Indiana Department of Natural Resources
Division of Forestry
DRAFT
Resource Management Guide

Jackson-Washington State Forest	Compartment 3 Tract 13
Forester Michael Spalding	Date: September 26, 2013
Management Cycle End Year: 2040	Management Cycle Length: 27 years

Location
This tract is located in Section 25, Township 5 North, Range 4 East, Brownstown Township, Jackson County.

General Description
This 52 acre tract is influenced by a southerly aspect for about half of the tract and a northerly aspect for the other half of the tract. The south-facing aspect is dominated by a chestnut oak overstory, and the north-facing aspect is dominated by mixed hardwoods, primarily yellow-poplar and chestnut oak.

History
The land that makes up tract 13 was acquired through three separate acquisitions. The first was an 80 acre purchase from John and Hannah Brandt on December 16, 1932. This purchase contributed nearly all of the acreage to this tract. The second was a 25 acre purchase from Benton and Albertine Miller on January 3, 1941. The third was a 15 acre purchase from Ralph Michael on April 19, 1999.

The first recorded management of this tract is an inventory and brief management guide from February 1968. The only number recorded that was associated with the inventory is a total estimated harvest volume of 80,000 board feet. The recommendation for the slopes was to harvest the mature trees. The recommendation for the bottom was to regenerate the entire bottom area. The forester noted "Most of the present growing stock appears to be the residual stand of a previous cut and the quality and vigor is poor."

Another inventory and management guide was completed on August 21, 1979. The inventory estimated 4,598 board feet per acre for a total of 275,700 board feet on the 60 acre tract. The harvest volume was estimated to be 1,949 board feet per acre for a total potential harvest of 116,940 board feet. The recommendation was to harvest the mature yellow-poplar and to thin some of the chestnut oak areas.

A timber sale was sold on December 22, 1982. The tract acreage was listed as 62 acres; however, the entire tract was not marked for harvest. The upper south-facing slope on the north end of the tract and the flat ridge top on the south end of the tract were both excluded from the harvest area. The primary objective of the harvest was to salvage dead trees killed by the linden looper epidemic of 1978 to 1980. Also, single trees selection

and two regeneration openings were marked throughout the rest of the tract. The sale was purchased by Darrel Wright of English for $6,100.00 ($79.86/MBF)

Landscape Context
This tract lies near the center of the Skyline Drive area of Jackson-Washington State Forest, and is therefore heavily forested. Moving out from this block of forested hills the landscape becomes dominated by other agricultural uses, primarily corn and soybean production. Brownstown is the most heavily populated area in the landscape and is 2 ½ miles from the tract.

Topography, Geology and Hydrology
The topography in this tract is moderately steep. Only some small areas within the tract may require longer cable or tracked equipment to skid trees. The underlying geology is made up of sandstone, siltstone, and shale bedrock. The entire tract is located in the uppermost end of the Starve Hollow Lake watershed.

Soils
Berks channery silt loam (BeG) (22.7 acres) 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, 12 to 20 percent slopes (CoD) (4.3 acres) 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) (22.8 acres) 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.

Stonehead silt loam (SsC2) (.1 acre) This series consists of deep and very deep, moderately well drained soils formed in loess and the underlying residuum weathered

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

Tilsit silt loam (TlB2) (2.5 acres) 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. Native vegetation is primarily oak, hickory, red and sugar maples, blackgum, yellow-poplar, dogwood, beech, 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.

Access
This tract can be directly accessed from Skyline Drive. From the intersection of US 50 and State Road 250 in Brownstown, travel east 1 ¾ miles on State Road 250. Turn right (south) onto County Road 100 East and travel for ¼ mile to Skyline drive. Turn right (west) on Skyline Drive and travel 1 ¼ miles to the tract.

Boundary
The northern boundary is Skyline Drive. The eastern boundary is a ridge top for the northern 1/3 and a private property boundary for the southern 2/3. This property line is marked with orange Carsonite posts. The southern boundary is a ridge top. The western boundary is an ephemeral drainage for the northern 1/3 and a private property boundary for the southern 2/3. This property line is also marked with orange Carsonite posts.

