**Indiana Department of Natural Resources**
**Division of Forestry**
**DRAFTRESOURCE MANAGEMENT GUIDE**

Jackson-Washington State Forest
Forester Michael Spalding
Management Cycle End Year: 2039

Compartment 2 Tract 14
Draft Plan Date: September 20, 2013
Management Cycle Length: 26 years

## Location

This tract is located in Sections 19, and 20, Township 5 North, Range 5 East, Brownstown Township, Jackson County. The tract is 2 ½ miles southeast of Brownstown and ¼ mile northeast of the Jackson-Washington State Forest Office.

## General Description

This 48 acre tract is covered with both oak-hickory and mixed hardwoods. Knob Lake and a portion of the campground are located within this tract.

## History

The majority of the tract came from three land purchases. The first was a 200 acre purchase from Grover Doerr on August 26, 1931. The second was another purchase from Grover Doerr of 40 acres on November 23, 1931. The third was an 80 acre purchase from George and Louise Vondielingen on March 20, 1935.

The first recorded management of this tract is an inventory and brief management guide from October 1971. At that time the tract was listed as having a total of 46 acres, with 28 merchantable timber acres, 13 recreational acres, and 5 acres of water. The total volume per acre estimated by the inventory was 4,969 board feet, with 3,418 per acre as harvest volume. This management guide recommended a timber harvest within ten years.

Two harvests were marked and sold in this tract. In 1976 a white oak harvest of 11,919 board feet was sold for $6,034 ($506.25/MBF). In 1977 a multiple species harvest of 70,001 board feet was sold for $8,601.00 ($122.87/MBF).

Another inventory was conducted and management guide written. The guide is dated 1976 but references the timber sale in the past tense. The tract was reduced to 31 acres, and only contained merchantable timber at that time. The inventory estimated 6,461 board feet per acre with 2,927 board feet harvest stock and 3,534 board feet growing stock. The guide recommended another potential harvest in 1991.

## Landscape Context

The area of forestland in which Compartment 2 Tract 14 lies contains approximately 2,100 acres of State Forest ownership. To the southwest of this block of forest across State Road 250 is a block of approximately 2,700 acres of State Forest ownership. With the exception of the office, service area, property residence, and campground, these two blocks are almost entirely forested. Brownstown, approximately 2 ½ miles northwest of Compartment 2, has not seen significant growth in land area over the last 10 years. Most of the development has been single family homes. Most of the conversion of forestland to homesites in the landscape in the vicinity of Compartment 2 is occurring on Venus Road, approximately one mile north of this tract. Over the past 10 or so years, several acres have been lost to fragmentation due to construction of many

new homes and parcelization of larger tracts of forestland. To the east and southeast of the block of forest land containing compartments one and two is land heavily dominated by agriculture and dotted with small remaining woodlots which are areas that were generally too wet to farm. Several of these small woodlots have been pushed into piles and burned within the last 2 to 3 years. The primary threat to the private forestland within the landscape of Compartment 2 will continue to be fragmentation and parcelization due to construction of single family homes.

**Topography, Geology and Hydrology**

The topography of this tract transitions from moderately-steep dissected slopes on the west end of the tract to very steep slopes near the eastern end of the tract. The underlying geology consists of siltstone and sandstone. The entire tract is within the watershed of Knob Lake. Water flowing out of Knob Lake drains into a mapped perennial stream that eventually flows into Pond Creek, which then flows into the Muscatatuck River.

**Soils**

**Beanblossom silt loam (BcrAW) (2.0 acres)** 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.

**Berks channery silt loam (BeG) (8.1 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) (2.0 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) (8.2 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.

**Kurtz silt loam (KtF) (20.3 acres)** 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.

**Steff silt loam, rarely flooded (Sg) (.1 acre)** This moderately well drained soil has a seasonal high watertable at 1.5 to 2.5 ft. and is on flood plains. Slopes are 0 to 2 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 in/hr) in the most restrictive layer above 60 inches. Available water capacity is high (10.8 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 4.5 to 5.5.

**Water 7.3 (acres)** This is the portion of the tract that is Knob Lake.

**Access**
From the intersection of US Highway 50 and State Road 250 in Brownstown, travel east on State Road 250 for 2.2 miles to Camp Road. This is main entrance into Jackson-Washington State Forest. Travel .75 mile on Camp Road to the southwest corner of the tract.

