Indiana Department of Natural Resources
Division of Forestry

DRAFT

Resource Management Guide

Clark State Forest **Compartment: 7** **Tract: 6**
Allie Cline **Date 8/31/12**

Acres Commercial Forest: 115
Acres Noncommercial Forest: 0
Acres permanent Openings:
Acres Other:

Acres Total: 115

Average Site Index: 70

Basal Area ≥ 14 inches DBH: 28.1
Basal Area < 14 inches DBH: 55.8
Basal Area Culls: --
Total Basal Area: 83.8

Number Trees/Acres: 158

Stocking Level: fully stocked 73%

Species	Harvest	Leave	Total
Black Locust	940	0	940
American Elm	0	1120	1120
Hackberry	1310	0	1310
Sweetgum	1860	0	1860
Black Cherry	2970	0	2970
Black gum	4520	0	4520
Red Maple	3280	2750	6030
White Ash	9500	0	9500
Red Pine	2360	9980	12340
Shagbark Hickory	0	17360	17360
American Sycamore	18730	0	18730
Scots Pine	18970	4070	23050
Northern Red Oak	13590	10940	24530
Pignut Hickory	9970	18510	28490
Yellow Poplar	17540	20830	38370
Sugar Maple	20730	18830	39560
Black Oak	36750	42980	79730
Eastern White Pine	65780	79000	144780
White Oak	74470	242540	317000
Totals	**303270**	**468910**	**772190**

Location

This tract is located in Clark County Indiana, T1N R7E Section Grant283.

General Description

This tract consists of oak-hickory, mixed hardwoods, and pine plantation cover types. There are a total of 115 harvestable acres within this tract. The majority of Clark State Forest's Resource Trail runs through this tract.

History

This tract was part of the original 2,000 acres that were purchased as part of Indiana's first state forest. The southern half of the tract contains many different plantations. This is due to the fact that the first state tree nursery was located on this property. There are many species present here that are not normally found on other parts of the property. There are also still quite a few pines left from the CCC plantings in the 1930s. In many of these areas the pine are starting to die and the hardwoods taking over. This tract was inventoried in 1987. At that time the basal area was 76 and the number of trees per acre was 118. A second inventory was completed in 2001. This inventory found a basal area of 104 with 139 trees per acre. Also, according to the 2001 management plan, the western portion of this tract was harvested in the mid 1980s.

Landscape Context

This tract is bordered by Interstate 65 and private property to the west. A small neighborhood lies to the south and other State Forest tracts to the north and east.

Topography, Geology, and Hydrology

This tract is gently sloping. A broad ridgetop runs north to south through this tract. The steepest portions in this tract are along the northwest boundary line. Here a small creek runs through the property.

Soils

Coolville-Rarden complex. This soil is deep to moderately deep and moderately well drained. These soils are found on hills. Bedrock is the lower part of the subsoil. Underlying material is silt loam, silty clay loam, silty clay, and parachannery silty clay loam. Low available water capacity. Permeability is slow. Depth to water table is about 12 to 24 inches. Surface layer is about 5 inches thick. Subsoil is between 45 and 60 inches thick.

Slope: 12 to 18 percent

Woodland Suitability Group:
Site Index: 66-71 (Upland Oaks)
Growth Range Potential:
Management Concerns: Soil Rutting, Erosion, Available water capacity, Early spring wetness, Lack of moisture in mid and late summer.

Pekin Silt Loam. Deep, nearly level and gently sloping, moderately well drained soils on terraces. Fragipan in the lower part of the subsoil. Surface layer is dark brown silt loam about 12 inches thick. Subsoil is about 37 inches thick. Underlying material is stratified silty clay loam, silt loam, loam, and sand. Moderate in content of organic matter available water capacity is moderate, and permeability is very slow. Runoff is slow to medium.

