

Indiana Department of Natural Resources – Division of Forestry

Draft

Resource Management Guide

State Forest: Morgan-Monroe

Tract Acreage: 73

Foresters: Phil Jones & Dave Ramey

Management Cycle End Year: 2028

Compartment 10 Tract 12

Commercial Acreage: 73

Date: March 11, 2013

Management Cycle Length: 15 years

Location:

Compartment 10 Tract 12 lies in the southeast corner of Section 7, Township-10-N, Range-1-W in Washington Township of Monroe County, Indiana. The tract lies approximately 11 miles north northwest of the city of Bloomington, Indiana.

Figure 1 – M1012

General Description:

M1012 consists of a total of 73 forested acres of which the majority is of Oak-Hickory timber type. Mixed Hardwoods such as Yellow Poplar, Sugar Maple, White Ash, Red Maple, Beech and Aspen are also present and interspersed throughout the tract. Riparian Management areas exist along the west and northeast tract boundaries. Overall, 73 acres are considered commercial forest acreage. M1012's timber resource ranges from small to large sawtimber in size. The overall timber quality of this tract is good. A summary of the forest resources in M1012 in relation to species dominance is noted below in Table 1.

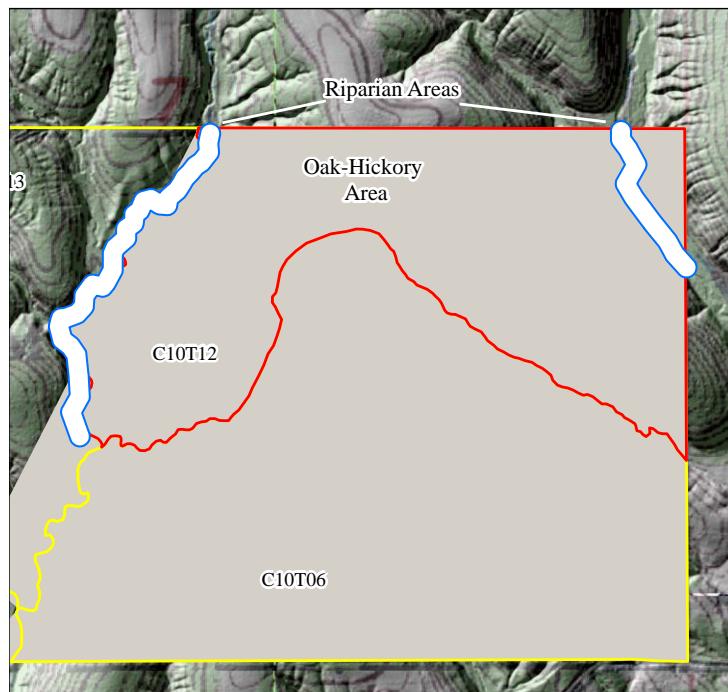


Table 1 – Basic Forest Structure of M1012 in January 2013

Overstory Layer	Understory Layer	Regeneration Layer
White Oak	Sugar Maple	Sugar Maple
Black Oak	Sassafras	Flowering Dogwood
Yellow Poplar	Red Maple	Red Maple
Red Oak	White Oak	Shagbark Hickory
Scarlet Oak	<i>American Beech</i>	<i>American Beech</i>
Sugar Maple	<i>Black Oak</i>	<i>Largetooth Aspen</i>
<i>Red Maple</i>	<i>Largetooth Aspen</i>	<i>White Oak</i>
<i>Bitternut Hickory</i>	<i>Yellow Poplar</i>	<i>Yellow Poplar</i>
<i>Pignut Hickory</i>	<i>Elm spp.</i>	
<i>Shagbark Hickory</i>	<i>Black Walnut</i>	
<i>Largetooth Aspen</i>	<i>Red Oak</i>	
<i>White Ash</i>		
<i>American Beech</i>		
<i>Sycamore</i>		
<i>Black Cherry</i>		
<i>Basswood</i>		

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

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

History:

