Indiana Department of Natural Resources
Division of Forestry
DRAFT
RESOURCE MANAGEMENT GUIDE

Jackson-Washington State Forest Compartment 3 Tract 21
Forester: Michael Spalding
Draft Plan Date: December 31, 2012 Inventory Completion Date: July 6, 2012
Management Cycle End Year: 2036 Management Cycle Length: 24

Location

This tract is located in the north half of Section 35, Township 5 North, Range 4 East, Brownstown Township, Jackson County. The tract lies approximately 3 miles south of Brownstown.

General Description

This 68 acre tract is covered with oak-hickory, mixed-hardwoods, and mixed pine forest types. Oak-hickory dominates the sloped portions of the tracts while the mixed hardwoods and pine dominate the flat and very gently-sloped portions of the tract.

History

The land that makes up this tract came from four separate land acquisitions. The first was a 64 acre purchase from August and Daisy Pollert on June 20, 1933. The next was an 80 acre purchase from Giles and Cora Smith on July 6, 1933. Seventy-six acres of land was purchased from William and Katherine Shaw on January 7, 1950. The final acquisition that contributed to these tracts was 30 acres purchased from Asbury and Hettie Jarvis on June 18, 1952.

The land that makes up this tract was formerly part of three other tracts. The first recorded management history of all three tracts was inventories and plans in June 1971. One tract was mostly small diameter pine and was not tallied, and another was small diameter chestnut oak and was also not tallied. The only tract that had substantial merchantable timber had an inventory that estimated the tract to have 1,782 board feet per acre, with 864 board feet as harvest stock and 918 board feet as growing stock. The next activity to occur was another inventory and management plan on July 28, 1986. This inventory estimated 4,688 board feet per acre, with 1,513 board feet as harvest stock and 3,175 board feet as growing stock. A timber sale was marked on 62 acres of this tract and sold on October 11, 1988. The sale included 81,823 board feet in 553 sawtimber trees with an additional 182 culls. The top three species by volume were black oak, chestnut oak, and scarlet oak. Joe Spence Logging purchased the sale for $9,100.00 ($111.22/MBF).

Landscape Context

The landscape around this tract is dominated by forestland in the Brownstown hills with large tracts of cropland to the east and west. Development is limited to single family residences, and some new home construction.

Topography, Geology and Hydrology
The southern half of this tract consists of gentle topography of primarily south and west-facing slopes. The northern half of the tract consists of steep west-facing slopes. The underlying geology is made up of sandstone, siltstone, and shale bedrock. This tract contains an intermittent stream that transitions into a perennial stream. This perennial stream eventually drains into Starve Hollow Lake, which in turn drains into Mill Creek, a tributary of the Muscatatuck River.

Soils
Kurtz silt loam (KtF) (acres) This series consists of deep, well drained soils on hills. They formed in residuum weathered from interbedded soft siltstone and shale bedrock. Slopes range from 20 to 55 percent. Most Kurtz soils are in forest. Native vegetation consists of mixed hardwood with oaks, hickory, beech and yellow-poplar. These soils a well suited to trees. The potential productivity or site index for this soil type is 60 (northern red oak). Preferred trees to manage for are black oak, chestnut oak, persimmon, northern red oak, scarlet oak, shagbark hickory, American beech, sugar maple, and white oak.

Coolville silt loam, 12 to 20 percent slopes (CoD) (acres) This moderately well drained soil has a seasonal high watertable at 1.0 to 2.0 ft. and is on side slopes on uplands. Slopes are 12 to 20 percent. The native vegetation is hardwoods. The surface layer is silt loam and has moderately low or moderate organic matter content (1.0 to 3.0 percent). Permeability is very slow (<0.06 in/hr) in the most restrictive layer above bedrock. Available water capacity is moderate (6.6 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 3.5 to 5.5. Bedrock is at a depth of 40 to 60 inches. This soil type has a site index of 66 for northern red oak.

Gilpin silt loam, 25 to 55 percent slopes (GnF) (acres) This well drained soil has a water table at a depth greater than 40 inches and is on side slopes on uplands. Slopes are 25 to 55 percent. The native vegetation is hardwoods. The surface layer is silt loam and has moderate organic matter content (2.0 to 4.0 percent). Permeability is moderate (0.6 to 2.0 in/hr) in the most restrictive layer above bedrock. Available water capacity is low (4.8 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 3.5 to 5.5. Bedrock is at a depth of 20 to 40 inches.

