# RESOURCE MANAGEMENT GUIDE

## DRAFT

**State Forest:** Morgan-Monroe **Compartment:** 18 **Tract:** 11
**Forester:** Amy Zillmer **Date:** October 9, 2009
**Management Cycle End Year:** 2029 **Management Cycle Length:** 20 yrs

**Location**
This tract is located in the Sections 14 and 23, T8N, R1E Salt Creek Township of Monroe County. This tract is approximately 7.5 miles east from the city of Bloomington and on the eastern side of the Lake Monroe Watershed.

**General Description**
This tract consists of closed canopy hardwood forest with a small amount red pine scattered along the ridgetop. The tract is 125 acres of which all are considered commercial.

**History**
This tract was acquired by the state of Indiana through two separate acquisitions. The first in 1965 was from the United States Government. This includes the southern 85 acres of tract. The second was in 1997 from Indiana University and included the northern 40 acres.

From a management perspective, although this area has no recorded history, the tract has strong evidence of a unique and varied history. An old road bisects the southern half of the tract and along the tract's ridgetop. Much of the area to the south shows signs of being open in the past, namely scattered, large wolfy over-mature stems and dense saplings. Some stumps were also noted. The timber harvest records for this area are unclear due to an office fire. Several neighboring tracts have had references to large clearcuts occurring sometime around the 1970's. On ground evidence supports this. Tract shows an impressive amount of oak saplings on south facing slopes. The ridgetops have some planted red pine and an abundance of early successional stems (i.e. Largetooth aspen). These areas were most likely farmed before becoming under federal ownership. The species mix and size class lean toward older stands on the side slopes. Old fencing suggests that these areas may have been grazed.

The IU land purchase to the north has a greater concentration of mature stems. Stumps and tops were located along the north facing slope (25-30 years old). Prior to acquisition, IU had planned a second harvest. Negotiations were being made between the IN Division of Forestry and IU to grant temporary access across state property to the University for timber harvesting. Before the harvest took place, IU decided to sell the land to the State of Indiana. Presently, much of the paint still remains on trees selected for harvest. This harvest appeared to have been aimed at removing large over-mature stems across tract.

This tract was up for inventory for the 09/10 fiscal year. An inventory was completed in August 2009 by Amy Zillmer and Andi Wallis. 37 points were conducted over 125 acres (1 point per 3.4 acres). The findings of this of this inventory are highlighted in this report.

**Landscape Context**
This tract adjoins a large block of state forest (2,500+ acres), so closed canopy forest is prevalent. Much of the surrounding landscape is also managed by the Monroe Reservoir. Land types include closed canopy forest, open water, wetlands, and floodplains. Agricultural fields and houses dot the landscape. The most recent adjacent state forest timber harvest occurred in 1995 in the neighboring tract to the east (Tract 9).

**Topography, Geology and Hydrology**
This tract consists of two main ridge lines running in NS and EW. The majority of the tract consists of east and west facing slopes. Underlying geology is unglaciated sandstone, siltstone, and/or shale bedrock. Silt loam soils are generally shallower and are derived from bedrock weathering. Several unmapped intermittent and ephemeral stream channels interlace these ridges draining north into Goodley Branch and south into North Fork Salt of the Monroe Reservoir.

**Soils**
<u>BkF-Berks – Weikert Complex</u>
This soil makes up 63 acres of the tract. It is located along side slopes and bottoms of the tract's ridges. This soil forms from sandstone bedrock about 38" under the surface. Slopes range from 25% up to 75%. This particular tract does not approach the higher extreme. This soil has severe limitations for forest management due to slope and low strength. Roads should avoid soil when possible. It is recommended that any road construction follow contours or land shaping may be employed. This complex is well drained with a low available water capacity. Although unsuited for urban development due to slope and depth to bedrock, it is well suited for trees. This soil holds a 70 site index.

