. In the understory it is almost exclusively red and sugar maple and American beech with some white ash present. Most of this cover type is in the bottomland area near the ephemeral stream and transitioned to yellow poplar with some areas containing quality black walnut that could use release. The maple and beech present are of low quality and vigor and should be thinned. Some of the mixed hardwood areas are near old regeneration openings that could be extended while timber stand improvement (TSI) is performed in the old openings. The goal in these openings would be to promote some species that are less shade tolerant to establish within the openings. These openings would be extended when the improvement harvest is conducted in the oak-hickory cover type within the same tract. With these openings, some of the denser areas will also be marked for an improvement harvest focusing on poor quality, damaged, low vigor, and poor health trees to sustain and improve the health of the tract while reducing competition for available nutrients and sunlight.

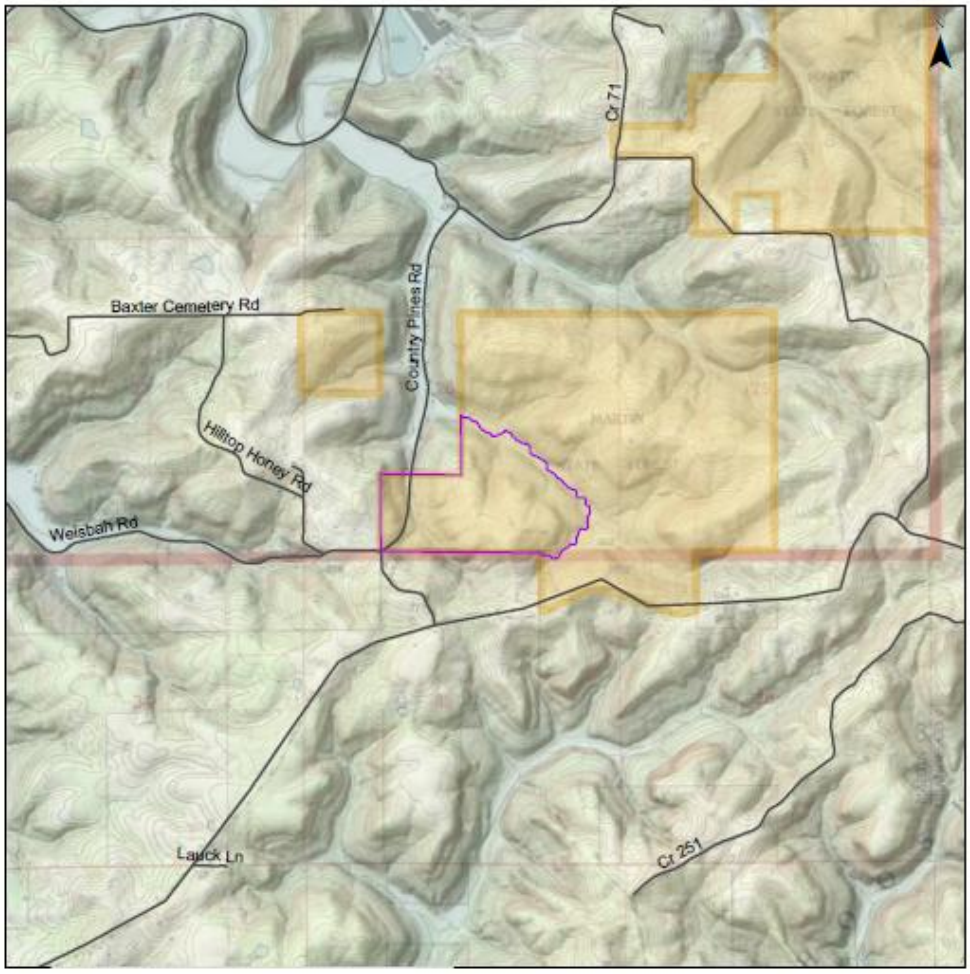
Summary Tract Silvicultural Prescription and Proposed Activities

