

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

State Forest: **Yellowwood**
Tract Acreage: **91**
Forester: **Laurie Burgess**
Management Cycle End Year: **2028**

Compartment: **8** Tract: **20**
Commercial Forest Acreage: **91**
Date: **August 11, 2014**
Management Cycle Length: **15 years**

Location

Y0820 is located in Sections 30 and 31 of Township 9N, Range 2E of Brown County. The tract is accessed 0.8 mile west of Scarce O’Fat Ridge along “Bill Jack Ridge” of Yellowwood State Forest.

Figure 1. Yellowwood SF Compartment 8 Tract 20



General Description

Y0820 is comprised of the following timber types: Mixed Oak, CHO/Mixed Hardwoods, and YEP/Mixed Hardwoods. The forest resource ranges from small to large sawtimber in size. While there are many quality trees in this tract the overall timber quality of Y0820 is about average. A summary of the forest resources in Y0820 in relation to species dominance is noted below in Table 1.

Table 1. Species composition from the July 2014 inventory in Y0820

Overstory Sawtimber Layer	Understory Poletimber Layer	Regeneration Layer
White Oak Yellow Poplar Chestnut Oak Black Oak <i>Northern Red Oak</i> <i>Pignut Hickory</i> <i>American Beech</i> <i>Sugar Maple</i> <i>Shagbark Hickory</i> <i>White Ash</i> <i>American Sycamore</i> <i>Black Walnut</i> <i>Scarlet oak</i> <i>Blackgum</i> <i>Red maple</i> <i>Black cherry</i>	Sugar Maple Yellow Poplar American Beech Shagbark Hickory <i>White Oak</i> <i>Pignut Hickory</i> <i>Chestnut Oak</i> <i>American Elm</i> <i>Black Cherry</i> <i>Black Oak</i>	American Beech Sugar Maple Red Maple Dogwood Ironwood <i>Yellow Poplar</i> <i>White Ash</i> <i>White Oak</i>

Bold – Species that comprise $\geq 10\%$ of the total BA in each structural class

Italicized - Species that comprise $\leq 10\%$ of the total BA in each structural class

History

Y0820 is part of a large block of land deeded by the United States Department of Agriculture in 1953 to Yellowwood State Forest. Historical aerial photography suggests that prior to government acquisition the valleys and ridgetops were farmed and the sideslopes likely to have been grazed. The last timber harvest in this tract occurred in 1978.

- October 1954 - Forester Whittern, Timber sale sold of 37,896 bf. Included South portion along with Tract 19. Sold to Moore Bros.
- June 1976 - First Forest Resource Inventory by Forester J. Gunkel – 1,123 bf./ac harvest, 3,142 bf/ac leave.
- November 1978 - Foresters W. Bull, J. Gunkel, J. Akard – Timber sale 84,281 bf. Sold to Empire.
- March 1979 - Forester M. Murphy – TSI completed by YACC crew.
- March 1980 - Forester D. Sieg – Salvage harvest recommended after brief recon.
- January 1985 - Forester R. Unversaw – Red oak recon for “Superior” Red oak for genetic research. Tract contains quality Red oak but not superior red oak.
- April 1987 - Forester R. Unversaw – Tract 20 divided to reduce tract acreage. A portion of Tract 20 was added to portion of Tract 16 to create Tract 29 and Tract 20.
- March 1997 – Second Forest Resource Inventory by Forester M. Boyd – 5,952 bf/ac present, 2,219 bf/ac harvest, 2,719 bf/ac residual.
- July 2000 - Forester G. Scherschel – Management plan drafted based on 1997 inventory.
- July 22, 2014 - Forester L. Burgess – 3rd Forest Resource Inventory to follow up observation of windthrow damage from Summer 2013.

Landscape Context

Y0820 is surrounded by other Yellowwood State Forest tracts. The majority of the landscape is comprised of closed canopy, managed State Forest timberlands. The tract borders 133-acre

Yellowwood Lake, the YSF Headquarters, Campgrounds and recreational facilities to the east. Being a large lake, Yellowwood Lake provides a significant fishery resource as well as a staging area for migrating waterfowl. Yellowwood Lake, North Fork Salt Creek and Jackson Creek provide some uncommon lowland habitats including seasonal and ephemeral wetlands due to occasional flooding from the streams. A small portion of the backwaters of Lake Monroe are also in the landscape.

