Indiana Department of Natural Resources
Division of Forestry

DRAFT

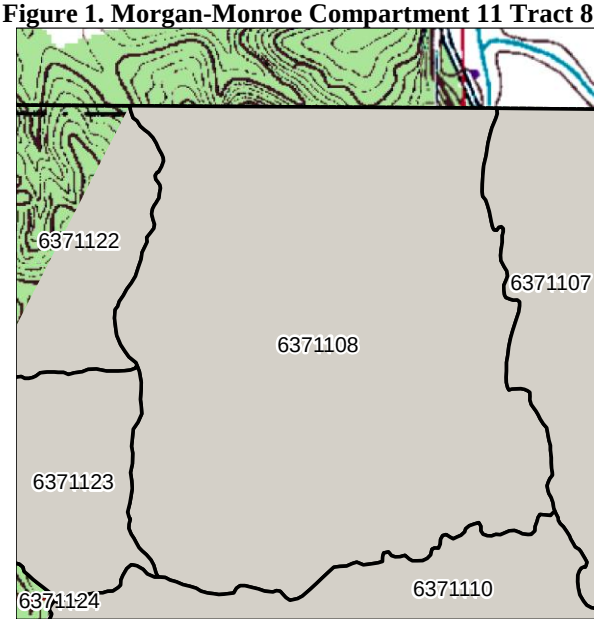
RESOURCE MANAGEMENT GUIDE

State Forest: **Morgan-Monroe** Compartment: **11** Tract: **08**
Tract Acreage: **115** Total Commercial Forest Acreage: **112**
Forester: **Amanda Smith (for Phil Jones)** Revised Date: **3/15/2013**

Location

Tract 08 is located in Section 3 of Township 10N, Range 1W of Monroe County, Indiana. The tract is accessible off of Bryant Creek Road between North Old SR 37 and IN 37. A public parking lot for this tract is located roughly 0.77 miles east of IN 37 and 1.29 miles northwest from Bryant Creek Lake.

Figure 1. Morgan-Monroe Compartment 11 Tract 8



General Description

To facilitate management old MMSF Tracts 6371108 and 6371109 were combined to form the new tract 6371108 (Figure 1). The contributing portions of the timber sale description and volume from the old Tract 8 will be referred to as Stratum #1 whereas the old Tract 9 will be referred to as Stratum #2. Currently the new Tract 8 is a total of 115 acres with roughly 97.3 acres of Oak-Hickory forest, 14.5 acres of mixed hardwoods, and 3.2 acres of old group selection openings in Morgan-Monroe State Forest. Approximately 112 acres are considered commercial forestland with a 3 acre Riparian Management Stratum along the Tract's E boundary adjacent to the mapped intermittent stream.

The forest resource's timber ranges from small to large sawtimber in size with the regeneration openings being mostly small poletimber in size. The overall timber quality of this tract is moderate to good. The forest resources that were observed in M1108 in 2012 is summarized in Table 1 below.

Table 1. Overview of Forest Resources in Tract 08 in June 2012.

Overstory Sawtimber Layer	Understory Poletimber Layer	Regeneration Layer
Black Oak	Sugar Maple	White Ash
White Oak	White Oak	Sugar Maple
Scarlet Oak	Sassafras	Shagbark Hickory
White Ash	Yellow Poplar	Sassafras
Northern Red Oak	Red Maple	Red Maple
Bitternut Hickory	Black Oak	Red Elm
Sugar Maple	Pignut Hickory	Pignut Hickory
Pignut Hickory	Shagbark Hickory	Pawpaw
Red Maple	Basswood	Northern Red Oak
American Beech	American Beech	Ironwood
Yellow Poplar	Bitternut Hickory	Dogwood
Shagbark Hickory	Black Cherry	Bluebeech
Basswood	Black Walnut	Blackgum
American Sycamore	Blackgum	Bitternut Hickory
Black Cherry	Red Elm	American Elm
Black Walnut	White Ash	American Beech
		*Yellow Poplar
		*White Oak
		*Scarlet Oak
		*Redbud
		*Black Oak

* Notes species not captured in Prism Plots but present within the tract.