Both cover types will be managed under the same general prescription. An improvement harvest is recommended utilizing single tree selection, regeneration opening, group selection, or shelterwood cuts to promote less shade tolerant species in those areas removing an estimated 301,155-407,445 BF. Prior to the harvest TSI is recommended to reduce vines present in previous openings and the bottomland areas. There is some burning bush on the ridgetop that is just a small patch which should be treated with a goal of elimination prior to the timber harvest. Within two years after the harvest, TSI is recommended to complete any openings created and to reduce the understory in any shelterwoods to increase light penetration to the ground layer. Starting within two years after post-harvest TSI a prescribed fire regime should be started on suitable areas of the tract. This will reduce the understory competition and improve ground conditions for seed germination, survival, and advancement for less shade tolerant species. 3-5 years after the harvest a walkthrough of the areas that were established for regeneration openings or shelterwoods for any additional TSI needs and address invasive species accordingly. The evaluation should be done every 5-10 years after the initial evaluation. Additionally, every year the fire lanes should be routinely maintained to maintain accessibility. In 2042 this tract will need to be inventoried and a new resource management guide drafted.

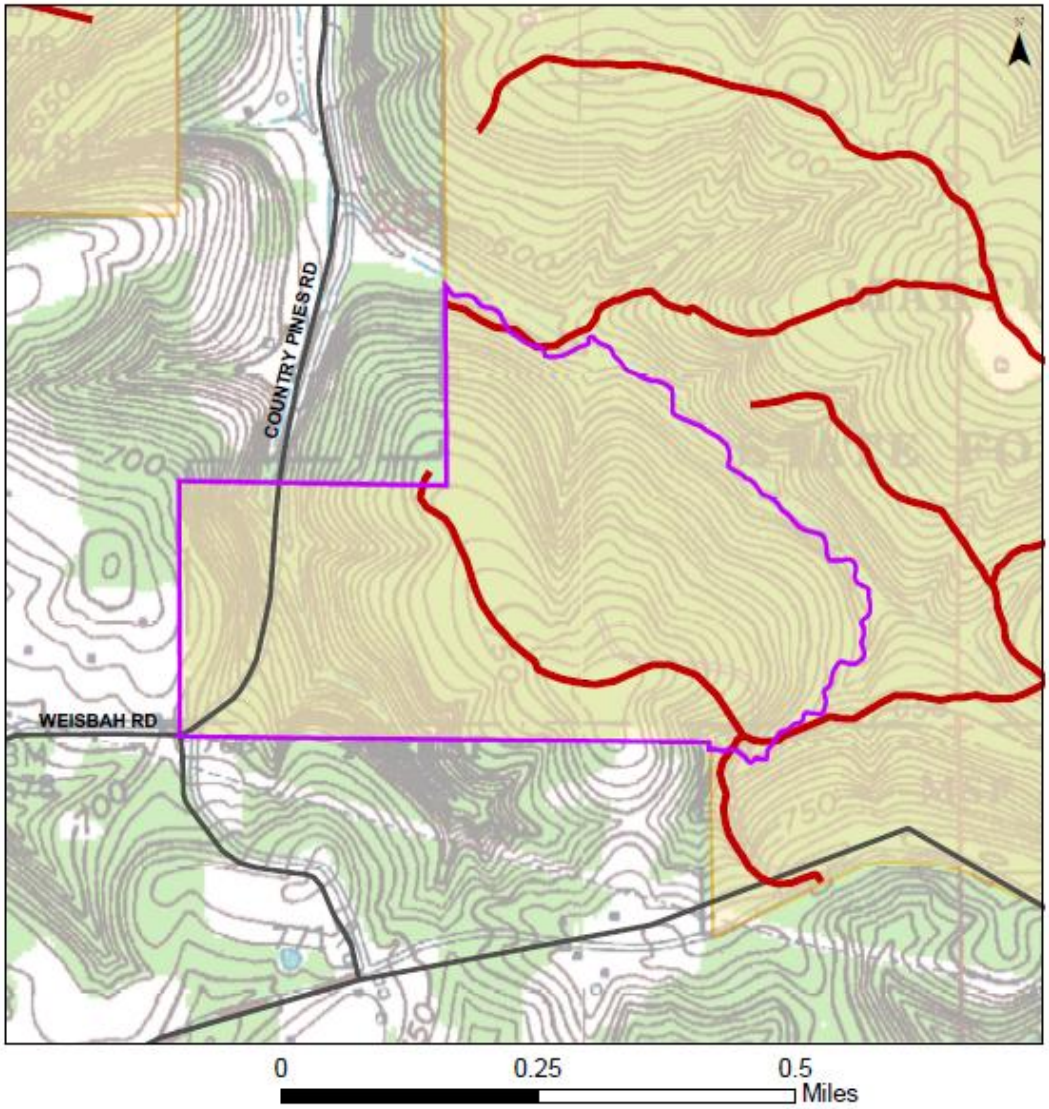
Proposed Management Activity	*Proposed Date*
Pre- Harvest TSI/invasive work	Fall 2024
Timber Harvest	2025-2027
Post-Harvest TSI Including Invasives	1-2 Years after Harvest
Prescribed Fire Regime	At least 1Year after TSI
Regeneration opening monitoring	3 years post-harvest
Inventory and Write new Guide	2041-2043

