Indiana Department of Natural Resources

Indiana Department of Natural Resources – Division of Forestry
Draft Resource Management Guides
Jackson-Washington State Forest
Document Number: JWSF 2019-1

The Indiana State Forest system consists of approximately 158,000 acres of primarily forested land. These lands are managed under the principle of multiple use-multiple benefit to provide forest conservation, goods and services for current and future generations. The management is guided by scientific principles, guiding legislation and comprehensive forest certification standards which are independently audited to help insure long term forest health, resiliency and sustainability.

For management and planning purposes each State Forest is divided into a system of compartments and tracts. In general terms compartments are 500-1,000 acres in size and their subunits (tracts) are 50-200 acres in size. Resource Management Guides (RMGs) are then developed for each tract to guide their management through a 15-25 year management period. There are approximately 1,700 tracts in the State Forest system. During annual planning efforts 50-100 tracts are reviewed and RMGs developed based on current conditions, inventories and assessments.

The RMGs for the following Compartments and Tracts contained in this document are part of tracts under review this year for Jackson-Washington State Forest.

Compartment	Tract
11	11
8	2
9	10
3	14
3	24
2	2

To submit a comment on this document, go to:
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You must indicate the Document Number, or the State Forest Name, Compartment and Tract numbers 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 and review posted at http://www.in.gov/dnr/forestry/3634.htm.

Note: Some graphics may distort due to compression.

State Forest: Jackson-Washington | Compartment: 11 Tract: 11
Forester: Ross Danson, Allen Jasowicz | Date: 1-1-2019
Management Cycle End: 2034 | Management Cycle Length: 15

Location
This tract is located in Washington County, Indiana, more specifically Township 3 North, Range 5 East, Section 5 in Gibson Township in Washington County. This area is located 3 miles west of State Road 39 off Mount Eden Road.

General Description
This tract encompasses approximately 45 acres with a general cover type of mixed hardwoods with a one acre abandoned agricultural field in the southcentral portion of the tract. The field appears to be part of a larger old field that is now occupied with Eastern Red Cedar trees.

History
In 2008 the state purchased approximately 158 acres of property from Donald Hoffman. As part of the acquisition the property boundaries were surveyed and marked with orange carsonite posts. Tract boundaries were modified as a result of the land acquisition. Tract 11 acreage is made up entirely from the acquisition, which means there is no history of state management on the tract prior to 2008.

Prior to the purchase the tract was inventoried indicating an estimated 88,230 bd. ft. of sawtimber within the tract. The top three species by sawtimber volume were red maple, at 23,660 bd. ft., black oak at 20,670 bd. ft., and yellow poplar at 15,060 bd. ft.. Prior to state ownership Donald Hoffman operated a personal saw mill and periodically logged the property to supply timber for his own use.

Landscape Context
The surrounding area to the north and east is mostly flat, and is primarily agricultural lands; the Muscatatuck River is approximately 1.5 miles north of the tract. The surrounding area to the south and west is primarily forested, with moderate to steep slopes. There are a few single-family homes within a one mile radius. A hay field borders a large portion of the eastern boundary of the tract.

Topography, Geology and Hydrology
The tract is mostly flat, with a few gentle slopes running northeast from the southwest corner of the tract. An unmapped intermittent stream cuts across the northern portion of the tract, and another unmapped intermittent cuts across the southern portion of the tract. There's a small wildlife pond in the southcentral portion of the tract, and a large private pond just outside the western tract boundary. The underlying parent material is sandstone.

Soils
Chetwynd (CeD2) This soil series consists of very deep, well drained soils that formed in as much as 46 cm (18 inches) of loess and in the underlying loamy and sandy outwash. They are on dissected outwash plains. Slope ranges from 8 to 80 percent. Most of the Chetwynd soils are in woodland. A few less sloping areas are used for pasture. Native vegetation is mixed deciduous

hardwood forest. It is well suited to trees. Plant competition is moderate. Seedlings survive and grow well if competing vegetation is controlled by cutting, girdling or spraying. The site indexes for hardwood species range from 88 (northern red oak) to 99 (tulip poplar). Preferred trees to manage for are black oak, bur oak, cherrybark oak, chestnut oak, persimmon, red oak, shagbark hickory, shingle oak, swamp chestnut oak, tuliptree, and white oak.

Charlton-Hollis-Rock outcrop complex (ChB), 3 to 8 percent slopes. This map unit consists of gently sloping soils on uplands where the relief is affected by the underlying bedrock. The very deep, well drained Charlton soil is in low pockets. The shallow, excessively drained Hollis soil is on the tops of hills and ridges or near rock outcrops. In many areas stones and boulders 10 inches to 10 feet in diameter cover 0 to 10 percent of the surface, A typical map unit is about 47 percent Charlton soil, 18 percent Hollis soil, 10 percent Rock outcrop, and 25 percent other soils. These soils and areas of exposed bedrock are intermingled so closely that it was not practical to separate them at the scale used for mapping. Areas of the map unit are irregular in shape and range from 6 to 1 00 acres.

Cincinnati silt loam (ChC2) This series consists of very deep, well drained soils that are moderately deep to a fragipan. They are on till plains. Slope ranges from 1 to 18 percent. Much of the area of Cincinnati soils is used for growing cultivated crops, mainly corn, wheat, soybeans, tobacco, and forages, both grasses and legumes. A considerable percentage of the Cincinnati soils is used for pasture or woodland, or is idle. Native vegetation is deciduous mixed hardwoods, including oaks, hickory, tulip poplar, maple, and beech. This soil is well suited to tree. Plant competition is moderate. Seedlings survive and grow well if competing vegetation is controlled. The site indexes for hardwood species range from 80 (n. red oak) to 95 (tulip poplar). Preferred trees to manage for are black oak, bur oak, chestnut oak, scarlet oak, shingle oak, red oak, and white oak.

Gilpin-Berks loams (GnF) This soil complex is found on side slopes in the uplands. These are moderately steep to very steep, moderately deep, well drained soils. They are about 50 percent Gilpin soil and 35 percent Berks soil. The two soils occur as areas so intricately mixed that mapping them separately is not practical. These soils are fairly well suited for tree. The erosion hazard, the equipment limitation, seedling mortality, and plant competition are concerns in managing the wooded areas. Locating logging roads, skid trails, and landings on gentle grades and removing water with water bars, culverts, and drop structures help to control erosion. Seedlings survive and grow well if competing vegetation is controlled by cutting, girdling, or spraying. The site indexes for hardwood species range from 70 (black oak) to 95 (tulip poplar). Preferred trees to manage for are black oak, chestnut oak, scarlet oak, red oak, and white oak.

Hickory silt loam (HrD2) This series consists of very deep, well drained, soils on dissected till plains. Slope ranges from 12 to 18 percent. Most areas are used for pasture, but some are in forest. A few lesser sloping areas are used for forages or row crops. Native vegetation is deciduous forest. This soil is fairly well suited to trees. The erosion hazard, the equipment limitations, and plant competition are the main concerns in the management of wooded areas. Locating logging roads, skid trails, and landings on gentle grades and removing water with water bars, culverts, and drop structures help to control erosion. During wet periods, roads tend to be slippery and ruts form easily. Seedlings survive and grow well if competing vegetation is

controlled and if livestock are excluded from area. The site indexes for hardwood species is 85 for white oak and 85 for northern red oak. Preferred trees to manage for are black cherry, black oak, black walnut, bur oak, chinkapin oak, hickory, pecan, red oak, sugar maple, and white oak.

Otwell silt loam (Otc2) This series consists of very deep, moderately well drained soils. They formed in 50 to 102 cm (20 to 40 inches) of loess and the underlining lacustrine or glaciofluvial sediments. Slopes typically are from 2 to 18 percent, and range from 0 to 50 percent. Some areas are used for pasture and forest. Native vegetation is mixed deciduous hardwood forest. This soil is fairly well suited for trees. Seedling mortality and windthrow hazards are management concerns. Seedlings survive and grow well if competing vegetation is controlled and if livestock are excluded from the area. The site indexes for hardwood species is 65 for white oak. Preferred trees to manage for are black oak, chestnut oak, common persimmon, scarlet oak, shingle oak, white oak.

Stendal silt loam (Sf) This soil series consists of very deep, somewhat poorly drained soils that formed in acid, silty alluvium. These soils are on flood plains and flood-plain steps. Slopes range from 0 to 2 percent. Used mainly for growing corn and soybeans. Some areas are in forest. Native vegetation is dominantly hardwood forest. This soil is well suited to trees. The equipment limitations and plant competition are concerns in managing the woods. Equipment should only be used during dry periods or when the ground is frozen. Seedlings survive and grow well if competing vegetation is controlled and if livestock are excluded from area. The site indexes for hardwood species range from 85 (sweetgum) to 90 (pin oak). Preferred trees to manage for are bur oak, overcup oak, pecan, pin oak, red maple, shellbark hickory, swamp chestnut oak, and swamp white oak.

Wellston silt loam (WeC2, WeD) This series consists of deep or very deep, well-drained soils formed in silty material from loess and from fine-grained sandstone or siltstone and with bedrock at depths of 40 to 72 inches. Wellston soils are on nearly level to steep uplands in areas of acid sandstone, siltstone, or shale bedrock; but are most common on ridgetops. Slope ranges from 0 to 50 percent but are dominantly 4 to 18 percent. Native vegetation consisted of oak, hickory, dogwood, tulip poplar, and cherry. This soil is fairly well suited to trees. The erosion hazard, the equipment limitations, and plant competition are the main concerns in the management of wooded areas. Locating logging roads, skid trails, and landings on gentle grades and removing water with water bars, culverts, and drop structures help to control erosion. During wet periods, roads tend to be slippery and ruts form easily. Seedlings survive and grow well if competing vegetation is controlled. The site indexes for hardwood species is 81 (red oak) and 90 (yellow-poplar). Preferred trees to manage for are black oak, chestnut oak, persimmon, red oak, scarlet oak, shagbark hickory, sugar maple, yellow-poplar, and white oak.

Zanesville silt loam (ZaB, ZaC2) This gently sloping, deep, moderately well-drained or well-drained soil is found on ridge tops on the uplands. The soil is well suited to trees. Plant competition is moderate. Seedlings survive and grow well if competing vegetation is controlled by cutting, girdling, or spraying. The site index for this soil ranges from 70 (white oak) to 90 (yellow-poplar). Preferred trees to manage for are black oak, bur oak, chestnut oak, persimmon, scarlet oak, red oak, and white oak.

Access
The northern section of the tract fronts Mount Eden Road for approximately 250 feet. This road frontage is approximately 3 miles west of State Road 39 along Mount Eden Road.

Boundary
The northern portion of the tract is a narrow piece, approximately 250 wide and 1,000 feet long, that juts out of the main body of the tract, and is bounded by Mount Eden Road to the north, and private property to the east and west. To the south of this narrow piece is the main body of the tract, which is roughly 1,300 feet wide and 1,300 feet long. The main body of the tract is bordered by private property to the east and west, and State Forest to the south. A fenced hay field borders a large portion of the eastern tract boundary. Private forestland borders the majority of the western tract boundary; however, there is a large private pond, approximately an acre, adjacent to the central portion of the western tract boundary.

Wildlife
A diverse assortment of wildlife resources are found on this tract conducive to providing habitat for a variety of wildlife species. Habitat includes:

- mixed hardwood stands with varied structure
- riparian areas
- open field provides edge habitat and early successional forest

Hard mast trees such as oaks, hickories, and American beech provide food source to both game and non-game species. The openings are varied in size but all present similar, dense vegetation that favors wildlife preferring this habitat structure. Such vegetative species include sassafras, grapevine, and other early successional shrubs.

Snags (standing dead or dying trees), are an important wildlife habitat features in Indiana's forests. They are used by a wide range of species as essential habitat features for foraging activity, nest/den sites, decomposers (e.g., fungi and invertebrates), bird perching and bat roosting. Additionally, snags are an important contributor to the future pool of downed woody material. Downed woody debris provides habitat and protection for many species and contributes to healthy soils.

Forest wildlife species depend on live trees for shelter, escape cover, roosting and as a direct (e.g., mast, foliage) or indirect (e.g., foraging substrate) food resource. The retention of live trees within various diameter classes is of particular concern to habitat specialists such as species of conservation need like the Indiana bat.

The Division of Forestry has developed compartment level guidelines for two important wildlife structural habitat features. Current assessments indicate the abundance of these habitat features meet or exceed recommended base levels in all but the largest diameter classes. This is indicative of the younger stand present and harvest history prior to State acquisition. The prescribed management will maintain or enhance the relative abundance of these features.

Wildlife Habitat Features

Snags (all species)	Maintenance Level	Inventory	Available Above Maintenance
5"+DBH	179	2,000	1821
9"+DBH	134	165	31
19"+DBH	22	0	-22

A Natural Heritage Database review was completed for this tract. If Rare, Threatened or Endangered species (RTE's) 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 is a mixed hardwood forest with a one acre interior grass field. Invasive species were widespread, particularly Japanese stiltgrass, Japanese honeysuckle and multiflora rose, which are common species throughout the County.

Forest Condition

TM 901 RESOURCE MANAGEMENT GUIDE			
INVENTORY SUMMARY			
		Compartment:	11
State Forest:	Jackson-Washington	Tract:	11
Forester:	Danson, Jasowicz	Inventory Date:	7/22/16

ACREAGE IN:	
Forest	44
Non-Forest	1
Water	
Permanent Openings	
Other Uses	
TOTAL AREA	45

(Estimated Tract Volumes for Commercial Forest Area-Bd.Ft., Doyle Rule)

SPECIES	TOTAL VOLUME
Black Oak	32,990.00
Yellow Poplar	28,320.00
Red Maple	23,690.00
Pignut Hickory	14,560.00
Sugar Maple	9,870.00
Northern Red Oak	7,100.00
Eastern Redcedar	6,160.00
American Beech	6,010.00

Shagbark Hickory	3,310.00
Virginia Pine	2,920.00
White Ash	2,870.00
Chestnut Oak	2,680.00
Sassafras	1,620.00
TRACT TOTALS	142,100.00
PER ACRE TOTALS	3,157.78

The 2016 inventory shows total volume at 3,157 bd. ft. per acre. Total basal area was estimated 81.6 sq. ft. with 193 trees per acre. These values indicate that current stocking for this tract is at 73%. The volume available for harvest at this time is low, at approximately 140 bd. ft. per acre. No harvest is recommended at this time. .

