

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

State Forest: **Ferdinand**
 Tract Acreage: **80**
 Forester: **A. Smith**

Compartment: **03** Tract: **01**
 Commercial Forest Acreage: **80**
 Date: **10/14/2015**

Location

Tract 0301 is located in Dubois County, Sections 17 and 18, T3S, R3W in Jefferson Township. It is located roughly 1.5 miles southwest of Birdseye, Indiana and 3.8 miles northeast of the Ferdinand State Forest Office. The tract is accessible off of firelane #10 and a gravel road that connects to Birdseye Road Southwest.

General Description

Tract 0301 consists of approximately 80.0 acres with roughly 2.6 acres of planted eastern white pine, 28.4 acres of mixed hardwoods, and 49.0 acres of oak-hickory forest. The overall timber quality of this tract is average and ranges from medium to large sawtimber in size. The tract was noted to have good oak regeneration in many areas throughout the inventory. A summary of the forest resources in tract 0301 in relation to species dominance is noted below in Table 1.

Table 1. Overview of Forest Resources in Tract 0301 in August 2015

Overstory Sawtimber Layer	Understory Poletimber Layer	Regeneration Layer
White Oak	Sugar Maple	Sugar Maple
Black Oak	Sassafras	American Beech
Yellow Poplar	American Beech	Blackgum
American Beech	Bitternut Hickory	Sassafras
Bitternut Hickory	White Oak	Shortleaf Pine
Sugar Maple	Blackgum	Yellow Poplar
Eastern White Pine	Yellow Poplar	
Northern Red Oak	Red Maple	
Silver Maple	Black Oak	
Pignut Hickory	Pignut Hickory	
Black Walnut		
Black Cherry		
Chestnut Oak		
Red Maple		
Shagbark Hickory		
Sassafras		
American Sycamore		
Blackgum		
Black Locust		
Dogwood		

History

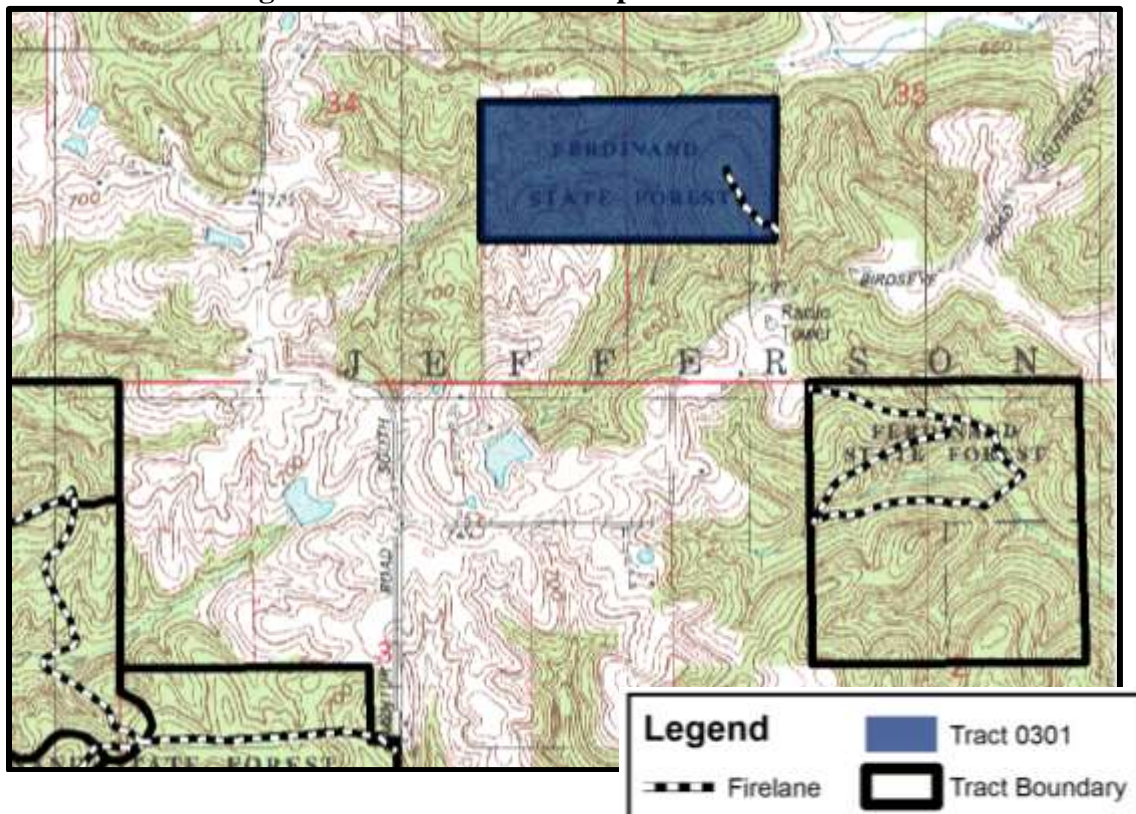
The 80.0 acre area that is today tract 0301 (see Figure 1) was deeded to the State of Indiana on June 14, 1944 by Sam and Nannie Eckart. Forester Ben Hubbard conducted the first resource inventory in 1977 and found there to be a total estimated volume of 131,201 BdFt with an estimated harvest volume of 47,194 BdFt for the 80 acre tract. A timber sale was conducted by Foresters Janet Eger and Ben Hubbard on December 18, 1979 however; the sale was not completed due to technical difficulties on the end of the highest bidder. The sale was rebid on February 19, 1980 and was sold to DMI Furniture, Inc. (an estimated 93,498 BdFt in 429 trees for \$14,556.00).