**Boundary**
Part of the southwestern boundary follows the dam of Knob Lake, and the other part follows the ridge where trail 5 is located. The southern and eastern boundaries are ridges with either hiking trails or firelanes along the entire extent of the boundaries. The western one third of the northern boundary is Camp Road, and the eastern two thirds is an intermittent stream valley that transitions into an ephemeral stream valley.

**Wildlife**
. As displayed in the table below, the number of snags estimated in this tract for all three size classes exceeds the maintenance level. Additional snags may also be created through the proposed post-harvest timber stand improvement.

| **Indiana Bat Habitat Snag Guidelines** | | | | | |
|---|---|---|---|---|---|
| | | | | **Available** | **Available** |
| **Snag** | **Maintenance** | **Optimal** | **Inventory** | **Above** | **Above** |
| **Size Class** | **Level** | **Level** | **Estimate** | **Maintenance** | **Optimal** |
| **5"+ DBH** | 146 | 256 | 361 | 215 | 105 |
| **9"+ DBH** | 110 | 219 | 208 | 98 | -11 |
| **19"+ DBH** | 18 | 37 | 22 | 3 | -15 |

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**

. Two forest types are present in this tract. The western end of the tract is influenced by the west aspect, and is therefore dominated with oak-hickory stands and a greenbrier layer. The understory is dominated by beech, red maple, and sugar maple. The other forest type present is mixed hardwoods and is located on the north facing slope. This forest type is located on mesic soils and has pawpaw and spicebush in the understory.

**Forest Condition**

The stocking level in this tract is currently at 100%; the proposed harvest would reduce this to 73%, which is still fully stocked and well above the b-line. The inventory estimated a total volume on the 37.5 acres of forest to be 373,610 board feet. The board feet per acre was estimated to be 7,784 , with 1,937 board feet harvest stock and 5,846 board feet growing stock. The management guide that appears to have been written after the 1977 timber sale stated "Prior to the sale there were massive ground movements in this tract leading to fallen and dying trees." This still appears to be a problem now, as many large trees seem to have shifted downslope and are leaning. These trees are highly susceptible to falling over.

| TM 901 RESOURCE MANAGEMENT GUIDE | | | |
|---|---|---|---|
| | | | |
| **INVENTORY SUMMARY** | | | |
| | | Compartment: | 2 |
| State Forest: | Jackson-Washington | Tract: | 14 |
| Forester: | Michael Spalding | Date: | January 25, 2013 |

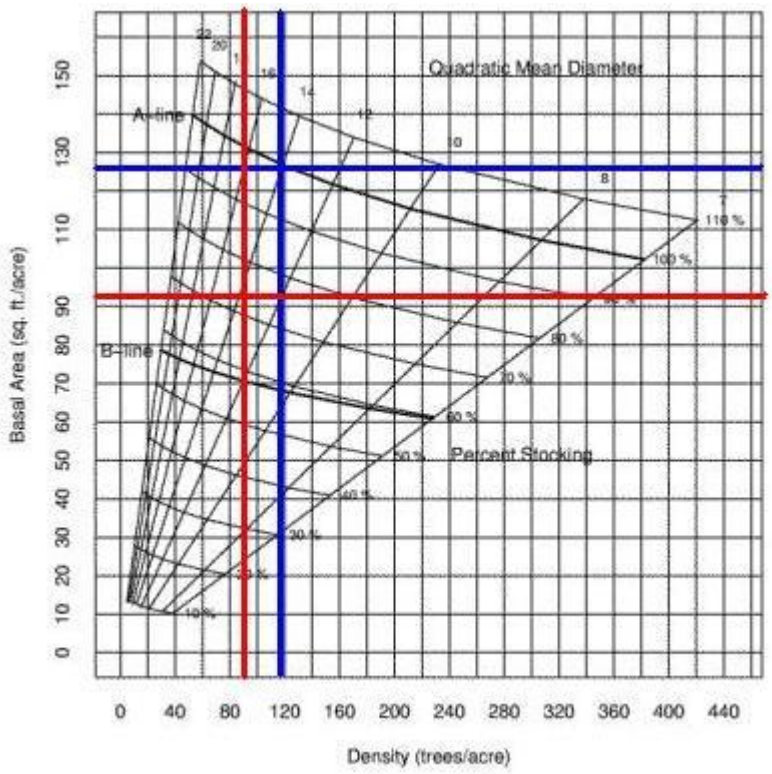
| ACREAGE IN: | |
|---|---|
| Forest | 37.5 |
| Knob Lake | 7 |
| Campground | 3.5 |
| TOTAL AREA | 48 |