Recreation
The main recreational use of the tract is hunting. The prescribed management will allow the continuation of this traditional forest activity.

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

Tract Subdivision Description and Prescription
Mixed Hardwoods (44 acres)
The entire subdivision is composed of a mixed hardwood forest. The top three species in terms of sawtimber volume are black oak, yellow poplar, and red maple. The bulk of the remaining sawtimber volume is made up of sugar maple, Eastern redcedar, Northern red oak, American beech, and pignut hickory. Eastern redcedar is the most common tree within the subdivision. The inventory estimated a total of 8,633 trees within the subdivision: 2,380 of those are Eastern redcedar; and 1,951 of those cedars are pole-sized trees. Red maple and yellow poplar are also prolific in the pole-size and sub-merchantable diameter classes. The inventory estimated 999 sub-merchantable yellow poplar stems. Many of these small-diameter yellow poplar trees occupy a past opening in the northern portion of the tract. The inventory estimated a total of 1,064 red maple trees within the subdivision, 881 of those being pole-size trees. Sawtimber volume is low; the inventory estimated 3,179 bd. ft. of sawtimber per acre in 25 sawtimber trees. Given the vast amount of pole-size trees, and the lack of saw-timber volume, a timber harvest is not recommended at this time.

The inventory estimated 0 snags in the 19 inch and above diameter class. Snags in the large diameter class will improve as the stand ages.

The area surrounding the abandoned agricultural field appears to be an old field that was left unattended due to the presence of Eastern red cedar now prolific in that area.

Japanese stiltgrass has been found throughout most of the tract. Japanese honeysuckle can be found in the southern and eastern half of the subdivision. Multiflora rose is scattered in the northern, eastern, and northwestern areas of the subdivision.

Field (1 acre)
The abandoned agricultural field is located in the southcentral portion of the tract. It should not be maintained as a field, but allowed to naturally convert back to native hardwood species through natural succession or tree planting. This process also provides for early successional habitat during the transition period.

Tract Prescription and Proposed Activities
A timber stand improvement (TSI) operation is prescribed to release trees with good form and vigor, create wildlife snags and to minimize the spread of invasive species. Given the lack of sawtimber volume, a timber harvest is not recommended at this time. The tract should be re-evaluated in 15-20 years.

Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Invasive species management	2019-2022
Timber Stand Improvement	2019-2022
Re-inventory and Management Guide	2032

Jackson-Washington State Forest
Compartment 11 Tract 11
Tract Subdivision

N

Legend

Tract Boundary
Pond
Field

0 275 550 1,100 Feet

State Forest: Jackson-Washington **Compartment: 8 Tract: 2**
Forester: Quentin Beahrs **Date: April 23, 2018**
Management Cycle End Year: 2043 **Management Cycle Length: 25**

Location
The tract is located in Washington County, Indiana, more specifically Township 3 North Range 4 East, Sections 3 and 10 of Monroe Township. This area is located approximately 13 miles south of Brownstown off Rooster Hill Road.

General Description
The tract is approximately 26 acres and the general cover type is mixed hardwoods with a small portion of the tract in oak – hickory.

History
Tract 2 was created by two separate land purchases. First, in 1964, a 312 acre parcel was purchased from Juanita and Murrell Dorsey. A small portion of land from that purchase makes up the southeast corner of tract 2. In 1990, 60.88 acres was purchased from William P. Creviston, which created the main acreage of the tract as it's identified today.

In 1998, a trash dump site was cleaned up.

Landscape Context
The land south of the tract is Jackson-Washington State Forest. However, the land adjacent to the tract to the north, east, and west is private property. Much of this land is forested but there are also agricultural fields, open grass areas, ponds, and single family residences within one mile.

Topography, Geology and Hydrology
This tract consists of one major ridge running east and west across the southern boundary of the tract, and one major ridge running northeast and southwest through the center of the tract. The parent material of the tract consists of sandstone, siltstone, and shale.

Soils
Berks-Weikert complex (BhF) This soil series is steep to very steep, well drained soils are on side slopes in the upland areas. The Berks soil is moderately deep, and the Weikert soil is shallow. The two soils occur as areas so intricately mixed that mapping them separately is not practical. This soil complex is suited for trees. The erosion hazard, the equipment limitations, seedling mortality, windthrow hazard, and plant competition are concerns in managing the woods. Locating logging roads, skid trails, and landings on gentle grades and removing water with water bars, culverts, and drop structures help to control erosion. The site indexes for hardwood species range from 50 (black oak) to 70 (white oak). Preferred trees to manage for are black oak, chestnut oak, scarlet oak, red oak, and white oak.

Burnside silt loam (Bu) This series consists of deep, well drained soils that formed in 30 to 61 centimeters (12 to 24 inches) of medium-textured alluvium and the underlying loamy-skeletal alluvium. These soils are on flood plains and alluvial fans. It is occasionally flooded for brief periods in the spring. Native vegetation is deciduous hardwoods. This soil is well suited for trees.

Plant competition is moderate. Seedlings survive and grow well if competing vegetation is controlled by cutting, girdling, or spraying. The site index for hardwood species is 95 for yellow-poplar. Preferred trees to manage for are bitternut hickory, white oak, red oak, black walnut, sugar maple, and yellow-poplar.

Gilpin silt loam (GID2) This strongly sloping, moderately deep, and well drained soil is on side slopes in the uplands. This soil is fairly well suited to trees. The erosion hazard, the equipment limitations, and plant competition are the main concerns in the management of wooded areas. Locating logging roads, skid trails, and landings on gentle grades and removing water with water bars, culverts, and drop structures help to control erosion. During wet periods, roads tend to be slippery and ruts form easily. Seedlings survive and grow well if competing vegetation is controlled by cutting, girdling, or spraying. The site indexes for hardwood species range from 80 (red oak) to 95 (yellow- poplar). Preferred trees to manage for are black oak, chestnut oak, scarlet oak, red oak, and white oak.

Wellston silt loam (WeC2, WeD) This series consists of deep or very deep, well-drained soils formed in silty material from loess and from fine-grained sandstone or siltstone and with bedrock at depths of 40 to 72 inches. Wellston soils are on nearly level to steep uplands in areas of acid sandstone, siltstone, or shale bedrock; but are most common on ridgetops. Slope ranges from 0 to 50 percent but are dominantly 4 to 18 percent. Native vegetation consisted of oak, hickory, dogwood, tulip poplar, and cherry. This soil is fairly well suited to trees. The erosion hazard, the equipment limitations, and plant competition are the main concerns in the management of wooded areas. Locating logging roads, skid trails, and landings on gentle grades and removing water with water bars, culverts, and drop structures help to control erosion. During wet periods, roads tend to be slippery and ruts form easily. Seedlings survive and grow well if competing vegetation is controlled. The site indexes for hardwood species is 81 (red oak) and 90 (yellow-poplar). Preferred trees to manage for are black oak, chestnut oak, persimmon, red oak, scarlet oak, shagbark hickory, sugar maple, yellow-poplar, and white oak.

Access
Access to this tract is directly off Rooster Hill Road. See map.

Boundary
The tract boundaries are defined by a county road to the south and private property to the west, north, and east. See maps.

Wildlife
A diverse assortment of wildlife resources are found on this tract conducive to providing habitat for a variety of wildlife species. Habitat includes:

- Contiguous oak-hickory canopy
- Mixed hardwood pockets with varied structure
- Riparian areas

Hard mast trees such as oaks, hickories, and American beech provide food source to both game and non-game species.

Snags (standing dead or dying trees), are an important wildlife habitat feature in Indiana's forests. They are used by a wide range of species as essential habitat features for foraging activity, nest/den sites, decomposers (e.g., fungi and invertebrates), bird perching and bat roosting. Additionally, snags are an important contributor to the future pool of downed woody material. Downed woody debris provides habitat and protection for many species and contributes to healthy soils.

Forest wildlife species depend on live trees for shelter, escape cover, roosting and as a direct (e.g., mast, foliage) or indirect (e.g., foraging substrate) food resource. The retention of live trees within various diameter classes is of particular concern to habitat specialists such as the Indiana bat.

The Division of Forestry has developed compartment level guidelines for two important wildlife structural habitat features. Current assessments indicate the abundance of these habitat features meet or exceed recommended base levels in all diameter classes. The prescribed management will maintain or enhance the relative abundance of these features.

Snags (All Species)	Maintenance Level	Inventory	Available Above Maintenance
5"+ DBH	104	166	62
9"+ DBH	78	78	0
19"+ DBH	13	18	5

A Natural Heritage Database review was completed for this tract. If Rare, Threatened or Endangered species (RTE's) were identified or encountered 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
The tract is a mixed hardwood and oak-hickory forest. Grapevine was observed in the tract. The heavy patches of grapevine should be treated prior to a prescribed timber harvest.

Forest Condition

INVENTORY SUMMARY	
State Forest:	Jackson-Washington
Forester:	Quentin Beahrs
Compartment:	8
Tract:	2
Inventory Date:	4/17/2018

ACREAGE IN:	
Forest	26
Non-Forest	
Water	
Permanent Openings	
Other Uses	
TOTAL AREA	26

SPECIES	TOTAL VOLUME
Chestnut Oak	62,980.00
Yellow Poplar	40,740.00
White Oak	29,860.00
Sugar Maple	27,820.00
Pignut Hickory	19,990.00
American Beech	17,540.00
Northern Red Oak	16,750.00
Black Oak	14,610.00
Shagbark Hickory	8,850.00
White Ash	7,870.00
Red Maple	5,710.00
Bitternut Hickory	3,650.00
Sassafras	1,520.00
Red Elm	860.00
Scarlet Oak	580.00
TRACT TOTALS	259,330.00
PER ACRE TOTALS	9,974.23

The 2018 inventory estimated a total volume of 9,974 board feet and an average basal area of 119.9 sq. ft. per acre in this tract. There is an average of 156 trees per acre. These values indicate current stocking for the tract is 99%. The prescribed harvest is expected to be in the 50-100 MBF range.

Much of the tract is composed of mixed hardwood forests. Oaks, maples, yellow poplars, and hickories are the most common species in these areas. Though the overstory and regeneration show a wide variety of species, the understory is primarily composed of sugar maple and beech. In the oak-hickory subdivision, chestnut oak is most common along ridgetops, though white oak, pignut hickory, and northern red and black oaks grow along ridgetops, as well. Most of the oaks and hickories have good form, but many are hollow or show signs of decline. The most commonly regenerating species are chestnut oak, white oak, maple, and American beech.

Recreation

The major recreational use of this tract is hunting. There are no recreational trails in this tract.

During proposed management activity, specifically a timber harvest, public access into the tract will be restricted for safety reasons. Access into the area will be permitted following the completion of the harvest.

Cultural
No known archaeological sites have been reported within this tract. If any cultural sites are found, adverse impacts will be avoided during management or construction activities.

Tract Subdivision Description and Prescription
Mixed hardwood (17.75 acres)
This tract is characterized as mostly mixed hardwoods. Yellow poplar is the dominant species in this subdivision. The inventory estimated 1,567 BDFT of yellow poplar saw timber per acre. In this subdivision chestnut oak is the second most abundant species but the top species overall at 2,422 BDFT per acre. The bulk of the remaining tree species in this subdivision are white oak, sugar maple, pignut hickory, and American beech. The understory is diverse, but American beech is the dominant understory tree, followed by sugar maple, and white ash. Generally, trees are healthy, but pockets of trees show decline and drought stress. There are also a few areas of high wind throw, the few remaining trees should be salvaged in order to release light and nutrients for a new cohort of trees to grow. In this subdivision both and single tree and group selection are recommended in order to best release light and nutrients to the residual stand. Following the recommended timber management activity, timber stand improvement (TSI) should be conducted throughout the subdivision to control any invasive species found and further release future crop trees.