<u>WmC- Wellston-Gilpin silt loams</u>
This soil makes up 62 acres of the tract. It is found mainly on ridge tops and side slopes. This soil forms from loess over loamy residuum over shale 46" under surface. Slopes generally range from 6 to 20% slopes. WmC is well drained with a moderate to low available water capacity. Severe hazards to erosion due to silty loam texture. This soil holds a 71 site index.

**Access**
This tract is accessed by an old road that once connected Gilmore Ridge with McGowen Road. Old roads are present on all of the tract's ridgetops. An old roadcut is also present on the tract's main east facing slope that descends north into the bottomlands.

**Boundary**
The northern boundary of this tract also serves as a property line with the Monroe Reservoir. Carsonite posts marking the line are located at elevation points along this north line. The west line boundary is up to date and was recently repainted in the 08/09 fiscal year. The rest of the tract is surrounded by state property.

**Wildlife and Plant Communities**
Ongoing wildlife management has been occurring to the north of tract since 1998. Rex Watters, a Wildlife Specialist for the Monroe Reservoir, has bush hogged this area several times to maintain early successional habitat. Some woody wildlife plantings (wild plum, pin oak, shumard oak) were planted in 2005 with varied success due to high flood waters. Future plans for plant food plot strips are being considered. All plans include maintaining this area for early successional habitat.

Overall, the forest bestows a steady food source in the form of mast and the neighboring reservoir provides a constant source of water. This information was used to complete a Wildlife Review and Ecological Assessment report that are stored in tract file. The Natural Heritage Database did not report any rare, threatened or endangered species within tract boundaries. However, several sightings of the Timber Rattlesnakes were reported within the area.

*Crotalus horridus* or the Timber Rattlesnake is a species of special concern in Indiana. This species suffers from triad of obstacles. Namely habitat destruction and fragmentation, sport hunting, advanced forest succession, and road mortality. Future timber management activities will most likely employ group selection harvesting. The harvest will not only increase the tract's horizontal heterogeneity but it will also increase viable breeding grounds for the snakes in this area.

<u>Indiana Bat Guidelines</u>
The Indiana Division of Forestry recognizes the potential to enhance the Indiana bat habitat on its lands by implementing comprehensive management principles. These management principles include obtaining data on size, species, and numbers of snags trees. Snag trees and some specific species are an integral part of the Indiana bat policy as they are prime roosting sites for maternal colonies.

**Table 1. Legacy Trees inventoried August, 2009 on 6371811**

| Size Classes | Maintenance Level | Inventory | Available For Removal |
|---|---|---|---|
| ***11"+ DBH*** | 1125 | 1417 | 292 |
| ***20"+ DBH*** | 375 | 323 | -52 |

**** Species Include:*** *American Elm, Bitternut Hickory, Black Locust, Cottonwood,, Green Ash, Northern Red Oak, Post Oak,*

*Red Elm, Shagbark Hickory, Shellbark Hickory, Silver Maple, Sugar Maple, White Ash, White Oak*

*These species of trees, whether dead, dying, or alive have a relative high value as potential Indiana Bat roost trees and are encouraged for conservation.*

**Table 2. Snag Trees inventoried August, 2009 on 6371811**

| Size Classes | Maintenance Level | Optimal Level | Inventory | Available above Maintenance | Available above Optimal |
|---|---|---|---|---|---|
| ***5"+ DBH*** | 500 | 875 | 3915 | 3415 | 3040 |
| ***9"+ DBH*** | 375 | 750 | 286 | -89 | -464 |
| ***19"+ DBH*** | 62.5 | 125 | 28 | -34 | -97 |

**Table 3. Cavity Trees inventoried August, 2009 on 6371811.**

| Size Classes | Maintenance Level | Optimal Level | Inventory | Available above Maintenance | Available above Optimal |
|---|---|---|---|---|---|
| ***7"+ DBH*** | 500 | 750 | 778 | 278 | 28 |
| ***11"+ DBH*** | 375 | 500 | 175 | -200 | -325 |
| ***19"+ DBH*** | 62.5 | 125 | 94 | 32 | -31 |

