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

State Forest: Yellowwood **Compartment** 13 **Tract** 14
Forester: Amy Spalding **Date:** October 26, 2010
Management Cycle End Year: 2020 **Management Cycle Length:** 20 years

Location

This tract is located in parts of Section 24, T10N, R1E and Sections 19 & 30, T10N, R2E, Brown County, Indiana. It is located in a block of State Forest between Brummett's Creek and Sewell Road. It is approximately 2 miles northwest of Needmore.

General Description

This tract is 165 acres of which 160 are commercial (5 acres deducted for high tension power line and underground AT&T line). The majority is fairly diverse mixed hardwoods with about 19 acres of planted Virginia pine.

Table 1. Species list by relative abundance from May 2010 inventory on 6371727

Regeneration	Understory	Overstory
Sugar Maple	Sugar Maple	White Oak
American Beech	Virginia Pine	Yellow Poplar
Sassafras	Sassafras	Virginia Pine
Yellow Poplar	Red Maple	Pignut Hickory
Black Oak	Yellow Poplar	Black Oak
White Ash	Black Oak	Sugar Maple
Pignut Hickory	Pignut Hickory	White Ash
White Oak	White Ash	American Beech
Blackgum	White Oak	Shagbark Hickory
Red Maple	Black Walnut	Scarlet Oak
Shagbark Hickory	American Beech	Sassafras
Red Elm	Blackgum	Red Maple
Black Cherry	Shagbark Hickory	Black Walnut
	Scarlet Oak	Basswood
	Basswood	Bitternut Hickory
	Bitternut Hickory	Northern Pin Oak
	Northern Pin Oak	Northern Red Oak
	Northern Red Oak	Red Elm
	Red Elm	Black Cherry
		Largetooth Aspen

History
This tract was formed from two acquisitions; the first in 1951 from a land grant from the federal government and the second from Knauss in 2010. The flat ridges were most likely farmed and sideslopes grazed. During the 1930's Virginia pine was planted on the eroding hillsides by CCC or WPA workers.

The older section of tract was reconned in 1990. Based upon on ground findings an inventory was recommended. An inventory occurred in 2000 by Forester Hahn. A harvest was recommended, but was not implemented due to access.

The newer purchase has been harvested in the past 10-15 years utilizing single tree and group selection. Currently the stand is fully stocked. Skid trails were kept open to facilitate recreational use under private ownership.

An inventory was conducted during October 2010 by Forester Amy Spalding and Intermittent Forester Kaylee DeCosta. The findings of that inventory are highlighted in the report below.

Landscape Context
The tract is nestled in a large block of rugged upland forest of which much is publically owned. Small ponds on both private and public lands dot the landscape. Houses and agricultural fields can be found along narrow valleys and ridge tops.

Topography, Geology and Hydrology
Tract 14 slopes down to the southeast. Numerous fingerlike ridges make up the east and western slopes. Ephemeral and intermittent drainages move water southerly into Lake Lemon. The underlying geology of this tract is most likely a combination of sandstone, shale, and siltstone.

Soils
<u>WeC2-Wellston-Gilpin silt loams, 6 to 20 % slopes, eroded</u>
This soil is found along the tract's ridges. It is formed from loess over loamy residuum over shale. It is well drained with a moderate available water holding capacity. In general the soil is well suited to trees. Only slight equipment limitations exist. Wellston-Gilpin has a SI of 71 in northern red oak, a land capability class of IVe, and a woodland ordination symbol of 4A.

<u>BgF-Berks-Trevlac-Wellston complex, 20 – 70% slopes</u>
This complex is found on side slopes along the tract's main ridge. It is formed from a combination of siltstone interbedded with sandstone and shale. It has a very low available water capacity and is moderately rapidly permeable. This soil is well suited to woodlands, and has some limitations to harvest. Employing standard BMP regulations such as waterbars or contour shaping for haul roads mitigate these limitations. Other special logging methods, such as uphill yarding with cables can be beneficial when using rubber tired or crawler tractors. This

complex holds a SI of 70 in northern red oak, a land capability class of VIIe, and woodland ordination symbol of 4R.

WaD-Wellston – Berks – Trevlac Complex, 6 to 20 % slopes

This complex is found along the tract's main ridge. It forms from weathered sandstone-shale-siltstone bedrock at a depth of 51" with a loess cap. The slopes range from 6 – 20%. This soil is unsuited to urban development due to slope. It is very well suited to forestry, with only moderate equipment limitations due to slope and depth to bedrock on some components of complex. Following natural contours for road construction and land shaping can mitigate erosion hazards. This soil has a site index of 70 for northern red oak and a woodland ordination symbol of 4A.

Be-Beanblossom channery silt loam, occasionally flooded

This soil is found in the bottomland areas along the northeastern drainage. It is formed from channery alluvium. Slopes range from 1 to 3 %. It has a very low available water capacity and is moderately rapidly permeable. Overall this soil is well suited to woodlands. Wetness is a concern for harvesting and planting operation, but can be dealt with by avoiding wet times of year. Beanblossom holds a 95 SI, a land capability class of IIIw, and woodland ordination symbol of 7F.