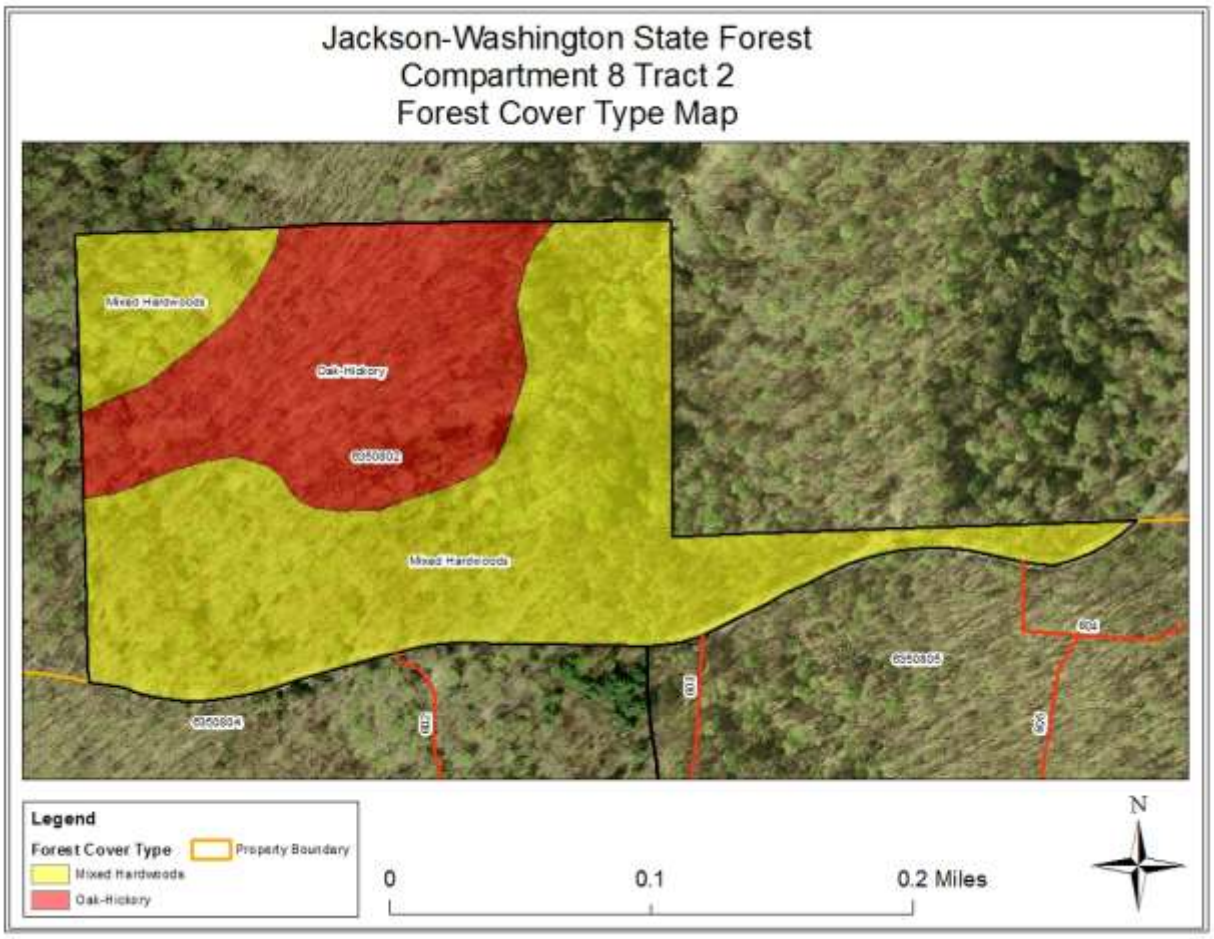
Oak - Hickory (8.25 acres)
The remainder of the tract is characterized as oak-hickory. Chestnut oak is the dominant species. The bulk of the remaining tree species in this subdivision are white oak, pignut hickory, northern red and black oak, and shagbark hickory. The understory is rich with diversity including several oak and hickory species, but sugar maple is the dominant understory tree. In this subdivision the trees appear to be healthy but many are showing signs of decline and sound hollow. The recommended management for this subdivision is to utilize single tree and group selection in order to remove those trees with defect to release light and nutrients to the surrounding trees and promote seedling growth in the understory. Following the recommended timber management activity TSI should be conducted to further release desired mast producing species and remove any invasive species discovered during the management activity.

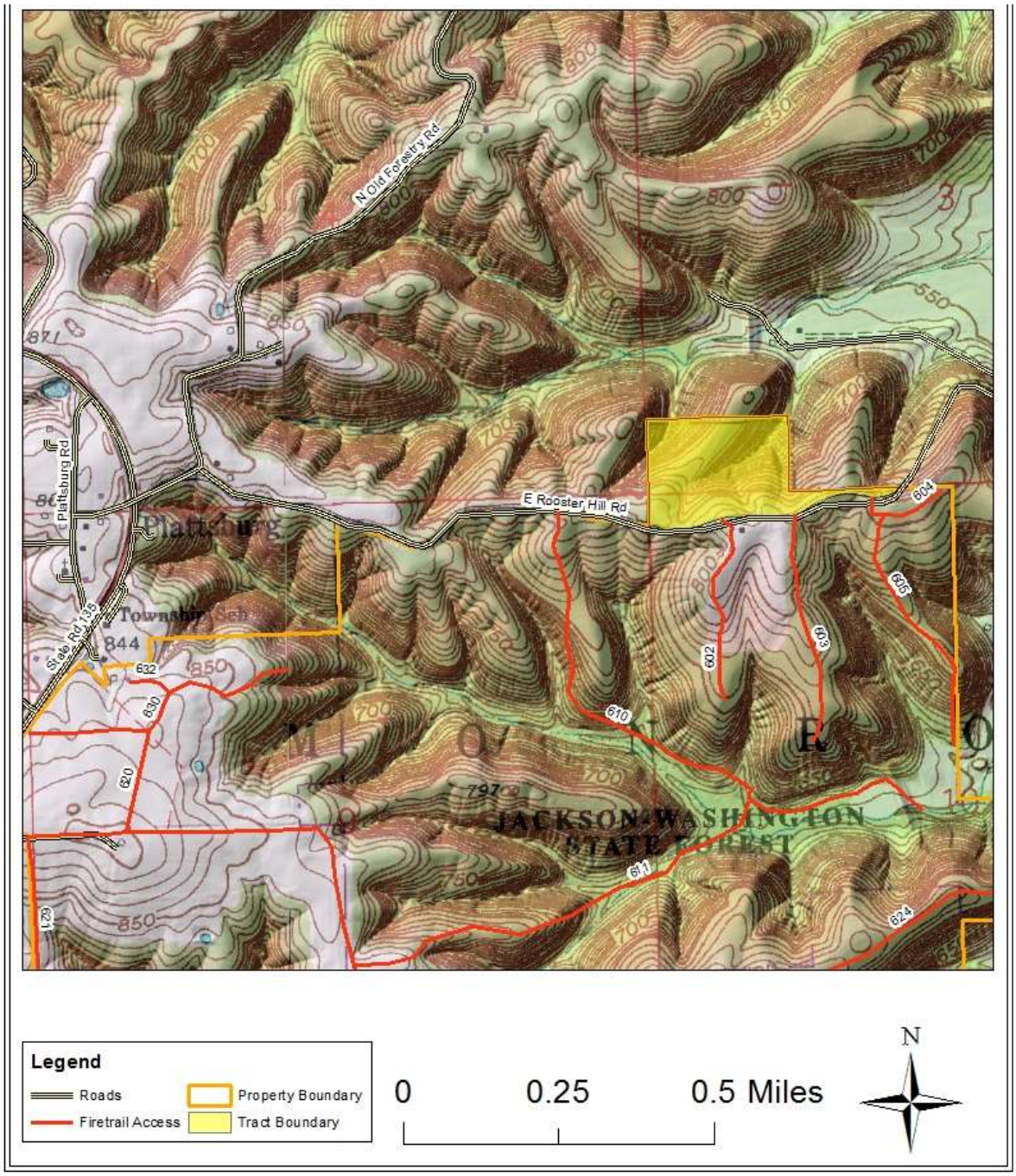
Tract Prescription and Proposed Activities
In general, trees in this tract appear to be healthy, but wind throw, and signs of decline and drought stress show. The proposed management activity is to conduct an improvement harvest to remove trees with defect and low vigor to release healthy trees, therefore, improving the overall health and quality of the stand. This improvement harvest should be conducted over the next 5-10 years utilizing both single tree and group tree selection. Group selection, if used, is expected to occur on less than 5 acres. Prior to a timber harvest, the areas with an overabundance of grapevines should be treated. Following a timber harvest TSI should be conducted. The purpose of the TSI is to target invasive species, complete regeneration openings, reduce grapevine concentrations, and release oak or hickory and other residual crop trees.

No invasive species were noted during the inventory of this tract. Since the inventory was conducted before leaf out some invasive species may have gone unnoticed. This tract should receive another inventory and management guide in 20 years. The proposed management activity should have little to no impact on wildlife communities within or near the tract.

Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Pre-harvest grapevine control	2019-2020
Mark, Sell and harvest timber	2020-2023
Post-harvest Timber Stand Improvement	2023-2024
Regeneration opening monitoring > 1acre in size	2024-2025
Inventory and Management Guide	2043-2044




N Old Forestry Rd
E Rooster Hill Rd
Plattsburg Rd
State Rd 136
Plattsburg
Township
844
632
850
830
620
621
797
JACKSON-WASHINGTON
STATE FOREST
611
610
602
603
604
605
624
Legend
Roads
Firetrail Access
Property Boundary
Tract Boundary
0
0.25
0.5 Miles
N

State Forest: Jackson-Washington **Compartment: 9 Tract 10**
Forester: Ross Danson **Date: July 25, 2016**
Management Cycle End Year: 2041 **Management Cycle Length: 25**

Location
This tract is located in section 36, T 4 N, R 4 E in Monroe Township of Washington County.

General Description
This tract is approximately 43 acres. The general cover type is Oak-Hickory and mixed hardwood forest, with a small component of the tract being a mixed hardwood/pine cover type.

History
Parts of this tract originally belonged to compartment 36 tract 17. In 1971 an inventory estimated total volume at 3,465 bd.ft./acre; however, it is unclear what portion of that forest inventory covered the current tract. In 1988, the tract boundary was expanded following a land purchase, and realigned again in 2001.

Landscape Context
Much of the surrounding land to the south, east, and west is forested. The tract is situated on the northern end of a large block of state forest land. North of the tract is primarily bottom land agricultural fields; the Muscatatuck River is approximately a mile north of the tract.

Topography, Geology and Hydrology
The western portion of the tract is dominated by a flat ridgetop. Multiple finger ridges and ephemeral drains jut off of this ridgetop and descend eastward into a narrow valley. This valley converges on a mapped blue line stream that runs north to south and forms the eastern tract boundary.

Soils
Berks-Weikert complex (BhF) This soil series is steep to very steep, well drained soils are on side slopes in the upland areas. The Berks soil is moderately deep, and the Weikert soil is shallow. The two soils occur as areas so intricately mixed that mapping them separately is not practical. This soil complex is suited for trees. The erosion hazard, the equipment limitations, seedling mortality, windthrow hazard, and plant competition are concerns in managing the woods. Locating logging roads, skid trails, and landings on gentle grades and removing water with water bars, culverts, and drop structures help to control erosion. The site indexes for hardwood species range from 50 (black oak) to 70 (white oak). Preferred trees to manage for are black oak, chestnut oak, scarlet oak, red oak, and white oak.

Burnside silt loam (Bu) This series consists of deep, well drained soils that formed in 30 to 61 centimeters (12 to 24 inches) of medium-textured alluvium and the underlying loamy-skeletal alluvium. These soils are on flood plains and alluvial fans. It is occasionally flooded for brief periods in the spring. Native vegetation is deciduous hardwoods. This soil is well suited for trees. Plant competition is moderate. The site index for hardwood species is 95 for yellow-poplar. Preferred trees to manage for are bitternut hickory, white oak, red oak, black walnut, sugar maple, and yellow-poplar.

Wellston silt loam (WeC2, WeD) This series consists of deep or very deep, well-drained soils formed in silty material from loess and from fine-grained sandstone or siltstone and with bedrock at depths of 40 to 72 inches. Wellston soils are on nearly level to steep uplands in areas of acid sandstone, siltstone, or shale bedrock; but are most common on ridgetops. Slope ranges from 0 to 50 percent but are dominantly 4 to 18 percent. Native vegetation consisted of oak, hickory, dogwood, tulip poplar, and cherry. This soil is fairly well suited to trees. The erosion hazard, the equipment limitations, and plant competition are the main concerns in the management of wooded areas. Locating logging roads, skid trails, and landings on gentle grades and removing water with water bars, culverts, and drop structures help to control erosion. During wet periods, roads tend to be slippery and ruts form easily. The site indexes for hardwood species is 81 (red oak) and 90 (yellow-poplar). Preferred trees to manage for are black oak, chestnut oak, persimmon, red oak, scarlet oak, shagbark hickory, sugar maple, yellow-poplar, and white oak.

Zanesville silt loam (ZaB, ZaC2) This gently sloping, deep, moderately well-drained or well-drained soil is found on ridge tops on the uplands. The soil is well suited to trees. Plant competition is moderate. The site index for this soil ranges from 70 (white oak) to 90 (yellow-poplar). Preferred trees to manage for are black oak, bur oak, chestnut oak, persimmon, scarlet oak, red oak, and white oak.

Access
From the intersection of Pull Tight Road and Mail Route Road, travel north on Mail Route Road to the parking area at the end of the road, approximately 5 miles. From this point take the fire trail (#720) that heads due north from the parking area. The trail forks approximately a quarter mile from the parking area, take the left fork and the southernmost tip of the tract is another quarter mile.

Boundary
Tract boundaries consist of property line to the north, a drainage ravine and valley to the north-east and east, and a broad ridgetop to the south and west.

Wildlife
A diverse assortment of wildlife resources are found on this tract conducive to providing habitat for a variety of wildlife species. Habitat includes:

- contiguous oak-hickory canopy
- mixed hardwood stands with varied structure
- small Pine pockets
- riparian areas

Hard mast trees such as oaks, hickories, and American beech provide food source to both game and non-game species.

Snags (standing dead or dying trees), are an important wildlife habitat features in Indiana's forests. They are used by a wide range of species as essential habitat features for foraging activity, nest/den sites, decomposers (e.g., fungi and invertebrates), bird perching and bat roosting. Additionally, snags are an important contributor to the future pool of downed woody

material. Downed woody debris provides habitat and protection for many species and contributes to healthy soils.

Forest wildlife species depend on live trees for shelter, escape cover, roosting and as a direct (e.g., mast, foliage) or indirect (e.g., foraging substrate) food resource. The retention of live trees within various diameter classes is of particular concern to habitat specialists such as the Indiana bat.

The DoF has developed compartment level guidelines for two important wildlife structural habitat features. Current assessments indicate the abundance of these habitat features meet or exceed recommended base levels in all diameter classes. The prescribed management will maintain or enhance the relative abundance of these features.

Snags	Maintenance Level	Inventory	Available Above Maintenance
5"+ DBH	173.6	263	90
9"+ DBH	130.2	263	133
19"+ DBH	21.7	42	21

A Natural Heritage Database review was completed for this tract. If Rare, Threatened or Endangered species (RTE's) were identified or encountered for this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species. See addendum.

Communities

This is primarily an oak-hickory forest, with a mixed hardwoods forest along the drainages. A small forest type of mixed hardwoods interspersed with pine is located along one of the flat ridgetops. Multiflora rose, stilt grass, and grapevine were observed but they are not prevalent.

