

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

**State Forest:** Owen-Putnam

**Forester:** R. Duncan

**Management Cycle End Year:** 2029

**Compartment:** 7    **Tract:** 3

**Date:** December 2014

**Management Cycle Length:** 15 Years

### **Location**

Compartment 7, tract 3 is located primarily in the east central portion of section 22, township 11N, range 4W, Morgan Township, Owen County. It is approximately 1 mile northeast of the horse campground and approximately 4 miles northeast of the office.

### **General Description**

This tract is a 75-acre multiple use parcel located within the 701 acres comprising compartment 7 of the Owen-Putnam State Forest. Timber types include closed canopy oak-hickory, beech-maple, mixed hardwoods and pine. White pine, Virginia pine and Loblolly pine were planted along the ridge top adjacent to the power line to control erosion from past disturbance. The over-story consists of medium to large sawlog sized yellow-poplar, maple, oak, hickory and ash. The quality of merchantable timber is good. The pole-sized under-story consists mostly of beech, maple, hickory and poplar. This area exhibits good opportunities for multiple use management, including timber management, wildlife management, soil and water conservation and public recreational activities, such as, hunting, hiking, gathering, viewing and interpretation.

### **History**

Owen-Putnam State Forest was established in 1948 with most of its landholdings purchased as smaller non-contiguous tracts in the 50's and 60's. The ridge tops in the area of this tract were farmed up until the 1930's. Sometime in the 1960's many of the severely eroded ridge tops were planted to pine to stabilize the soil. Compartment 7 tract 3A has been managed for many years.

- Property wide timber inventory (TIMPIS) in 1988
- Timber inventory in 1994
- Timber stand improvement 1994
- Timber harvest in 1995
- Timber inventory in 2011

### **Landscape Context**

Compartment 7 tract 3 is located in a rural area. Generally the area is forested hills and ravines. The private property adjacent to this compartment and tract are primarily closed canopy, deciduous, mixed hardwood forests with no agriculture or industry, limited residential housing, some small fields/pastures and small ponds located primarily along county roads beyond the state forest.

### **Topography, Geology and Hydrology**

This part of Owen-Putnam State Forest falls in the Shawnee Hills Natural Region, Crawford Upland Section. This section is most distinct by its rugged hills with sandstone cliffs and rockhouses. Characteristic soils are the well-drained acidic silt loams of the Wellston-Zanesville-Berks Association. The upper slopes consist of an oak-hickory assortment, with a more mesic component in the coves resembling the mixed mesophytic forest community.

The topography of the area varies from nearly level ground on the ridge top along the west end of the tract with moderately steep east to northeast facing slopes. Water sheds into a mapped intermittent stream flowing northwest to southeast along the north edge of the tract, then into a mapped perennial stream. The area is generally comprised of shallow to moderately deep, well-drained soils often containing fragipans, on nearly level to steep slopes. These soils occur throughout the Illinoian glaciated areas of the county. In the event of a harvest, the existing haul road and log yards can be utilized. However, care must be taken during the planning and execution of skid trails due to the erosive nature of some soils. Best Management Practice (BMP) guidelines will be followed to preserve soil and water quality.

## Soils

The tract is composed primarily of the Muskingum Stony Silt Loam on 35-70% slopes and the Hickory silt loam on 35-70% slopes. In the Muskingum series are shallow, excessively drained, steep or very steep soils underlain by sandstone, siltstone and shale. The Hickory series consists of deep, well-drained, steep soils that lack a fragipan. These soils are mainly in forest and are excellent for the growth of poplar, oak and hickory. (USDA, SCS – Soil Survey, Owen County, IN 1964).

Specifically, the tract is composed of the following soils:

The soils of this tract are often shallow, stony and droughty and therefore not suited for farming and usually considered to be poorly suited for high quality timber production. In general the soils are more suited for oak and hickory than poplar.