Tract Management History

Stratum #1

Morgan-Monroe State Forests acquired Tract 08 on July 22, 1931 from Thomas C. Day & Company Incorporated. Boundary work was completed for Tract 08 on 8/30/83. Timber was marked on 1/27/1984 by Forester Breedlove and the timber was sold to the Barnett Lumber Company on 3/20/1984. Logging of Tract 08 began on 3/29/1984 and was completed on 11/5/1984. TSI was completed on 10/15/1987 by consultant Phillip Reid. This stratum's inventory was completed on June 1, 2012 by Intermittent Forester Smith. Signs of recent ATV use on the trails were observed during inventory.

Stratum #2

Morgan-Monroe State Forests acquired Tract 09 on May 8, 1950 from Roy and Katherine Cain. A timber inventory cruise was completed for Tract 09 in the early 1970's. Timber was marked between 8/21/1986 to 2/4/1987. Logging road maintenance was completed on 12/17/1986 and the timber was sold on 4/21/1987. Waterbar construction occurred on 6/21/1987 - 6/22/1987 and logging was completed on 7/27/1987. TSI was completed on 8/16/1988. The log road and waterbars were seeded on 12/7/1988. This stratum's inventory was completed on June 21, 2012 by Intermittent Forester Smith.

Landscape Context

Tract 08 is bordered by State Forest on all sides except for the northern boundary which is bordered by private property. The majority of this forest acreage is closed canopy Mixed Oak/Mixed Hardwoods; a few pine plantations also exist to the east of the tract. One 8.5 acre regeneration opening lies to the west and adjacent to this tract; this area was harvested 2009 and provides excellent early-successional forest habitat. Approximately ½ dozen other smaller

regeneration openings (17 acre total) from the 1980's lie in the south adjacent tract. A few smaller sized agricultural fields and residential areas lie to the north and south of the tract within the landscape context. Highway 37 along with its permanent maintained grassland corridor also runs within a quarter of a mile of this tract.

Topography, Geology and Hydrology
The area's topography ranges from 0 - 75% slopes. Tract 08 has predominantly eastern and southern aspects. The area's soils range from 24 – 60 inches in depth to unweathered bedrock. Soils present in this tract were formed from sandstone, siltstone, and shale parent material. One mapped intermittent creek serves as the tract's east boundary. Several other unmapped ephemeral drainages also occur within the tract. Water resources from this tract drain into Bryant Creek which serves as a tributary for the White River.

Soils
BkF (Berks-Weikert Complex, 25 – 75% slopes) Moderately steep to very steep slopes and well drained soils. Parent material is loamy-skeletal residuum over sandstone and shale. This soil type presents severe erosion hazards, severe equipment limitations, slight to moderate seedling mortality, and slight windthrow hazard. Management considerations should include building haul roads on a contour and constructing water bars to prevent erosion. Tract 08 is comprised of roughly 91.6% of this soil type.

Bu (Burnside Silt Loam, 0 – 2% slopes) Minor slopes and well drained soils with moderate available water capacity that occasionally flood. Parent material is loamy-skeletal alluvium over shale and siltstone. Tract 08 is comprised of roughly 6.2% of this soil type.

WmC (Wellston-Gilpin Silt Loams, 6 – 20% slopes) Moderately sloping to moderately steep. Parent material is loess over loamy residuum over shale. This soil type presents a slight risk for erosion hazard and equipment limitation. Tract 08 is comprised of roughly 2.3% of this soil type.

Access
Tract 08 is most easily accessed by the public off of Bryant Creek Road between Old 37 North Road and IN 37 along its eastern boundary which is an intermittent stream. Management access was recently upgraded for equipment from the long firetrail that proceeds from off the north side of Chambers Pike Road. An archaeological roadwork review was completed for this roadwork improvement in August of 2012.

Boundary
Tract 08 is bordered by Morgan-Monroe State Forest tracts to the south, east, and west and by private property ownership to the north. The northern boundary has been marked and repainted by orange paint along the line for many years and is up to date. The private property's owner has also posted "Private Property" signs along a portion of the boundary. The eastern boundary is delineated by a mapped intermittent stream. The western boundary is designated by an ephemeral stream. The southern boundary is also designated by an ephemeral stream.

Wildlife

A Natural Heritage Database review was obtained for this tract. 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.

The current inventory was conducted during the late spring of 2012 so breeding summer bird residents were present. The following bird species were detected during the inventory:

American Crow	Northern Parula	Red-eyed Vireo
Chirping Sparrow	Ovenbird	Red-tailed Hawk
Eastern Phoebe	Pileated Woodpecker	Wood Thrush

Other species or sign observed within the tract indicates use by White-tailed Deer, Grey Squirrel, Eastern Chipmunk, Raccoon, Opossum, Coyote and other small mammals. Multiple deer trails were also noted throughout the tract. Tract 08 has an abundant supply of food sources such as soft and hard mast. The large, mapped intermittent stream that runs along the eastern boundary of the tract provides a generally reliable watering source for the area wildlife over most parts of the calendar year.