Forest Condition

TM 901 RESOURCE MANAGEMENT GUIDE			
INVENTORY SUMMARY			
		Compartment:	9
State Forest:	Jackson-Washington	Tract:	10
Forester:	Jasowicz/Danson	Inventory Date:	7/25/16

ACREAGE IN:	
Forest	43
Non-Forest	
Water	
Permanent Openings	
Other Uses	
TOTAL AREA	43

(Estimated Tract Volumes for Commercial Forest Area-Bd.Ft., Doyle Rule)

SPECIES	TOTAL VOLUME
Chestnut Oak	129,600.00
Yellow Poplar	77,460.00
Sugar Maple	38,110.00
Northern Red Oak	31,410.00
White Ash	27,350.00
Basswood	16,120.00
American Beech	14,260.00
Pignut Hickory	12,900.00
White Oak	7,440.00
Red Maple	4,280.00
Black Oak	4,000.00
TRACT TOTALS	362,930.00
PER ACRE TOTALS	8,440.23

The 2016 inventory shows an average volume of 8,440 bd.ft./acre and an average basal area of 109.8 sq. ft. per acre in this tract. There is an average of 145 trees per acre. These values indicate that current stocking for this tract is at 100%. The inventory tally approximates the removal of 2,400-3,400 bd.ft./acre with a leave volume of 5,000-6,000 bd.ft./acre, with residual basal area near 78 sq. ft. per acre and post-harvest stocking around 67%.

Recreation

A small section of the Knobstone trail (@ mile marker 47d) treks near the southern boundary of the tract. The other main recreational use of the tract is hunting.

During the proposed management activities, specifically timber harvesting, public access into the tract will be restricted for safety reasons. Access into the area will be permitted following the

completion of the harvest. This may or may not require a temporary reroute or closure along the KT.

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

Tract Subdivision Description and Prescription

Mixed Hardwood and Pine (9 acres)
This subdivision accounts for the smallest portion of the tract. The subdivision is located in the northwest corner of the tract and sits on a flat broad ridgetop that extends west beyond the tract boundary. Most of the ridgetop resembles a declined pine plantation. The most common species in the subdivision is yellow poplar, followed by white pine; however, white pine was not collated within the inventory plots because the distribution of pine trees is sporadic. Most of the sawtimber sized yellow poplar and white pine are in the 14 inch to 20 inch diameter range and large sawtimber sized trees are uncommon. The other subdivisions would benefit from an improvement harvest but most of this subdivision should be excluded from the harvest and allowed to mature.

Mixed Hardwoods (11 acres)
This subdivision takes up a minor part in the tract. It lies mostly along the mapped blue line stream that creates the eastern tract boundary and along the ephemeral drains that run into the mapped blue line stream. The most common overstory species are yellow poplar, sugar maple, white ash, and American beech. Other species such as basswood, red maple, and various oak species also reside in this subdivision. The prescribed management recommendation for this subdivision is to conduct an improvement harvest removing poorly formed and declining trees, which would funnel more resources to healthier trees of better form and vigor.

Oak Hickory (23 acres)
This is the predominant subdivision in the tract. Chestnut oak is the most common overstory species, estimated at 129,600 bd.ft. throughout the tract. The second most common overstory species is Northern red oak, estimated at 31,410 bd.ft. throughout the tract. Other species such as pignut hickory, sugar maple, American beech, basswood, white oak, and others reside in the subdivision. The management recommendation for this tract is an improvement harvest, removing poorly formed and declining trees to promote the growth of healthy trees with good form and vigor. The top species for removal is chestnut oak, which would remain the dominant overstory species following the harvest.

Tract Prescription and Proposed Activities
The proposed management activity is to conduct an improvement harvest to improve the overall health and quality of the tract. This improvement harvest should occur within the next 3-5 years utilizing a combination of single tree and group selection methods. The purpose of single tree selection is to remove drought stressed or wind damaged trees, mature and over-mature trees, declining ash due to Emerald ash borer, mixed hardwoods that release quality oak and hickory, and other intermediate trees needed to release residual crop trees. Where conditions warrant,

group selection silviculture could be utilized to facilitate the regeneration of shade intolerant species. Such regeneration openings would cover less than 10% of the tract. Within two years of the timber harvest, timber stand improvement (TSI) operation should follow to adequately complete the group openings, treat cull trees, and release residual crop trees in the remaining tract acreage. During TSI trees will be deadened to create snag habitats for wildlife, such as the Indiana bat. Invasive species are to be monitored and treated as needed.

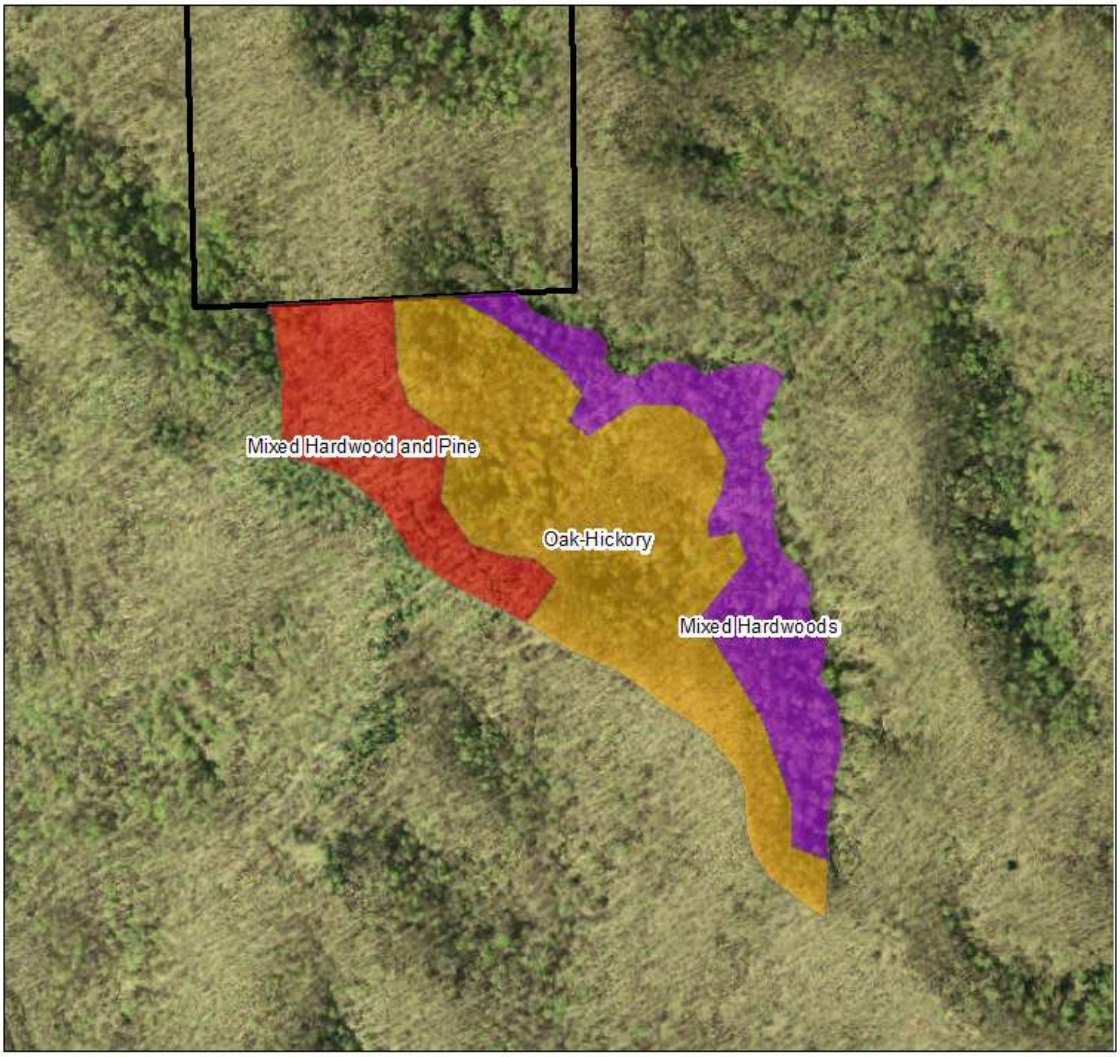
Tree selection will consider both safety and aesthetic impacts along trail corridors, as well as interpretive opportunities.

During and after completion of the proposed timber harvest BMP's will be implemented in order to minimize soil erosion. This tract should receive another inventory and management guide 20 years following the completion of the timber harvest. The proposed management activity is expected to increase tract habitat diversity and provide a variety of wildlife benefits, including snag creation, beneficial large woody debris and enhanced Oak growth.

Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Mark and sell timber	2019-2023
Post-harvest TSI and invasive species management	2023-2025
Regeneration monitoring	3 yrs after harvest
Trail management and maintenance	ongoing
Inventory and management guide	2041

Jackson-Washington State Forest
Compartment 09 Tract 10
Covertype Map



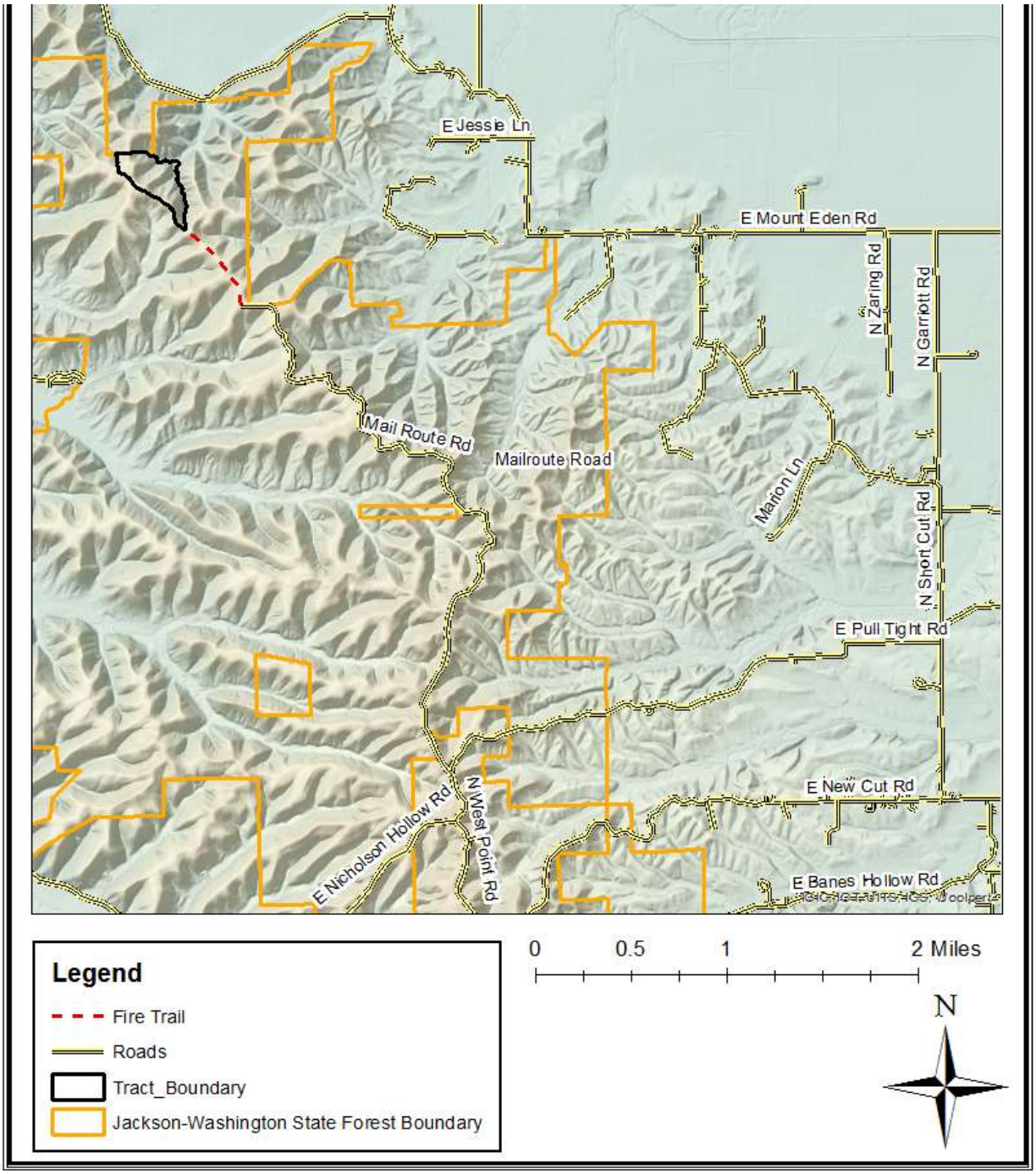
Legend

Cover Type

- Mixed Hardwood and Pine
- Mixed Hardwoods
- Oak-Hickory
- Jackson-Washington State Forest Boundary

0 500 1,000 Feet

N


E Jessie Ln
E Mount Eden Rd
N Zaring Rd
N Garriott Rd
Mail Route Rd
Mailroute Road
Marion Ln
N Short Cut Rd
E Pull Tight Rd
E New Cut Rd
N West Point Rd
E Nicholson Hollow Rd
E Banes Hollow Rd
Legend
Fire Trail
Roads
Tract_Boundary
Jackson-Washington State Forest Boundary
0
0.5
1
2 Miles
N

State Forest: Jackson-Washington **Compartment: 3 Tract: 14**
Forester: Quentin Beahrs **Date: May 29, 2018**
Management Cycle End Year: 2043 **Management Cycle Length: 25**

Location
The tract is located in Jackson County, Indiana, more specifically Township 5 North Range 4 East, Section 36 of Brownstown Township. This area is located approximately 3.5 miles south of Brownstown off Skyline Drive.

General Description
The tract is approximately 73 acres and the general cover type is Oak-Hickory with pockets of mixed hardwoods.

History
In 1932, an 80 acre parcel was purchased from John and Hannah Brandt. Approximately 13 acres of this tract came from this purchase area.

In 1970, the remaining 60 acres of this tract was purchased from William and Ida Stahl.

In 1994, the tract was inventoried. The inventory indicated an estimated harvest volume of 1,016 Bd.Ft. per acre with a total estimated volume of 4,092 Bd.Ft. per acre.