Slope: 0-6%
Woodland Suitability Group: 3d9
Site Index: 70-80 (Upland Oaks)
Growth range potential (Upland Oaks): 185-260 bd.ft./acre/year
Management Concerns: Erosion, available water capacity, early spring wetness, lack of moisture in mid and late summer.

Weddel silt loam. This soil is moderately well drained and is moderately deep or shallow. They are found on till plains, shoulder and side slopes as well as summits. Bedrock in the lower part of the subsoil. Surface layer is about 8 inches thick. Subsoil is about 70 inches thick. Underlying material is silt loam, silty clay loam, and parachannery silty clay. Available water capacity is moderate.

Slope: 2 to 6 percent
Woodland Suitability Group:
Site Index: 65-70 (Upland Oaks); 75 (Tuliptree)
Growth Range Potential:
Management Concerns: Rutting, Erosion, available water capacity, early spring wetness, lack of moisture in mid and late summer.

Access

Access to this tract is very good. Access can be gained from the main entrance road, and the loop around the front field. The Resource Trail also allows for excellent access to this tract.

Wildlife

There are many species of wildlife found throughout this tract. While inventorying, deer, squirrels, chipmunks, and many songbirds were noticed. The different cover types provide great habitat for many different species of wildlife. The oak-hickory type provides mast producing trees while the pine provides cover. There is also a small pond in the center of this tract that was put in as a wildlife watering pond. It is surrounded by a small open field. The Resource Trail passes through this field and past the pond.

Wildlife Habitat Feature Tract Summary

	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal
Legacy Trees *					
11"+ DBH	1041.84		2879	1837	
20"+ DBH	347.28		562	215	
Snags (all species)					
5"+ DBH	463.04	810.32	2210	1747	1400
9"+ DBH	347.28	694.56	1381	1034	686
19"+ DBH	57.88	115.76	132	74	16
Cavity Trees (all species)					
7"+ DBH	463.04	694.56	328	-135	-367
11"+ DBH	347.28	463.04	255	-92	-208
19"+ DBH	57.88	115.76	114	56	-2

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

There could be some improvement to the environmental features of this tract. There are not many cavities found in these trees. Some of the problem could lie in the fact that this tract was inventories in midsummer with full canopy and underbrush. A lot of the cavities could have been simply missed while the inventory was conducted. In order to promote cavity trees is that in the harvest there the culls could remain in the forest to keep all the cavities that are already located in the tract.

Indiana Bat

Timber harvest activities may have both positive and negative effects on the Indiana bat. While undetected but occupied roost trees could be cut during spring, summer or fall, the probability of disturbance or direct injury or death to bats is extremely small. Timber harvest could create conditions that are beneficial to Indiana bats. Roads and/or skid trails provide improved canopy foraging conditions by reducing clutter. Roosting habitat could also be improved by reducing clutter around roost trees. Edges of log landings and regeneration openings could provide roost trees with improved solar exposure, thus improving microclimate/thermal conditions for roosting areas. This would improve reproductive success and fitness, contributing to local population stability or increase. In cases of maternity trees this could provide conditions that increase growth and activity rates of young bats, leading to reduced time for parental care.

Suitable roost trees such as large diameter snags or live trees with loose or exfoliating bark will be retained in sufficient numbers to provide continuing roosting habitat for the Indiana bat.

Natural Heritage Database review

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.

Recreation

This tract is highly used for recreation. The Resource Trail's easy access and ease of use make it one of the most popular trails for visitors to the forest. Because this tract is so highly visible and used it would be an excellent place to use different types of silviculture methods during the harvest, and turn the Resource Trail into an educational trail; Teaching people about the different harvesting methods and resource management.

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.

Summary Tract Silvicultural Prescription and Proposed Activities

Oak-Hickory

This type consists of 67 acres. The average basal area for this stratum is 86. There is a total of 513.9 MBF on this tract. 346.0 MBF was left and 167.9 MBF was harvested. The stocking of this stratum is at 87%. This is considered fully stocked but on the high end of the spectrum. With the proposed harvest it would knock the stocking down to 73% which is a more manageable stocking percent. Most of what was removed from this area was white and black oak. Many of the black oak were over-mature and dying. The white oaks were stunted due to the high number of trees per acre.