Forester Nate Orsburn conducted a resourced inventory in 1998 and found a total estimated volume of 5,219 BdFt/acre with an estimated 2,151 BdFt/acre harvest volume. Vine TSI was completed in January, 2000 by CR & R laborer Tom Merkley over the entire 80 acre tract. Forester Gretchen Herbaugh sold an estimated 50,000 BdFt in 202 trees and 25 culls from 27 marked acres for \$23,100.00 to Phil Etienne's Timber Harvest, Inc. on October 26, 2001. The current tract resource inventory was completed in 2015 by Jacob Henry.

Landscape Context

This tract is comprised of dominantly oak-hickory and mixed hardwoods with one area of planted eastern white pine along the southeastern boundary line. Private forests and agricultural land surrounds all sides of the tract. Water sources on the tract include a small pond and the mapped intermittent streams that cut the tract into three parts.

Figure 1. Ferdinand SF Compartment 03 Tract 01



Topography, Geology and Hydrology

North and south-facing slopes dominant the tract with some east and west-facing slopes occurring where the ephemeral drainages and mapped intermittent streams cut the area into three parts. The slopes vary from long and gentle to abrupt and steep across tract 0301.

Soils

Burnside silt loam (Bu) is an occasionally flooded soil with a depth of 40 to 60 inches to the water table occurring on 0-2% slopes. It is moderately well drained with a low runoff class. The available water storage profile is moderate at about 7.2 inches.

Gilpin silt loam (GID2) is a well-drained soil with a depth of more than 40 inches to the water table occurring on 12-18% side slopes in upland areas. It is eroded and contains 1-3% organic matter. It is moderately permeable at 0.6 to 2 inches per hour above 60 inches and available water capacity is low at 3.9 inches above 60 inches. The pH ranges from 3.6 to 5.5. Bedrock begins at a depth of 20-40 inches.

Gilpin silt loam (GIE) is a well-drained soil with a depth of more than 40 inches to the water table occurring on 18-25% side slopes in upland areas. It contains 1-3% organic matter and is moderately permeable. Available water capacity is low, 3.7 inches in the upper 60 inches. The site index is 95 for yellow poplar.

Gilpin-Berks complex (GoF) makes up the greatest area of this tract. The Gilpin-Berks complex contains Gilpin and Berks soils. They are well-drained with a depth of more than 40 inches to the water table. They occur on 20-50% side slopes in upland areas. The Gilpin surface layer is silt loam and the Berks surface layer is channery silt loam. Organic matter content is moderately low and permeability is moderate. Available water capacity is 3.7 inches above 60 inches in Gilpin soils and 2.6 inches above 60 inches in Berks soils. The pH range and depth to bedrock are the same as the previously listed Gilpin soils. The site index for Gilpin soils is 95 for yellow poplar and the site index for Berks soils is 70 for black oak.

Wellston silt loam (WeC2) is a well-drained soil with a depth of more than 40 inches to the water table occurring on 6-12% side slopes in upland areas. It is eroded and has a silt loam surface layer, contains moderately low organic matter, and has moderate permeability. Available water capacity is 7.8 inches above 60 inches. The pH ranges from 4.5 to 6.0. Bedrock begins at 40 to 72 inches. This soil has a site index of 81 for northern red oak.