**HeuF—Hickory-Wellston silt loams**, 25 to 35 percent slopes, *Setting*: Dissected till plains over interbedded shale, siltstone, and sandstone, *Position*: Backslopes, *Site Index*: Upland oak 85

**ZapD3—Zanesville, soft bedrock substratum-Tulip silt loams**, 12 to 18 percent slopes, severely eroded, *Setting*: Hills underlain with interbedded sandstone, shale, and siltstone, *Position*: Backslopes, *Site Index*: 69-75

**ZamB2—Zanesville silt loam**, soft bedrock substratum, 2 to 6 percent slopes, eroded, *Setting*: Hills underlain with interbedded sandstone, shale, and siltstone, *Position*: Shoulders and summits, *Site Index*: Upland oak 69-75

**ZamC2—Zanesville silt loam, soft bedrock substratum**, 6 to 12 percent slopes, eroded, *Setting*: Hills underlain with interbedded sandstone, shale, and siltstone, *Position*: Shoulders and Backslopes, *Site Index*: Upland oak 69-75

**ZapD3—Zanesville, soft bedrock substratum-Tulip silt loams**, 12 to 18 percent slopes, severely eroded, *Setting*: Hills underlain with interbedded sandstone, shale, and siltstone, *Position*: Backslopes, *Site Index*: 69-75

**SneC2—Solsberry silt loam**, 6 to 12 percent slopes, eroded, *Setting*: Dissected till plains, *Position*: Shoulders and Backslopes, *Site Index*: Upland oak 80

**PlcAV—Piankeshaw silt loam**, 0 to 2 percent slopes, frequently flooded, very brief duration, *Setting*: Flood plains, *Position*: Natural levees, flood-plain steps, and alluvial fans, *Site Index*: Tuliptree 95

**CkkB2—Cincinnati silt loam**, 2 to 6 percent slopes, eroded, *Setting*: Dissected till plains, *Position*: Summits and shoulders, *Site Index*: Upland oak 80

## **Access**

To access the tract from Spencer Indiana, travel west on State Road 46 approximately 5-miles to Fishcreek road, then travel north on Fishcreek road approximately 4.5-miles to Hale Hill road, then travel east on Hale Hill road approximately 1/2 mile to the forest parking lot and access road on the south side of the road. The tract is accessible to the public via the parking lot on Hale Hill road. Management access as well as public recreational access to this tract is good.

## **Boundary**

This tract is a 75-acre sustainably managed, multiple use parcel located within the 701 acres comprising compartment 7 of the Owen-Putnam State Forest. Private property borders this tract at the west end with the approximate boundary lines having been located and marked with orange paint and ribbon. The boundary lines have been reasonably well documented and witnessed in the past. The remainder of this tract's boundaries are internal and therefore adjacent to other state forest tracts. They primarily follow a stream to the north and a power line right-of-way to the south.

## **Wildlife**

With the presence of the brushy, more open habitat of the power line RoW to the south and the intermittent stream to the north, in addition to the forest area, this tract contains habitat for a variety of wildlife species. Common species or sign observed include Eastern grey squirrel, Eastern fox squirrel, Eastern chipmunks, white-tailed deer, Wild Turkey, Virginia opossum, North American raccoon, Eastern box turtle, raptors, songbirds, woodpeckers, toads, frogs and various small stream aquatic life.

A Natural Heritage Database Review is part of the management planning process. 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.

Live trees in this tract provide for shelter, escape cover, roosting and as a direct (e.g. mast, foliage) or indirect (e.g. foraging substrate, bugging) food resource, with the oaks, hickories, walnuts and beech providing hard mast for deer, turkey and squirrel and the cherries providing soft mast for birds. The pine stands provide benefits such as cover, roosts and browse.

Live trees containing cavities in this tract provide nesting and denning opportunities for woodpeckers, songbirds and small mammals and potentially contribute to future snags (standing dead trees).

Snags in this tract provide essential habitat characteristics for foraging activity, nest/den sites, decomposers (e.g., fungi and invertebrates), bird perching and bat roosting, and are important contributors to the future pool of downed woody material. Rotten logs, crater knolls, ephemeral streams and the mapped intermittent stream provide habitat for herptiles and aquatic vertebrates.

The proposed management activities for this tract should not significantly alter the relative proportion and availability of habitat/cover types or significantly disrupt travel/dispersal corridors or create isolated habitat units separated from larger units of similar habitat. Nor should the proposed management activities increase the likelihood that specialist interior forest species would be affected by generalist species using forest edge habitats. Indiana Logging and Forestry Best Management Practices (B.M.P.s) will be followed to conserve soil and water resources and related forest wildlife habitats, such as springs/seeps, ponds/wetlands and karst features.

## Wildlife Habitat Features

According to the data collected during the tract inventory (R. Duncan 2011) and represented in the following table, this tract is well represented with habitat in regards to the density, size and species of live and dead trees essential for consideration of various wildlife habitat needs including habitat specialists such as cavity nesters and species of conservation need like the Indiana bat (*Myotis sodalis*) and their suggested habitat requirements.