Snags	Maintenance Level	Inventory	Above Maintenance level
5”+ DBH	496	1987	1491
9”+ DBH	372	1059	687
19”+DBH	62	210	148

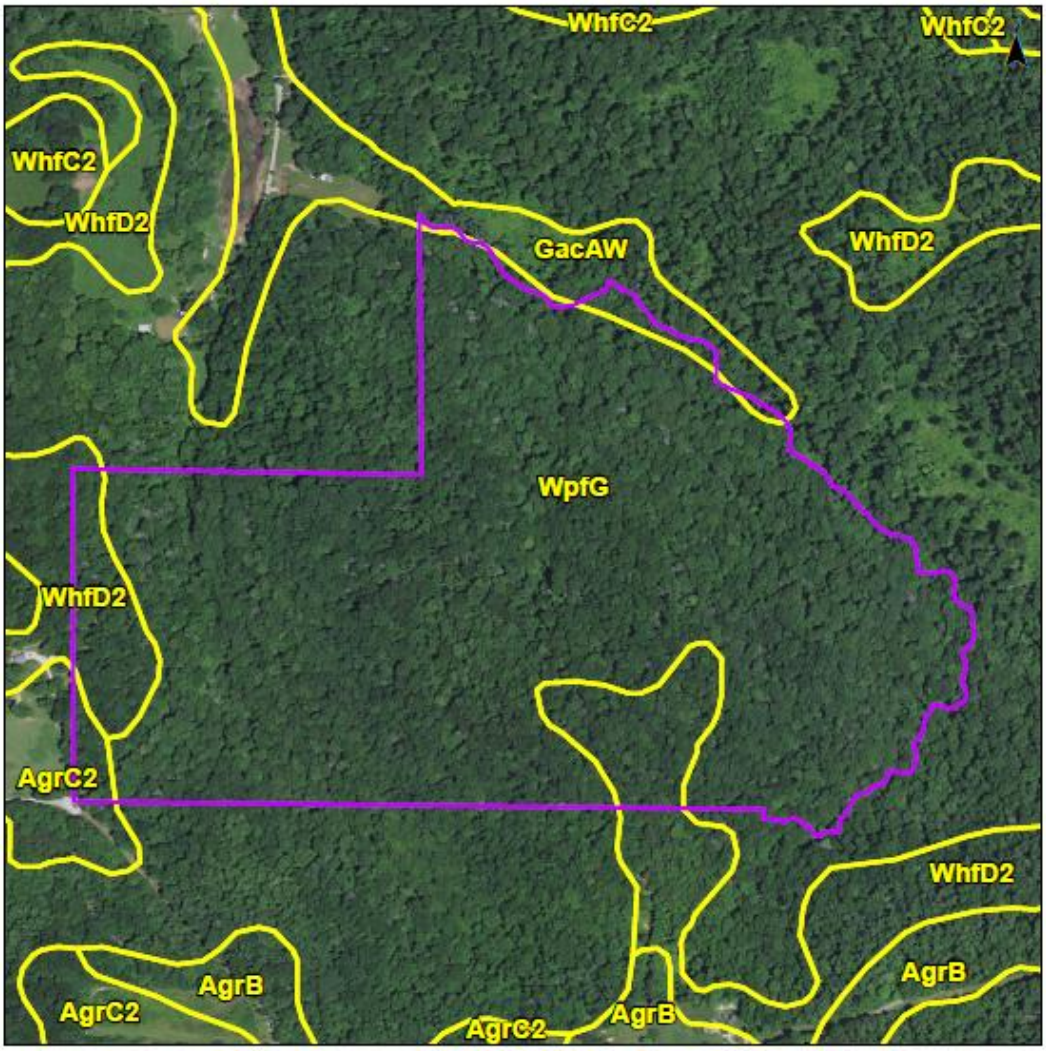
Martin State Forest
Location Map
Compartment 7 Tract 12