Zanesville silt loam (ZnC2) is a moderately well-drained soil with a depth of 2-3 feet to the water table, seasonally. It occurs on 6-12% side slopes in upland areas. Organic matter content is moderately low at 1-2% and permeability is very slow. Available water capacity is 8.2 inches above 60 inches. The pH ranges from 4.5 to 6.0. Bedrock begins at a depth of 50-90 inches. This soil has a site index of 69 for white oak and 90 for yellow poplar.

Access

Tract 0301 is easily accessible off by Firelane#10 by a gravel road that runs north from Birdseye Road Southwest. Firelane #10 provides access to almost the eastern half of tract 0301. The firelane needs to be cleared of small debris and growth for future use. The rest of the tract is a little more difficult to access due to the mapped intermittent streams that cut the tract into three sections. The intermittent streams have been crossed for past timber harvests and evidence of old skid trails were identified during this inventory.

Boundary

Tract 0301 is bounded on the east by the gravel road. There is a corner stone in the middle of the north and south boundary along the section line and a corner stone in the northwest and northeast corners of the tract. There is old fencing along parts of the tract boundary. The lines should be run and identified prior to any timber harvest activities.

Wildlife

A Natural Heritage Database review was completed for this tract. If Rare, Threatened or Endangered species (RTE's) 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.

Typical common wildlife species were observed in the tract during the inventory (songbirds, chipmunks, squirrels, box turtles, toads and deer). Tract 0301 has an abundant supply of food resources such as soft and hard mast. The mapped intermittent streams and the small pond provide a water source for wildlife.

The Division of Forestry has instituted special 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) and crop tree release following the harvest is planned which will increase standing snag counts. Crop tree release work will focus on legacy tree species increasing the number of legacy trees in the larger diameter ranges over the long term management of the tract. Management practices conducted on 0301 will be conducted in a manner that will maintain the long-term and quality forest habitats for wildlife populations.

Live Legacy Trees* and Snags inventoried August, 2015 on F0301

	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal
Legacy Trees *					
11"+ DBH	720		1,980	1,260	
20"+ DBH	240		280	40	
Snags (all species)					
5"+ DBH	320	560	412	92	

9"+ DBH	240	480	206
19"+ DBH	40	80	35

* **Species Include:** AME, BIH, BLL, COT, GRA, REO, POO, REE, SHH, ZSH, SIM, SUM, WHA, WHO

Communities

Tract 0301 is composed of mesic to dry-mesic upland hardwoods dominated by oak-hickory, mixed hardwoods, and a small amount pine plantings. The dominant overstory timber species include white oak, black oak, yellow poplar, American beech, bitternut hickory, and sugar maple. The understory contains mainly sugar maple, sassafras, American beech, bitternut hickory, white oak, and blackgum. The ground cover of tract 0301 consists of mainly mesic to dry mesic species. During the current resource inventory all portions of the tract were reviewed and evaluated for old growth potential as well as for Representative Sample Areas. No representative stratum or old growth appear to exist within this tract.

Exotic Species

Japanese stiltgrass and multiflora rose were observed during the inventory. Overall, there were very few invasives identified and/or observed during the inventory process. The Japanese stilt grass is found along the firelane and should be reviewed for treatment needs before and after timber harvest activities. Stilt grass is pervasive throughout the surrounding landscape.

Recreation

Likely recreational activities on this tract include hunting, mushroom hunting, hiking, bird watching, and wildlife viewing. Tract 0301 is detached from other state forest property which probably reduces the amount of recreational use that it gets.

