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

State Forest: Jackson-Washington | Compartment: 11 Tract: 19
Forester: D. Potts | Date: October 3, 2013
Management Cycle End Year: 2037 | Management Cycle Length: 20 years

Location

This tract is located in Section 17, Township 3 North, Range 5 East, Gibson Township, Washington County. Salem is approximately 8 miles southwest of this tract.

General Description

This 77 acre tract is covered with hardwood forest heavily dominated by chestnut oak, and has an area of planted pine.

History

This tract is comprised of portions of two separate land acquisitions. The first occurred in 1954 from Elzina Frazier and Frank Frazier, her husband, 120 acres. The second occurred in 1983 from Roy Robbins and Kathleen M. Robbins, husband and wife, 80 acres.

The tract history file contains an inventory and management guide from 1987. However, the tract boundary has changed since that time, due to a land acquisition, so an accurate comparison of the data is not possible. The management guide refers to the previous landowner having a timber harvest prior to state acquisition. The guide states that the "logging operation was the fairly standard high-grade that is often seen on private land in this area, it appears that the post-harvest firewood cutting may have actually done worse damage to the tract in terms of timber resources." The guide states that TSI was marked to create regeneration openings in areas where the stocking was low or altogether absent. TSI was marked in the eastern white pine stand in the bottom to reduce the basal area and to prune the first log side limbs. The guide further states that many areas will not be ready for a harvest for 40 or more years, but that TSI should occur within 10 years to release and ensure the survival of desired species. It does state that the pine stand will be ready for a harvest in 10 years (1997), that harvest never occurred.

Landscape Context

The dominant land use within the landscape surrounding this tract is forestland. This is primarily due to this tract's location adjacent Jackson-Washington State Forest's largest landholding. Currently, the amount of early successional forest habitat in this area is relatively low as most of the abandoned fields from prior to State of Indiana ownership have become closed canopy forest, and harvesting in the Back Country area is restricted to single-tree selection. Surrounding this large block of forestland are crop fields, watershed lakes, and single-family residences. Some increase in construction of homes has been seen in the area, but the distance to municipalities and poor economic conditions

have kept those to a minimum. Also, several timber harvests have occurred on the private lands surrounding the State Forest, including a harvest on the parcel directly south of this tract. Most appear to have been diameter limit high-grade harvests, while some have been harvested with long-term forest management as a directive.

Topography, Geology and Hydrology

The topography for this tract is a north slope on the south side of the tract, (the tract boundary is a ridgetop) and a south slope on the north side of the tract. The north slope and south slope are separated by a mapped intermittent drainage. The mapped intermittent drainage extends from the tract's western boundary to the tract's eastern boundary, which is also the property line. The drainage then flows east into Arnold Creek, which then flows north into Elk Creek, continuing north into the Cammie Thomas Ditch and finally the Muscatatuck River, which then flows into the East Fork White River. The underlying geology consists of siltstone, sandstone, and shale. A wildlife pond is visible from an aerial photograph in another tract to the west. The wildlife pond is outside the tract boundary and therefore will not be impacted by a harvest or any other mangement activities.

Soils

Berks-Weikert complex (BhF) (~22 acres) 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**)** (~6 acres) 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.

Cuba silt loam (Cu) (~17 acres) This series consists of very deep, well drained soils that formed in acid, silty alluvium. These soils are on flood plains, flood-plain steps and natural levees. Slope ranges from 0 to 3 percent. Native vegetation is mixed hardwood forest. This soil is well suited to trees. No major hazards or limitations affect planting or harvesting. The site indexes for hardwood species is 100 (yellow-poplar). Preferred trees

to manage for are bitternut hickory, white oak, red oak, black walnut, sugar maple, and yellow-poplar.

Gilpin-Berks loams (GnF) (~20 acres) 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 trees. 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.