In 2007, the tract was inventoried again. The inventory indicated an estimated harvest volume of 1,714 Bd.Ft. per acre with a total estimated volume of 5,709 Bd.Ft. per acre.

Landscape Context
The land north and southwest of the tract is Jackson-Washington State Forest. However the land adjacent to the tract to the south, west, and east is private property. Much of this land is forested but there are also agricultural fields, open grass areas, ponds, and single family residences within one mile.

Topography, Geology and Hydrology
This tract consists of one major ridge running east and west across the northern boundary of the tract. The parent material of the tract consists of sandstone, siltstone, and shale.

Soils
Berks channery silt loam (BeG) This steep and very steep, moderately deep, well-drained soil is on side slopes and knolls in the uplands. Slopes can range from 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. 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.

Coolville silt loam (CoD) This moderately well drained soil has a seasonally high water table at 1.0 to 2.0 ft. and is on side slopes on uplands. Slopes can range from 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 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) This well drained soil has a water table at a depth greater than 40 inches and is on side slopes on uplands. Slopes range from 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 3.5 to 5.5. Bedrock is at a depth of 20 to 40 inches.

Kurtz silt loam (KtF) This series consists of deep, well drained soils on hills. They formed in residuum weathered from interbedded soft siltstone and shale bedrock. Slopes can range from 20 to 55 percent. Native vegetation consists of mixed hardwood with oaks, hickory, beech and yellow-poplar. This soil is well suited to trees. The site index for this soil type is 60 for 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.

Rarden silty clay loam (RdD3) This moderately well drained soil has a seasonal high water table 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.

Stonehead silt loam (SsC2) 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.

Tilsit silt loam (TlB2, TlC2) The Tilsit series consists of deep and very deep, moderately well drained soils with a slowly permeable fragipan in the subsoil. Slope ranges from 0 to 15 percent. The potential for surface runoff is negligible to medium. Permeability is moderate in horizons above the fragipan and slow or very slow in the fragipan. About half of the areas are used for corn, small grains, tobacco, truck crops, and hay and pasture. The remainder is in woodland or

idle. Native vegetation is primarily oak, hickory, Virginia pine, maple, gum, poplar, dogwood, beech, ironwood, persimmon, and sassafras. These soils are well suited to trees. The erosion hazard, the equipment limitations, and plant competition are the main concerns in the management of wooded areas. Locating logging roads, skid trails, and landings on gentle grades and removing water with water bars, culverts, and drop structures help to control erosion. Seedlings survive and grow well if competing vegetation is controlled. The site indexes for hardwood species range from 90 (black oak) to 100 (tulip poplar). Preferred trees to manage for are black oak, bur oak, chestnut oak, scarlet oak, red oak, and white oak.

Wellston silt loam (WeD2) This well drained soil has a water table at a depth greater than 40 inches and is on flood plains. Slopes are 12 to 18 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 moderate (0.6 to 2.0) in the most restrictive layer above bedrock. Available water capacity is moderate (7.3 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 72 inches.

Access

Access to this tract will be off Skyline Drive and fire trail 214. From Skyline Drive turn southeast onto fire trail 214 and follow it for approximately a third of a mile to the north east tract corner. This fire trail crosses private property for a short section before returning to state property. This will require permission from the private landowner if used for management activities. Public access to this tract will be to travel due south from the trail head of fire trail 214 following the property line down slope then back up slope to the northeast tract corner.

Boundary

The tract boundaries are defined by a ridge top to the north, and property line to the west, south, and east. See attached map.

Wildlife

A diverse assortment of wildlife resources are found on this tract conducive to providing habitat for a variety of wildlife species. Habitat includes:

- Contiguous mixed hardwood canopy
- Oak-hickory pockets with varied structure
- Riparian areas

Hard mast trees such as oaks, hickories, and American beech provide food source to both game and non-game species.

Snags (standing dead or dying trees), are an important wildlife habitat features in Indiana's forests. They are used by a wide range of species as essential habitat features for foraging activity, nest/den sites, decomposers (e.g., fungi and invertebrates), bird perching and bat roosting. Additionally, snags are an important contributor to the future pool of downed woody material. Downed woody debris provides habitat and protection for many species and contributes to healthy soils.

Forest wildlife species depend on live trees for shelter, escape cover, roosting and as a direct (e.g., mast, foliage) or indirect (e.g., foraging substrate) food resource. The retention of live

trees within various diameter classes is of particular concern to habitat specialists such as species of conservation need like the Indiana bat.

The Division of Forestry has developed compartment level guidelines for two important wildlife structural habitat features. Current assessments indicate the abundance of these habitat features meet or exceed recommended base levels in all but the 19"+ diameter classes, which is at 88% of target. The prescribed management will maintain or enhance the relative abundance of these features, including the larger diameter class.

Snags (All Species)	Maintenance Level	Inventory	Available Above Maintenance
5"+ DBH	292	678	386
9"+ DBH	219	608	389
19"+ DBH	36.5	32	-5

A Natural Heritage Database review was completed for this tract. If Rare, Threatened or Endangered species (RTE's) were identified or encountered 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

The tract is primarily an oak-hickory forest. Grapevine, multiflora rose, and ailanthus were observed throughout the tract. These species are common and prevalent throughout the county. Priority control should be given to ailanthus and bush honeysuckle. These would be treated as soon as practical, with individuals and smaller areas being targeted as needed. A broader and/or situational approach should be taken with the other species noted above. Control measures for these species could be warranted for larger scale road & trailside treatment projects, planned regeneration openings, pre or post-harvest TSI projects, etc.

Forest Condition

TM 901 RESOURCE MANAGEMENT GUIDE			
INVENTORY SUMMARY			
		Compartment:	3
State Forest:	Jackson-Washington	Tract:	14
Forester:	Quentin Beahrs	Inventory Date:	5/29/2018

ACREAGE IN:	
Forest	73
Non-Forest	
Water	
Permanent Openings	
Other Uses	

TOTAL AREA	73	

(Estimated Tract Volumes for Commercial Forest Area-Bd. Ft., Doyle Rule)

SPECIES	TOTAL VOLUME
Chestnut Oak	268,050.00
White Oak	58,320.00
Sugar Maple	35,700.00
Black Oak	31,120.00
Pignut Hickory	30,480.00
Northern Red Oak	16,540.00
Shagbark Hickory	7,440.00
American Beech	5,960.00
White Ash	5,720.00
Yellow Poplar	3,310.00
Scarlet Oak	2,140.00
American Sycamore	1,880.00
Blackgum	1,400.00
Bitternut Hickory	600.00
TRACT TOTALS	468,670.00
PER ACRE TOTALS	6,420.00

The 2018 inventory estimated a total volume of 6,420 bd. ft. per acre. Total basal area was estimated at 108.4 sq. ft. with 146 trees per acre. These values indicate current stocking for the tract is 89%. The preliminary harvest tally proposed the removal of 1,340 bd. ft. per acre bringing the basal area to 89 sq. ft. per acre and 244 trees per acre. The leave tally projects post-harvest stocking at about 75%, excluding culls. Actual harvest volume is projected at 1,200-2,000 bd. ft./acre.

Recreation

The major recreational use of this tract is hunting. There are no hiking or horse riding trails in this tract. During any management activity, specifically a timber harvest, access into this tract will be restricted due to safety concerns. Following the management activity the tract will be re-opened to the public.

Cultural

No known archaeological sites have been reported within this tract. If any cultural sites are found, adverse impacts will be avoided during management or construction activities.

Tract Subdivision Description and Prescription

Oak-Hickory (51 acres)

The oak-hickory subdivision makes up the largest portion of the tract. The dominant overstory species in this subdivision is chestnut oak. The inventory estimates 3,672 bd.ft. of chestnut oak sawtimber/acre. The remainder of the overstory is comprised of white oak, black oak, northern red oak, scarlet oak, pignut hickory, and shagbark hickory. The main understory species in this

subdivision are white oak, chestnut oak, northern red oak, pignut hickory, sugar maple, white ash, and American beech. The prescribed management activity is to conduct an improvement harvest that would remove poorly formed and declining trees, which would release more resources to the healthier, more vigorous trees with good form. The top species for removal in this subdivision are chestnut oak and black oak. This harvest would still result in chestnut oak being the dominant overstory species, followed by white oak and black oak. The improvement harvest will utilize single tree selection to release the residual stand. The harvest should be preceded by invasive species treatment targeting ailanthus. Grapevine should also be treated in areas of the tract close to planned regeneration openings. Timber stand improvement (TSI) should follow the harvest to further release the residual crop trees and control problem occurrences of invasive species. This work will also provide habitat benefits through the creation of snag trees of various diameters.

Mixed hardwood (22 acres)

The mixed hardwood subdivision makes up a small portion of the tract. The dominant overstory species in this subdivision is sugar maple. The inventory estimates 489 bd.ft. of sugar maple sawtimber/acre. The remainder of the overstory is comprised of white oak, chestnut oak, northern red oak, American sycamore, yellow poplar, white ash, shagbark hickory, pignut hickory, persimmon, black cherry, sassafras, and American beech. The main understory species in this subdivision are chestnut oak, sugar maple, white ash, and American beech. The prescribed management activity is to conduct an improvement harvest that would remove poorly formed and declining trees, which would release more resources to the healthier, more vigorous trees with good form. The top species for removal in this subdivision are white ash and Blackgum. This harvest would still result in sugar maple being the dominant overstory species, followed by white oak and black oak. The improvement harvest will utilize single tree selection to release the residual stand. The harvest should be preceded by invasive species treatment targeting ailanthus. Grapevine should also be treated in areas of the tract close to planned regeneration openings. Timber stand improvement (TSI) should follow the harvest to further release the residual crop trees, create wildlife snag trees and control problem occurrences of invasive species.

Tract Prescription and Proposed Activities

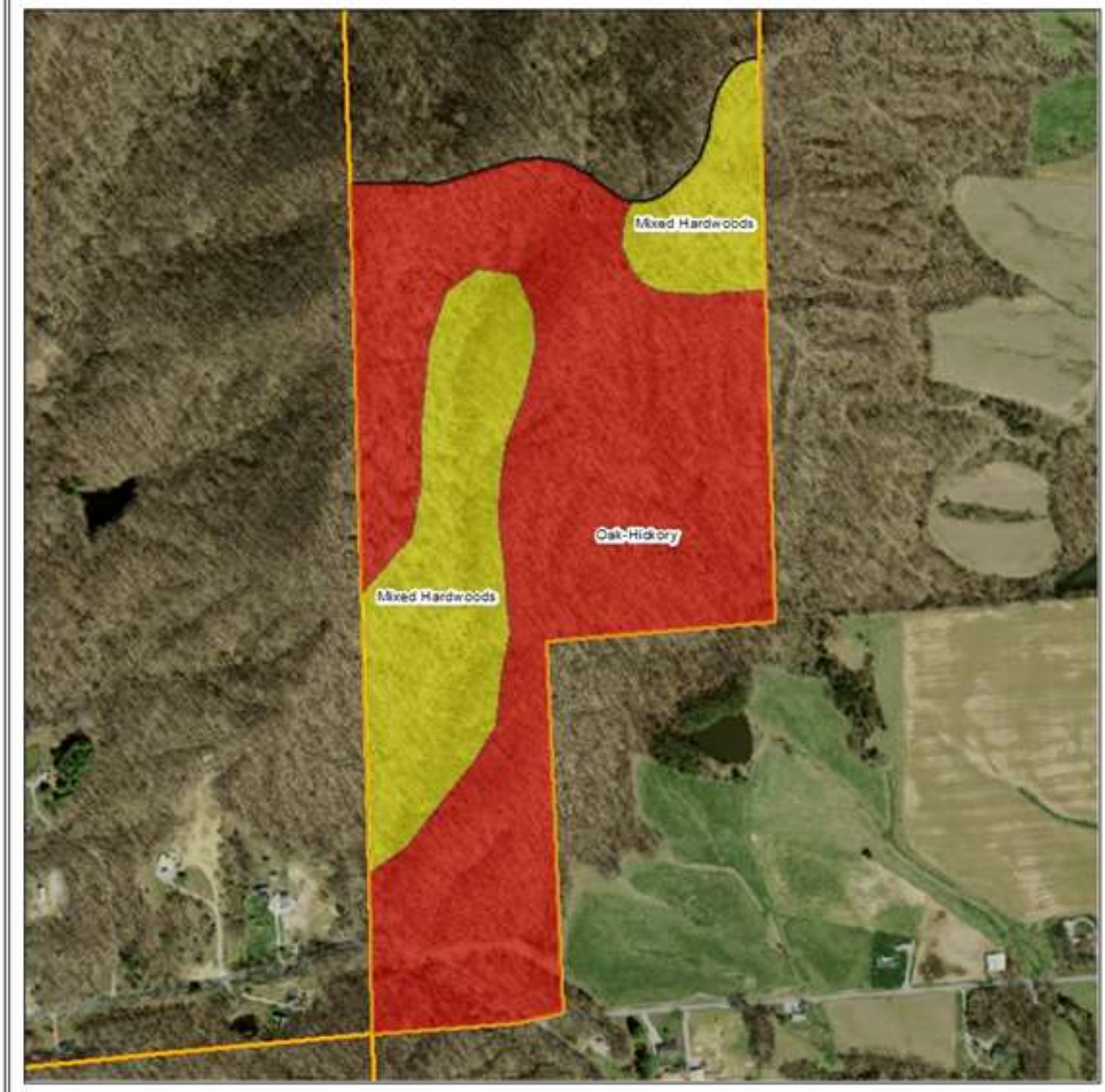
The proposed management activity is to conduct an improvement harvest to promote the overall health, resiliency and quality of the stand. This improvement harvest is recommended to occur within the next 10 years utilizing single tree selection and group tree selection. The purpose of the harvest is to remove mixed hardwoods that release oak or hickory, drought stressed or wind damaged trees, declining ash from Emerald ash borer, mature and over-mature trees and other intermediate trees needed to release residual crop trees. Within two years of the timber harvest, a TSI operation should follow to release crop trees that were not adequately released during the harvest. Additionally, TSI should be utilized to control targeted invasive species in the stand, and deaden a small percentage of low value trees to create snags for wildlife, such as the Indiana bat. During and after completion of the proposed management activity BMP's will be implemented in order to minimize soil erosion. This tract should receive another inventory and management guide 20 years following the completion of the timber harvest. The proposed

management activity should have little to no adverse impact on wildlife communities, including the Indiana bat, within or near the tract.

Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Pre-Timber Stand Improvement	2019-2020
Mark and Sell Timber Sale	2020-2021
Post-harvest Timber Stand Improvement	2021-2023
Forest Growth and Periodic Monitoring	2023-2043
Inventory and Management Guide	2043

Jackson-Washington State Forest
Compartment 3 Tract 14
Forest Cover Type Map



Legend

Forest Cover Type

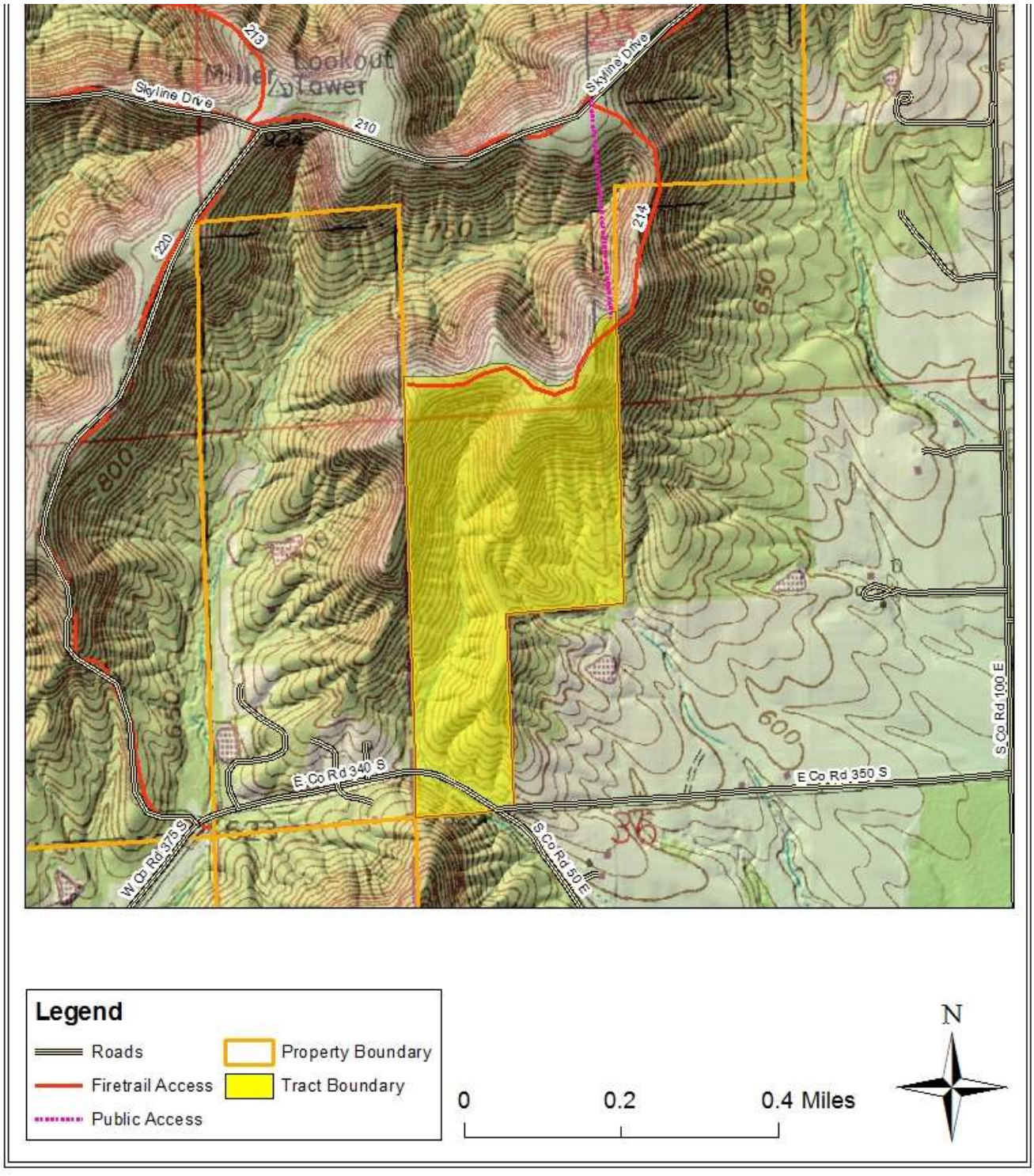
Mixed Hardwoods

Oak-Hickory

Property Boundary

0 0.1 0.2 Miles

N


Skyline Drive
Skyline Drive
Lookout Tower
213
210
220
214
750
650
800
600
E Co Rd 340 S
E Co Rd 350 S
W Co Rd 375 S
S Co Rd 50 E
S Co Rd 100 E
36
Legend
Roads
Firetrail Access
Public Access
Property Boundary
Tract Boundary
0
0.2
0.4 Miles
N

State Forest: Jackson-Washington **Compartment: 3 Tract: 24**
Forester: Quentin Beahrs **Date: November 16, 2017**
Management Cycle End Year: 2038 **Management Cycle Length: 20**

Location
The tract is located in Jackson County, Indiana, more specifically Township 5 North Range 4 East, Section 26 of Monroe Township. This area is located approximately 2 miles south of Brownstown off of South County Road 50 West.

General Description
The tract is approximately 47 acres and the general cover type is mixed hardwoods.

History
In 1996, this tract was created due to the purchase of 40 acres from Hoeveners.

In 1999, the northeast and northwest corners were set, as well as the north line.

In 2001, a new tract was created after the purchase of new land.

Landscape Context
The land south and northeast of the tract is Jackson-Washington State Forest. However the land adjacent to the tract to the north, east, and west is private property. Much of this land is forested but there are also agricultural fields, open grass areas, and single family residences. The private property to the west has been harvested recently.

Topography, Geology and Hydrology
This tract consists of one major ridge running east and west through the center of the tract. There are two mapped intermittent streams in this tract, the first starts near the center of the tract on the east side and runs northwest to the northwest corner. The second stream starts southeast of the tract and makes up much of the southern tract boundary. These two streams flow northwest and meet up at Hough creek. The parent material of the tract consists of sandstone, siltstone, and shale.

Soils
Beanblossom silt loam (BcrAW) This is a deep, well-drained soil 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. Preferred trees to manage for are bitternut hickory, white oak, sugar maple, and yellow-poplar.

Bonnell silt loam (BoD2) 10 to 18 percent slopes, eroded. This well drained soil has a water table at a depth greater than 40 inches and is on side slopes on uplands. Slopes are 10 to 18 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 moderately slow

(0.2 to 0.6 in/hr) in the most restrictive layer above 60 inches. Available water capacity is moderate (8.7 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 4.5 to 5.5.

Coolville silt loam (CoD), 12 to 20 percent slopes. This moderately well drained soil has a seasonally high water table at 1.0 to 2.0 ft. and is on side slopes on uplands. Slopes can range from 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 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 (GnF), 25 to 55 percent slopes. This well drained soil has a water table at a depth greater than 40 inches and is on side slopes on uplands. Slopes range from 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 3.5 to 5.5. Bedrock is at a depth of 20 to 40 inches.

Hickory loam (HrE) This well drained soil has a water table at a depth greater than 40 inches and is on side slopes on uplands. Slopes are 15 to 45 percent. The native vegetation is hardwoods. The surface layer is loam and has moderate organic matter content (2.0 to 4.0 percent). Permeability is moderate (0.6 to 2 in/hr) in the most restrictive layer above 60 inches. Available water capacity is high (10.1 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 4.5 to 5.5.

Kurtz silt loam (KtF) This series consists of deep, well drained soils on hills. They formed in residuum weathered from interbedded soft siltstone and shale bedrock. Slopes can range from 20 to 55 percent. Native vegetation consists of mixed hardwood with oaks, hickory, beech and yellow-poplar. This soil is well suited to trees. The site index for this soil type is 60 for 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.

Access

Access to this tract will be off Skyline drive. Fire trail 213 begins just west of the fire tower and leads down-hill to fire trail 212 which turns back east and goes through the center of the tract. Once in the tract, fire trail 212 will be the main access, but there is a network of old road beds and skid trails that can be used to access the remainder of the tract. A management only easement located at the base of Skyline Drive will serve as the ingress and egress for any management activities in this tract.

Boundary

The tract boundaries are defined by a stream to the south, and property line to the west, north, and east. The northern tract boundary is marked with orange carsonite posts. See attached maps.

Wildlife

A diverse assortment of wildlife resources are found on this tract conducive to providing habitat for a variety of wildlife species. Habitat includes:

- Contiguous mixed hardwood canopy
- Oak-hickory pockets with varied structure
- Riparian areas

Hard mast trees such as oaks, hickories, and American beech provide food source to both game and non-game species. The openings are varied in size but all present similar, dense vegetation that favors wildlife preferring this habitat structure. Such vegetative species include sassafras, grapevine, and other early successional shrubs.

Snags (standing dead or dying trees), are an important wildlife habitat features in Indiana's forests. They are used by a wide range of species as essential habitat features for foraging activity, nest/den sites, decomposers (e.g., fungi and invertebrates), bird perching and bat roosting. Additionally, snags are an important contributor to the future pool of downed woody material. Downed woody debris provides habitat and protection for many species and contributes to healthy soils.

Forest wildlife species depend on live trees for shelter, escape cover, roosting and as a direct (e.g., mast, foliage) or indirect (e.g., foraging substrate) food resource. The retention of live trees within various diameter classes is of particular concern to habitat specialists such as species of conservation need like the Indiana bat.

The Division of Forestry has developed compartment level guidelines for two important wildlife structural habitat features. Current assessments indicate the abundance of these habitat features meet or exceed recommended base levels in all diameter classes. The prescribed management will maintain or enhance the relative abundance of these features.

Snags (All Species)	Maintenance Level	Inventory	Available Above Maintenance
5"+ DBH	188	627	439
9"+ DBH	141	311	170
19"+ DBH	23.5	32	9

A Natural Heritage Database review was completed for this tract. If Rare, Threatened or Endangered species (RTE's) were identified or encountered 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

The tract is primarily a mixed hardwood forest. Grapevine, multiflora rose, privet, barberry, autumn olive, holly, burning bush, amur honeysuckle and Japanese honeysuckle were observed throughout the tract. Invasive species treatment should be conducted prior to a prescribed timber harvest.

Forest Condition

TM 901 RESOURCE MANAGEMENT GUIDE			
INVENTORY SUMMARY			
		Compartment:	3
State Forest:	Jackson-Washington	Tract:	24
Forester:	Quentin Beahrs	Inventory Date:	11/16/2017

ACREAGE IN:	
Forest	47
Non-Forest	
Water	
Permanent Openings	
Other Uses	
TOTAL AREA	47

(Estimated Tract Volumes for Commercial Forest Area-Bd. Ft., Doyle Rule)

SPECIES	TOTAL VOLUME
Yellow Poplar	94,290.00
White Oak	49,620.00
Sugar Maple	28,130.00
Black Oak	27,550.00
Red Maple	18,740.00
White Ash	15,660.00
Chestnut Oak	15,140.00
Northern Red Oak	14,890.00
Sweetgum	4,680.00
Pignut Hickory	4,620.00
American Sycamore	4,480.00
Bitternut Hickory	2,470.00
Shagbark Hickory	2,010.00
Virginia Pine	1,550.00
TRACT TOTALS	283,830.00
PER ACRE TOTALS	6,039.00

The 2017 inventory estimated a total volume of 6,039 bd. ft. per acre. Total basal area was estimated at 112.5 sq. ft. with 251 trees per acre. These values indicate current stocking for the tract is 101%. The harvest tally indicates a potential harvest volume of 1,422 bd. ft. per acre bringing the basal area to 98.1 sq. ft. per acre and 244 trees per acre. The leave tally shows post-harvest stocking at about 89%, excluding culls. A harvest is not recommended at this time.

Recreation
The major recreational use of this tract is hunting. The prescribed management will allow the continuation of this traditional forest activity. There are no hiking or horse riding trails in this tract.

Cultural
No known archaeological sites have been reported within this tract. If any cultural sites are found, adverse impacts will be avoided during management or construction activities.