Access

A new property purchase in 2010 provides access from Slippery Elm Shoot. Some work along with archeology clearance will need to be done to open the entrance, improve the old roadbed, and establish log yards.

Boundary

The north and west boundaries adjoin State Forest. The western boundary follows an intermittent drainage and the north follows ephermal drainages across a ridge line. The southern and eastern boundaries are property lines. The south follows Slippery Elm Shoot Road, and the east is clearly marked with orange paint.

Wildlife

This tract provides a wealth of wildlife habitat. Food and water sources are plentiful from hard mast and several nearby ponds on adjacent ridge. During the 2010 inventory numerous songbirds including white breasted nuthatch, yellow bellied woodpecker, red shouldered hawk, gold finch, downy woodpecker, blue jay, chickadee, and red bellied woodpecker were observed. Also signs of turkey, squirrels, chipmunks, and white-tailed deer were observed. The natural heritage database did not report any rare, threatened, or endangered animals within tract boundaries, however a sighting of a Hooded Warbler was observed <1 mile to the northwest.

Hooded Warbler-*Wilsonia citrina*

According to the Division of Forestry Environmental Assessment the Hooded Warbler is listed a species of special concern. It is a forest gap species that nests within a dense shrub layer in mature deciduous forests. Preferred nesting sites are often associated with regenerating forest gaps. This species is associated with large forested tracts, so extensive deforestation, clearing, and fragmentation on breeding and wintering grounds are thought to be threats. The Hooded Warbler is frequently parasitized by the Brown-Headed Cowbird. Single-tree and group selection openings will not only be conducive to this bird's habitat requirements but will also increase the habitat quality.

Indiana Bat Guidelines

The Indiana Division of Forestry recognizes the potential to enhance the Indiana bat habitat on its lands by implementing comprehensive management principles. These management principles include obtaining data on size, species, and numbers of snags trees. Snag trees and some specific species are an integral part of the Indiana bat policy as they are prime roosting sites for maternal colonies.

Table 2. Live Legacy Trees* inventoried October 2010 on 6421314

Size Classes	Maintenance Level	Inventory	Available For Removal
11"+ DBH	1485	3324	1839
20"+ DBH	495	1132	637

**** Species Include:*** *American Elm, Bitternut Hickory, Black Locust, Cottonwood,, Green Ash, Northern Red Oak, Post Oak, Red Elm, Shagbark Hickory, Shellbark Hickory, Silver Maple, Sugar Maple, White Ash, White Oak*
These species of trees, whether dead, dying, or alive have a relative high value as potential Indiana Bat roost trees and are encouraged for conservation.

Table 3. Snag Trees inventoried October 2010 on 6421314

Size Classes	Maintenance Level	Optimal Level	Inventory	Available above Maintenance	Available above Optimal
5"+ DBH	660	1155	760	100	-395
9"+ DBH	495	990	440	-55	-550
19"+ DBH	82.5	165	60	-22	-105

Currently this tract is meeting all guidelines for legacy and snags except for 9" & 19" DBH+ snags. Snags should be retained on tract unless they present a safety hazard. Snag creation should also be incorporated into the tract's post-harvest TSI plan.

Recreation

Although this tract does not contain any established recreation facilities, it most likely is used for hunting, gathering, bird and wildlife viewing, and hiking.

Exotics

Highly disturbed permanent openings including the high tension power line and an underground AT&T line have numerous exotic invasives including Japanese

stiltgrass, bush honeysuckle, and autumn olive. Although complete eradication is unfeasible, care should be focused along the entrance to tract to inhibit movement of exotics into the tract. Japanese stiltgrass was also noted along the old skid trails on the southern half of the tract. Accessible areas should be treated during appropriate months.

Cultural

Cultural resources may be present on the tract but their location is protected. Adverse impacts to significant cultural resources will be avoided during any management or construction projects.

Tract Subdivision Description and Silvicultural Prescription

Forest Condition

Currently this stand holds an average of 8,143 BF per acre with 2,691 BF tallied as harvest and 5,344 BF reserved as growing stock. There are 111 square feet of basal area and 35 sawtimber and quality trees per acre. Overall the stand is overstocked at 104%.

Table 4. Harvest/Leave Chart from October 2010 inventory on 6421314

Species	Harvest	Leave	Total
American Beech	18010	7230	25240
Basswood	5220	0	5220
Bitternut Hickory	0	4210	4210
Black Cherry	0	4710	4710
Black Oak	56380	116270	172650
Black Walnut	0	1760	1760
Largetooth Aspen	5680	0	5680
Northern Pin Oak	0	4930	4930
Northern Red Oak	67370	194320	261690
Pignut Hickory	8370	115030	123400
Red Elm	1180	0	1180
Red Maple	6390	13240	19630
Sassafras	7980	1400	9380
Scarlet Oak	0	16910	16910
Shagbark Hickory	6150	29340	35490
Sugar Maple	8240	27030	35270
Virginia Pine	49730	0	49730
White Ash	60550	0	60550
White Oak	45930	254090	300020
Yellow Poplar	96830	91310	188140
Totals	**444010**	**881780**	**1325790**
Totals/Acre	**2691**	**5344**	**8035**

Mixed Hardwoods

This is the most common strata across the stand comprising about 140 of the tract's 165 acres. Due to the variation of the tract from past management, this stratum was divided based on the acquisition timelines.