Wildlife
The number of snags estimated by the inventory for the 5"+ and the 9"+ size classes far exceed both the maintenance level and the optimal level. The 19"+ size class is only slightly deficient. Post-harvest timber stand improvement will create additional snags in this size class. Recent droughts are causing significant mortality in areas as well and will likely contribute new snags not tallied during the inventory.

Indiana Bat Habitat Snag Guidelines					
				Available	**Available**
Snag	**Maintenance**	**Optimal**	**Inventory**	**Above**	**Above**

Size Class	Level	Level	Estimate	Maintenance	Optimal
5"+ DBH	208	364	591	383	227
9"+ DBH	156	312	489	333	177
19"+ DBH	26	52	21	-5	-31

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

Communities

The south facing slopes in this tract are dominated by chestnut oak, with lesser amounts of scarlet and white oaks as well as pignut hickory. The understory of this area has a stand of extremely dense beech saplings with greenbrier below. The north facing slopes are dominated by mixed hardwoods, and much of the area has a very dense stand of pawpaw in the understory.

Forest Condition

The inventory estimated a total of 476,390 board feet of timber on this tract. Of the estimated 9,161 board feet per acre, 2,497 is considered harvest stock and 6,665 is considered growing stock. The total potential harvest is estimated to be 129,820. This harvest would reduce the basal area from 115.8 square feet per acre to 84.2 square feet per acre. The stocking level would drop from 92% to 67%, which is still in the fully stocked range and well above the b-line.

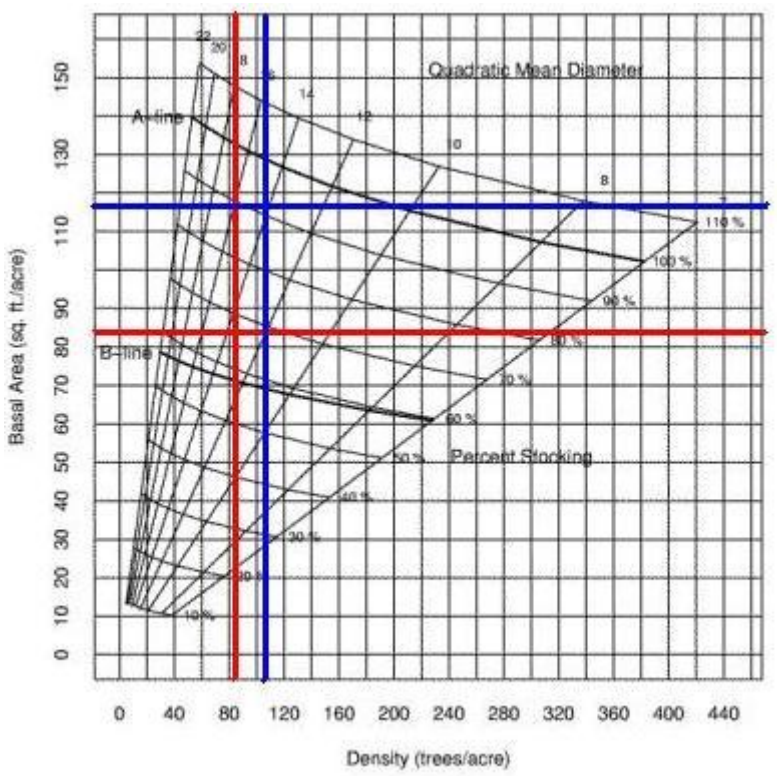
TM 901 RESOURCE MANAGEMENT GUIDE			
INVENTORY SUMMARY			
		Compartment:	3
State Forest:	Jackson-Washington	Tract:	13
Forester:	Michael Spalding	Inventory Date:	January 29, 2013

ACREAGE IN:	
Forest	52
Non-Forest	0
TOTAL AREA	52

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

SPECIES	HARVEST STOCK	GROWING STOCK	TOTAL VOLUME
chestnut oak	45,050	155,990	201,040
yellow-poplar	46,010	32,080	78,090
northern red oak	1,470	41,230	42,700
white oak	0	37,740	37,740
black oak	8,070	18,840	26,910
shagbark hickory	0	25,790	25,790
pignut hickory	3,380	16,630	20,010
white ash	14,450	3,460	17,910
sugar maple	5,090	7,490	12,580
scarlet oak	2,510	3,290	5,800
American sycamore	0	4,030	4,030
red maple	2,140	0	2,140
American beech	1,650	0	1,650
TRACT TOTALS	129,820	346,570	476,390
PER ACRE TOTALS	2,497	6,665	9,161