Legacy trees, as defined by the Management Guidelines for Compartment-Level Wildlife Habitat Features are well represented above the suggested maintenance levels. White oak and shagbark hickory are two species having preferred characteristics for tree roosting bats. Both are relatively abundant in this tract and will be given consideration as habitat. Also, as the tract continues to mature, the number of legacy trees  $\geq 20$ " D.B.H. is expected to rise.

Standing dead or dying trees (snags) are somewhat well represented in this tract. Snags  $\geq 5$ " D.B.H. and  $\geq 9$ " D.B.H. in this tract are above the maintenance levels for both classes. However, the snags in the  $\geq 19$ " D.B.H. class are below the maintenance level. The lack of large diameter snags is often attributable to the overall good health of the forest and the short retention of large standing dead trees. Snags have short standing times and often become wind thrown.

Legacy trees, snags and cavity trees 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. In addition, the girdling of select cull trees could be performed through post harvest timber stand improvement (T.S.I.) to address the lack of large diameter snags.

## Wildlife Habitat Feature Tract Summary

	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance
<b>Legacy Trees *</b>				
11"+ DBH	675		1753	1078
20"+ DBH	225		590	365
<b>Snags (all species)</b>				
5"+ DBH	300	525	1394	1094
9"+ DBH	225	450	467	242
19"+ DBH	37.5	75	0	-38

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

## Communities

Most of this tract is of the dry-mesic upland forest community type, with some isolated more mesic sites located along lower north slopes, and some floodplain along streams. The dry-mesic upland forest community has moderate soil moisture with trees growing well, however the canopy is usually more open than in mesic forests. It is one of the most prevalent forest communities in Indiana. It occurs on slopes throughout the state. The dominant plants in this community are the white oak (*Quercus alba*), Northern red oak (*Quercus rubra*) and

black oak (*Quercus velutina*). Characteristic plants in this community are the shagbark hickory (*Carya ovata*), mockernut hickory (*Carya tomentosa*), flowering dogwood (*Cornus florida*), hop hornbeam (*Ostrya virginiana*) and black haw (*Viburnum prunifolium*). Characteristic animals in this community are the broad-headed skink (*Eumeces laticeps*), white-footed mouse (*Peromyscus leucopus*) and eastern chipmunk (*Tamias striatus*).

A Natural Heritage Database Review is part of the management planning process. 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.

An exotic/invasive species, multi-flora rose (*Rosa multiflora*), is present in and around this tract in patches of light to moderate densities. It is also common throughout the county. Control measures could be undertaken during post-harvest T.S.I., to treat problem occurrences before their populations expand.

## **Recreation**

This multiple use tract has good public access via the parking lot and fire trail located on Hale Hill. It is a good tract for public recreational activities including hunting, hiking, gathering, viewing and interpretation. Because of its parking and walkable fire trail, it is an ideal spot for anyone looking for an easily accessible outdoor experience.

## **Cultural**

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

## **Tract Description and Silvicultural Prescription**

This tract was not subdivided (non-stratified).

In 1988 a property wide inventory (TIMPIS) was conducted, including Compartment 7 tract 3 (M. Calvert & D. Smith) The results estimated the tract to contain 4014 Bd. Ft. of total sawtimber per acre and 1024 Bd. Ft. of harvest sawtimber per acre, with a stocking level of 77% and a harvest proposed in the year 1995. The tract boundary has since been redrawn with its' acreage reduced from 153 acres to 75 acres.

In 1994 a routine timber inventory was conducted (D. Ramey). The data estimated the tract to contain 79 Sq. Ft. of total basal area per acre in trees  $\geq 10$  inches in diameter at breast height (d.b.h.) and approximately 4942 Bd. Ft. of total sawtimber per acre with an estimated 1578 Bd. Ft. of harvest sawtimber per acre.

In 1995 the tract was harvested (Crone Lumber Co.) of 61,471 Bd. Ft. in 235 trees on 55 acres (1117 Bd. Ft. /Acre) as part of an intermediate harvest in the form of a selective thinning and improvement cut.

In 2011 a routine inventory was conducted (R. Duncan). The data estimated the tract to be over 110% stocked with 135 Sq. Ft. of total basal area per acre (including poles and sub-merchantable trees) and approximately 10,856 Bd. Ft. of total sawtimber per acre with an estimated 4,835 Bd. Ft. of harvest sawtimber per acre and an average tree diameter of 10.5 inches. Since 2005 sawtimber diameter has been decreased from 14 inches to 12 inches.