- 1947 – State acquisition from Schnaiter
- 1972– Quick Cruise Inventory (Old C20BT9,10)
- 9/17/74 – Timber Sale (145,520 BF - C20BT9)
- 7/8/76 – Timber Sale (84,900 BF - C20BT10)
- 1982 – Boundary Line Painted
- 1988 – Boundary Line Repainted
- 1993 – Boundary Line Repainted
- 1994 – Haul Rd and Yard Construction
- 1995 – Parking Lot Constructed
- 1995 – Inventory and Management Plan Completed
- 1995 – Timber Marking
- 1995 – Timber Sale (125,878 BF)
- 1996 – Road Closeout
- 1997 – TSI: openings completed
- 1998 – Boundary Line Repainted
- 2003 - Boundary Line Repainted
- 2011 - Boundary Line Repainted
- 2013 –Inventory and Draft Plan Completed

In 1995 a timber harvest was conducted which removed 650 trees containing an estimated 125,878 board feet (bd. ft.) of sawtimber volume. 186 cull trees were marked although it appears that many of these, particularly the Beech, were left. About 60% of the harvest in 1995 were Oaks, 20% Yellow Poplar, and remaining trees were predominantly Maples, Elms, Beech, White Ash, and Largetooth Aspen. The sale was closed out in the fall of 1996.

Post harvest TSI was completed in 1997 in the 5 small openings (2 ac total).

Landscape Context:

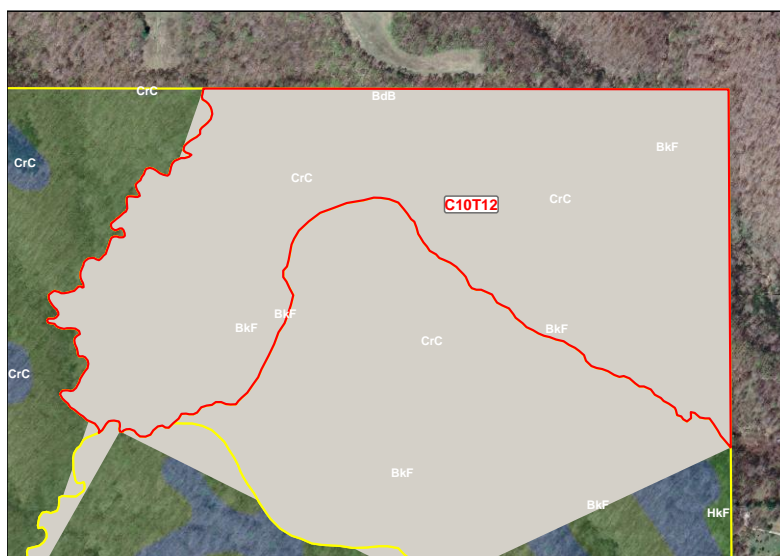
The land surrounding the north and east edge of the tract is privately owned and consists of a mix of closed canopy deciduous forest along with open pasture or grassland. An intermittent stream cuts through the northeast portion of the tract. The south and west portions of the tract are surrounded by Morgan-Monroe State Forest. An intermittent stream forms the west tract boundary and the southern boundary consists primarily of two large ravines.

Topography, Geology, and Hydrology:

M1012 consists of a broad, v shaped ridge with steep sideslopes that border large ravines and stream bottoms. Slopes range from 2-6% on the ridges and 25-75% on the sideslopes. All aspects are represented within the tract. The two primary soils formed over limestone, underlain by sandstone, siltstone, or shale. Water resources from the intermittent streams and ephemeral drainages in M1012 drain into Indian Creek and then into Beanblossom Creek which feeds into the White River.

Soils:

The dominant soil type in this tract is the Berks-Weikert Complex (BkF), a type which is very common in Monroe County, covering approximately 24.5 percent of the land. These upland soils are formed in residuum from sandstone, siltstone, and shale. Available water capacity is low to very low with rapid permeability and surface run off. Organic matter is moderate. Berks-Weikert soils have a capability class of VIIe and woodland suitability subclasses of 3f (Berks) and 4d (Weikert), indicating Berks to have moderately high soil productivity and a high content of coarse fragments while Weikert has moderate soil production and restrictive root depths.



The other soil type commonly found in this tract is Crider Silt Loam (CrC). Like the Berks-Weikert Complex, Crider Silt Loams are also quite common in Monroe County, comprising roughly 11.9 percent of the soils found there. It is an upland soil formed in loess and residuum from limestone. Crider Silt Loam has high available water capacity and moderate permeability; however the organic matter layer is low. The capability subclass is IIIe, and a woodland suitability subclass of 1o indicates very high soil productivity and no other pertinent restrictions.