Stocking Guide
Compartment 3 Tract 13



Estimated Pre-Harvest Data in Blue
Total Basal Area per Acre = 115.8 square feet per acre
Total Number Trees per Acre = 103
Average Tree Diameter = 14 inches DBH
Percent Stocking = 92%

Projected Post-Harvest Data in Red
Total Basal Area per Acre = 84.2 square feet per acre
Total Number Trees per Acre = 82
Average Tree Diameter = 13.7 inches DBH
Percent Stocking = 67%

Recreation
The primary recreational use within this tract is hunting. Skyline Drive, which follows the northern boundary of this tract, is a very popular route for fall foliage viewing. During harvest of the timber, spotters will be necessary along Skyline Drive to avoid any potential hazards to pedestrians or motorists.

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

Oak-Hickory (40.6 acres)
This subdivision is dominated by primarily chestnut oak. The oak-hickory area on the north-facing slope features medium to large sawtimber chestnut, white, red, and black oaks. The timber is good to excellent quality and should receive a thinning harvest to maintain the health and vigor of the residual trees. Where possible, mixed hardwoods should be marked to release oak and hickory trees. The oak-hickory area on the south-facing slope transitions from very poor form and poor quality chestnut oak mixed with scarlet, black, and white oaks near the top of the slope to good quality white and chestnut oaks near the bottom of the slope. Some pignut hickories are scattered throughout as well. The understory in this area has a very dense layer of American beech with a greenbrier layer below that. The lower portion of the slope is in need of a thinning harvest to release the higher quality and healthier oak and hickory trees. The upper slope is in need of a thinning. The forester marking the timber harvest can make a thorough assessment of whether to thin through harvesting or timber stand improvement. This assessment can best be made while laying out access to the lower portion of this south-facing slope. Once thinned, this area will be a fully stocked stand of healthy oak and hickory trees.

Mixed Hardwoods (11.7 acres)
As the name indicates, this area is dominated by mixed hardwoods; however, there are pockets of oak-hickory that are not large enough to delineate separately. Yellow-poplar and chestnut oak are the two most prevalent trees in this subdivision. The timber in this area is generally good to excellent, with a few lower quality stems present as well. The overstory trees range from pole to large sawtimber, with most being medium to large sawtimber. The understory is heavily dominated by pawpaw. Much of this subdivision is in need of single-tree selection to release the more vigorous, better quality trees. Also, when possible, mixed hardwood trees should be marked to release oak or hickory trees. Most of the ash trees should be marked in advance of emerald ash borer reaching this block of forest. Many of the yellow-poplar trees are declining in health and vigor in this subdivision as well. A few areas throughout the subdivision are in need of small to moderate-sized regeneration openings between ½ and 5 acres in size, with most of the openings being in the one to three acre range. These areas contain mature, overmature, dying, and dead yellow-poplar, ash, and other damaged, mature, overmature, and defective trees of other species. One are in need of an opening is on the ridge top at the sound end of the tract. This area was an old field or orchard at one time. There is a large amount of wind damage in this area as well as many mature and defective trees. The prescribed regeneration openings in this subdivision will likely be dominated in the future by mixed hardwoods including yellow-poplar and cherry.

Tract Prescription and Proposed Activities
This tract should be marked for a timber harvest in the next three to five years. This harvest should focus on releasing the healthier and higher quality oak and hickory trees through a thinning harvest as well as incorporating regeneration openings to harvest high-risk, damaged, defective, mature, over-mature, and drought-stressed trees. Within two

years following the harvest, post-harvest timber stand improvement should be performed to release trees not sufficiently released through the harvest, deaden any culls not harvested by the logger, and to complete any regeneration openings. Additional large snags will likely be created through post-harvest timber stand improvement. Best management practices will be implemented on this harvest as required on all State Forest timber sales to minimize the impacts of sediment reaching streams and to protect the soil. Twenty years after completion of the harvest, another inventory should be performed and a management guide written.