The Indiana Division of Forestry recognizes the potential to improve the Indiana bat habitat on its lands by implementing comprehensive management practices. These management practices include obtaining data on size, species, and numbers of snag trees (See Table 2). Snag trees and some specific species of trees are a vital part of the Indiana bat policy as they are prime roosting sites for maternal colonies. According to the Wildlife Habitat Feature Summary, appropriate levels of snags and legacy trees were only met for snags in the 5"+ DBH range. The deficits in the other size classes could be improved during the planned postharvest TSI by girdling a number of trees in this size range.

Table 2. Live Legacy Trees* and Snags inventoried June 2012 on M1108

	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal
Legacy Trees *					
11"+ DBH	517.5		1574.5	1163	
20"+ DBH	172.5		497.5	372	
Snags (all species)					
5"+ DBH	230	402.5	413.5	183.5	11
9"+ DBH	172.5	345	98	**-74.5**	**-247**
19"+ DBH	28.75	57.5	16.5	**-12.25**	**-41**

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

Communities

The ground cover of tract 08 consisted of mainly mesic to dry mesic species. Observed species included:

Appendaged Waterleaf	Grape Vine	Poison Ivy
Beebalm	Grass	Red Raspberry
Black Snakeroot	Greenbrier	Sedge

Bloodroot	Hepatica	Sensitive Fern
Blue Cohosh	Honewort	Solomon's Seal
Broad Beech Fern	Jack-In-The-Pulpit	Southern Fragile Fern
Canada Violet	Jewelweed	Spicebush
Celandine Poppy	Large-flowered Bellwort	Spinulose Wood Fern
Christmas Fern	Large-flowered Trillium	Squawroot
Cleavers	Leeks	Stinging Nettle
Dittany	Maidenhair Fern	Sweet Cicely
Doll's Eyes	Maple-leafed Viburnum	Virginia Creeper
Drooping Trillium	Mayapple	Wild Geranium
False Solomon's Seal	Multiflora Rose	Wild Ginger
Fire Pinks	Oxalis	Wild Strawberry
Gooseberry	Pawpaw	

Squawroot (*Conopholis Americana*) is a plant that is parasitic on the roots of oak trees. Japanese Stiltgrass and Multiflora Rose were the two invasives observed during the resource inventory. Japanese Stiltgrass was found along the banks of the intermittent stream. Multiflora Rose has become naturalized in the landscape, therefore, only large concentrations should be considered for treatment. With modest recreational use of this area, eradication of the Japanese Stiltgrass is unlikely. However, treatment to accessible areas prior to harvest operations should be conducted to reduce seed production.

Recreation

Activities on this tract include hiking, bird watching, wildlife viewing, hunting, and mushrooming. Hunting is probably the most popular activity as a deer stand was observed during the inventory.

Cultural

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

Tract Subdivision Description and Silvicultural Prescription

Summaries of the 2 main strata in Tract 8 are noted below. Stratum #3 was developed following the inventories of the 2 main strata. Specific data about this Stratum could not be derived as it overlaps Stratum #1 and #2. The overall structure for this tract is represented in the following Gingrich Stand and Stock table that follows the individual stratum summaries **(**Figure 2).

Stratum #1

Total Trees/Ac. = **429**
BA/A = **122.8 Sq. Ft./Ac.**
Present Volume = **10,797 Bd. Ft./Ac.**
Residual Volume/Ac. = **7,557 Bd. Ft./Ac.**
Overall % Stocking = **84%** (Fully Stocked)
Sawtimber & Quality Trees/Ac. = **42**
Harvest Volume = **3,240 Ft./Ac.**

