Indiana Department of Natural Resources
Division of Forestry

DRAFT

Resource Management Guide

Clark State Forest **Compartment: 7 Tract: 08**
Christine Martin **Date: 12/26/12**

Acres Commercial forest: 136
Acres Noncommercial Forest: 0
Acres Permanent Openings: 0
Acres Other: 0

Basal Area ≥ 14 inches DBH: 81
Basal Area < 14 inches DBH: 22
Basal Area Culls: 1
Total Basal Area: 104

Acres Total: 136
Stocking Level : Fully Stocked (92%)

Number Trees/Acre: 184

Species	Harvest	Leave	Total
Large tooth Aspen	2900		2900
Post Oak	2900		2900
Scarlet Oak		2900	2900
Norway Spruce		3030	3030
White Ash	3140		3140
Black gum		3740	3740
Red Maple	5530		5530
American Beech	3120	3350	6470
American Sycamore		7100	7100
Northern Red Oak		7550	7550
Pignut Hickory		10120	10120
Sweet gum		20680	20680
Sugar Maple	13700	7180	20880
Virginia Pine	16980	5580	22570
Black Oak	26270	27120	53390
Yellow Poplar	11380	63810	75190
Eastern White Pine	105560		105560
White Oak	187850	679990	867840
Shagbark Hickory			
Totals	**379330**	**842150**	**1221490**

Location

This tract is located in Clark county Indiana, Military Grant # 282, and # 283. This tract is located just outside of the white oak nature preserve.

General Description

In total this tract of land comprises 136 acres. There are three different types in this tract. The largest stratum is the oak-hickory which is 110 acres. The white oak type is mainly a monoculture of white oak. There are some good quality white oaks but overall there are a lot of stressed and dying trees. There next largest is the mixed hardwoods stratum which is found along the drainages. This type is approximately 15 acres in size. The last type is the white pine. The white pine is approximately 10 acres. These white pines were planted.

History

This tract had a harvest in the 1986. There was an inventory preformed in 1987. This inventory shows that there is 2,643bd.ft. Per acre. There was a total square footage of basal area of 67.

In 1988 were tree plantings which occurred in three different locations on tract 708 and 709. There were two areas close to the main road one was in tract 709 (2acres) and the other one in 708 (5 acres). These areas looked to be across the intermittent stream from each other in the north end on the tracts. There was red oak and cherry planted in these locations. There was a third area of approximately 5 acres located at the end of the firelane in 708. This planting was of red oak and it was located close to the boundary line.

Landscape Context

This tract is mainly comprised of a west facing slope. There are many ridge fingers to this slope therefore all the slope aspects are represented here. This tract is relatively flat compared to the rest of Clark State Forest. There is only a 50ft elevation change between the bottom of the ridge top and the bottom of the hill.

Topography, Geology, and Hydrology

Frankie Lake is located in the tract to the north. There is also an intermittent stream called sheep's branch that comprises the western boundary of this tract. The intermittent stream of sheep's branch drains into wolfs run which is a perennial stream.

Soils

Beanblosson Silt Loam(BcrAW) or Wakeland Silt (WaaAH)

The Wakeland series consists of very deep, somewhat poorly drained soils that formed in silty alluvium. These soils are on flood plains and flood-plain steps. Mean annual

temperature is about 54 degrees F, and the mean annual precipitation is about 42 inches. The surface horizon is a plowed horizon with a dark grayish brown silt loam. After this horizon the rest of the profile is comprised of substratum. The substratum is mainly a grayish brown silt loam. The end of the profile is at 60 inches.
Degree Slope: 0-2%
Site Index: 80
Growth Range Potential: 342

Coolville (ComC)
The Coolville series consists of moderately well drained soils with a moderate available water capacity. These soils are comprised of Loess with a clayey residuum over shale and siltstone. The first Horizon is a silt loam which is 8 inches thick. The next horizon is 8-21inches thick and is comprised of a silty clay loam. At 21-37 soils is a silty clay. At 37-44inches it is a parachannery silty clay loam. At 44-60 inches it is bedrock. The mean annual precipitation is 40-46inches. The mean annual temperature is 52-57 degrees F.
Degree Slope: 6-12%
Land capability: 3e
Management concerns: None

Deam Silty Clay Loam (DbR)
This soil series is formed from the residuum of shale. These soils are moderately deep, well drained soils found on hills. The mean annual temperature is 52-57 degrees F. The mean annual precipitation is 40-46 inches. The surface horizon is a silty clay loam which grades into more the further in the horizon. In the Bt2 horizon there starts to be some parachanery silty clay showing up in the profile. The rest of the profile gets increasingly channery until bedrock.
Degree slope: 15-55%
Available water capacity: low
Permeability: slow to very slow