Topography, Geology and Hydrology

Y0820 is situated on the north side of the major ridge known as Bill Jack Ridge. This is a spur ridge from Scarce O'Fat Ridge extending to the southeast. The tract's topography ranges from 5 - 60% slopes with predominating aspects being northeast along with some east, west and a few south aspects. The underlying soils range from 27-72 inches in depth to sandstone and/or shale bedrock. A mapped intermittent stream makes up the tract's northern boundary. The tract also contains several ephemeral drainages between finger ridges. Water resources from Y0820 drain into Yellowwood Lake and the Bear Creek/North Fork Salt Creek watershed. Management activities will consider impacts to water resources and include measures to address potential impacts.

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. Slope considerations are needed 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. This soil comprises about 75% of the tract acreage.

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. This soil comprises about 25% of the tract acreage.

Access

Public and resource management accesses into Y0820 are available east off Scarce O'Fat Ridge. Cable gates and public parking areas are located at each end of this long ridge. DNR vehicle and foot access is available from the gate near the dam of Yellowwood Lake. A road improvement project for this portion of the trail has been submitted.

Boundary

The tract is surrounded by Yellowwood State Forest property. A mapped intermittent delineates the north tract boundary. Bill Jack Ridge firetrail is the tract's south & west boundary whereas Yellowwood Lake is the tract's east boundary.

Wildlife

Wildlife resources in Y0820 are abundant. This tract contains habitat suitable for a wide variety of wildlife species. The tract currently consists of closed canopy deciduous forest dominated by Mixed

Hardwoods with a modest amount of Yellow Poplar. Large areas of contiguous Oak-Hickory and Mixed Hardwood timberlands make up the adjacent Yellowwood SF tracts. These tracts supply abundant food resources that include soft and hard mast. Yellowwood Lake provides a permanent water resource as well as habitat for a fishery and migrating waterfowl.

A Natural Heritage Database Review was completed for Y0820. 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 and tract level basis in order to maintain long-term and quality forest habitats. Crown release performed during the planned timber harvest 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 will be conducted in a manner that will maintain the long-term and quality forest habitats for wildlife populations.

Communities

Y0820's ridgetops and sideslopes are comprised mostly of mesic upland hardwoods dominated by Mixed Oaks and Mixed Hardwoods. These overstory timber species include White Oak, Yellow Poplar, Chestnut Oak and Black Oak. The understory consists mainly of Sugar Maple, American Beech, and Yellow Poplar. The ground cover consists of mainly mesic to dry mesic species.

Exotic Species

Japanese Stiltgrass is common to the region and was noted along the combined firetrail and horsetrail. Stiltgrass treatments are most effectively applied during July and August. Selected areas will be treated during the proper application period or prior to any proposed timber sale harvest.

Recreation

Y0820 has a combined hiking/horseback riding trail along its west boundary. Recreational activities that occur in Y0820 could include these activities as well as bird watching, wildlife viewing, hunting, and mushrooming. Parking is available for the public adjacent to the Yellowwood Lake Dam or the north end of Scarce O'Fat Road. Portions of this tract are also an important part of the Yellowwood Lake viewshed. Management activities will consider aesthetic qualities along with other factors.

Cultural Resources

All portions of Y0820 were reviewed for cultural sites during the forest resource inventory. Cultural resources may be present on Y0820 but their location(s) are protected. Adverse impacts to significant cultural resources will be avoided during any management or construction activities.

Tract Subdivision Description and Silvicultural Prescription

The overall stand structure for Y0820 is represented in the following Gingrich Stand and Stock Table (Table 2) that follows the individual Tract Summary.