Wellston silt loam (WeC2, WeD) (~11 acres) 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. 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

From Salem, IN take Highway 56 east for approximately 5 miles, then turn north onto Old State Road 56. Travel on Old State Road 56 for about .5 mile, stay right, then turn north onto NW Point Road. Follow NW Point Road for approximately four miles, NW Point road will turn into East Pull Tight Road. The tract is located on the north side of the road. Vehicle access is through an agreement with a private land owner. The tract can be accessed on foot from the Knobstone Trail, which runs through almost the entire length of the tract.

Boundary

The tract boundaries are also property boundaries on the north, west and the western end of the southern boundary. At the southwest corner of the tract is a property corner stone, from that stone the tract boundary follows an unmapped intermittent drainage, which transitions to a mapped intermittent drainage north east for approximately 1500 feet. Then the boundary turns north and follows an ephemeral drainage for approximately 600 feet to the northwest corner of the tract, which is also a property corner. From the

northwest property corner the tract boundary follows the property boundary for approximately 2,800 feet, to the tract and property northeast corner. From that corner the tract boundary follows the property boundary south for approximately 800 feet to the center of an east to west ridge. The tract boundary follows the center of the ridge west for approximately 3,400 feet, at which point the ridgetop intersects the property boundary, which is also the tract boundary. From that intersection the tract boundary follows the property boundary west for approximately 700 feet, to the southwest corner of the tract, which was the point of origin.

Wildlife

Wildlife Habitat Feature Summary

Snags(all species)	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal
5"+ DBH	308	539	1230	922	691
9"+ DBH	231	462	543	312	81
19"+ DBH	38.5	77	48	10	-29

The Wildlife Habitat Feature Summary indicates that the number of snags present within the tract exceeds the maintenance level for all DBH classes and exceeds the optimal level for the 5"+ and 9"+ DBH class. Additional snags will likely be created through post harvest timber stand improvement (TSI).

Communities

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

Forest Condition

The forest is generally healthy and vigorous. The 2013 inventory shows a total volume of 482,260 bd. ft. for the tract with a harvest volume of 163,160 bd. ft. and a leave volume of 319,100 bd. ft. These numbers translate to per acre volumes of 6,263 bd. ft. total, 4,144 bd. ft. harvest and 2,119 bd. ft. leave. The stocking chart shows current stocking at 80%, with a reduction to 62% stocking post harvest. Currently basal area is 96.6sq. ft./ acre. Post harvest basal area is estimated to be 72.9 sq. ft./acre. Trees per acre will decrease from 136 to 119 after the harvest. The top three species for total volume are chestnut oak, white oak, and yellow poplar. The top three species for harvest, by volume, are eastern white pine, chestnut oak and largetooth aspen. Throughout the tract understory regeneration is dominated by American beech and sugar maple, with

lesser amounts of sassafras, red maple, yellow poplar and white ash. In some areas paw paw dominates the understory.

Recreation
The primary recreation use of this tract are hunting and hiking. The Knobstone Trail follows a path through the center of this tract. During a proposed timber harvest, the section of the trail which lies within this tract will be closed to the public and re-routed, for safety reason. Following completion of the harvest the trail will be re-opened.