Pekin silt loam (Pcr)
The pekin series consists of moderately well drained soils that are formed in silty alluvium and loess on stream terraces and flood plain steps. These soils contain a fragipan in the substratum. The mean annual temperature is 52-57 degrees F. The mean annual precipitation is 42-48 inches. These soils are a silt loam grading to a silty clay loam then in the underlying soil grades back to a silt loam. The fragioan starts at 15 inches below the surface. The fragipan extends for about 15-33 inches.
Degree slope: 0-12%
Available water capacity: moderate

Stendal (Sf, So)
This soil consists of deep moderately permeable soils found on flood plains. These soils are formed in acid alluvium. These soils are frequently flooded. The surface horizon is made up of a silt loam plow layer. This soil has no sub soil as it is mixed in the plow

layer. The substratum is a silt loam and is very strongly acidic. The mean annual precipitation is 40-46 inches and the mean annual temperature is 52-57 degrees Fahrenheit.
Degree Slope:0-2
Site Index: 90
Growth Range Potential:432

Weddel silt loam (WeB2)

The weddel series consist of soils that were formed in loess with the underlying paleosol till and residuum of soft shale. These soils are found on backslopes, shoulders and summits of till plains. These soils tend to have fragic properties. The mean annual precipitation is 43 inches and the mean annual temperature is 54 degrees Fahrenheit. The profile starts out as a silt loam. The subsoils is a silty clay loam. The depth to the fragipan is 26 inches. Underneath the fragipan is a silty clam loam. The substratum is a parachannery silty clay. The bedrock forms at 75-80 inches.
Degree slope: 2-12%
Drainage class: moderately well drained
Land capability: 2e

Wilbur Silt Loam (WokAW)

These soils form on flood plains in silty alluvium. The mean annual precipitation is 40-46 inches and the mean annual temperature is 52-57 degrees Fahrenheit. The available water capacity is Very high for the Wilbur series. In a typical profile these soils have a plow layer which is about 7 inches deep. The subsoil is mainly a silt loam with weak soils structure. The substatum is a silt loam, massive.
Degree slope: 0-2 %
Flooding: occasional
Land capability: 2w

Access

There is great access to this tract. This eastern boundary of this tract is the Frankie loop road. There is an old firelane that cuts off the Frankie loop trail which runs approximately ¼ to the south east along the ridge. This firelane as an old roadbed at one time, it does not have any rock on it. There is also a horsetrail that cuts through this tract to the tract to the west (709).

Boundary

The majority of this tract is surrounded by Clark State forest. There is a short half mile section that is bordered by private property. A quarter mile runs along the interstate therefore there is a right of way fence that marks the boundary. This fence then follows the boundary of the state as it slants to the south west. At the end of this fence is corner evidence of carsonite and a Bernstein monument that was set by the state surveyor. There is another monument that is directly to the north of this monument found, which marks the line. At this point the line turns to the west and the carsonite continues the rest of the

boundary line until the boundary hit Forestry Road. This boundary line is marked avery 100ft or so with pipes, and a state forest boundary line sign.

There is a small encroachment in 709. This encroachment is that the neighbors are mowing part of the forest for their front lawn/ filed. This encroachment will need to be dealt with.

Wildlife and Communities

This tract is typical of Southern Indiana. There were found deer, squirrels, chipmunks, song birds, and some birds of prey, while inventorying.

Wildlife Habitat Feature Tract Summary

	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal
Legacy Trees *					
11"+ DBH	1224		5249	4025	
20"+ DBH	408		1517	1109	
Snags (all species)					
5"+ DBH	544	952	622	78	-330
9"+ DBH	408	816	622	214	-194
19"+ DBH	68	136	165	97	29
Cavity Trees (all species)					
7"+ DBH	544	816	613	69	-203
11"+ DBH	408	544	613	205	69
19"+ DBH	68	136	354	286	218

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

In this inventory it is shown that this tract meets all the ecological guidelines. If there is room for improvement it would be under the small diameter snags and the small diameter tree cavities. This can be achieved in the post harvest TSI. Girdling the small diameter trees will created the snags desired and for a short time will create the cavities that are needed for certain animals in the woodland.

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.