Tract Summary Data

Total Trees/Ac. = **119 Trees/Ac.**

BA/A = **90.1 Sq. Ft./Ac.**

Present Volume = **8,160 Bd. Ft./Ac.**

Overall % Stocking = **75% (Stocked)**

Sawtimber & Quality Trees/Ac. = **28 Trees/Ac.**

Summary Tract Silvicultural Prescription and Proposed Activities

The current forest resource inventory was completed on July 22, 2014 by Forester Laurie Burgess. 29 prism points were sampled over 91 acres (~1 point for every 3 acres). A tract summary of the forest resource inventory is given above and a present volume by species breakdown of the summary is given in Table 3 below. Stocking is modestly variable across this tract. Basal area of sawtimber stems range from 30 sq.ft./acre to 110 sq.ft./acre with over half of the plots tallying 50 sq.ft./acre or more. Some portions of Y0820 are overstocked and are prescribed a singletree selection cutting to thin and release desirable crotrees and to remove suppressed and poorly formed trees. Group selection cuttings are prescribed to regenerate areas of poor stocking, excessive mortality and storm damage (as noted from Summer 2013), or in aggregations of timber areas that have low vigor. YEP is dominant in portions of this tract however a significant number of these trees show decline and dieback in the crown or are already dead due to the drought and scale damage that occurred in 2012. Some of the YEP may have very little merchantable value. A managed timber harvest over the entire tract is prescribed. The tract's forest resource is composed of six Stratums as outlined in Figure 2 below based on the major timber types illustrated.

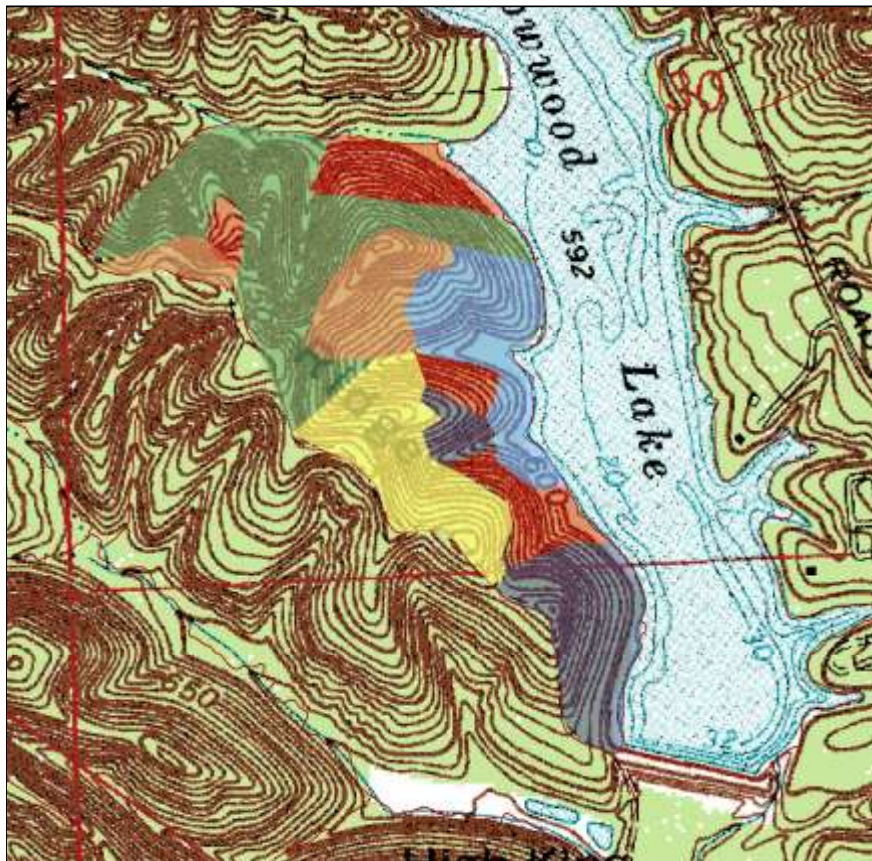


Figure 2. Y0820 Stratums Type Map

Legend

- Yellow Poplar
- Mix Oak
- REO WHO YEP
- White oak
- Chestnut oak
- Mix Hardwood

1) Yellow Poplar Stratum

The Yellow Poplar cover type is traditionally a significant timber resource for YSF, however field reviews within this Stratum indicate high levels of dead and dying YEP. Estimating recoverable volume is often difficult. Diebacks in the crown and root system are the main concerns; some individuals show extreme levels of dieback whereas others are lighter. The longterm effects of dieback in this species can develop into mortality a few years later. Efforts will be made to harvest those individuals that show significant dieback and retain those that appear to have overcome the drought and insect stresses.

