Indiana Department of Natural Resources
Division of Forestry
DRAFT

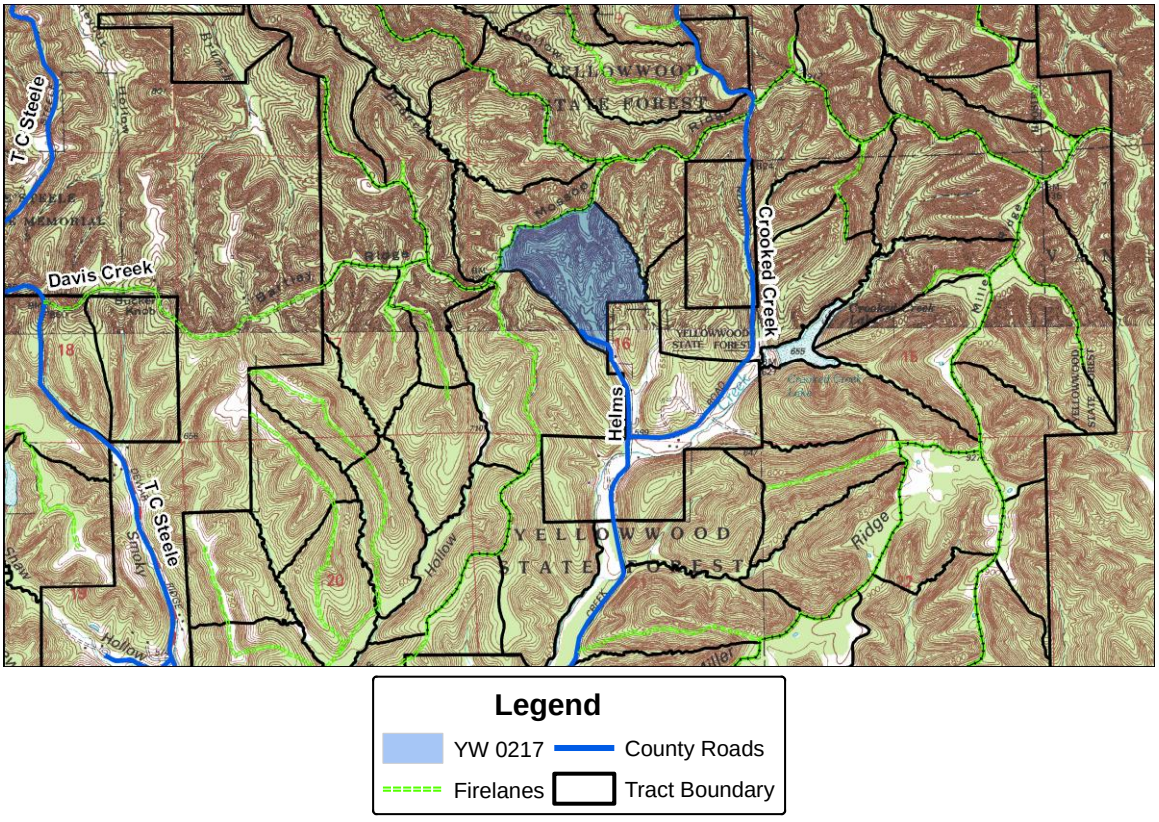
State Forest: **Yellowwood SF**
Tract Acreage: **86**
Forester: **Spalding**
Management Cycle End Year: **2028**

Compartment: **02** Tract: **17**
Commercial Forest Acreage: **86**
Date: **November 25, 2013**
Management Cycle Length: **15 years**

Location

Yellowwood Compartment 2 Tract 17 is located in Section 16, Township 8 North, Range 2 East, Brown County, Indiana. It is approximately 2.5 miles south east of Belmont and 6.5 miles southwest of Nashville, IN. The tract is accessible by a firetrail off of Mossop Ridge Firetrail from Crooked Creek Road.

Figure 1. Yellowwood State Forest Compartment 2 Tract 17



General Description

Y0217 consists of 86 acres all of which are commercial forest land. It has cover types of Oak- Hickory, Mixed Hardwoods, and some small pockets (<1 acre) of Norway spruce. The timber quality is fair due to the tract's mostly south to western exposures that result in drier sites.