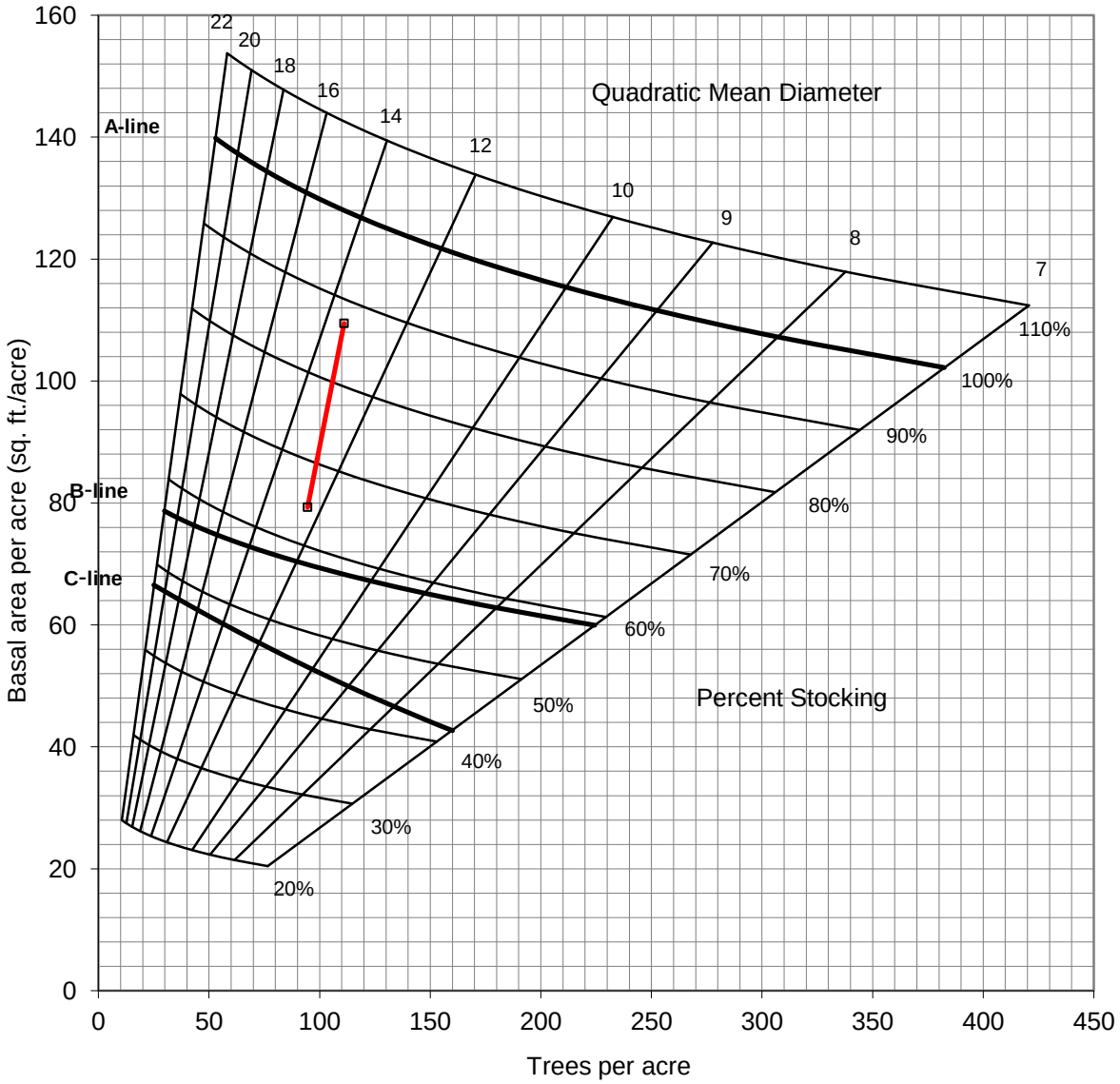
Stratum #2

Total Trees/Ac. = **430.5**
BA/A = **125.8 Sq. Ft./Ac.**
Present Volume = **9,516 Bd. Ft./Ac.**
Residual Volume/Ac. = **6,333 Bd. Ft./Ac.**
Overall % Stocking = **91%** (Fully Stocked)
Sawtimber & Quality Trees/Ac. = **45**
Harvest Volume = **3,183 Ft./Ac.**

M1108 (All Strata #1,2,3)
Total Trees/Ac. = **432**
BA/A = **124.3 Sq. Ft./Ac.**
Present Volume = **10,129 Bd. Ft./Ac.**
Residual Volume/Ac. = **6,918 Bd. Ft./Ac.**

Overall % Stocking = **87%** (Fully Stocked)
Sawtimber & Quality Trees/Ac. = **43.5**
Harvest Volume = **3,210 Ft./Ac.**