A timber harvest is prescribed in this Stratum along with postharvest TSI. This management would benefit its future growth, development and quality. Singletree and selection cuttings are prescribed to release a growing stock of high quality, more vigorous stems. Likewise, careful selection by free thinning of co-dominant stems will help to improve overall croptree spacing. Lower quality trees that include fire-damaged, low-forking, leaning, overtopped and suppressed intermediates, epicormically sprouting, and deformed trees are planned to be marked for removal in an improvement cutting. Group selections may be prescribed in areas where aggregations of low quality, diseased/damaged, low basal area, or declining trees occur.

2) Mixed Oak Stratum

The Mixed Oak timber type provides significant timber resource values. The promotion of this Stratum is important in the Division's longterm forest management objective due to its valued properties for wood products as well as wildlife values. This cover type occurs over approximately 25% of Y0820's forest acreage. The overstory is dominated by WHO, CHO and BLO. The understory layer consists of mainly SUM, AMB, YEP, Hickory species, Flowering Dogwood, and Ironwood. The regeneration layer consists of mainly REM, AMB, SUM, YEP, and WHA. This Stratum contains generally medium-sized sawtimber trees with some large sawtimber trees. Windthrow damage was fairly extensive in a few areas. This Stratum occurs across most aspects but generally appears on the upper slopes. An improvement cutting using mostly singletree selection to thin and release desirable croptrees and to remove suppressed and poorly formed trees is recommended. Trees selected for harvest should include fire-damaged, low-forking, leaning, mature, epicormically sprouting, overtopped/suppressed intermediates, or deformed trees. Harvesting these stems will relieve stand density and release the healthiest and most vigorous croptrees. Windthrow in the Summer of 2013 was also observed in this Stratum that was concentrated and contained accumulations of trees in pockets. Efforts will be made to salvage trees from this windthrow event.

3) Red Oak, White Oak, Yellow Poplar Stratum

The quality of stems varies throughout this Stratum. The removal of AMB and SUM to promote regeneration of desired Oak species will be the focus in this area. There are several nice REO to retain and some to consider for harvest. A selection harvest will be applied to stems that appear to be declining in vigor. Other harvestable stems noted would be the notable multi-stemmed trees that long ago generated from older stump sprouts. There are notable quality WHO to retain as well in this Stratum with a few that are prescribed for harvest to reduce stocking. Scattered YEP will likely be chosen for harvest due to insect and drought decline factors.

Overall, marking objectives within this Stratum should consider Oak, Hickories and other species of significant timber and wildlife value as the preferred croptrees for release. An improvement cutting is prescribed to release quality stems of Oaks, Hickories and other valued trees from crown competition by lower valued timber species. It will also harvest low-forking, leaning, overtopped/suppressed intermediates, and deformed trees. Singletree selection cuttings are prescribed to remove lower quality stems and drought stressed timber. The longterm result of these prescribed cuttings will be to increase timber and wildlife habitat diversity. Group selections may be prescribed in areas where aggregations of low quality, disease/damaged stems, low basal area, or poor vigor are found.

4) White Oak Stratum

There are several quality stems of this species in this Stratum. Portions of this Stratum do contain some windthrow of which some stems could be salvaged. The overall goal of management within this Stratum will be to retain high quality individuals that have high vigor and provide ample ability to continue to increase their growth. The harvest within this Stratum will be of more of a general improvement cutting to reduce competition from lower valued individuals and species groups.

5) Chestnut Oak Stratum

This Stratum contains several quality stems of this species and less of the typical stagnated trees more commonly observed in other YSF tracts. Portions of this stratum do contain some windthrow of which some individual stems could be salvaged. Stocking will be reduced by singletree selection throughout most of this Stratum. In some cases the CHO appear to possess higher quality than the WHO that is intermixed.