Table 1. Overview of Forest Resources in Y0217 in September 2013

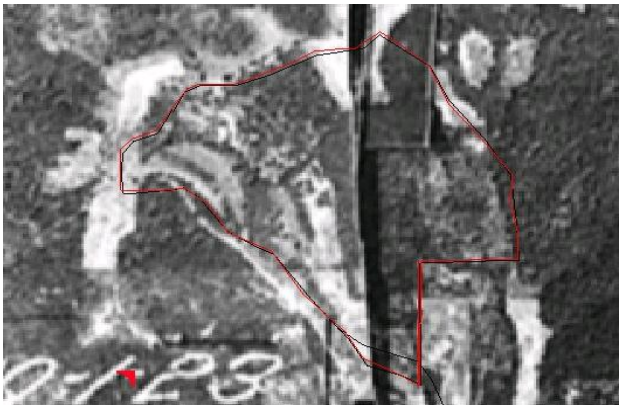
Overstory Sawtimber Layer	Understory Poletimber Layer	Regeneration Layer
White Oak	**Red Maple**	**Red Maple**
Black Oak	**Sugar Maple**	**Sugar Maple**
Yellow Poplar	**American Beech**	**American Beech**
Chestnut Oak	**Sassafras**	**Ironwood**
Scarlet Oak	*White Oak*	*Flowering Dogwood*
Pignut Hickory	*Black Oak*	*Pignut Hickory*
American Beech	*Yellow Poplar*	*Bluebeech*
Northern Red Oak	*Shagbark Hickory*	*White Oak*
Sassafras	*Pignut Hickory*	*Sassafras*
Red Maple	*Northern Red Oak*	*Blackgum*
Shagbark Hickory	*Chestnut Oak*	*Pawpaw*
Sugar Maple		*Chestnut Oak*
Black Cherry		
White Ash		

Bold – Species that comprise ≥ 10% of the total BA in each structural class
Italicized - Species that comprise ≤ 10% of the total BA in each structural class

History

Y0217 along with much of the surrounding area was transferred to the Division of Forestry in 1956 from the federal government. Based upon ground reconnaissance and historical aerial photos, this area had a very strong history of agriculture. Many of the wider ridges and bottomlands were cleared and farmed. The sideslopes were used as pasture and grazed. Some of the bottomland fields were later planted to Norway spruce after government acquisition. An old county road is present on the western boundary of the tract that at one time connected Helms Road to Mossop Ridge.

Figure 2. 1939 Aerial Photo of Y0217 (IHAP)



- Norway Spruce plantations established in bottomlands, date unknown.
- First tract inventory completed in 1997 on August 27, 1997 by Forester M. Boyd: 4,077 BF/A Present volume and 1,600 BF/A Harvest volume.
- Management guide for 1997 inventory prepared by Intermittent Forester G. Scherschel in July 2000.
- Wildfire contained along E portion of Mossop Ridge in April 2003.
- Hardwood Ecosystem Experiment initiated in adjacent tracts to North in 2007: Management Unit #8, Unevenaged Research Core.
- Tract boundary changed to move eastern boundary to intermittent stream in 2013.
- Second and current forest resource inventory of Y0217 completed in September 2013 by Forester Amy Spalding.

Landscape Context
The majority of the landscape surrounding Y0217 is publically owned so closed canopy forest is the dominant land use. There are some agricutural and remote residential areas in a small block of privately owned ground to the south and southwest. Crooked Creek Lake, a 10 acre lake, is located about ½ mile to the southeast. Lake Monroe, a 10,750 acre lake, begins about 3 miles to the southwest. The T.C. Steele State Memorial, a State of Indiana Historic Site lies approximately 2 miles west of the tract.

Topography, Geology and Hydrology
The topography of Y0217 is typical of the Brown County Hills Natural Region. This tract consists of two finger ridges in the southwest portion of Mossop Ridge. The slopes are moderate to very steep having predominantly south and western aspects. An ephemeral drainage and one mapped intermittent drainage on the southeastern boundary of the tract dissects these ridges and channels water south into Crooked Creek which in turn feeds into Lake Monroe. The underlying geology of Y0217 is a combination of sandstone, siltstone, and limestone bedrocks.

Soils
BgF- Berks-Trevlac-Wellston Complex, 20 to 70 percent slopes
These moderately steep to very steep well drained soils are on hillsides in the uplands. They are fairly well suited to trees. Erosion hazards and equipment limitations are the main management concerns due to slope. Consideration should be given during sale planning and implementation of Best Management Practices for Water Quality. This Complex has a site index of about 70 for northern Red Oak.

WaD- Wellston-Berks-Trevlac Complex, 6 to 20 percent slopes
These moderately sloping to moderately steep, well drained soils are on sideslopes and narrow ridgetops in the uplands. They are well suited to trees. Seedling mortality can be an issue on the south facing Berks soils due to droughty conditions. This Complex has a site index of about 70 for northern Red Oak.

Be- Beanblossom Channery Silt Loam, occasionally flooded
This nearly level and gentle sloping, deep, moderately well drained soil is on flood plains, alluvial fans, and colluvial benches. It is fairly well suited to trees. Wet periods can contribute to equipment limitations. Rooting depth is somewhat restricted for some trees, i.e. Black Walnut, due to coarse fragments in subsoil. This soil has a site index of 95 for Yellow Poplar.