Berks channery silt loam (BeG) (acres) This steep and very steep, moderately deep, well drained soil is on side slopes and knolls in the uplands. Slopes are 25 to 75 percent. The native vegetation is hardwoods. It is fairly well suited to trees. The equipment limitations, seedling mortality, and the erosion hazard are management concerns. Overstocking helps to compensate for seedling mortality. Building logging roads and skid trails on the contour and constructing water bars help to control erosion. North aspects generally are more productive than south aspects. The site indexes for hardwood species range from 70 (white oak) to 90 (yellow-poplar). Preferred trees to manage for are black oak, chestnut oak, scarlet oak, red oak, and white oak.

Stonehead silt loam (SsC2) (acre) This series consists of deep and very deep, moderately well drained soils formed in loess and the underlying residuum weathered from soft shale or soft siltstone bedrock. Slopes range from 4 to 12 percent. Native vegetation is mixed hardwoods with oaks, hickory, beech, maple, and tulip-poplar as the major species. This soil is well suited for trees. Prolonged seasonal wetness hinders logging activities and planting of seedlings. The equipment limitations, seedling mortality, windthrow hazard, and plant competition are management concerns. The potential productivity or site index for this soil type is 90 for northern red oak. Preferred trees to manage for are black oak, chestnut oak, common persimmon, northern red oak, scarlet oak, shagbark hickory, sugar maple, yellow-poplar and white oak.

Beanblossom silt loam (BcrAW) (acres) This deep, well drained soils that formed in 0 to 24 inches of medium-textured alluvium and the underlying loamy-skeletal alluvium. The Beanblossom soils are on flood plains and alluvial fans below steep and very steep hillslopes. Native vegetation is deciduous forest, dominantly sycamore, elm, hickory, beech, maple, and tulip poplar. This soil is well suited to trees. Plant competition is moderate. Seedlings survive and grow well if competing vegetation is controlled. Preferred trees to manage for are bitternut hickory, white oak, sugar maple, and yellow-poplar.

Cincinnati silt loam (CcC2) (acres) This series consists of very deep, well drained soils that are moderately deep to a fragipan. Slope ranges from 1 to 18 percent. Native vegetation is deciduous mixed hardwoods, including oaks, hickory, yellow-poplar, maple, and beech. This soil is well suited to trees. Plant competition is moderate. Seedlings survive and grow well if competing vegetation is controlled. The site index is 80 for northern red oak. Preferred trees to manage for are black oak, chestnut oak, persimmon, scarlet oak, northern red oak, and white oak.

Rarden silty clay loam, 12 to 20 percent slopes, severely eroded (RdD3) (.8 acre) This moderately well drained soil has a seasonal high watertable at 1.0 to 2.0 ft. and is on side slopes on uplands. Slopes are 12 to 20 percent. The native vegetation is hardwoods. The surface layer is silty clay loam and has moderately low organic matter content (0.5 to 2.0 percent). Permeability is slow (0.06 to 0.20 in/hr) in the most restrictive layer above bedrock. Available water capacity is low (4.8 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 3.5 to 6.5. Bedrock is at a depth of 20 to 40 inches. This soil type has a black oak site index of 71. Tree species to manage for include bitternut hickory, northern red oak, American beech, sugar maple, and white oak.

Access

This tract can be accessed from two points. One is from the Starve Hollow vista on Skyline Drive. This area will serve as a log yard for much of the upper slopes of this tract and the north facing slope. The other access point is from County Road 75 West. This county road dead-ends into the state forest as a public road, but continues on as firetrail 231, which shares most of its length with a horse trail. This ends up at the log yard used in the 1988 timber sale.

Boundary
The southern boundary of the tract is .3 mile of property line marked with orange blazes on the line trees. The southern .4 mile of the western boundary follows an old county road that is now parts of a horse trail and firetrails 230 and 231. The western boundary is then a mapped intermittent stream from the point of its transition into a perennial stream until it meets the northern boundary of the tract. The northern boundary is an ephemeral drainage valley that connects the mapped intermittent stream to Skyline Drive. The eastern boundary is a ridgetop that follows Skyline Drive south to the property line.

