RESOURCE MANAGEMENT GUIDE

State Forest: Yellowwood **Compartment:** 14 **Tract:** 04
Forester: Amy Zillmer **Date:** 4/20/2009
Management Cycle End Year: 2029 **Management Cycle Length:** 20 years

Location

Tract four is located in Section 6, T10N, R2E of Brown County. It is approximately 2 miles south of Mahalasville, IN.

General Description

This tract contains 66 acres of which all are commercial forestland. The general cover type is mixed hardwoods.

History

The United States Government deeded the tract to the State of Indiana in the 1950's. The tract management file shows a history of management on the site. Between the years 1981-1983 timber marking, timber harvest and post harvest timber stand improvement were completed on the site. This harvest was in conjunction with tract 5 and included 10 acres of tract 4. The lumber was sold to Pingleton Lumber Co. out of Greencastle, IN for $20,751.95. A second harvest was conducted across tract 4 in 1986. Harvest included 85, 671 BF in 350 trees. The sale was sold to International Veneer Co., Inc for $22,127.90 (.26/BF).

Topography, Geology and Hydrology

The underlying geology of this area is most likely a combination of shale and siltstone. Two northeast to south-west drainages flow into Bear Creek. The topography consists of one main ridge with north an south facing slopes and portions of ridges and sideslopes bisected by tract boundary. Slopes are gentle to moderately steep.

Soils

Berks-Trevlac-Wellston complex (BgF)

This is the most dominant soil found on the tract covering 42 acres. It is located along the side slopes and bottoms of the tract's ridges. This soil forms from sandstone-shale bedrock about 36" under surface. Slopes for this soil can range from 20 – 70%, although they tend to be more moderate on this area. Overall, the complex is well drained. This area is generally unsuited to urban development due to slope. There are some limitations for equipment due to slope. It is recommended that any road construction follow contours or land shaping should be employed. This is lessened due to the absence of very steep slopes on this tract. In terms of forestry, this soil is very well suited for trees. This soil has a site index of 71 for northern red oak. This complex has a woodland ordination symbol of 4R.

Hickory silt loam (HkD2)
This soil found mainly on 17 acres of tract's ridgetops and sideslopes. It is well drained. Erosion is a concern due to slope. Implementation of standard BMP's and careful planning can overcome these limitations. The site index for white oak is 85, red oak is 85 and yellow poplar is 95. This soil has a woodland ordination symbol of 5R.

Hickory silt loam (HkF)
This soil is found on 7 acres of the tract's side slopes. HkF is a deep and well drained soil. Erosion is a concern due to slope. Implementation of standard BMP's and careful planning can overcome these limitations. This soil has a woodland ordination symbol of 5R

Access
Access to tract is limited as it is bordered on three sides by private property bisect many of the slopes. This tract has been accessed in prior years from the south.

Boundary
As stated earlier, this tract is bounded on the west, north, and east sides by private property. The south line is follows a ridgetop adjoining state property. The property lines for tract are up to date.

Wildlife
Wildlife resources in this tract are plentiful. This tract supports many woodland species including, but not limited to: White-Tailed Deer, Wild Turkey, Eastern Grey Squirrel, Fox Squirrel, chipmunks, and various songbirds.

Wildlife Habitat Features
The Indiana Division of Forestry recognizes the potential to enhance wildlife habitat, including that of the Indiana Bat, on its lands by implementing comprehensive management principles. These management principles include obtaining data on size, species, and numbers of live legacy trees, snags, and cavity 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 2009 on 6421404.

Size Classes	Maintenance Level	Inventory	Available For Removal
11"+ DBH	599	1314	716
20"+ DBH	200	291	91

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

Currently the tract is meeting all guidelines for live legacy trees.

Table 2. Snag Trees inventoried 2009 on 6421404

Size Classes	Maintenance Level	Optimal Level	Inventory	Available above Maintenance	Available above Optimal
5"+ DBH	266	466	616	350	150
9"+ DBH	200	399	171	-29	-228
19"+ DBH	33	67	27	-6	-39

Inventory data shows a large surplus in 5"+ DBH and deficiencies in 9"+ and 19"+ snags. Any management activity should be aimed at preserving existing 9"+ snags unless safety issues are present. Snag creation in larger diameter class sizes should be considered following any future harvesting or during TSI work.

Table 3. Cavity Trees inventoried 2009 on 6421404.

Size Classes	Maintenance Level	Optimal Level	Inventory	Available above Maintenance	Available above Optimal
7"+ DBH	266	399	853	587	454
11"+ DBH	200	266	372	173	106
19"+ DBH	33	67	88	55	22

The tract is meeting all guidelines for cavity trees.

Communities

There are two distinct communities on this tract. There is the upland, drier species found on the hillsides and there is the lowland, wet communities found in the creek bottoms. Tree species that characterize the upland communities are red oak, white oak, black oak, and hickory. Tree species that characterize the wetter sites are sycamore, elm, and red maple. Ferns, sedges, mosses and lichens were found throughout the tract.

The Kirtland's Snake (Clonophis kirtlandii) was sighted near this tract in 1997. The Kirtland's Snake is on the Indiana endangered species list. The snake is a reclusive animal that lives in grassy areas and stays under objects or underground. The main food sources for the snake are earthworms and slugs.