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

| SPECIES | HARVEST STOCK | GROWING STOCK | TOTAL VOLUME |
|---|---|---|---|
| chestnut oak | 44,260 | 146,720 | 190,980 |
| white oak | 0 | 43,870 | 43,870 |
| sugar maple | 25,510 | 14,930 | 40,440 |
| pignut hickory | 5,440 | 28,840 | 34,280 |
| American beech | 5,630 | 16,540 | 22,170 |
| northern red oak | 0 | 13,850 | 13,850 |
| shagbark hickory | 0 | 10,830 | 10,830 |
| yellow-poplar | 4,070 | 5,050 | 9,120 |
| red maple | 5,710 | 0 | 5,710 |
| black oak | 2,360 | 0 | 2,360 |
| TRACT TOTALS | 92,980 | 280,630 | 373,610 |

| | | | |
|---|---|---|---|
| PER ACRE TOTALS | 1,937 | 5,846 | 7,784 |

**Stocking Guide**
Compartment 2 Tract 14




Estimated Pre-Harvest Data in Blue
Total Basal Area per Acre = 126 square feet per acre
Total Number Trees per Acre = 118
Average Tree Diameter = 14 inches DBH
Percent Stocking = 100%

Projected Post-Harvest Data in Red
Total Basal Area per Acre = 92 square feet per acre
Total Number Trees per Acre = 91
Average Tree Diameter = 13.9 inches DBH
Percent Stocking = 73%

**Recreation**
Recreational use of this tract is very high. Knob Lake is a popular local lake for fishing. The camp sites at the north end of Knob Lake are located in this tract. All of hiking trail 5 and parts of hiking trails 2 and 3 are located in this tract. Hiking trail 5 would have to be temporarily

closed during any harvesting activities. Parts of trails 2 and 3 would need to be closed or rerouted during the timber harvest as well.

**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 Hardwoods (15.8 acres)** This subdivision is dominated by sugar maple, beech, and yellow-poplar. Several of the beech are over-mature, defective, or both. Many of the sugar maple are mature or have borer damage. Although yellow-poplar is not as prevalent as the beech and maple, many of them are mature to over-mature. Throughout the steeper parts of this subdivision is evidence of the major land movement referred to in the older management guide. Many larger trees are leaning or have the soil stability compromised around them, and are therefore at a high risk of falling over at any time. This area was harvesting the 1976 timber sale and no erosion is currently visible from that harvest. If the trees are harvested prior to falling over, the resulting disturbance should be less than if left to fall over. Due to all of the previously mentioned reasons, this subdivision is in need of a large regeneration opening or multiple smaller to moderate sized ones. It is expected that a regeneration opening with this aspect and soils will be dominated with yellow-poplar and cherry as well as other mixed hardwoods.

**Oak-Hickory (21.8 acres)** This subdivision is dominated primarily by chestnut oak with lesser amounts of white, red, black, and scarlet oaks as well as pignut and shagbark hickories. The timber transitions from mostly average quality pole to medium sawtimber chestnut oak on the upper slopes to higher quality medium to large sawtimber white, red, black, scarlet, and chestnut oaks on the lower slopes. Many of the plots in this subdivision had basal areas of 130 to 210 square feet per acre. Some of the trees have defects resulting in rot and volume loss, but many of the trees are sound. This area needs a thinning harvest to release the healthier, more vigorous, and higher quality oak and hickory trees by harvesting suppressed, co-dominant, damaged, mature, and over-mature oaks and hickories as well as any mixed hardwoods competing with oak and hickory trees. Following the thinning harvest, this subdivision will be fully stocked with higher quality healthy oak and hickory trees.