This cover type makes up the majority of this tract. It contains medium to large sawtimber. In some of this area, the basal area was well over 100 which is a very dense group of trees. A selective harvest

should be conducted throughout this portion of the tract. There are already many oak seedlings and saplings present, so I would expect oak to be the main regeneration. Post-harvest TSI should be done in this area to help release the oak seedlings from the competing regeneration. The TSI should focus on enlarging or creating openings to allow the maximum amounts of sunlight to reach the forest floor to help facilitate the growth of more oaks. These new oaks will come from the acorns being produced from the remaining oaks in the overstory.

Pine

This type is 25 acres in size. The average basal area is 76. These pines were mostly planted by the Civilian Conservation Corps in the 1930s. These acres have a lot of windthrow and mortality. The pine has reached its maturity level and needs to be removed. There are a total of 118.6 MBF, with 64.9 MBF being left and 53.7 MBF being harvested.

There are three options for this area of the tract:

Option one: Include this area in the harvest, and do a selective harvest removing a majority of the pines that are still left to make room for the sapling and seedling hardwoods underneath. If this area is included in the harvest, it will need some pre-harvest TSI to prevent the shade-tolerant species already present, like American beech, white ash, and maple, from out competing the slower growing oaks and hickories once the canopy is opened up. The pre-harvest TSI should also include invasive species control. This area has a high concentration of privet, autumn olive, and Japanese honeysuckle among others.

Option two: Do not include this area in the harvest and let it naturally regenerate on its own. Most of the pine is already dead or dying and the hardwoods are taking over, just not the desirable species. If this option is chosen, TSI should, at a minimum, be done here. There are many oaks, hickories, and poplars in the mid- and under-stories. The TSI should focus on releasing these trees by girdling the beech, poorly formed maples as well as any pine still standing. The TSI should also focus on spraying the invasive species before they get out of control.

Option three: Include this area in the harvest, selectively harvesting to remove the pine overstory to make room for the hardwoods. Then do post-harvest TSI to remove the undesirable species like American beech, white ash, and poorly formed maples as well as the invasive species.

Mixed Hardwoods

This type contains 24 acres. The average basal area is 95. There is a total of 120.7 MBF; of that 43.4 MBF was left, while 77.3 MBF was harvested. The stocking is 75%. The harvest will reduce the stocking

to 50%, which is slightly understocked. While most of this type is true mixed hardwoods, many of the acres have dead or dying pine that the hardwoods have begun to replace. Therefore the board feet value of harvested timber seems high; however it is mostly removing the pine that is left to give the hardwoods more room to grow.

The area along the southern boundary line and in the southeastern corner is where this type is mostly found. I believe this is because these areas were once an old pasture or other farm ground. Since this tract includes some of the original 2,000 acres purchased in 1903, it makes sense that this area was abandoned farm ground that was sold to the state and then replanted to trees. This is also the area where the old state tree nursery was located, so many of the trees present today are remnants of what was planted years ago.

These areas should be selectively harvested. Most of the trees here are poorly formed or stunted from being over-topped by the pine for so many years. Most trees here are poles to medium sized sawtimber. These areas include species like black locust, black cherry, sycamore, elm, and poplar for example. A selective harvest would be beneficial here because it would remove some of the less desirable species, and hopefully the surrounding oaks and hickories would seed in. After the harvest TSI should also be performed here. This TSI will remove all the diseased and dying trees that the logger left and will also focus on the invasive species. This area contains many invasive species throughout its understory, and should be treated before and after the harvest takes place.

Activities listing

2013- pre harvest TSI on the invasive species found throughout the stand.
2014-timber sale
2015-post harvest TSI
2016- evaluate invasive species and spray again
2017- evaluate invasive species and possibly spray again
2033- re inventory and evaluate for a new harvest

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