TlB- Tilsit Silt Loam, 2 to 6 percent slopes
This gently sloping, deep, moderately well drained soil is on the tops of ridges in the uplands. It is well suited to trees. The rooting depth is limited by a fragipan present at a depth of 30 inches. This soil has a site index of 68 for White Oak and 90 for Yellow Poplar.

Access
This tract is easily accessed off of Mossop Ridge Firetrail. This Firetrail Road is a major Compartment Road that serves several tracts and is well maintained. The western boundary of the tract is also an old roadway. It is in fair to somewhat poor condition. A roadwork project for a timber harvest in this tract would provide an opportunity to install water diversions to close this road out properly.

Boundary
The boundaries of Y0217 follow natural and manmade features. The northern boundary of the tract is Mossop Ridge Firetrail. The western boundary is a section of abandoned roadway that once connected Helms Road to Mossop Ridge. The southern boundary is an identified and marked private property line. This south line was recently remarked in the fall of 2013. The eastern boundary of the tract follows an intermittent drainage that runs up to Mossop Ridge.

Wildlife
Wildlife resources in the tract appear abundant. Y0217 contains habitat for a variety of wildlife species. Forested habitat includes a large amount of contiguous Oak-Hickory and Mixed Hardwoods along the sideslopes and riparian areas along its streams. Sassafras, Grapevines, and other early successional shrubs are among those present that provide modest wildlife food resources. Other habitat structures that favor wildlife include snags (standing dead trees) and cavity trees. Snags and cavity trees provide habitat for birds, bats, and other small mammals to feed, roost, and nest. Hard mast trees such as Oaks, Hickories, and Beech provide food resources for Squirrels, Wild Turkey, and White-tailed deer. Downed woody debris provides habitat and protection for forest floor wildlife and herptile species. Overall, this tract has an abundant supply of soft and hard mast. The mapped intermittent stream that runs along the tract's east boundary provides a temporal water source for the area during nondroughty periods of the year.

A Natural Heritage Database Review was completed for Y0217 On November 25, 2013. If Rare, Threatened or Endangered species (RTE's) were identified for this tract, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species.

The Division of Forestry has instituted procedures for conducting forest resource inventories so that the documentation and analysis of live tree and snag tree densities are examined on a compartment level basis in order to maintain long-term and quality forest habitats. Crown release performed during timber harvests will stimulate the growth of the selected croptrees and will enhance the vigor of these sawtimber trees. Timber Stand Improvement (TSI) following the harvest is planned which will increase standing snag counts. Management practices conducted on Y0217 will be conducted in a manner that will maintain long-term and quality forest habitats for wildlife populations.

Communities
There are two main communities found within Y0217: dry upland forest and dry-mesic upland forest.

Dry upland forest is found along the upper sections of the slope and on dominant south to southwest facing slopes. The soils are very dry and poorly developed because of steep, exposed slopes or because of bedrock, gravel, or sand at or near the surface. In a dry upland community, trees grow slowly, but there usually is a well-developed understory and groundlayer. Dominant trees in this community include Chestnut Oak and Black Oaks. Characteristic plants include Pignut Hickory, Broom Moss, and Pincushion Mosses. Ground Skinks, Five-lined Skinks, Fence Lizards, and Summer Tanagers are among some of the wildlife present.

Dry-mesic upland forests are found on the tract's lower elevations and in cove like areas or northerly facing slopes. Dry-mesic upland forests are one of the most prevalent forest communities in Indiana. This community is in an intermediate position along a soil moisture gradient. Trees grow well, but the canopy is usually more open than in mesic forests. The dominant trees found are White Oak, Red Oak, and Black Oaks. Other plants and animals characteristic of this community are Shagbark Hickory, Mockernut Hickory, Flowering Dogwood, Hop Hornbeam (Ironwood), Blackhaw, Broad-headed Skink, White-footed Mouse, and Eastern Chipmunks.

Exotic Species
Autumn Olive was noted in small populations across the tract, although populations were somewhat denser on the ridgetops. Periwinkle was also noted to be present in the southwest corner of the tract and its population went across the tract boundary. A single stem of Paulownia was also observed along Mossop Ridge. Multiflora rose is also present in small amounts across the tract. The Paulownia stem should be treated prior to any proposed harvest. Autumn Olive populations are planned to be treated in the postharvest TSI operation. As Brown County is a known location of the plant "virus" rose rosette disease, the populations of MF Rose are relatively stable. Control measures may be warranted if large populations are located in or surrounding planned regeneration openings. The Periwinkle population should be evaluated by the marking forester and included in a postharvest TSI project provided the population is large enough for contracting otherwise it will be treated by the overseeing forester.