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

Tract Subdivision Description and Prescription

Mixed Oak (~41 acres)
This subdivision is comprised primarily of a mix of three oak species: chestnut oak, white oak and northern red oak. Those three species account for 78% of the number of sawtimber trees per acre, 80% of the basal area per acre and 84% of the total volume per acre. The estimated volume for this subdivision is 7,784 bd. ft./acre, with the harvest removing 2,160 bd. ft./ acre, leaving the residual volume at 5,624 bd. ft./ acre. The midstory is comprised of chestnut oak, sugar maple and red maple. Understory species found frequently within this subdivision include: American beech, red maple, sugar maple and sassafras. In some areas the understory was dominated by paw paw. Regeneration was primarily limited to American beech, sugar maple and sassafras. Scattered oak seedlings were observed on drier sites and in the cut over areas located throughout south slope in the north and northeast of the tract. Much of this area received a timber harvest and post-harvest firewood cutting in the early 1980's, as mentioned in the tract history section. Following those activities and the land acquisition, Jackson-Washington State Forest staff prescribed TSI for the area to create openings and to favor crop trees. In several areas (one such area is a portion of the south facing slope in the north half of the tract) within this subdivision the trees are relatively small diameter and the stocking is relatively low. Within those areas with small diameter trees and lower stocking, the management prescription is for TSI to occur to remove grapevines and to provide release to crop trees. In other areas that were outside of the previous harvest or where the stocking is higher and the trees are merchantable, the management prescription is to implement a single tree selection and/ or group selection improvement harvest. Effort should be made to maintain and enhance the oak/hickory forest type into the future. During the field inventory an area was identified where the most appropriate management prescription would be to implement a regeneration opening. In this area the stocking was very low and many of the trees were declining. Removing the overstory will allow a healthy, well stocked new cohort of trees to grow. Regeneration in subsequent years within the openings will likely be comprised of the following species: yellow-poplar, red maple, blackgum, sassafras, largetooth aspen and black cherry.
Mixed Hardwoods (~21 acres)

The mixed hardwood tract subdivision includes much of the area/areas that were harvested, post-harvest firewood cutting took place and were regenerated. This subdivision is a mix of hardwood species that are smaller in size and few are merchantable. Tree species that make up a large proportion of the total basal area are: yellow poplar, largetooth aspen and black cherry. The estimated volume for this subdivision is 2,960 bd. ft./acre, with the harvest removing 529 bd. ft./ acre, leaving the residual volume at 2,431 bd. ft./ acre. The understory is dominated by sassafras, American beech, sugar maple, and red maple. Within a majority of the subdivision, TSI is the prescribed management activity, as much of the area was only regenerated around 25 years ago and very few of the trees are merchantable. There are several islands that were not regenerated and within those islands, single tree selection could occur.

Old Field/Planted Pine (~15 acres)
This subdivision is located in the center of the tract between the north slope and the south slope and lies in an east to west orientation. This subdivision was likely a field for grazing, hay, or potentially an attempt at row crops. The area was planted to eastern white pine to reforest the area, likely because the ground was in poor condition from the mentioned agricultural practices. The overstory within this subdivision is currently dominated by eastern white pine, largetooth aspen and yellow poplar. The estimated volume for this subdivision is 6,612 bd. ft./acre, with the harvest removing 4,128 bd. ft./ acre, leaving the residual volume at 2,248 bd. ft./ acre. The management prescription for this area is to regenerate the non-native eastern white pine to allow a new cohort of native hardwood trees to grow. Many eastern white pine trees have blown down in storms or wind events, further necessitating the management prescription to regenerate the area. Regeneration in subsequent years within the openings will likely be comprised of the following species: yellow-poplar, red maple, blackgum, sassafras, largetooth aspen and black cherry.

Tract Prescription and Proposed Activities
The management prescription for the tract is to apply a single-tree and group selection improvement harvest in the next year or two. A harvest should focus on removing the non-native eastern white pine. Several areas located within the mixed oak tract subdivision had insufficient stocking, or had visible damage and/or decay from past grazing and/or fire damage, in these areas the management prescription is to implement a regeneration opening. The number of regeneration openings and size of openings throughout the tract will vary based on the conditions discovered in the field at the time of marking. The recommended management prescription for the remaining areas is to remove competing lesser quality and declining trees, favoring white oak and chestnut oak with well formed crowns and good growth characteristics. The management prescription for the mixed hardwood tract subdivision area is TSI. Following these recommendations should provide for a tract of well stocked healthy and more vigorous growing trees. During and after harvest operations best management practices (BMP's) will be implemented to minimize any potential impact to soil and water resources. Following the harvest, timber stand improvement should be performed throughout the entire tract to remove grapevines, release future crop trees and to deaden (non-merchantable) trees not removed during the harvest. Regeneration opening monitoring of openings that are

greater than one acre in size should occur within 2-3 years post harvest, to ensure that natural regeneration is a success. A re-inventory should occur in 20 years, following the harvest.

Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Mark harvest and sell timber	2014-2015
Post-harvest TSI	2017-2018
Regeneration opening monitoring >1acre in size	2018-2021
Inventory and Management Guide	2037

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INVENTORY SUMMARY				
			Compartment:	11
Jackson-Washington State Forest			Tract:	19
Forester:	D. Potts		Date:	10/2/13

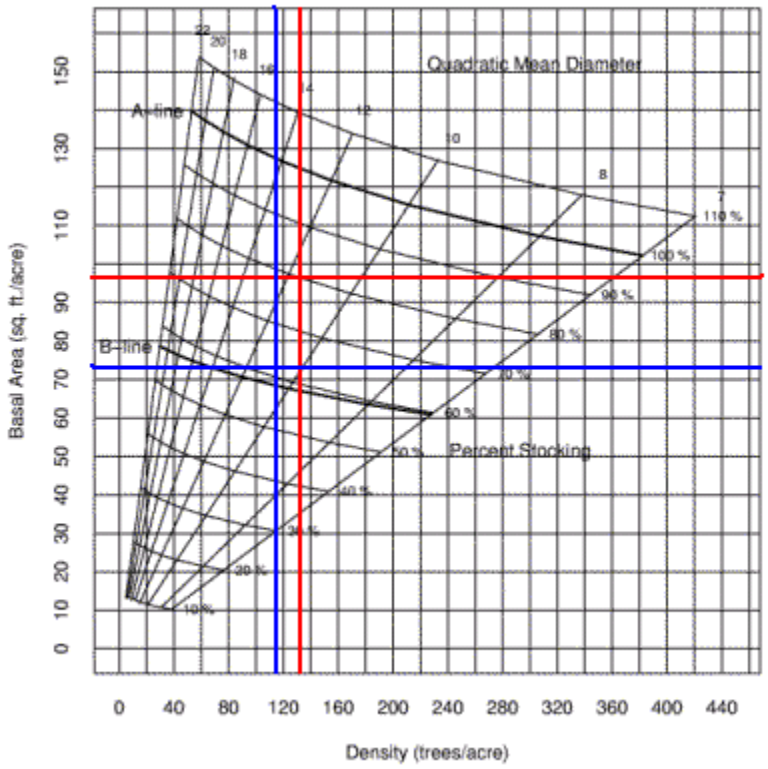
ACREAGE IN:

Commercial Forest	77
Non-Commercial	0
TOTAL AREA	77

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

SPECIES	HARVEST STOCK	GROWING STOCK	TOTAL VOLUME
Chestnut oak	34,730	106,540	141,270
White oak	12,610	77,850	90,460
Yellow poplar	21,140	35,840	56,980
Northern red oak	12,230	34,610	46,840
Largetooth aspen	24,560	19,500	44,060
Eastern white pine	39,360	0	39,360
Black oak	0	21,270	21,270
Sugar maple	5,200	7,950	13,150
Pignut hickory	1,610	5,630	7,240
Red maple	1,710	4,500	6,210
American beech	4,540	0	4,540
Shagbark hickory	0	3,300	3,300
White ash	3,240	0	3,240
Scarlet oak	2,230	0	2,230
Eastern redcedar	0	2,110	2,110
TRACT TOTALS	**163,160**	**319,100**	**482,260**
PER ACRE TOTALS	**2,119**	**4,144**	**6,263**

Stocking Guide
Compartment 11 Tract 19



Pre-Harvest Inventory Data in Red
(Sub merchantable trees excluded)
Total BA/A = 96.6 sq.ft./AC
Total #trees/acre = 136
Avg. tree diameter = 11.8 inches
Percent stocking = 80%

Post-Harvest Inventory Data in Blue
(Sub merchantable trees excluded)
Total BA/A = 72.9 sq.ft./AC
Total #trees/acre = 119
Avg. tree diameter = 11 inches
Percent stocking = 62%

Jackson-Washington State Forest
Compartment 11 Tract 19
Tract Subdivision Map

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