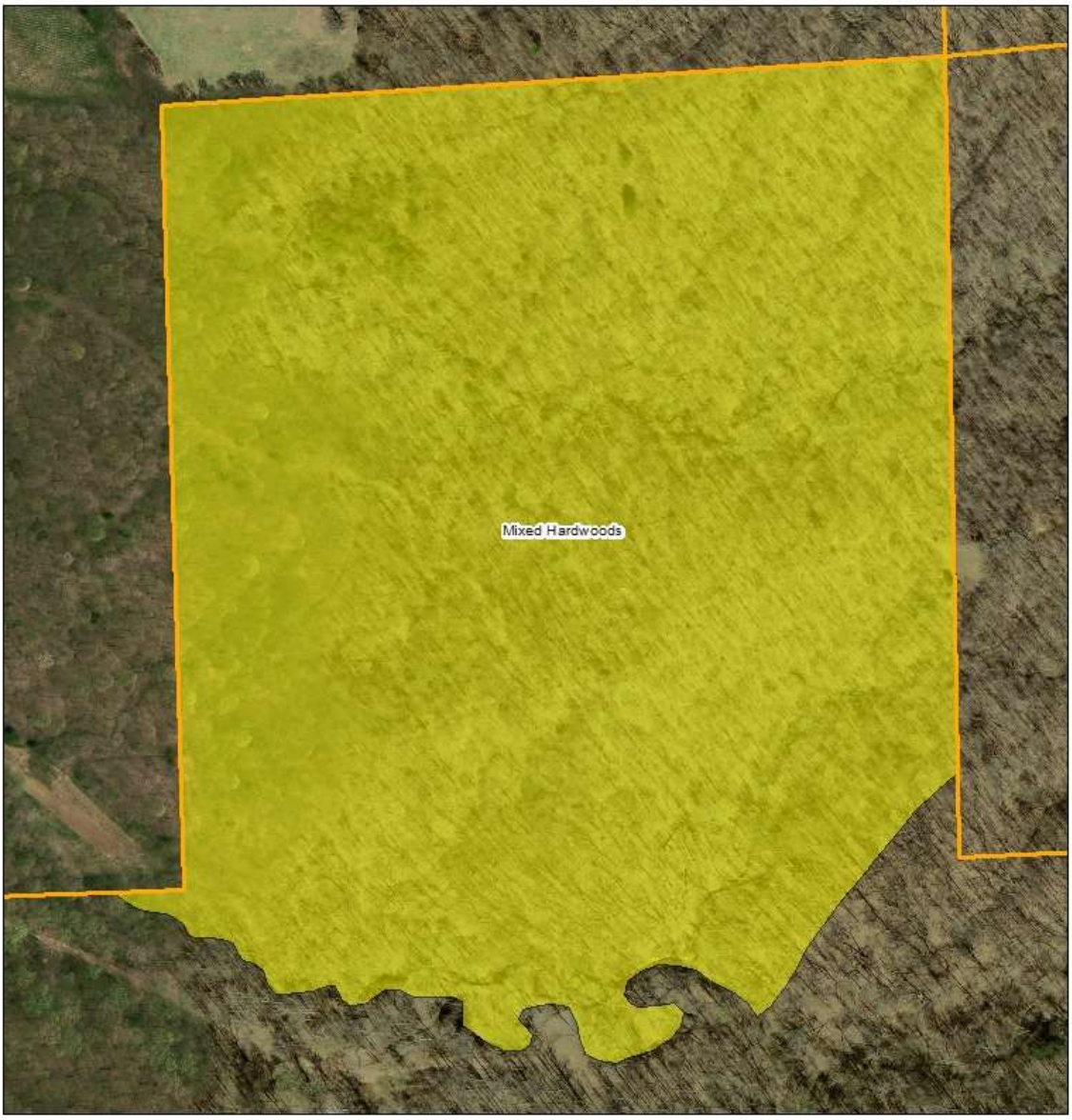
Tract Subdivision Description and Prescription
Mixed hardwood (47 acres)
This tract is characterized as mixed hardwoods. Yellow poplar is the dominant species. The inventory estimated 2,006 BDFT of yellow poplar saw timber per acre followed by white oak at 1,056 BDFT and sugar maple at 599 BDFT. The bulk of the remaining tree species in this subdivision are white ash, basswood, and black oak. The understory is diverse, but sugar maple is the dominant understory tree, followed by white ash, and American beech.

Tract Prescription and Proposed Activities
The proposed management activity is to conduct a timber stand improvement (TSI) project to improve the overall health and quality of the stand. This TSI project should occur within the next two years. The purpose of the TSI is to target invasive species, reduce grapevine concentrations, remove non-native pine, and release oak or hickory and other residual crop trees. The invasive species present on this tract include multiflora rose, privet, barberry, autumn olive, holly, burning bush, and amur honeysuckle. This tract should receive another inventory and management guide in 20 years. The proposed management activity should have little to no impact on wildlife communities, including the Indiana bat, within or near the tract.

Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Timber Stand Improvement/Invasive species management	2019-2022
Re-inventory and Management Guide	2038

Jackson-Washington State Forest
Compartment 3 Tract 24
Forest Cover Type



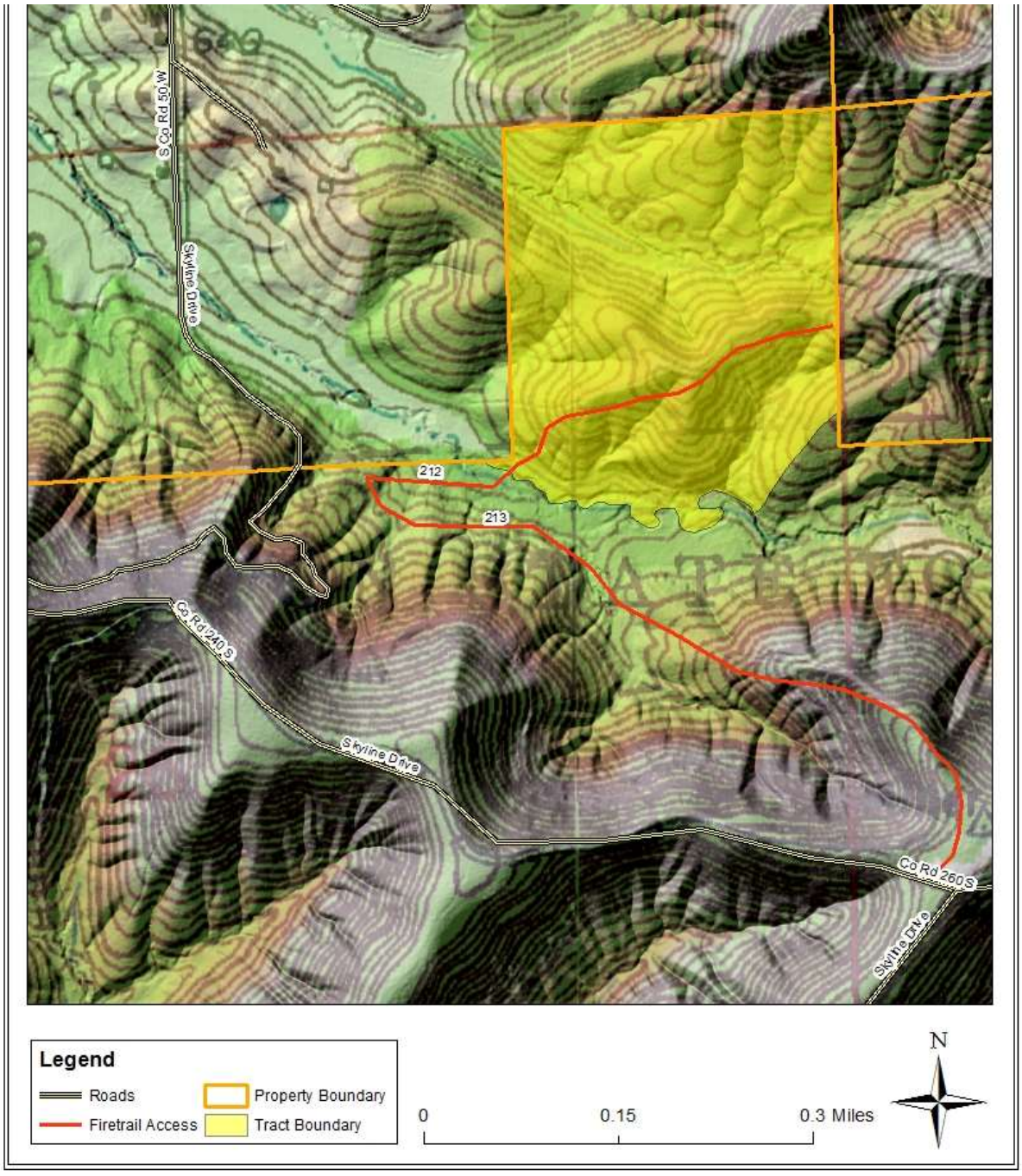
Legend

Property Boundary

Mixed Hardwood Cover Type

0 0.075 0.15 Miles

N


S Co Rd 50 W
Skyline Drive
212
213
Co Rd 240 S
Skyline Drive
Co Rd 260 S
Skyline Drive
Legend
Roads
Firetrail Access
Property Boundary
Tract Boundary
0
0.15
0.3 Miles
N

State Forest: Jackson-Washington **Compartment: 02 Tract: 02**
Forester: Taylor Ardisson **Date: December 28, 2018**
Management Cycle End Year: 2043 **Management Cycle: 25 years**

Location
The tract is located in Jackson County, Indiana, more specifically Township 5 North Range 5 East, Section 17 of Brownstown Township. This tract is approximately 3 miles east of Brownstown.

General Description
The tract is approximately 35 acres with a general cover type of Oak-Hickory; however there is a small stand of mixed hardwoods within.

History
On January 26th, 1963 160 acres was purchased from Mary A & John H Vondielingen. Approximately 3 acres of this purchase is part of tract 2.

On August 19th, 1963 40 acres was purchased from William & Mellita Bannister. The majority of this purchase makes up the remainder of tract 2.

In 1987, a forest inventory was conducted indicating an estimated total volume of 147,680 bd. ft.

In 1991, the north and east boundary lines were inspected yielding evidence of trespass. Findings estimated 6,914 bd. ft. of timber with a value of $1,697.25 had been removed. This volume was from four (4) trees identified as being on state land and several others considered line trees.

In 1995, a 40 acre land acquisition to the west required minor tract boundary changes.

In 2001, the tract boundary was changed and updated via GIS.

Landscape Context
Northeast of tract 2 is a land locked 40 acre tract of Jackson-Washington State Forest. Directly west and south is state forest land with private ownership to the north and east.

Private ownership adjacent to tract 2 is primarily forested with a mixture of pasture and agricultural fields. Agriculture is more prevalent to the east than forestland. No predicted changes occurring to the nearby land-use in the near future.

Topography, Geology and Hydrology
In the northwest region of this tract there is a major peak, also known as Pinnacle Peak. There is steep topography immediately around the peak that turns into numerous razorback ridges in all directions. Between razorbacks there are steep drainages that become gentler as the distance increases away from the peak. In the southern region of the tract the topography is gently rolling with a few drainages. The western portion of the tract is steep topography leading up to a saddle between the pinnacle peak and an adjacent hilltop.

There are no mapped intermittent or perennial streams within the tract. There are many ephemeral drains due to the topography described above. The geology of the tract consists of six different soil series. The parent material of these soil series within the tract includes Mississippian sandstone and shale or Mississippian shale and siltstone.

Soils

Brownstown channery silt loam (BvmG) This soil series is generally found on hills, knobs, or side slopes. It formed from a loamy-skeletal residuum that was over a Mississippian sandstone and shale mix. You will typically find this soil series on slopes ranging from 25-75% and it is a deep and well-drained soil. Seedlings have a moderate chance of survival with amount of available water being the primary limiting factor. Trees or woody vegetation are commonly found with the common species growing of: chestnut oak, pawpaw, dogwood, and greenbrier. Common trees to manage for are blackgum, black oak, bur oak, white oak, chestnut oak, eastern white pine, shingle oak, bald cypress, persimmon, southern red oak and Virginia pine. Black oak has a site index of 50. Available water capacity is moderate (6.6 inches in the upper 60 inches). The upper layer of this soil is mildly toxic (pH of 4.5). The organic matter in the upper surface is low with only 2.5% and there is a high chance of organic matter depletion.

Coolville silt loam (CoD, ComD) This moderately well-drained soil has a seasonally high water table at 1.0 to 2.0 ft. and is on side slopes on uplands. Slopes can range from 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 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.

Gnawbone silt loam (GmrF) This is a well-drained soil that is found on slopes ranging from 20-60 percent. Geographically, this soil is found on hilltops and side slopes. Trees and other woody vegetation will be typically be found growing in the understory. The seedlings have a moderate chance of survival with available water being the primary limiting factor. Trees that should be managed for on this soil are blackgum, black oak, bur oak, eastern white pine, scarlet oak, shingle oak, white oak, bald cypress, chestnut oak, persimmon, southern red oak and Virginia pine. The surface layer of this soil has a pH of 4.3 making this soil moderately acidic. Three percent of the surface layer is organic matter which is relatively low. Available water capacity is moderate (9.6 inches in the upper 60 inches). The soil is poorly suited for equipment operability mostly because of slope being a concern. However, with bmp's being implemented and restriction of logging activities during certain weather patterns, this can be mitigated.

Kurtz silt loam (KtF, KxzG) This series consists of deep, well drained soils on hills. They formed in residuum weathered from interbedded soft siltstone and shale bedrock. Slopes can range from 20 to 55 percent. Native vegetation consists of mixed hardwood with oaks, hickory, beech and yellow-poplar. This soil is well suited to trees. The site index for this soil type is 60 for 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.

Spickert silt loam (SoaC2) The Spickert silt loam series is generally found on soil series of 6 to 12%. This is a moderately well drained soil series that from a loess that was over a silty residuum, all of which was over Mississippian siltstone. Only 2% of the surface layer is comprised of organic matter and it has pH of 5.9. With the given pH, trees and woody vegetation which is found in the understory, has a better environment for growth. There is a moderate amount of storage capacity (9 inches) for water in the upper 60 inches. This soil has a site index of 100 (yellow poplar) and 90 (black oak).

Stonehead silt loam (SsC2) (SukC2) 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.

Access

Vehicle access to this tract is from southeast corner. Fire access road #101 travels north from State Road 250. After approximately ¾ of a mile, fire access road #101 ends at fire access road #133. Heading west on #133 until it reaches fire access road #130. After approximately 1.25 miles, the road will be just short of the southern tip of the tract. All of these fire access roads have had maintenance in the past but will require further roadwork to improve stability.

This tract can also be accessed by foot using the hiking trail system located in this part of Jackson-Washington State Forest. Navigate to Trail 1 whether through the use of Trail 10 or the entrance to the Trail 1 located in the day use area at the end of Camp Road in the CCC playground. The trail is approximately 1 mile in length with approximately a quarter of the trail serving as the western tract boundary.

The fire access roads described above also serves as part of the state forest horse trail system located off State Road 250.

Boundary

The north and east tract boundaries also serve as state forest boundary line. The southern tract boundary runs west from the state forest property corner a short distance before going south then back northwest following small ephemeral drains until it reaches Trail 1 located on the western boundary. The western boundary follows a ridge, also serving as the hiking trail, northeast to Pinnacle Peak. From the peak the boundary follows a small finger ridge to the north boundary line.

Wildlife

A diverse assortment of wildlife resources are found on this tract conducive to providing habitat for a variety of wildlife species. Habitat includes:

- Contiguous Oak-Hickory canopy

- Contiguous Mixed hardwood canopy
- Diverse age, size, and species composition throughout the understory and midstory of the canopy.