Mixed Hardwoods-1951 Acquisition
This sub-stratum covers about 90 acres. It contains 9,189 BF/acre with 2,997 BF/acre tallied as harvestable and 6,192 BF/acre reserved as growing stock. This stand contains 118 square feet of basal area per acre. It is overstocked at 109%.

Overstory species vary by slope and aspect. Dominate trees include black oak, northern red oak, pignut hickory, shagbark hickory, white oak, and poplar. Other dominate trees include scarlet oak, red elm, pin oak, black cherry, American basswood, black walnut, sassafras, sugar maple, red maple, American beech, and white ash. The understory is dominated by shade tolerant beech-maple. To a lesser extent oak, hickory, poplar, ash, and sassafras were also noted. The regeneration layer is almost completely made up of beech and maple.

In general, many stems are experiencing decline from natural senescence and overcrowding. Single tree selection of low vigor, poor formed stems is recommended to release higher quality stems. Retention in white oak is expected to be high. In areas of poor quality, low basal area, or excessively mature stands, group selection regeneration may be prescribed.

Mixed Hardwoods-2010 acquisition
This sub-stratum covers about 50 acres. It contains 8,361 BF/acre with 2,299 BF/acre tallied as harvestable and 5,767 BF/acre reserved as growing stock. This stand contains 102 square feet of basal area per acre. It is fully stocked at 100%.

Overstory species vary by slope and aspect. Dominate trees include white oak, yellow poplar, northern red oak, and American beech. Other dominate trees include white ash, sugar maple, shagbark hickory, black oak, red maple, scarlet oak, and sassafras. The understory is dominated by shade tolerant beech-maple. Black oak, black walnut, yellow poplar, hickory, basswood, and blackgum were also noted.

This stand has been harvested in the past 10-15 years. Several small openings (<1 acre) were noted during inventory. Areas are regenerating well. In other areas, a somewhat selective harvest took place. In some areas many ash and/fire damaged stems were left. An improvement harvest to utilize these stems and improve croptree spacing is recommended. Follow up TSI to old openings and canopy gaps are recommended.

<u>Virginia Pine</u>

This stratum covers about 19 acres across the tract. During the early 1900's much of the gentler ridges in this area were cleared and farmed for agriculture. This practice proved to be unsuitable for this topography. Much of the land was purchased or repossessed by the US government for delinquent taxes. In the 1930's government funded programs such as the CCC or WPA planted these eroded ridges to various pine to secure the eroding soil. Many of these species were planted outside of their native ranges. Portions of both the acquisitions were planted to Virginia pine. Currently these stands contain about 3,096 BF/acre with Virginia pine making up about 2,000BF/acre and about 7.5 cords/acre.

Much of the present day stand has stagnated due to overcrowding and lack of management. In some areas oak and other mixed hardwoods have seeded and taken advantage of areas of where the pines have senesced. As the pine have served their purpose to stabilize the eroding soil, it is recommended that these areas be regenerated to utilize the Virginia pine and hasten this stand's transition to native hardwoods. When feasible, care should be taken to leave oak and hickory stems that have seeded into the pine.

Summary Tract Silvicultural Prescription and Proposed Activities
The overall recommendation for this tract is an improvement harvest. Harvest volumes are expected to fall between 300-350 MBF. The harvest will comply with BMP regulations to minimize soil erosion and protect water quality. Prompt installation of water diversions in conjunction with seed and straw following harvesting will be employed to minimize any effects to neighboring water resources. The harvest will entail both single tree and group selection cutting methods. Single tree selection will remove poorly formed, mature stems, and improve spacing of croptrees to increase the growth of residual stand. Group selection will be implemented in stands of inadequate stocking, poor quality, or mature timber. The goal of this harvest will be to create 10% of the tract in regeneration. Following harvest TSI is recommended to ensure opening completion and croptree release in older openings. This tract will be up for a new management guide/inventory in 20 years.

Proposed Management Activity	*Proposed Date*
Mark Timbersale/Exotic Treatment/ Arch Review/Roadwork/Timbersale	2010/11
Post Harvest TSI & Exotic Recon/Treatment	2012/13
New Management Guide/Inventory	2020

Attachments (in Tract File)
Gingrich Stocking Charts
Ecological Resource Review
Natural Heritage Database Review

Wildlife Habitat Review
Archeological Clearance/Roadwork Request
Soil, Stand, and Roadwork Maps
TCruise Reports

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