Proposed Activities Listing

Mark and sell harvest	2015-2018
Post-harvest timber stand improvement	2016-2018
Review any openings greater than one acre for regeneration	2018-2020
Inventory and management guide	2037-2040

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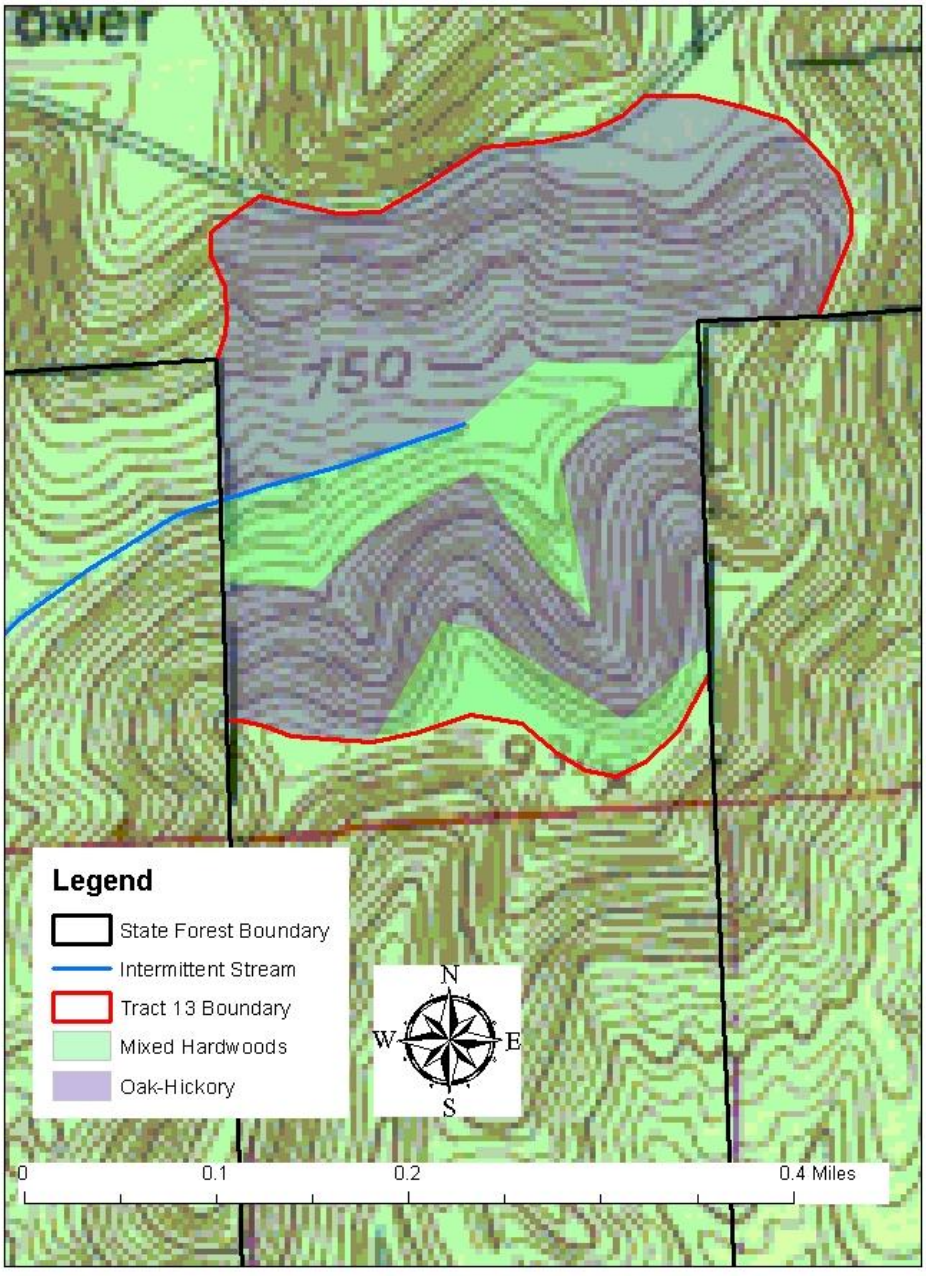
You must indicate the State Forest Name, Compartment Number and Tract Number in the "Subject or file reference" line to ensure that your comment receives appropriate consideration. Comments received within 30 days of posting will be considered. Note: Some graphics may distort due to compression.