**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. While the estimated number of snags in this tract exceeds the maintenance level for the Indiana bat, additional 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

Knob Lake. Twenty years after completion of the harvest, another inventory should be performed and a management guide written.

**Proposed Activities Listing**

| | |
|---|---|
| Mark and sell harvest | 2014-2017 |
| Post-harvest timber stand improvement | 2015-2017 |
| Review any openings greater than one acre for regeneration | 2017-2019 |
| Inventory and management guide | 2036-2039 |

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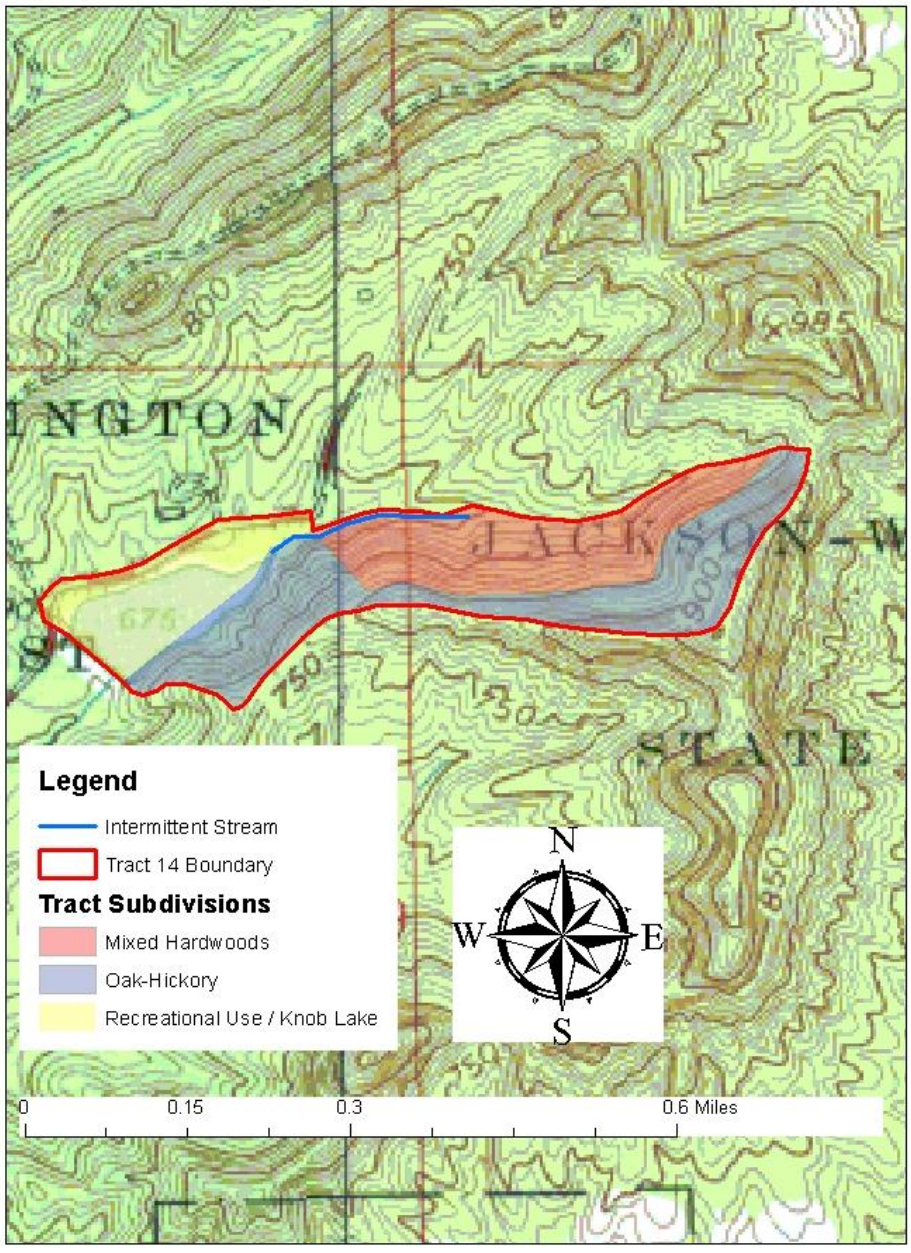
# Tract Subdivisions
# Compartment 2 Tract 14
# Jackson-Washington State Forest