Other Communities found in the area, by the Natural Heritage Database review, were timber rattlesnake (Crotalus horridus),

Exotic Species

Autumn olive was noted on a few areas during inventory. Sightings were isolated and should be treated during marking or following harvest. Japanese stilt grass was noted along the roadsides of Bear Creek Road. Efforts should be made to apply treatment during appropriate months of year to minimize transfer on to tract 4.

Recreation
This tract has many possibilities for recreation uses. Some of the more common recreation that can be expected within the tract and surrounding area include: hunting, hiking, birding, traversing (with a compass and map), wildlife watching, meditation, mushroom hunting, tree identification, and photography.

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 Silvicultural Prescription
This has rich variety of habitats from xeric oak hickory, mixed hardwoods, old field, bottomlands, to early successional regeneration openings. As a whole, the tract averages about 6,360 BF/acre with 2,240 BF being harvest able and 4,120 left as growing stock. There are 104.4 square feet of basal area per acre and is fully stocked at 84%.

Oak Hickory
Oak hickory is prevalent on the tracts southern facing slopes Dominant overstory species include chestnut oak, black oak, and white oak. The understory is made up of sassafras, sugar maple, American beech, and pignut hickory. Quality of stands were variable. Several areas required very light thinning due to the improvement harvest in the 80's. Other areas contained many damaged stems mixed with moderate quality that could benefit from release or removal.

Mixed Hardwoods
This is the most dominant covertype on the tract. It is common on north facing slopes and in the tracts bottomlands and coves. Overstory species composition is fairly diverse including yellow poplar, white oak, bitternut hickory, shagbark hickory, white ash, red oak, black oak, American beech, largetooth aspen, black walnut, sugar maple and red maple. Understory species were predominately maple/beech with some poplar and cherry.

Locations during inventory were noted to contain overmature and poor quality stems. Single tree or group selection harvesting methods should be employed to remove damaged/deformed stems to release higher quality and more vigorous stems. Also, with the advancement of the emerald ash borer, ash removal to reduce breeding hotspots is a priority.

Old Field
The wider ridgetops show evidence of past agricultural use. Dominant species in the overstory include scarlet oak, black oak, white oak, Virginia pine, and largetooth aspen. The understory is comprised of sassafras, red maple, pignut hickory, sugar maple, red cedar, and dogwood. Regeneration is dominated by sugar maple, and American beech, although there is a notable quantity of oak

due to the harsher growing conditions on the ridge. The north side of the south ridge is a little more advanced than the center ridge and could benefit from an improvement harvest. The center ridge only holds about 3,700 BF/ acre in 514 trees. This area could benefit from timber stand improvement work to release higher quality and more vigorous stems.

Old openings
The eastern toe slope on the southern north facing sideslope contains an opening from the 1980's harvest. Current species composition is dominated by yellow poplar with pockets of black cherry, red elm, American beech, and sugar maple. Many of the stems are poor formed due to excessive grapevines. Timber stand improvement to area to release future crop trees and for vine control would be beneficial.

Tract Proposed Activities
This tract presents some issues due to topography and access. Some of these routes could be improved with the use of movable bridges. Presently, the only access to this tract is from the south. A timber sale was marked and sold on the southern adjoining tract during the 08/09 fiscal year. Due to time constraints, these sale areas weren't able to be combined. This area could benefit from a harvest along with timber stand improvement work. It is recommended that the access routes be reevaluated following the completion of harvesting activities on the neighboring tract. Crop tree release in the old openings and old field areas could be accomplished during the post harvest TSI for the southern tract. Less vigorous trees could be girdled and left standing to increase the tract's snag density. If access routes can be established, a harvest is recommended in the next five years.

Harvesting timber will change the overstory species composition and density. Canopy gaps will stimulate residual canopies and understory plants as the results of increases to light. Modest ground cover exposure to mineral soil will simulate early successional species growth and development. Soil loss will be minimized as log yards and water bars will have seed and straw applied to prevent soil movement. The skid trails and haul roads will quickly re-vegetate after harvest operations cease. Little to no impact to water quality should occur as the use of Best Management Practices (BMP) help to prevent runoff directly entering streams. Recreation use of the tract will be limited while harvest operations are occurring; this measure is taken to provide for the safety of recreation users and timber harvest operators. Wildlife populations of early to mid successional groups will increase as a result of the harvest. In fact, the regeneration openings will promote species that thrive in early successional habitat, such as ruffed grouse and woodcock.

Proposed Management Activity	*Proposed Date*
Access Route Evaluation	2010
Timber Stand Improvement/Exotic Control	2011
Timber Sale	2011-2016
Post Harvest TSI/Exotic Control	
Inventory/New Management Guide	2029

Attachments kept in Tract File
Ecological Resource Review
Topographic map with tract subdivisions
Aerial photo with tract subdivisions
Soil type map of area
TCruise reports

Comments Summary and Response:

This management guide received comments concerning the control and spread of invasive species not only within the tract boundaries, but also areas of state forest that would have to be crossed to access tract 4. Japanese Stilt grass and Japanese barberry were located in the tract to the south. Since then, the Japanese barberry has been treated in neighboring tract and follow-up treatment will be implemented into the post-harvest TSI plan for tract 5. Following harvest on tract 5, skid trails and log yards will be seeded to inhibit the spread of stilt grass. Spot treatment to accessible areas is planned for stilt grass during appropriate treatment months on tract 5.