Wildlife
The number of snags for the smallest two size classes exceeded both the maintenance and optimal levels. The largest size class of snags fell short of the maintenance level by twelve for the tract. Post-harvest timber stand improvement will increase the number of snags.

Indiana Bat Habitat Snag Guidelines					
				Available	Available
Snag	Maintenance	Optimal	Inventory	Above	Above
Size Class	Level	Level	Estimate	Maintenance	Optimal
5"+ DBH	271.2	474.6	859	588	384
9"+ DBH	203.4	406.8	451	248	45
19"+ DBH	33.9	67.8	22	-12	-46

A Natural Heritage Database Review is part of the management planning process. If Rare, Threatened or Endangered species were identified for this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species.

Communities
This tract consists of oak-hickory, mixed hardwoods, and pine cover types. There is an area that could potentially be a siltstone glade barrens, and major skid trails should avoid this area if possible. Light harvesting may occur in and around this area to promote more sunlight reaching the herbaceous layer.

Invasive species noted in the tract were multiflora rose, Japanese silt grass, and vine honeysuckle. The stilt grass could be treated if in accessible areas and resources allow. Eradication of stilt grass in this area is no longer an option due to the prevalence of the seed bank in area streams. The honeysuckle does not appear to be a problem at this time and should be monitored during marking of the harvest and during the next inventory. The multiflora rose is just scattered bushes that do not seem to be interfering with the forest growth.

Recreation
This tract receives a many visitors for both horseback riding and hunting. During the proposed timber harvest, the horse trail would need to be temporarily shut down. This

tract also has part of the Starve Hollow vista and picnic area located within it. This area would need to be temporarily closed for the area to be used as a log yard.

Cultural
Cultural resources may be present, but their location(s) are protected. Adverse impacts to significant cultural resources will be avoided during management or construction activities.

Tract Subdivision Description and Silvicultural Prescription

Mixed Hardwoods/Pine (18.3 acres) – This subdivision is an area which had been cleared for farming over a century ago. A 1937 aerial photo shows this area as being in some type of farm fields. A variety of pine species was planted including loblolly, shortleaf, red, and Virginia pines. The hardwoods present in this area are naturally regenerated trees which appeared after farming was abandoned in this area. Species present in the overstory include yellow-poplar, red maple, sugar maple, black oak, sycamore, black cherry, largetooth aspen, blackgum, sweetgum, and white ash. Black locust is present and was most likely planted here as well. Overall quality in this area is poor to average. Size of the trees ranges from pole to large sawtimber. The red pine has almost entirely died in this area, as most of the red pine stands have at Jackson-Washington State Forest. The loblolly pine is doing quite well and should be either harvested to release hardwoods or harvested in groups to create openings. All Virginia pine should be harvested as well. Many of the yellow-poplar are showing signs of drought stress and should be harvested. This area would be well suited for a large regeneration opening due to the current conditions of the stand; however, the perennial stream located nearby prevents this from being a management option. This area should be marked for a regeneration opening outside the perennial stream buffer. By creating a regeneration opening, this area will regenerate into an even-aged stand of mixed hardwood trees.

Oak-Hickory (49.5 acres) – This subdivision is dominated by oak and hickory species, which transition from nearly pure chestnut oak on the driest soils to very high quality white, red, and black oak and shagbark and pignut hickories on the more mesic sites. Other mixed hardwoods are present throughout this subdivision as well and include primarily yellow-poplar and red maple. Size of the trees generally ranges from small to large sawtimber. In order to maintain the oak-hickory forest type in this subdivision, mixed hardwoods should be harvested when possible to release oak and hickory trees. Other trees to harvest should include drought-stressed, damaged, defective, suppressed, mature, and over-mature trees to release healthier and more vigorous residual trees. One or more regeneration openings should be marked on the north-facing slope near the north end of the tract. In this area, many of the trees are mature or defective from old grazing and fire damage, and some of the largest trees are at a high risk of falling over on the steeper areas.