Currently this tract is only meeting guidelines for small diameter stems for the live legacy, snags, and cavity trees (with the exception of 19"DBH + cavities trees). These findings are indicative of the current tract size class parameters as much of the tract is of a younger age class. Post harvest TSI to release higher quality stems with a focus on oak-hickory will increase the future densities of live legacy trees and snags in a variety of classes. As these stems increase is size, the prevalence of cavities and snags in larger diameter stems will also increase.

## Exotics

Japanese stilt grass is common along Gilmore Ridge and access firelane. Treatment is recommended during appropriate months to accessible areas. Following any roadwork, disturbed trails and yards should be seeded promptly to minimize new colonization. Autumn olive was also noted in several areas across the tract and on the access lane. Treatment is recommended before harvest with follow-up treatment during post harvest TSI.

## Recreation

This tract does not have any established recreational features. Likely uses of this tract include hunting, hiking, wildlife viewing, and gathering.

## Cultural

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

## Tract Subdivision Description and Silvicultural Prescription

Table 4. Estimated harvest/leave volume (Doyle) from August, 2009 inventory of 6371811.

| Species | Harvest Stock | Growing Stock | Total Volume |
|---|---|---|---|
| Yellow Poplar | 43230 | 77800 | 121030 |
| Northern Red Oak | 26250 | 39640 | 65890 |
| Sugar Maple | 24600 | 50710 | 75310 |
| Largetooth Aspen | 21140 | 0 | 21140 |
| White Ash | 20950 | 1400 | 22350 |
| Chestnut Oak | 12980 | 26040 | 39020 |
| American Beech | 7510 | 18140 | 25650 |
| Red Maple | 5950 | 990 | 6940 |
| White Oak | 5020 | 26390 | 31410 |
| American Elm | 3770 | 0 | 3770 |
| Pignut Hickory | 3650 | 38460 | 42110 |
| Basswood | 3110 | 0 | 3110 |
| Red Pine | 1380 | 0 | 1380 |
| American Sycamore | 0 | 6760 | 6760 |
| Bitternut Hickory | 0 | 7350 | 7350 |
| Blackgum | 0 | 1800 | 1800 |
| Black Oak | 0 | 27610 | 27610 |
| Black Walnut | 0 | 2870 | 2870 |
| Scarlet Oak | 0 | 20980 | 20980 |
| Shagbark Hickory | 0 | 3570 | 3570 |
| **Total** | **179540** | **350510** | **530050** |
| **Total/Acre** | **1436** | **2804** | **4240** |

Mixed Hardwoods

Mixed hardwoods are the most dominant cover type across the tract occupying about 58 acres. Presently this stratum contains an estimated 353,800 BF (6,100 BF/ac) with 121,220 BF (2,090 BF/ac) being harvestable and 226,780 BF (3,910 BF/ac) left as growing stock. There are 103 square feet of basal area per acre and this area is fully stocked (94%).

Currently the stand is dominated by Sugar Maple, Yellow Poplar, American Beech, Northern Red Oak, and Black Oak. The understory is dominated by Sugar Maple, Yellow Poplar, American Beech, and Pignut Hickory. Regeneration is dominated by beech/maple with pockets of sassafras, white ash, dogwood, and mixed oak/hickory.

In general, single tree and group selection is recommended for this area. The inventory noted several areas with declining overstory that could benefit from

regeneration. Single tree selection to remove poor formed, low vigor stems and to release higher quality, longer lived species groups is recommended.

In general, harvest levels are expected to be high in red oak, sugar maple, white ash, and poplar. Many of the red oak are reaching maturity and declining. Ash should be removed in a sanitation thinning when feasible as to lessen the opportunity for emerald ash borer breeding hotspots. Moderate to higher quality white oak should be released when possible. Regeneration in areas of poor stocking or quality will be implemented across tract where needed.