Various timber types can be found on this tract. They are oak-hickory, beech-maple, mixed hardwood and pine. The over-story consists mostly of medium to large sawlog sized poplar, oak, hickory, ash and maple, with Eastern white pine and Virginia pine comprising the pine stands. The quality of merchantable timber is good with the ridge tops and upper slopes containing more of the mixed hardwoods, and the mid to lower slopes

containing more of the oak-hickory. The pole-sized under-story consists mostly of sugar maple, yellow-poplar, hickory, sassafras, black cherry, red maple, American sycamore, white ash, and black walnut; with E. white pine and Virginia pine representing some of the pole sized understory in the pine stand. Advanced regeneration is represented mostly by American beech, white ash, sugar maple, sassafras, pawpaw, Northern red oak, and hickory.

The current stocking level indicates the tract is over stocked. Therefore the recommendation is to thin the mature yellow-poplar and other overcrowded conditions while harvesting the low quality, damaged, diseased, dying and poorly formed trees, especially the declining yellow-poplar that are competing with the oak and other quality trees such as the hickory and cherry. In addition, ash trees susceptible to Emerald Ash Borer will be selected for harvest to utilize their product before they become populated with the insect and decline. As with any forest management activities, Best Management Practice (BMP) guidelines will be followed to protect soil and water resources. The tract is projected to remain in the fully stocked category after the prescribed elective harvest.

Management in the form of Timber Stand Improvement (T.S.I.) was performed in 2007 to control grapevines and to perform maintenance on a 1-acre opening that was created in 1992. Additional T.S.I. is prescribed to release preferred, high quality crop trees through the culling of low volume, poorly formed trees and less desirable species, and to encourage early to mid successional species regeneration through the creation of canopy gaps and a reduction in understory shade tolerant species (sugar maple and American beech). T.S.I. would also look at problem occurrences of multi-flora rose. Standing dead trees (snags) and cavity trees will be given consideration for retention as habitat for wildlife. Legacy trees, as defined by the Resource Management Strategy for the Indiana Bat on State Forest Property, will be given consideration for retention as habitat for the Indiana Bat. In addition, the girdling of select, larger diameter cull trees could be performed through T.S.I. to address the Management Guidelines for Compartment-Level Wildlife Habitat Features.

The overall goal of this silvicultural prescription is to improve quality timber growth, species composition, and create favorable growing conditions for early to mid successional timber species, while providing biodiverse forest wildlife habitat.

### Inventory Summary – C7T3

**Total Number Trees/Acre:** 235

**Average Site Index:** 75-80

**Average Tree Diameter:** 10.5”

**Stocking Level:** >110%

	<b>Acres</b>		<b>Sq.Ft./Acre</b>
<b>Hardwood Commercial Forest:</b>	65	<b>Basal Area Sawtimber.</b>	96.3
<b>Pine Commercial Forest:</b>	10	<b>Basal Area Poles:</b>	20.7
<b>Noncommercial Forest:</b>	0	<b>Basal Area Culls:</b>	10.0
<b>Permanent Openings:</b>	0	<b>Sub Merch.</b>	8.9
<b>Other Use:</b>			
<b>Total:</b>	75	<b>Total Basal Area:</b>	135.9

## Estimated Tract Volumes for Commercial Forest Area – Bd.Ft. Doyle Rule

Species	Harvest Stock	Growing Stock	Total Volume
<b>YEP</b>	1935	2176	4111
<b>WHO</b>	170	1658	1828
<b>WHP</b>	802	171	973
<b>REO</b>	198	681	880
<b>LOP</b>	0	597	597
<b>SUM</b>	475	101	576
<b>SAS</b>	302	74	376
<b>SHH</b>	160	115	275
<b>REM</b>	231	42	273
<b>BIH</b>	68	166	234
<b>AMB</b>	196	0	196
<b>WHA</b>	173	0	173
<b>PIH</b>	0	153	153
<b>BLG</b>	58	0	58
<b>BLW</b>	0	57	57
<b>BAS</b>	36	0	36
<b>VIP</b>	31	0	31
<b>BLC</b>	0	30	30
<b>Per Acre Total</b>	4835	6021	10857
<b>Tract Total</b>	362,590	451,580	814,170