Recreation
This tract does not contain any established recreational facilities. Given its proximity to Mossop Ridge it is generally well used by the public for hunting, gathering, off trail hiking, and wildlife viewing.

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

Y0217 Tract Description and Silvicultural Prescription

Present Tract Resource Summary

Total Trees/Ac.= 120 **Sawtimber & Quality Trees/Ac.= 35**
BA/A= 76 sq.ft./Ac. **Present Volume/Ac.= 6,449 BdFt./Ac.**
Overall % Stocking = 65% (Fully Stocked)

Oak and Hickory cover types are common throughout Y0217. Dominate tree species include White Oak, Black Oak, Chestnut Oak, Scarlet Oak, and Pignut Hickories. The more mesic northeasterly sideslopes contain a stronger presence of Yellow Poplar, Black Cherry, and Maples. The majority of the understory is made up of Sugar Maple, Red Maple, and American Beech with a notable amount of Shagbark Hickory, Chestnut Oak, and Black Oak on the drier aspects. Regeneration was almost completely dominated by mixed Maples, American Beech, Ironwood, and Sassafras. Two small (<1 acre) Norway Spruce plantations are present in the bottomlands.

In 2007 the launch of the Hardwood Ecosystem Experiment at Yellowwood and Morgan-Monroe State Forests was initiated. The primary research goal/objective was to answer "What are the ecological and social impacts of long-term forest management on public and private lands in Indiana and the Central Hardwoods Region?" While this tract was not part of the research study-it is adjacent to one of the Unevenaged Research Cores and does serve as a buffer area with some special guidelines in terms of timber management to preserve the integrity of the research core. Y0217 is prescribed a managed timber harvest following this recent inventory. The past history of intensive farming and grazing has produced a poor to moderate quality stand of trees. Many of the Red Oak group stems such as Scarlet and Black Oak are approaching biological maturity and have begun to succumb to environmental stresses such as the successive droughts that have occurred over the last few years. An intermediate treatment to thin some of the lower vigor stems to release more vigorous stems is recommended. Lower quality trees that include low-forking, leaning, overtopped/suppressed intermediates, epicormically sprouting, and deformed trees are planned to be marked for removal in an improvement cutting. Suppressed stems should be removed when possible to improve stand health and to increase understory Oak-Hickory advance regeneration.

Regeneration treatments may be implemented in areas with low quality, low basal area, or excessively mature timber. With the limitations of placement and number of size of group selection opening inside of this buffer tract, it is unlikely that this tract will receive abundant regeneration treatment. However the proper implementation of intermediate thinnings should result in a healthy, more vigorous, well spaced Oak-Hickory cover type.

Summary Tract Silvicultural Prescription and Proposed Activities

The recommendation of this guide is to prescribe a managed timber harvest within this tract. Careful selection of individual trees through single tree selection as well as the marking of group selections in selected areas is planned. The primary marking objective is to remove lower quality, less vigorous stems resulting in a higher quality, more vigorous residual stand. As this tract is a buffer tract for one of the HEE Core units, special marking guidelines will be used to preserve the integrity of the Core Management Unit. The application of State Forest Best Management Practices (BMP's) will be applied prior to and during the harvest so that existing and newly created skid trails, access roads and yards are constructed to reduce soil erosion and reduce runoff to neighboring ephemerals and intermittent streams. Following the harvest, a post-harvest TSI plan will be prepared to thin areas within the tract that were insufficiently harvested, had excessive grapevine growth or to complete invasive species control measures.

Given the recent inventory and growth of Y0217's forest resources, this tract is suitable for a 15 year management cycle wherein growth and development of the forest resource is measured and evaluated through a forest inventory every 15 years. The current inventory indicates a possible harvest of between 100 - 200 MBF. A timber sale is being planned for FY14-15 or FY15-16.

Table 3. Y0217 Inventory Sawtimber Volume Estimates in September of 2013

Species	Volume Est. BF
White Oak	197,959
Black Oak	117,501
Yellow Poplar	67,520
Chestnut Oak	58,017
Scarlet Oak	40,407
Pignut Hickory	18,190
Sugar Maple	12,232
Northern Red Oak	12,025
Red Maple	8,814
Shagbark Hickory	6,048
Black Cherry	5,019
Sassafras	4,778
American Beech	3,545
White Ash	1,810
Blackgum	787
Total BF	**554,652**
Average BF Per Acre	**6,449**

Proposed Activities Listing

Proposed Management Activity	*Proposed Period*
DHPA timber sale project review	CY2014

Roadwork Rehabilitation	CY2014-15
Timber Marking & Invasive Evaluation	CY2014-15
Timber Sale	FY2014-15 or FY2015-16
Postharvest TSI & Invasives Follow-up	CY2015-2018
Regeneration Opening Review	CY2020-2023
Reinventory and Management Guide	CY2028

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