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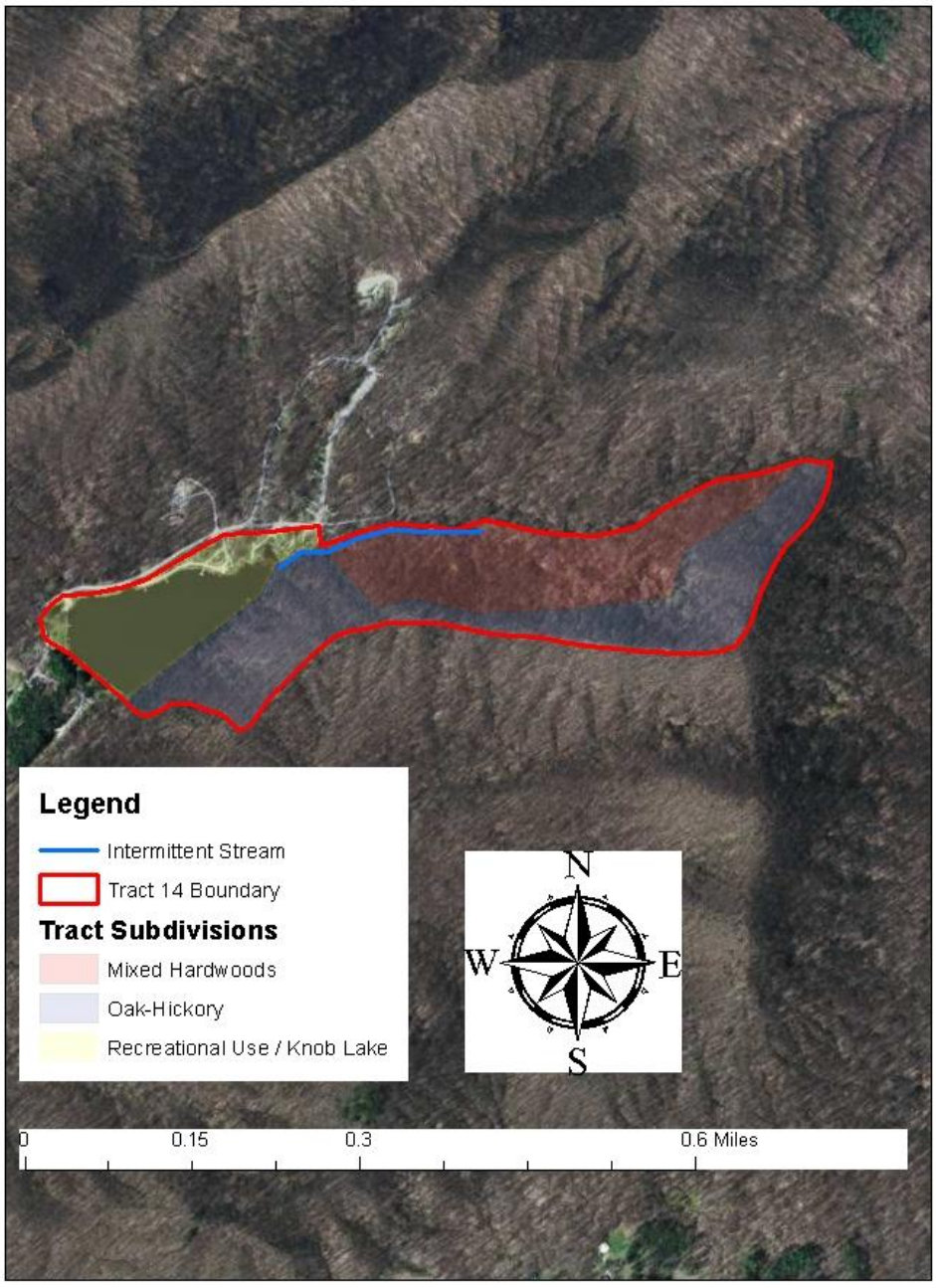

# Soils Map
# Compartment 2 Tract 14
# Jackson-Washington State Forest