Hard mast trees such as oaks, hickories, and American beech provide food source to both game and non-game species.

Snags (standing dead or dying trees), are an important wildlife habitat features in Indiana's forests. They are used by a wide range of species as essential habitat features for foraging activity, nest/den sites, decomposers (e.g., fungi and invertebrates), bird perching and bat roosting. Additionally, snags are an important contributor to the future pool of downed woody material. Downed woody debris provides habitat and protection for many species and contributes to healthy soils.

Forest wildlife species depend on live trees for shelter, escape cover, roosting and as a direct (e.g., mast, foliage) or indirect (e.g., foraging substrate) food resource. The retention of live trees within various diameter classes is of particular concern to habitat specialists such as the Indiana bat.

The Division of Forestry has developed compartment level guidelines for two important wildlife structural habitat features. Current assessments indicate levels above the recommended maintenance level. The prescribed management will maintain or enhance the relative abundance of these features.

Snags (All Species)	Maintenance Level	Inventory	Available Above Maintenance
5"+ DBH	140	226	86
9"+ DBH	105	226	121
19"+ DBH	17.5	89	71

A Natural Heritage Database review was completed for this tract. If Rare, Threatened or Endangered species (RTE's) were identified or encountered 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 a diverse community type consisting of oak-hickory, mixed hardwoods, greenbrier, pawpaw, multiflora rose, Japanese honeysuckle, and other herbaceous and woody vegetation. All of which are prevalent throughout the surrounding state forest landscape within Jackson County. In regards to invasive/exotic species, preference should be to treat ailanthus and bush honeysuckle if identified and found. These would be treated as soon as practical, with individuals and smaller areas being targeted as needed. A broader and/or situational approach should be taken with the species noted above. Control measures for these species could be warranted for larger scale road & trailside treatment projects, planned regeneration openings, pre or post-harvest TSI projects, etc.

Recreation

The major recreational uses within tract 2 are hiking and hunting. Portions of the fire trail access system allows for horse trail use. A small section of horse trail, part of the larger horse trail system located off State Road 250, does parallel the southern tract boundary. While the horse trail is not located within the tract it will serve as access to the tract during management activities since it primarily serves as a fire access road.

The property 'Trail 1'is a direct path to the top of the Pinnacle Peak. This trail also serves as most of the western boundary of the tract. This is a fairly popular trail and trail safety, stability and aesthetics are important resource management considerations.

During any management activity, specifically a timber harvest, access into this tract will be restricted due to safety concerns.

The trails may also be re-routed or temporarily closed during management activity for safety concern. Following the management activity the tract and trails will re-open to the public.

Cultural

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

Tract Subdivision Description and Prescription

Forest Condition

The 2018 inventory estimated a total volume of 371,258 bd. ft. Total basal area was estimated at 108.3 sq. ft. with 116 trees per acre. These values indicate current stocking at 87%.

Species	Total Volume
American Beech	5,012
Black Cherry	3,486
Black Oak	38,345
Chestnut Oak	190,219
Northern Red Oak	6,570
Pignut Hickory	46,924
Red Maple	5,665
Scarlet Oak	10,665
Shagbark Hickory	1,664
Sugar Maple	7,500
White Ash	1,681
White Oak	31,471
Yellow Poplar	22,056
TRACT TOTALS	371,258
PER ACRE TOTALS	10,653

Oak-Hickory (28 acres)
This stand is characterized as Oak Hickory. This type of stand is found in 80% of the total tract acreage. The stand is currently fully stocked at 85% stocking with 115 trees per acre. The dominant species is chestnut oak with an estimated 5,072 bd. ft. of saw timber per acre. White oak and pignut hickory are the next most abundant species with an estimated 1,041 bd. ft. and 1,292 bd. ft. of saw timber per acre, respectively. The bulk of the remaining tree species in this stand type are black oak, northern red oak, scarlet oak, sugar maple and red maple. The mid-story (pole sized timber) is comprised of mostly chestnut oak and sugar maple. The understory is diverse though with an abundance of sugar maple, red maple and American beech. The recommended management activity is to conduct an improvement harvest utilizing single tree selection targeting poorly formed individuals and trees declining in health, which will give healthier trees with good form more available resources above and below ground. Where conditions warrant, group selection silviculture could be utilized to facilitate the regeneration of shade intolerant species. When possible, selection should also favor releasing future crop trees. The residual stand should maintain a variety of species, with oak continuing to be the dominate species.

The top species for removal in this subdivision are chestnut oak, black oak and pignut hickory. The harvest volume for this stand is projected at 1,500 – 3,000 bd. ft. per acre. Following the timber harvest, timber stand improvement (TSI) should be conducted to complete the management process. Specifically, TSI will concentrate on completion of regeneration openings, crop tree release, and reduction of problem grapevines.. Small patches of multiflora rose and Japanese honeysuckle are also present but no immediate action is necessary and will be monitored following any proposed management.

Desired Future Condition
The objective of this cover type is to provide for multiple economic and ecological services specifically a quality hardwood timber stand, dominated by oak and hickory, while providing diverse habitat structure, hard mast and early to mid-seral habitat for wildlife.

Mixed Hardwoods (7 Acres)
This subdivision is characterized as mixed hardwoods. This stand type is 20% of the total tract and has a current high stocking of 94% with an estimated 15,365 bd. ft. per acre. The current dominant species is yellow poplar with an estimated 4,027 bd. ft. of sawtimber per acre. The next two dominant species within the stand are chestnut oak and black oak with an estimated 3,425 bd. ft. and 3,200 bd. ft. of sawtimber per acre, respectively. The midstory (pole sized timber) is mostly sugar maple (42%) and pignut hickory (32%). The understory consists of American beech and sugar maple. The current basal area of this stand is 117.6 and has an estimated 125 trees per acre. The recommended management activity is to conduct an improvement harvest utilizing single tree selection targeting poorly formed individuals and trees declining in health, which will give healthier trees with good form more available resources above and below ground. Where conditions warrant, group selection silviculture could be utilized to facilitate the regeneration of shade intolerant species. When possible, selection should also favor releasing future crop trees. The residual stand should maintain a variety of species.

The top species for removal within this stand are yellow poplar, chestnut oak, and American beech. The harvest volume for this stand is projected at 5,500 to 7,000 bd. ft. per acre. Following the timber harvest timber stand improvement (TSI) should be conducted to complete the management process. Specifically, TSI will concentrate on completion of regeneration openings, crop tree release, and reduction of problem grapevines. Small patches of multiflora rose and Japanese honeysuckle are also present but no immediate action is necessary and will be monitored following any proposed management.

Desired Future Condition
The objective of this cover type is to provide for multiple economic and ecological services specifically a quality hardwood timber stand, dominated by mid- and late-seral species, while providing diverse habitat structure, hard mast and mid to late-seral habitat for wildlife.

Tract Prescription and Proposed Activities

The proposed management activity is to conduct an improvement harvest to promote the overall health, resiliency, and quality of the stand. This improvement harvest will utilize single tree and group selection silviculture. The purpose of single tree selection is to remove trees with poor form and health, drought stressed or wind damaged. It will also target declining ash from Emerald ash borer, mature and over-mature trees, and other intermediate trees needed to release residual crop trees. Group selection will be used to target groups of trees that fit the above description growing together. Group selection openings will cover less than 15% of the tract.

The area immediately surrounding Pinnacle Peak and Trail 1 leading to it will receive a buffer to protect the unique feature of the area. Within the buffer timber harvesting will be minimized or restricted to TSI only, if applicable.

Within two years of the timber harvest, a TSI operation should follow to release crop trees that were not adequately released during the harvest and complete regeneration openings. Additionally, TSI should be utilized to control targeted invasive species in the stand, and deaden a small percentage of low value trees to create snags for wildlife, such as the Indiana bat.

During and after completion of the proposed management activity BMP's will be implemented in order to minimize soil erosion. This tract should receive another inventory and management guide 20-25 years following the completion of the timber harvest.

Trail maintenance will continue to be an ongoing activity within the tract.

Effect of Prescription on Tract Properties:
Landscape: Landscape forest patterns will remain similar to the current situation due to this tract being kept in a forested condition.

Soils: The management activities prescribed in this plan should have minimal impact on soils in this tract. Some soil disturbance is likely during harvesting but this should be confined to landings and main skid trails. These areas should be properly closed out according to Indiana's BMPs to minimize the impact of management activities on soils.

Hydrology: Hydrology should not be permanently affected by management on this tract. Water quality and yield should not be altered if BMPs are followed during harvest. BMP use will be contractually required of management operators.

Wildlife: Snags and coarse woody debris should remain at viable levels in the stratum and should continue to provide habitat. Managing to recruit newly established or released oaks and hickories will help to ensure that this important food source is available into the foreseeable future. Regeneration openings, such as prescribed have been shown to be of less an issue from nest predators and generalist species as compared to hard edges such as public roadways, utility corridors and crop field edges. Placement of regeneration openings away from hard edges can minimize these potential impacts. The prescribed activity will promote wildlife diversity and enhance habitat structural components.

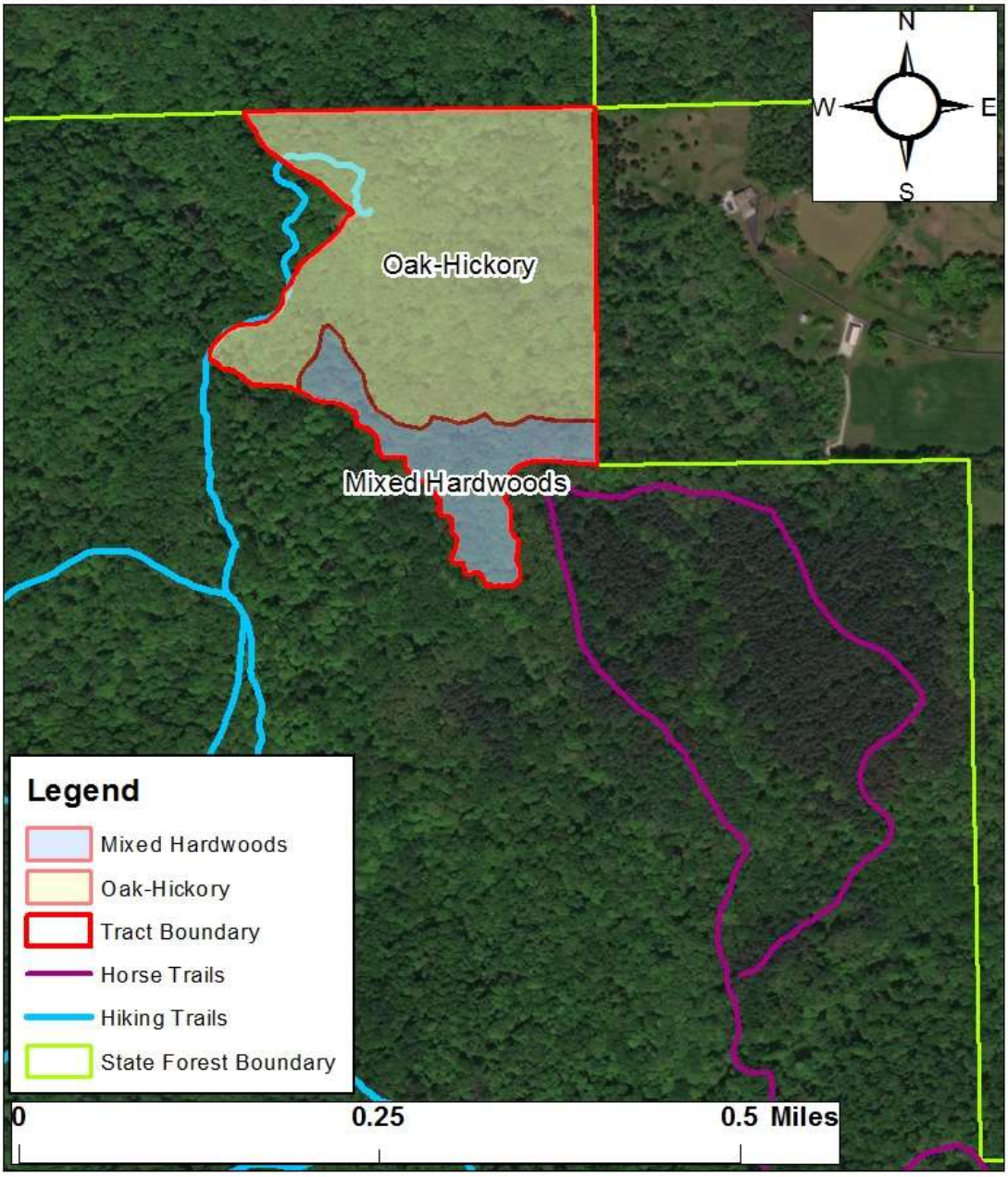
Additionally, management activities involving a timber harvest should not affect this habitat long-term from the perspective of any wildlife utilizing it due to the maintenance of a forested habitat on the tract. Creation of regeneration openings will create early successional habitat that will be beneficial to certain groups of wildlife dependent upon this habitat. Likely, early successional habitat created with such management will also benefit a wider segment of wildlife species that preferentially utilize such habitat for feeding and cover more so than later successional stage habitat.

Recreation: The recreation within this tract, hiking and sightseeing (Pinnacle Peak) will be minimally affected by the proposed management activities. Hunting, another popular recreational activity within the tract, will benefit from the recommended activities. For user safety, these uses may be temporarily suspended during management activities.

Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Management Guide	2018
Treat grapevine, Japanese honeysuckle and multiflora rose	2019-2020
Improve Access	2019-2020
Mark and Sell Timber Sale	2019-2020
Post-harvest Timber Stand Improvement	1-2 years after harvest
Trail Management and Maintenance	2019 - 2043
Forest Growth and Periodic Monitoring	3 years after harvest - 2043
Inventory and Revise Management Guide	20 - 25 years after harvest

Jackson Washington State Forest
Compartment 2 Tract 2
Forest Cover Type



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Compartment 2 Tract 2
Forest Cover Type