6) Mixed Hardwood Stratum

The Mixed Hardwoods timber type can be very variable in their composition and thereby have more complicated prescriptions. The majority of the Mixed Hardwoods acreage is dominated by YEP. This Stratum comprises about 30% of the tract acreage. Many of the YEP in this tract have suffered through the severe drought and Tulip Poplar Scale insect infestation that occurred in the late spring of 2012. The overstory is comprised of YEP, AMB, CHO, PIH, BLO, and WHO with an average basal area of 80+ square feet per acre. The understory layer consists of primarily AMB, SUM, and YEP.

In this Stratum the White Ash should be marked for harvest in a sanitation cutting to slow the spread of the Emerald Ash Borer. Emerald Ash Borer has been observed to the west, southeast and northeast portions of YSF so is probably already present.

Overall, marking objectives within this Stratum should consider Oak, Hickories and other species of significant timber and wildlife value as the preferred croptrees for release. An improvement cutting is prescribed to release the quality stems of Oaks, Hickories and other valued trees from crown competition. It will also harvest low-forking, leaning, overtopped & suppressed intermediates, and deformed trees. Singletree selection cuttings are prescribed to remove lower quality stems and drought stressed timber. The longterm result of these prescribed cuttings will be to increase timber quality, vigor and wildlife habitat diversity. Group selections may be prescribed in areas where aggregations of low quality, disease/damaged stems, low basal area, or poor vigor are found. Regeneration openings are expected to return to mostly Mixed

Hardwoods with a strong component of YEP however some increase in the Oak-Hickory component is expected. Wild Grapevines are present throughout this Stratum due to the high site quality throughout much of this tract. Treatment of these vines is planned prior to harvest in some areas whereas other areas can be treated in the postharvest TSI project.

Summary Tract Silvicultural Prescription and Proposed Activities

The prescription for Y0820 is a combination improvement and selection cutting type of harvest over most of the tract acreage. The Indiana guidelines for Best Management Practices (BMP's) will be followed during the timber harvest and closeout activities to maintain water quality. The prompt installation of water diversions following harvesting will be employed to minimize any effects to neighboring water resources. The proposed harvest will entail both singletree and group selection cuttings. Singletree selection will remove low grade, poorly formed, and declining overstory individuals so that spacing of croptrees is improved to increase the growth of the residual stand. Group selections will be prescribed in aggregations of timber that are inadequately stocked, contain poor quality, or contain stockings with declining vigor.

A riparian area exists along Yellowwood Lake which is the eastern boundary of the tract and along the north tract boundary which is a mapped intermittent stream. The management within these areas will be prescribed according to current Division of Forestry guidelines.

Portions of or all of Y0820 will be submitted for a postharvest Timber Stand Improvement (TSI) project along with any invasive work if deemed appropriate by the administering forester. A field review for regeneration opening success is planned 3-4 years after opening TSI completion.

Given the recent inventory and growth of Y0820's forest resources, this tract is suitable for a 15 year management cycle wherein growth and development of the tract's forest resource is evaluated by a forest inventory every 15 years. The current inventory and field assessment projects a harvest between 200 to 325 MBF. A timber sale is proposed for FY2014-15.

Table 3. Estimated Present Volumes from July 2014 inventory in Y0820

Species	Total
Yellow Poplar	208,880
White Oak	171,760
Black Oak	82,330
Northern Red Oak	72,290
Chestnut Oak	56,470
American Beech	53,790
Pignut Hickory	28,790
Shagbark Hickory	18,820
Sugar Maple	16,380
American Sycamore	8,500
White Ash	7,440
Blackgum	5,360
Scarlet Oak	4,750
Red Maple	3,400
Black Walnut	2,860
Black Cherry	2,090
Tract Totals (Bd. Ft.)	743,910
Per Acre Totals (Bd. Ft./Ac.)	8,175

Proposed Activities Listing

Proposed Management Activity

DHPA Timber Sale Project Review
Access Roadwork Rehabilitation
Timber Marking & Invasive Evaluation
Timber Sale
Postharvest TSI & Invasives Follow-up
Regeneration Opening Review

Reinventory and Management Guide

Proposed Period

CY2014-2015
CY2014-2015
CY2014-2015
FY2014-2015
Within 2 years of harvest
Within 3-4 years of
Postharvest TSI
CY2029

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