Summary Tract Silvicultural Prescription and Proposed Activities

This tract should receive a harvest in conjunction with the adjacent tract 19 within the next two years. Trees targeted for removal should include pine, mixed hardwoods that release oak or hickory trees, drought-stressed trees, fire or grazing damaged trees, mature and over-mature trees, and other intermediate trees needed to release vigorous residual trees. Openings should be made in the mixed hardwoods and pine in order to begin a new stand of healthy mixed hardwoods. Openings in the oak-hickory area should be made to harvest damaged and mature trees. This harvest will reduce the stocking level from approximately 94% to 58%, just barely below the b-line. This dip just below the b-line is largely due to the opening needed in the mixed hardwoods area- areas outside the opening will remain above b-line (fully stocked range). Many of the drought-stressed poplar in this area are in very poor health. The July 2012 inventory estimated 11,220 board feet per acre, with 4,506 board feet as harvest stock and 6,714 board feet as growing stock. This would result in a potential harvest volume of 279,380 from tract 21. The top three harvest species by volume would be yellow-poplar at 101,850 board feet, black oak at 37,330 board feet, and chestnut oak at 35,090 board feet. This harvest will result in a healthier more vigorous stand of trees, primarily dominated by the oak-hickory cover type. Following completion of the timber harvest, post-harvest timber stand improvement should be performed to complete the regeneration openings, deaden culls not taken by the logger, and release any trees not sufficiently released during the harvest. Another inventory and management guide should be completed twenty years after completion of the harvest.

Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Mark and Sell Timber Harvest with Tract 19	2013-2014
Post-Harvest Timber Stand Improvement	2015-2016
Review any openings greater than one acre for regeneration	2016-2018
Inventory and Management Guide	2035-2036

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You must indicate the 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. Note: Some graphics may distort due to compression.

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RESOURCE MANAGEMENT GUIDE

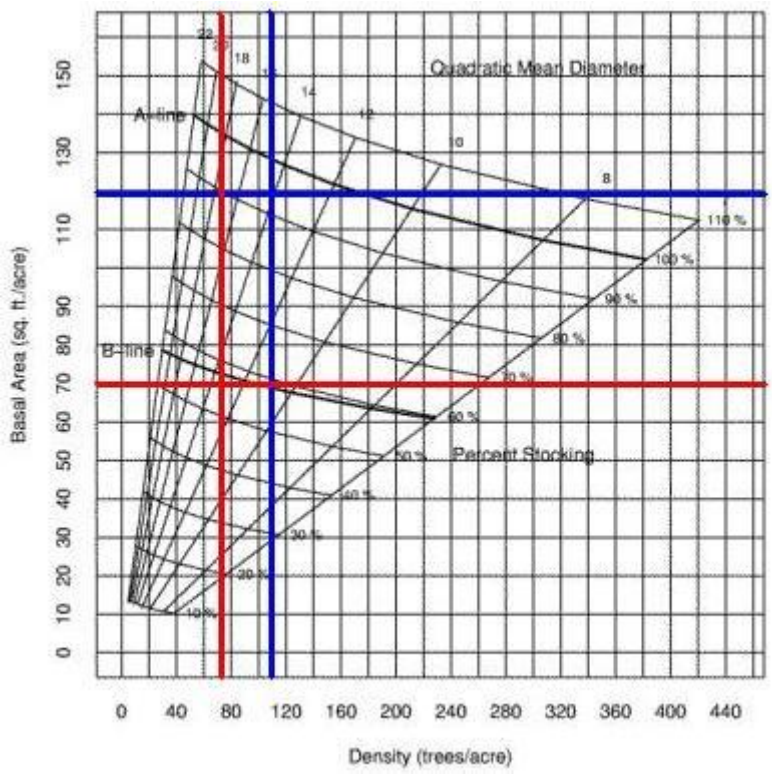
INVENTORY SUMMARY

			Compartment:	3
Jackson-Washington State Forest			Tract:	21
Forester: Michael Spalding			Date:	July 6, 2012