Cultural

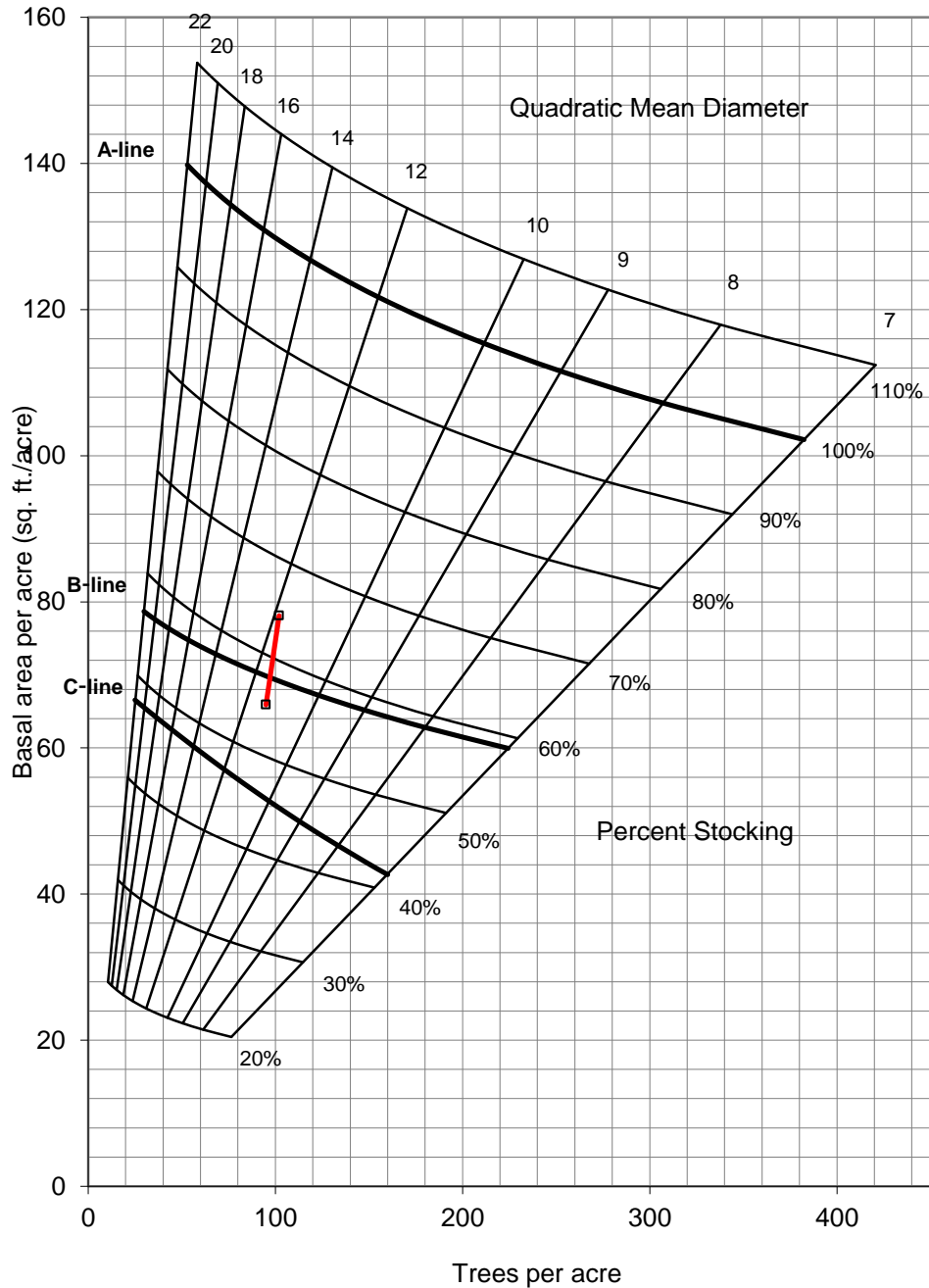
Cultural resources may be present but their location(s) are protected. Adverse impacts to significant cultural resources noted will be avoided during property management activities.

Tract Subdivision Description and Silvicultural Prescription

The overall stand structure for this tract is represented in the following Gingrich Stand and stock table that follows the individual stand summary.

Total Trees/Ac. = 102 Trees/Ac.	Tract Summary Data
BA/A = 78.1 Sq. Ft./Ac.	Overall % Stocking Hardwoods = 65% (Fully Stocked)
Present Volume = 6,391 Bd. Ft./Acre	Sawtimber & Quality Trees/Ac. = 39 Trees/Ac.