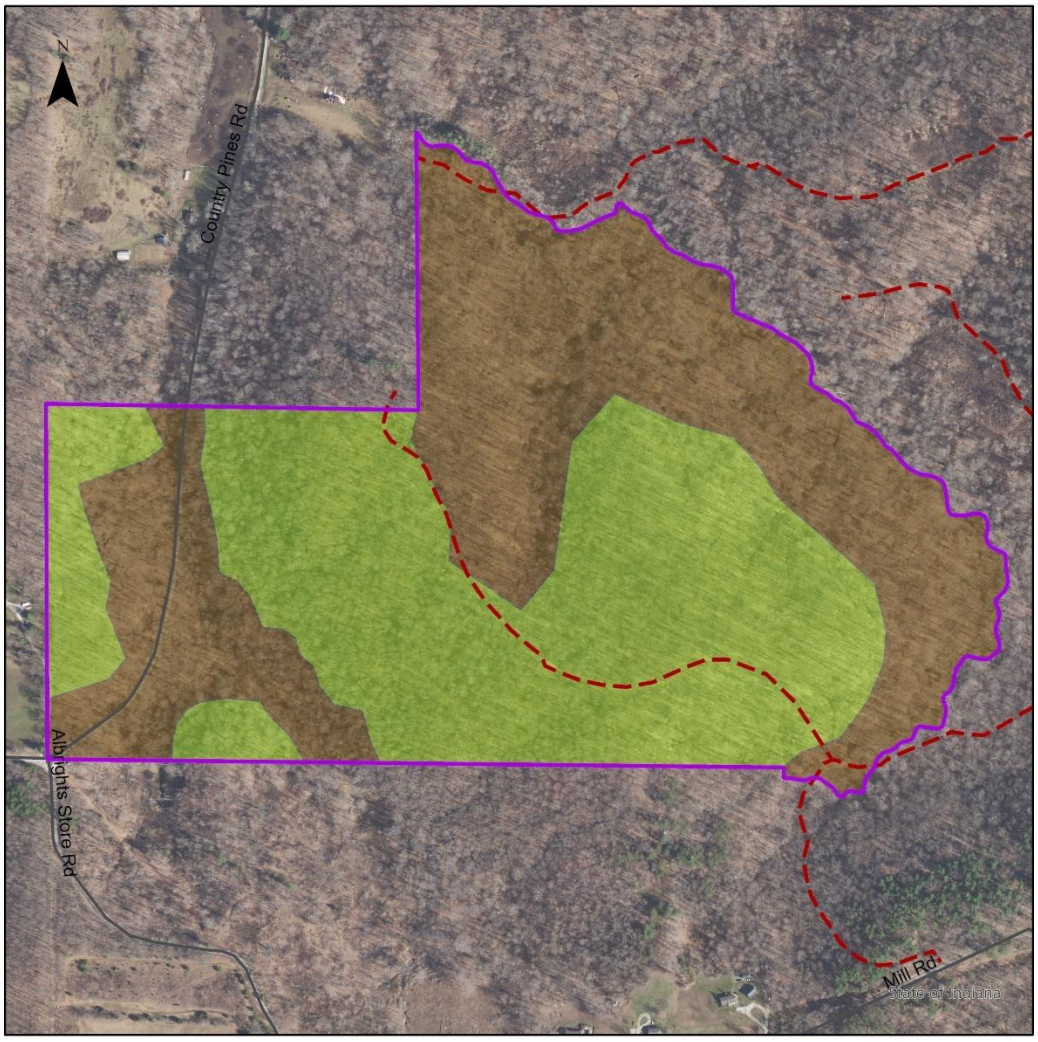
Martin State Forest
Compartment 7 Tract 12
Tract Map



Martin State Forest
Compartment 7 Tract 12
Soils Map



Martin State Forest
Compartment 7 Tract 12
Cover Types Map



Mesic Oak-Hickory
Mixed Hardwoods
FireLanes
Tract

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Miles