ACREAGE IN:	
Commercial Forest	62
TOTAL AREA	62

SPECIES	HARVEST STOCK	GROWING STOCK	TOTAL VOLUME
yellow-poplar	101,850	84,340	186,190
white oak	24,750	100,170	124,920
black oak	37,330	75,560	112,890
chestnut oak	35,090	75,640	110,730
loblolly pine	14,310	17,070	31,380
red maple	16,570	12,890	29,460
scarlet oak	15,730	13,610	29,340
northern red oak	8,360	18,560	26,920
pignut hickory	6,980	7,770	14,750
red pine	11,140	0	11,140
black cherry	0	4,440	4,440
shagbark hickory	0	3,730	3,730
largetooth aspen	3,170	0	3,170
basswood	0	2,470	2,470
American sycamore	2,060	0	2,060
eastern redcedar	2,040	0	2,040
TRACT TOTALS	279,380	416,250	695,630
PER ACRE TOTALS	4,506	6,714	11,220

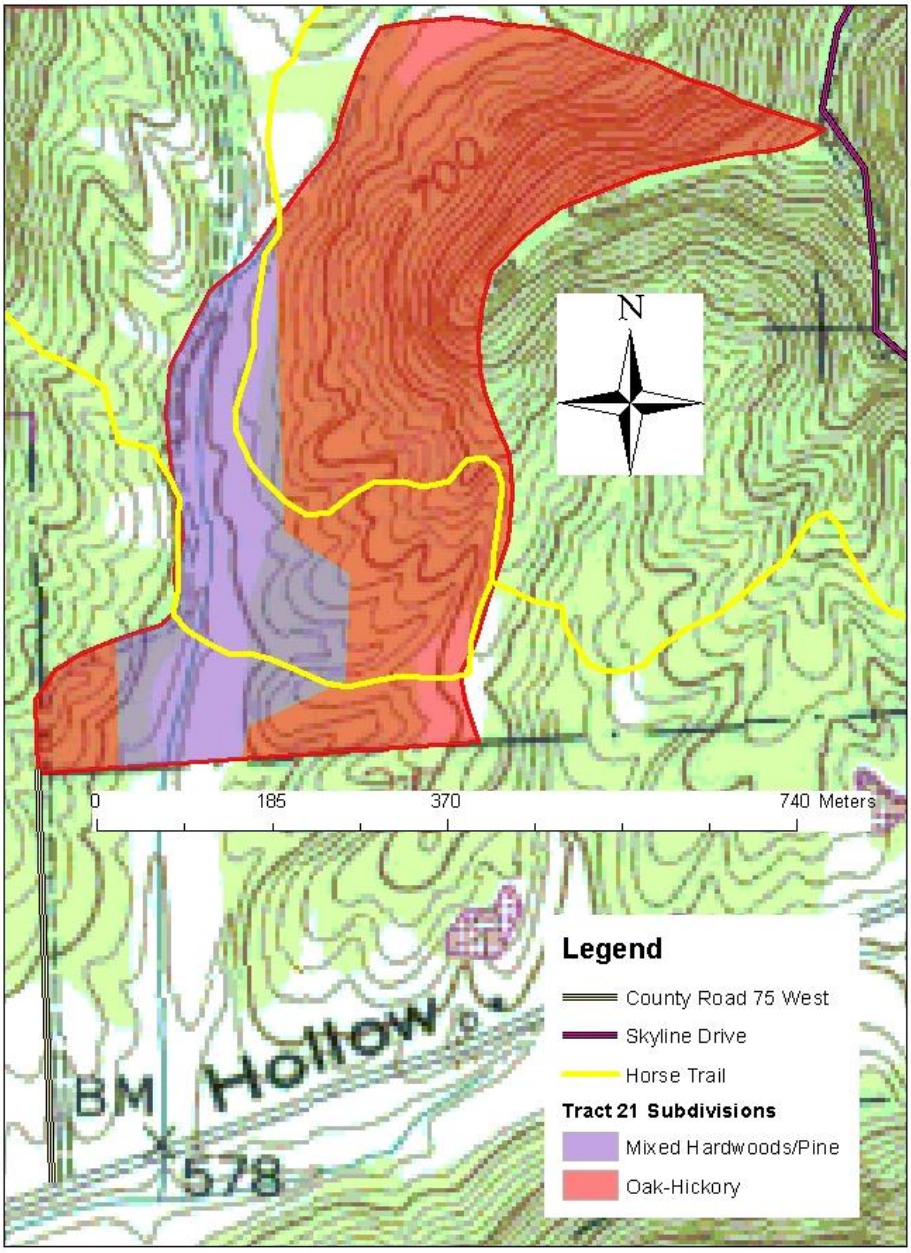
Stocking Guide
Compartment 3 Tract 21



Estimated Pre-Harvest Data in Blue
Total Basal Area per Acre = 119.3 square feet per acre
Total Number Trees per Acre = 110
Average Tree Diameter = 14 inches DBH
Percent Stocking = 94%