Figure 2. Gingrich Stand and Stocking Chart for M1108



Tract Silvicultural Prescription and Proposed Activities for M1108

This tract was divided into 2 major strata to facilitate record keeping of the 2 older tracts that currently have been merged into the present configuration of M1108. Stratum #3 was added in 2013 in a revised draft guide to include the Riparian Management area along the mapped intermittent stream on the east boundary of the tract (Figure 3). It was observed during the tract's resource inventory in 2012 that some WHO crowns are experiencing decline this year. This decline could be from the past two years of drought or from a late spring frost at the beginning of this growing season. The affected WHO will need closer review during timber marking to determine if they can recuperate from this crown decline. In addition, the tract's YEP areas were noticed to be experiencing a modest response to the same 2 year drought as well as an extraordinary Tuliptree scale infestation. The effect of the scale insect this year coupled with the last 2 years of drought may warrant a higher removal rate of Tuliptree stocking within the Tract. A goal of 10% regeneration of the tract acreage to meet long-term Forest Certification standards is more properly applied within the Mixed Hardwood components thereby conserving the more valued and mast producing oak-hickory. The proposed harvest of M1108 is expected to range from 300 to 400 MBF. This tract is planned to be combined with the harvest of M1110 to reduce administrative costs and will be jointly supervised by 2 property foresters at MMSF. The expected harvest of this combined tract harvest should range from 600 MBF to 800 MBF.

Stratum #1

The inventory for Stratum #1 was completed on June 1, 2012 by Intermittent Forester Amanda Smith. 27 prism points were completed over 55 acres (1 point for every 2.04 acres). A summary of the inventory is given above and a species contribution of the summary is given in Table 3 below. Stratum #1 is fully stocked and would benefit from a timber harvest. The proposed timber sale within this Stratum is expected to yield upwards of 180 MBF. The Stratum's forest resource is composed of 2 different subgroups which are mentioned below.

Oak- Hickory Subgroup Stratum #1

An Oak-Hickory timber type covers roughly 85% of Stratum #1 or about 46.9 acres. The overstory is dominated mostly by BLO, WHO, SCO, and REO with an average basal area of 105.7 square feet per acre. Singletree selection can be prescribed to remove lower quality stems and mature to overmature trees to release a growing stock of high quality, more vigorous stems. Likewise, careful selection of co-dominant stems will help to improve overall croptree spacing. Lower quality trees include low-forking, leaning, overtopped/suppressed intermediates, epicormically sprouting, and deformed trees. Group selection may be used to create regeneration openings where there is an abundance of advanced regeneration of oak and hickory seedlings or where the overstory has low stocking and should be regenerated.

Mixed Hardwoods Subgroup Stratum #1

A Mixed Hardwoods timber type covers roughly 14.8% of Stratum #1 or about 8.1 acres. The overstory is dominated mostly by SUM, SYC, BLC, REM, AMB, YEP, BIH, WHA, and WHO, with an average basal area of 75 square feet per acre. Singletree selection can be implemented to remove lower quality stems and mature to over mature trees which will help to improve crop tree spacing. An improvement cutting is prescribed to release quality oaks, hickories and walnuts from crown competition of lesser-valued timber species. The result of this cutting will increase timber diversity as well as provide for higher quality wildlife habitat. Improvement cuttings in this component will also be applied to remove low-forking, leaning, overtopped/suppressed intermediates, epicormically sprouting, and deformed trees. Group selections may be used to create regeneration openings within

this subgroup. Planned regeneration openings would most likely return to mixed hardwoods with a strong component of YEP. Overall, marking objectives within this component should consider oak and other species of significant wildlife value as the best croptrees for future conservation.

Stratum #2

The inventory for Stratum #2 was completed on June 21, 2012 by Intermittent Forester Amanda Smith. 28 prism points were completed over 60 acres (1 point for every 2.14 acres). A summary of the inventory is given above and a species contribution of the summary is given in Table 3 below. Stratum #2 is fully stocked and would benefit from a timber harvest. The proposed timber sale within this Stratum is expected to yield upwards of 200 MBF. The Stratum's forest resource is composed of 3 different subgroups which are mentioned below.