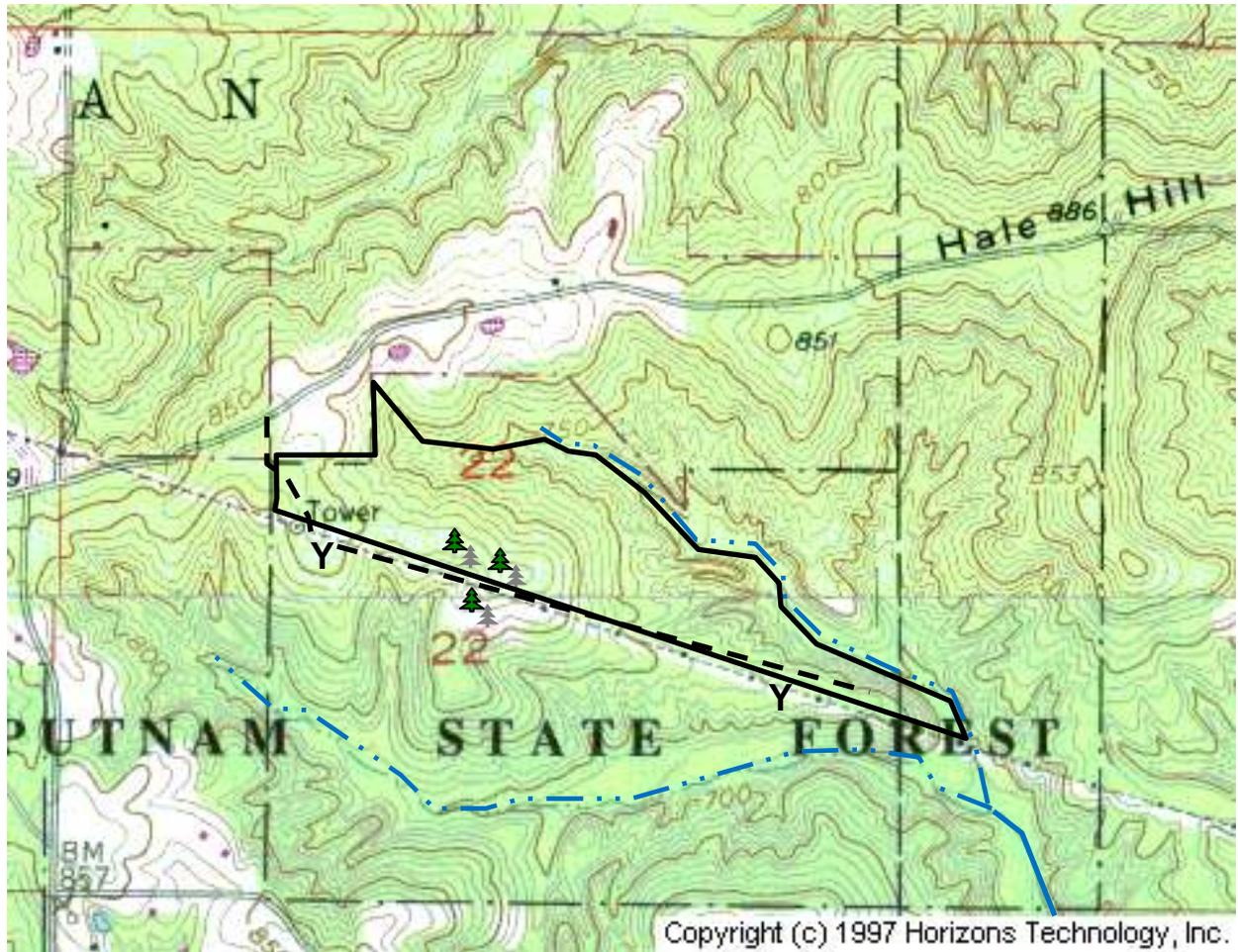
## Proposed Management Activities

2011 ----- Timber Inventory  
 2014 ----- DHPA Archaeological Clearance Application  
 2014 ----- Resource Management Guide  
 2014/15 ----- Timber Marking and Sale Layout  
 2015 ----- Timber Sale  
 2015-17 ----- Timber Harvest  
 2015-18 ----- Post-Harvest TSI and Exotic/Invasive Control  
 2015-18 ----- BMP Monitoring  
 2030 ----- Timber Inventory  
 2030 ----- Resource Management Guide

Compartment 7 Tract 3  
75 - Acres  
Cataract/Spencer Quadrangles  
Owen Co. Section 22, T11N, R4W



Tract Boundary -  Haul Road -  Pines -  Log Yard - Y  
Mapped Intermittent Stream - 



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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.