The last soil type, Bedford Silt Loam (BdB), is found in a very small area in the most upland region near the center of the far north portion of M1012. These soils have very slight slopes ranging from 2-6 percent with well-drained soils and a fragipan present in some areas at about 20 inches which can restrict root penetration.

Access:

M1012 is accessible via a small parking area on the north side of Frye road. The main access road starts in M1006 to the south and runs northwest into M1012. The last improvements to this road were in August of 1994. The road will need dozer work and approximately a dozen loads of stone. All of the haul road rehab work will be within M1006, as this is where the two existing log yards are located. The only equipment work required in M1012 will be to rehab an existing skid trail that runs down to the bottomlands areas along the western tract boundary. A suitable stream crossing location has been identified to gain access to the northeast portion of M1013.

Boundary:

Private boundary lays adjacent to the north and east portion of the tract. West Frye road is the access to the tract. The NE corner of the tract is a ½" rebar set by Mike Friley, Monroe County Surveyor at that time. The boundaries are marked in orange paint and were last painted in 2011.

Wildlife:

Wildlife resources in this tract appear to be abundant. This tract contains an adequate amount of diverse vegetation conducive to habitat for a variety of wildlife species. Habitat includes a large amount of contiguous Oak-Hickory canopy, scattered Mixed Hardwood areas, Riparian areas, and five small, scattered 15 year old regeneration openings. The tract to the south, M1006, also contains two permanent wildlife openings and an associated waterhole created by Forest Wildlife back in the mid 1990's.

The Oaks, Hickories, and scattered mature Beech provide hard mast for deer, turkey and squirrel. Snags (standing dead trees) and den/cavity trees provide nesting, bugging, and roosting opportunities for woodpeckers, songbirds, and small mammals. Rotten logs, crater knolls, water holes, and the mapped intermittent stream provide habitat for herptiles and aquatic vertebrates.

A Heritage Database Review was completed 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.

Wildlife Structural Habitat Features:

Snags, standing dead or dying trees, may be one of the most important wildlife habitat features in Indiana’s forests. They are essential habitat features used by a wide range of species for foraging activity, nest/den sites, decomposers (e.g., fungi and invertebrates), bird perching and bat roosting. Additionally, snags are an important contributor to the future pool of downed woody material.

Table 2 shows how this tract compares with the DoF guidelines for forest stand snag density. The data suggests that the stand meets maintenance levels in the smaller size classes, but is deficient in the 19” + class. This deficiency may be due to the relatively high vigor of the forest resource. The combination of improvement cuts, light thinnings, and small regeneration cuts over the past 40 years have resulted in a generally healthy and vigorous resource. Also, shallow soils and persistent wind action reduce the potential for long term snag retention except in cove sites. There was past evidence of scattered windthrow in M1012. Overall, larger diameter trees appear to be more effected by wind than those that are in the understory.

The inventory data does show there may be opportunities to increase this habitat feature. According to the data, there is an estimated 1 cull Beech tree per acre, with a DBH range of 22 – 32”. Many of these could be girdled in a postharvest Timber Stand Improvement (TSI) operation. This would not only provide an increase in this important habitat feature, but would free up resources and growing space for younger, more vigorous trees.

Table 2 – Forest Snag Density in M1012 in January 2013

Diameter (DBH) Distribution	Target Snag Density		
	Maintenance Level	Optimal Level	C10T12
<i>Including</i> at least this many snags per acre ≥ 5 ”:	4	7	9.6
<i>Including</i> at least this many snags per acre ≥ 9 ”:	3	6	3.6
<i>Including</i> at least this many snags per acre ≥ 19 ”:	0.5	1	.14

Forest wildlife species depend on live trees for shelter, escape cover, roosting and as a direct (e.g., mast, foliage) or indirect (e.g., foraging substrate) food resource. The retention of live trees with certain characteristics (Legacy trees) is of particular concern to habitat specialists such as the Federally Endangered Species like the Indiana Bat. As **Table 3** shows, Legacy trees of a particular species suitable as live roost trees for the Indiana Bat are very well represented in all size categories.

Table 3 – Preferred Live Roost Trees in M1012 in January 2013

Preferred Roost Trees per Acre

Diameter (DBH) Distribution	Maintenance Level	C10T12
TOTAL minimum roost trees per acre $\geq 11''$:	9	21
Including at least this many roost trees $\geq 20''$:	3	8

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

Legacy trees and standing dead trees (snags) will be given consideration for retention as habitat for the Indiana Bat and other wildlife as defined by the Resource Management Strategy for the Indiana Bat on State Forest Property and the Management Guidelines for Compartment-level Wildlife Habitat Features.