Projected Post-Harvest Data in Red
Total Basal Area per Acre = 70.0 square feet per acre
Total Number Trees per Acre = 73
Average Tree Diameter = 13.5 inches DBH
Percent Stocking = 58%

Tract Subdivisions
Compartment 3 Tract 21
Jackson-Washington State Forest



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Compartment 3 Tract 21
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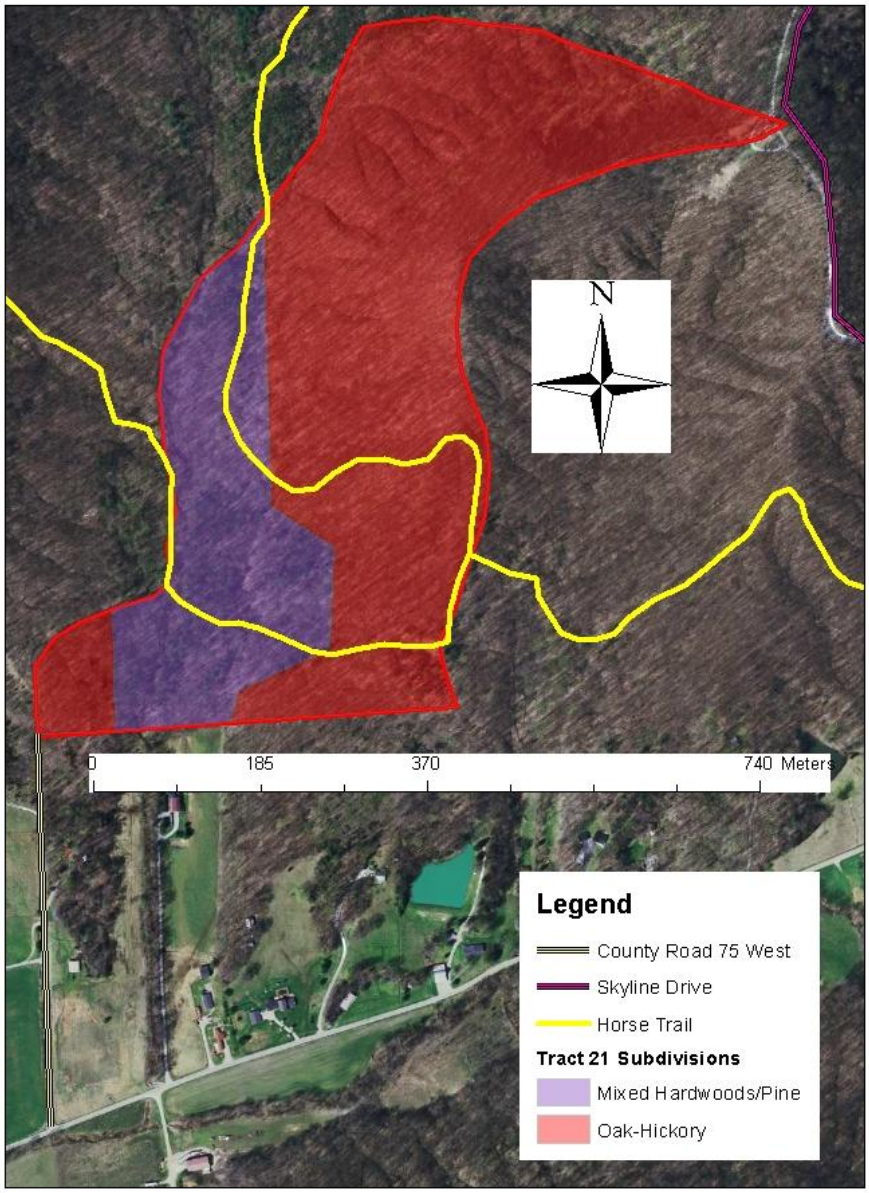

Soils Map
Compartment 3 Tract 21
Jackson-Washington State Forest