Oak-Hickory Subgroup Stratum #2

An Oak-Hickory timber type covers roughly 84% of Stratum #2 or about 50.4 acres. The overstory is dominated mostly by BLO, WHO, SCO, and PIH with an average basal area of 108.3 square feet per acre. Singletree selection can be prescribed to remove lower quality stems and mature to overmature trees to release a growing stock of high quality, more vigorous stems. Likewise, careful selection of co-dominant stems will help to improve overall croptree spacing. Lower quality trees include low-forking, leaning, overtopped/suppressed intermediates, epicormically sprouting, and deformed trees. Group selections may be prescribed to create regeneration openings where there is an abundance of advanced regeneration of Oak and Hickory seedlings or where the overstory has low stocking and could be regenerated.

Mixed Hardwoods Subgroup Stratum #2

A Mixed Hardwoods timber type covers roughly 10.7% of Stratum #2 or about 6.4 acres. The overstory is dominated mostly by SUM, REM, AMB, YEP, SHH, BIH, WHA, SCO, and BLO, with an average basal area of 80 square feet per acre. Singletree selection can be prescribed to remove lower quality stems and 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. The result of these cuttings will increase timber diversity as well as provide for high quality wildlife habitat. Improvement cuttings within this component will also be applied to remove low-forking, leaning, overtopped/suppressed intermediates, epicormically sprouting, and deformed trees. Group selections may be used to create regeneration openings within this subgroup. Regeneration openings would most likely return to mixed hardwoods with a strong component of YEP. Overall, marking objectives within this component should consider Oak and other species of significant wildlife value as the best croptrees for future conservation.

Old Opening Subgroup Stratum #2

Previously harvested areas that were regenerated are classified here as old openings. These openings cover roughly 5.3% of Stratum #2 or about 3.2 acres. These areas have successfully regenerated to dominant YEP, SAS, BLO, and WHO stems with an average basal area of 105 square feet per acre. The size classes of these stems are averaging 6-10" in diameter. The YEP regeneration was observed to be in modest decline as a result of the past two years of drought and the Tulip Poplar Scale insect infestation that occurred in the late spring of 2012. The affected YEP will need careful review prior to the planned post harvest timber stand improvement project as modest mortality is expected. All old regeneration openings should be scheduled for a croptree release and grapevine removal in the planned postharvest timber stand improvement project.

Stratum #3 Riparian Management Stratum
This Stratum is defined as lying adjacent to the mapped intermittent along the Tract's east boundary. Approximately 3 acres of the Mixed Hardwood component of sawtimber and pole-sized timber comprise this Riparian Management Stratum which includes portions of Strata #1 and #2. During this management cycle no harvest or TSI is planned in this Riparian Management Stratum.

Table 3. Volume Estimates: M1108 – All Strata
(June 2012 Inventory Data)

Species	Harvest	Leave	Total
Black Oak	166,680	243,850	410,530
White Oak	100,170	326,530	426,700
Scarlet Oak	35,990	52,910	88,900
White Ash	18,000	3,750	21,750
Northern Red Oak	12,700	45,380	58,080
Bitternut Hickory	10,900	22,150	33,050
Sugar Maple	8,470	6,340	14,810
Pignut Hickory	6,510	36,980	43,490
Red Maple	4,100	1,490	5,590
American Beech	3,260	6,510	9,770
Yellow Poplar	2410	21320	23730
Shagbark Hickory	0	16,360	16,360
Basswood	0	4,840	4,840
American Sycamore	0	3,080	3,080
Black Cherry	0	2,760	2,760
Black Walnut	0	1,370	1,370
Tract Totals (Bd. Ft.)	**369,190**	**795,620**	**1,164,810**
Per Acre Totals (Bd. Ft./Ac.)	**3,210**	**6,918**	**10,129**

Proposed Activities Listing

Proposed Management Activity	***Proposed Period***
DHPA timber sale project review	Summer 2012
Invasives Treatment	Fall 2012
Timber Marking	Winter-Spring 2012-13
Combined Timber Sale with M1110	FY2012-13
Timber Stand Improvement Project	CY2013-16
Regeneration Success Review	CY2019-20
Reinventory and Management Guide	CY2027

Attachments (Included in Tract File)
- Topo Map of Tract Features
- Tract Soils Map
- Aerial Photo of Tract
- INHD Review Map

- Stocking Guide Chart
- Printed TCruise Reports

To submit a comment on this document, click on the following link:
http://www.in.gov/surveytool/public/survey.php?name=dnr_forestry

You must indicate the State Forest Name, Compartment Number and Tract Number in the "Subject or file reference" line to ensure that your comment receives appropriate consideration. Comments received within 30 days of posting will be considered.

Note: Some graphics may distort due to compression.