Communities:

M1012 is mostly dry-mesic upland hardwoods. The dominant overstory timber species include White, Black, Red and Scarlet Oaks as well as Bitternut, Pignut and Shagbark Hickories. The understory contains Oaks but consists mainly of Hickories, Maple and Beech.

A Heritage Database Review was completed 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.

Exotics are currently of little concern in this tract. Multiflora rose was observed in scattered, light concentrations. If other species are detected during future management work, they will be addressed at that time.

Recreation:

The area is accessible via a small parking lot located just off the north side of West Frye Road. A fire lane extends northwest from this roadway and parking area through a cabled gate. Although no permanently established recreation areas are present in this tract, there are still several recreational opportunities. Hunting is permitted on State Forest property and this area also offers opportunities for gathering, and wildlife viewing.

Cultural:

Cultural resources may be present on this tract. If present their location(s) will be protected. Impacts to significant cultural resources noted will be avoided during management or construction activities.

M1012 Tract Summary Data

Total Trees/Ac. = **171 Trees/Ac.**

BA/A = **108 Ft²/Ac.**

Present Volume = **10,283 BF/Ac.**

Residual Volume/Ac. = **6,820 BF/Ac.**

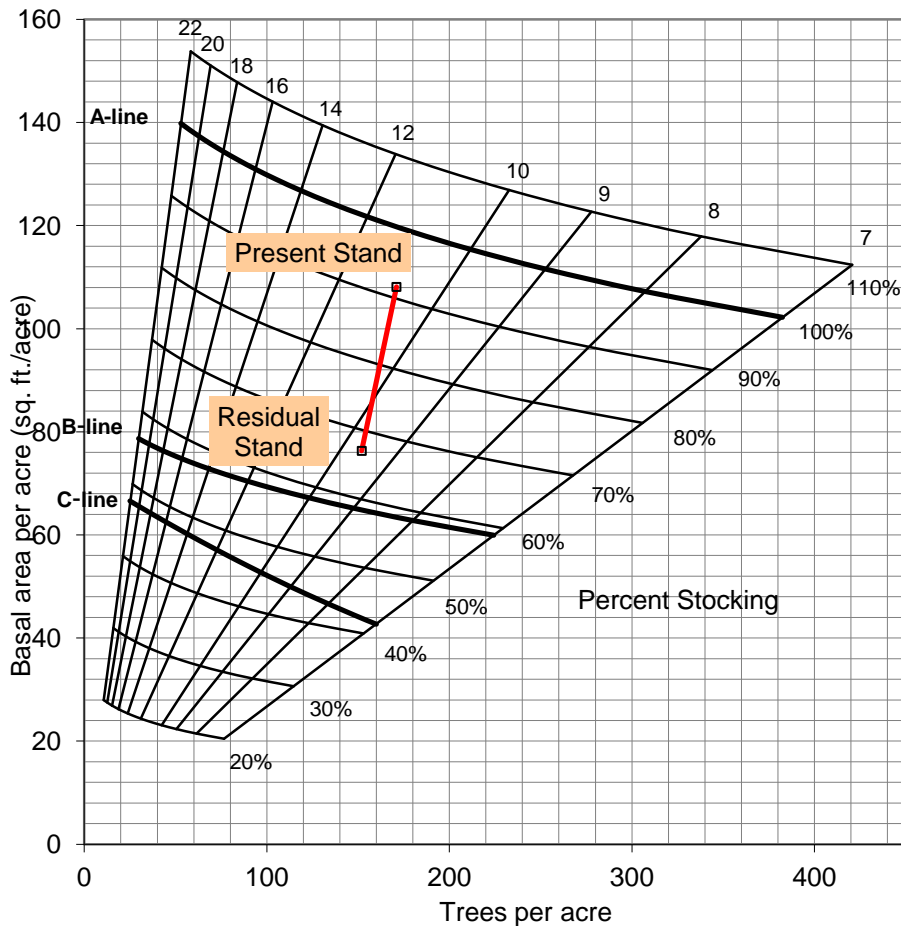
Overall % Stocking = **91%**

Sawtimber & Quality Trees/Ac. = **37 Trees/Ac.**

Harvest Volume = **3,463 Bd. Ft./Ac.**

	Acres		Sq. Ft. per Acre
Hardwood Commercial Forest:	73	Basal Area Sawtimber:	63.9
Pine Commercial Forest:	0	Basal Area Quality:	15.2
Noncommercial Forest:	0	Basal Area Poles:	16.5
Permanent Openings:	0	Basal Area Culls:	3.9
Other Use:	0	Sub-merchantable:	8.5
Total:	73	Total Basal Area:	108.1