Tract Subdivisions
Compartment 3 Tract 13
Jackson-Washington State Forest



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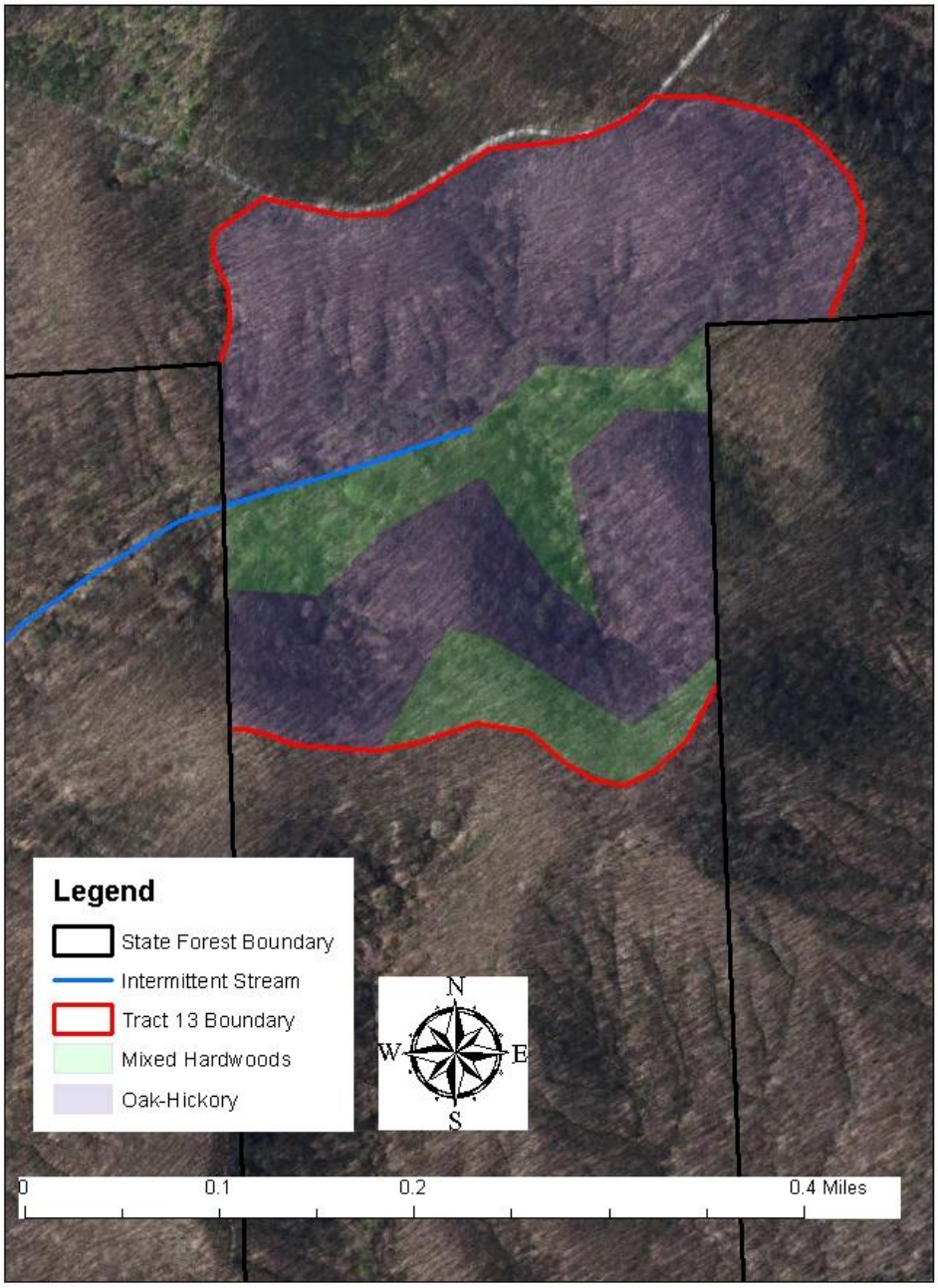

Soils Map
Compartment 3 Tract 13
Jackson-Washington State Forest