Oak-Hickory

This stratum covers about 24 acres. The inventory estimated 94,080 BF (3,920 BF/acre) with 25,920 BF (1,080 BF/ac) being harvestable and 68,160 BF (2,840 BF/ac) left as growing stock. Dominant overstory and understory species include chestnut oak and pignut hickory. Sugar maple, Largetooth aspen, white oak, sassafras, and American beech also make up the understory. Regeneration is dominated by beech/maple with notable amounts of oak-hickory.

Thinning out poor quality chestnut oak and hickory from both above and below to favor higher quality, more vigorous stems is recommended. In general, oak and hickory stems will be favored unless of poor quality. Regeneration may be implemented in areas where poor quality or mature occur.

Old Field

This stratum covers about 13 acres. The inventory estimated 32,760 BF (2,520 BF/acre) with 7,150 BF (550 BF/ac) being harvestable and 25,610 BF (1,970 BF/ac) left as growing stock. In general this tract is dominated by mixed xeric oak along with scattered planted red pine and aspen. The red pine and aspen should be harvested to release longer lived higher quality stems. Single tree selection along with regeneration openings in pine and aspen patches is recommended. Regeneration of small aspen stands would retain this species in the ecosystem and embolden low ruffed grouse populations.

Oak –Hickory Pole Timber

This stratum covers about 30 acres. The inventory estimated 48,600 BF (1,620 BF/acre) with 24,300 BF (810 BF/ac) being harvestable and 24,300 BF (810 BF/ac) left as growing stock. This division contains scattered wolfy chestnut oak and black oak. Small merchantable areas of scarlet oak, aspen, hickory, and red maple are scattered throughout division. The majority of this division falls into pole to submerchantable size class. White, black, scarlet, and chestnut oak are common along with mixed species such as sassafras, aspen, beech, and maple. Some of these overstory stems should be removed when felling option is available to minimize damage to regeneration. Others could be girdled to increase large diameter snag densities. Light commercial thinning is recommended with intensive postharvest timber stand improvement.

**Summary Tract Silvicultural Prescription and Proposed Activities**
In general, the recommendation of this guide is a timber harvest. Overall, the tract is overstocked. An improvement harvest will not improve the stocking, but will improve the overall forest health by removing less vigorous/ declining stems and releasing higher quality stems. The timber harvest planned for tract 11 will be conducted in a manner to protect the Lake Monroe watershed. The harvest will comply with BMP regulations to minimize soil erosion and protect water quality. Prompt installation of water diversions in conjunction with seed and straw following harvesting will be employed to minimize any effects to neighboring water resources. The harvest will entail both single tree and group selection cutting methods. Single tree selection will remove poorly formed, mature stems, and improve spacing of crop trees to increase the growth of residual stand. Group selection will be implemented in stands of inadequate stocking, poor quality, or mature timber. This tract will be marked and sold in the 09/10 fiscal year. Post harvest TSI will be conducted to complete any openings and should consider snag creation in various class sizes to increase the tract's viability for Indiana Bat habitat. Areas where midstory release to increase density of advanced oak regeneration should be noted during marking and incorporated into post harvest timber stand improvement plan. This tract will be up for a new management guide in 2029.

| *Proposed Management Activity* | *Proposed Date* |
|---|---|
| Mark Timber Harvest & Exotic Recon & Treatment | 2009/2010 |
| Sell Timber Harvest | 2009/2010 |
| Post Harvest TSI & Follow up Exotic Recon & Treatment | 2011 |
| New Management Guide | 2029 |

## Attachments (in Tract File)

Gingrich Stocking Charts
Ecological Resource Review
Natural Heritage Database Review
Wildlife Habitat Review
Archeological Clearance/Roadwork Request
Soil, Stand, and Roadwork Maps
TCruise Reports

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