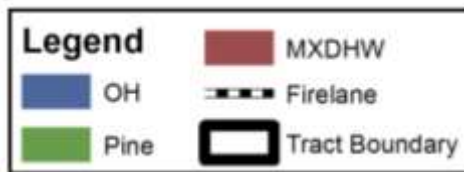
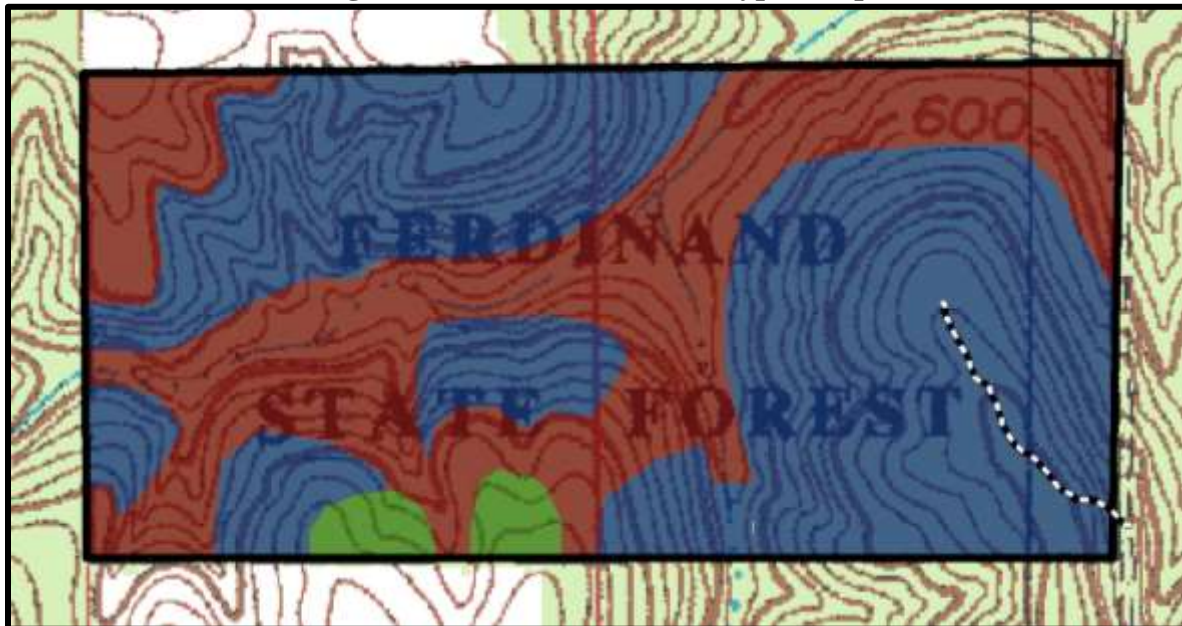
Table 2. Gingrich Stand and Stock Table for tract 0301



Summary Tract Silvicultural Prescription and Proposed Activities

The current forest resource inventory was completed in 2015 by Jacob Henry. Thirty-one prism points were sampled over 80.0 acres (1 point for every 2.6 acres). A tract summary of the forest resource inventory is given above and a species breakdown of the summary is given in Table 3 below. The tract’s forest resource is composed of 3 different stratums based on the 3 major timber types and size classes mentioned below.

Figure 2. Tract 0301 Stratum Types Map



Mixed Hardwoods Stratum

The mixed hardwoods timber type can be very variable in composition and thereby have more complicated prescriptions. The mixed hardwoods type covers roughly 35.5% of the tract or about 28.4 acres with an average basal area of 67.8 square feet per acre. The overstory is dominated by yellow poplar, black oak, American beech, white oak, black cherry, chestnut oak, and red maple. The understory layer consists of mainly sugar maple, sassafras, American beech, and bitternut hickory. The regeneration layer consists of mainly sugar maple, yellow poplar, shortleaf pine, and American beech.

A fair amount the tract's YEP appeared to be in modest decline as a result of the past couple years of drought and the Tulip Poplar Scale insect infestation that occurred in the late spring of 2012. Affected YEP will need careful review when the tract is marked as mortality is expected. Several areas had past storm and/or wind damage in the overstory trees.

A light single tree selection harvest is prescribed to remove lower quality stems and declining, mature to overmature trees which will help to improve croptree spacing. An improvement cutting is prescribed to release quality oaks, hickories and walnuts from crown competition of lesser-valued timber species. Overall, marking objectives within this component should consider oak, hickory, walnut, and other species of significant timber and wildlife value as the preferred trees for release. Improvement cuttings in this area will also be applied to remove low-forking, leaning, overtopped/suppressed intermediates, epicormically sprouting, and deformed trees. The long-term result of these prescribed cuttings will increase timber and wildlife habitat

diversity. Group selection may be prescribed in areas of low quality, disease/damaged stems, low basal area, or maturity to help maintain long-term forest regeneration and sustainability. Planned regeneration openings are expected to return to mixed hardwoods with a strong component of YEP.