Table 4. Gingrich Stand and Stock Table for M1012 in January 2013



Stand Descriptions and Silvicultural Prescriptions:

The current forest resource inventory was completed on January 16, 2013 by Foresters Jones and Ramey. 24 prism points were sampled. A tract summary of the forest resource is noted above and a detailed species breakdown of the summary is given in **Table 4** below. This tract is fully stocked and would benefit from a timber harvest. The estimated timber sale on this tract could yield from 175 to 300 MBF.

Oak-Hickory Stratum– 73 acres

Current Condition

The timber type is predominantly Oak-Hickory with some Mixed Hardwoods such as Yellow Poplar, Sugar Maple, White Ash, Red Maple, Beech and Largetooth Aspen. There is a small area that contains Butternut. Oak and hickory species account for over 75% of the total volume and BA in the tract with White and Black Oaks being the most prevalent. Average Oak-Hickory diameters are 18 – 20” for sawtimber trees and 24-26” for quality trees. Yellow Poplar comprises the largest portion of the remaining composition. The tract’s understory is dominated by Sugar Maple, Flowering Dogwood, Red Maple, Beech and Hickory spp. From the past harvest there are some small regeneration openings dominated with Yellow Poplar, Maple spp., and Sassafras. These are around 15 years old and total approximately 2 acres.

Prescription

The management goal of M1012 is to maintain a fully stocked, healthy stand dominated with healthy and vigorous Oaks and Hickories. The recommendation is to prescribe an improvement cutting over the majority of the tract. This would be accomplished primarily through single tree selection. However, small group selections may also be implemented in areas dominated by poor growing stock. Trees selected for harvest would be primarily overmature, damaged or defective, poorly formed, stressed, or inferior species competing with croptrees. For logistical purposes, M1012’s proposed harvest is planned to be combined with harvests in adjacent tracts M1006, M1013 & M1017.

Riparian buffer areas exist within 50 feet of the banks of the mapped intermittent streams located along the west and northeast tract boundaries and at the northeastern corner of the tract. This northeastern area, roughly 1.5 acre in size, is separated from the tract by the northeast stream and is considered inoperable for this management cycle. No harvest or TSI is planned in any of these Riparian buffer areas excepting in the incidental salvaging of downed timber.

Postharvest Timber Stand Improvement (TSI) is recommended and could include grapevine control, croptree release, large snag creation and small opening completion. Preharvest grapevine control may be required in potential group selection openings. Healthy Butternut trees will be encouraged where found.

Table 4 – Estimated Tract Volumes of M1012 in January 2013

Species	Harvest (bd. Ft.)	Leave (bd. ft.)	Total Volume (bd. ft.)
Black Oak	55,280	121,030	176,300
White Oak	49,630	145,390	195,020
Yellow Poplar	44,230	51,720	95,950
Scarlet Oak	37,020	18,640	55,660
Sugar Maple	11,930	17,630	29,560
White Ash	10,520	0	10,520
Red Maple	9,340	0	9,340
Largetooth Aspen	7,610	0	7,610
Red Oak	7,290	60,330	67,620
Beech	2,640	0	2,640
Bitternut Hickory	2,260	12,860	15,120
Black Cherry	2,260	0	2,260
Pignut Hickory	0	21,510	21,510
Shagbark Hickory	0	10,390	10,390
Sycamore	0	9,290	9,290
Basswood	0	3,830	3,830
Tract Total	240,010	472,620	712,630
Per Acre Total	3,288	6,474	9,762

Proposed Management Activities:

Proposed Period

Timber Marking	CY2013
Timber Sale	FY2013-14
Timber Harvest	CY2013-2016
Timber Stand Improvement Project	CY2015-2017
Regeneration Opening Review	CY2020
Inventory and New Management Guide	CY2028

The following attachments are kept in the tract file:

- Ecological Resource Review
- Topo Map with noted special features
- Inventory Map
- Soil Map
- Indiana Natural Heritage Database Map
- TCruise reports

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