Oak-Hickory Stratum

The Oak-Hickory timber type provides significant wildlife, timber resource, and value. The retention of species in this stratum is important in the Division's long-term timber management objectives. The Oak-Hickory type covers roughly 61% of the tract or about 49.0 acres. The overstory is dominated by white oak, black oak, American beech, bitternut hickory, and sugar maple with an average basal area of 82 square feet per acre. The understory layer consists of mainly sugar maple, white oak, bitternut hickory, and sassafras. The regeneration layer consists of mainly sugar maple, American beech, and sassafras.

Several areas had past storm and/or wind damage in the overstory trees. Single tree selection is prescribed to remove lower quality stems, declining and mature to overmature trees 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 low-forking, leaning, overtopped/suppressed intermediates, epicormically sprouting, and deformed trees are planned to be marked for removal in an improvement cutting. Group selection may be implemented in areas of low quality stems, disease/damaged stems, low basal area, or maturity to help maintain long-term forest regeneration and sustainability. Regeneration will likely be mixed hardwoods with a component of yellow poplar and oak. Any areas with advanced oak regeneration present should be released with a group selection opening.

Pine Stratum

Pines were commonly planted for erosion control purposes during the first half of the 20th century. As these pines have matured and individual trees have declined, native hardwoods have become established especially in the stratum's understory and canopy gaps. This timber type covers roughly 3% of the tract or about 2.6 acres of the tract with an average basal area of 113.7 square feet per acre. The overstory is dominated by eastern white pine and yellow poplar with an understory layer consisting mainly of sugar maple and sassafras. The regeneration layer consists of mainly sugar maple, American beech, and blackgum.

The white pine is in fair to good condition with some of the overstory experiencing crown thinning. Group selection may be prescribed in areas of low quality, disease/damaged stems, low basal area, or maturity to help maintain long-term forest regeneration and sustainability. Areas where pole size hardwoods have emerged and entered the stratum canopy should be prescribed TSI for croptree release if not adequately released during the prescribed timber harvest. Overall, marking objectives within this component should consider oak and other species of significant wildlife value as the best croptrees for future conservation. A selection of quality and vigorous white pine may be retained as they provide some wildlife habitat diversity.

Summary Tract Silvicultural Prescription and Proposed Activities

Given the recent inventory and growth of tract 0301's forest resources, a managed timber harvest over the entire tract area is prescribed within the next five years and will yield an estimated 100-160 MBF.

The Japanese stiltgrass should be treatment prior to harvest operations. Following the prescribed harvest operation, TSI is to be undertaken along with assessment of invasive species for follow-up treatment.

Table 3. Overview of Sawtimber Volume Estimates 0301

Species	Harvest	Leave	Total
White Oak	10,950	134,720	145,670
Black Oak	19,800	69,250	89,050
Yellow Poplar	12,970	61,370	74,340
American Beech	14,450	30,130	44,580
Bitternut Hickory	0	29,070	29,070
Sugar Maple	11,780	16,590	28,370
Eastern White Pine	16,530	9,020	25,550
Northern Red Oak	6,030	15,200	21,230
Silver Maple	5,320	2,380	7,700
Pignut Hickory	0	7,250	7,250
Black Walnut	0	6,300	6,300
Black Cherry	0	5,960	5,960
Chestnut Oak	0	5,350	5,350
Red Maple	0	5,330	5,330
Shagbark Hickory	0	3,740	3,740
Sassafras	760	2,740	3,500
American Sycamore	0	3,160	3,160
Blackgum	2,500	0	2,500
Black Locust	0	1,890	1,890
Dogwood	0	760	760
Tract Totals (Bd. Ft.)	101,090	410,210	511,300
Per Acre Totals (Bd. Ft./Ac.)	1,264	5,128	6,391

Proposed Activities Listing

<u>Proposed Management Activity</u>	<u>Proposed Period</u>
Pre-harvest Invasives Treatment	CY2016-2019
DHPA timber sale project review	CY2015-2018
Timber Marking & Invasives Evaluation	CY2016-2020
Timber Sale	CY2016-2020
Postharvest TSI & Invasives Follow-up	CY2017-2021
Regeneration Opening Review	3 yrs post-harvest
Reinventory and Management Guide	CY2030

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