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 used highly for recreation. Frankie Lake is found in the tract directly to the north of this tract. People fish this lake frequently in the summer. This Loop road will be closed during the logging operation so there are no safely hazards to the public. The Loop will be open to the boat ramp and Frankie shelter 2, but will be closed after that. People are more than welcome to fish and boat in Frankie Lake. The loggers will be instructed to watch out for the public when working in an area that is not closed off to the public.

There should not be any hunting in this tract because it is contained within the safety zone.

There is a short horsetrail that runs through this tract and the tract to the west. This horsetrail will be closed throughout the duration of the timber harvest. There are many other horsetrails for the public to use, that this should not impact recreation.

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

There are approximately 110 acres in this stratum. The main species is white oak. The basal area per square foot is 106, which means there is approximately 26 square feet of

basal area that can be removed. The stratum is currently 91% Fully stocked, which is getting close to being overstocked. With the harvest it would decrease the percent stocked to 70% Fully stocked. There are approximately 1,080,090 Doyle board feet found in this stratum and 314,830 of that is harvestable which is a little less than a third of the total volume.

This stratum consists mainly of a monoculture of white oak. The quality of the white oak trees on the southern end of the tract is vastly better than the quality of trees in the northern end of the tract. The overall size of these trees is mainly medium sawtimber to large sawtimber. These trees are fairly healthy with good crowns and a decent form class. There are however many trees that can come out for health reasons. There were some areas where there was heavy die back from the crowns. These trees will need to be taken out to promote growth on the healthier trees. There also were a lot of pockets where it was evident that the trees were stressed due to over crowding. These areas desperately need thinning in order to decrease the stress levels and to retain some of the trees. Without this thinning is highly possible that all the trees will get too stressed and will not be able to recover.

The regeneration is mainly red maple and American beech. There is not much sunlight hitting the forest floor to support oak regeneration. With the shade tolerant species in the understory it exacerbates the oak regeneration problem. There should be some large openings created with the harvest to increase the sunlight hitting the forest floor. There will need to be follow-up timber stand improvement to get rid of the maples and beeches growing in the newly created opening that will be shading out the oak regeneration. There will still be many other tree species in these openings but there should be some new oak sprouts.

In the northern section of this tract there is a lot of white pine in the understory. This white pine regeneration is from the white pines that have been planted. These white pines are very shade tolerant and will continue to grown and shade out any oak regeneration in the understory. The prescription for this area will be to create some larger openings to diversify the regeneration in the understory.

This stratum can use an improvement harvest. The poor quality, stunted, and stressed trees should be thinned out to make room for the young trees to take over. These young trees will improve vigor and overall health. There also needs to be some larger openings in order to facilitate oak regeneration. These openings should be created in areas with large groups of stunted or defected trees are found. There also have been areas found with a large amount of stressed white oak.

This stratum would also be a great candidate for a prescribed burn. There is a lot of oak in the overstory but not a lot of oak regeneration. The burn would kill a lot of the understory regeneration, and the vegetation on the ground thereby increasing the amount of sunlight that is hitting the forest floor. With this increased sunlight there should be some new growth of oak that is starting to grow. These oaks would be already established prior or from the new acorns that are falling to the ground from the overstory after the

burn. After a couple years there will need to be another prescribed burn. The forest vegetation and the competing regeneration from other tree species will grow back and will start competing with the oak regeneration once again. This 2nd burn will release the newly grown oak regeneration from the competition thereby cementing it in the understory so it can eventually grow into the overstory. The oaks are very tolerant to burns and spring back faster than any other species regeneration therefore prescribed burns helps the most when it comes to getting oak regeneration in an area.

This understory removal can also be done without burning but will require mechanical Timber Stand Improvement(TSI) to complete. The Timber Stand Improvement may prove to be more costly and the cost benefit ratios should be taken into account to know if it is better to burn or to do conventional TSI in this area.

WHITE PINE

This type is found to the north of this tract. The main tree species is white pine. There are approximately 10 acres in this stratum. There is 120 square feet of basal area. If it is chosen to individually select cut the stratum there is approximately 75 square feet of basal area that can be removed from this type. The stratum is currently at 90% stocking. This is getting close to being overstocked and within a couple years if this area is not thinned it will be overstocked which means it will start showing more signs of stress and dying. In the harvest it will put the area to 65% fully stocked. This gives more room for the trees to grow without as much competition for the limited resources. There is approximately 72,820 Doyle board feet that can be harvested within this type leaving 27,670 board feet. These figures were based on the removal of only the white pine and the scattered Virginia Pine in the harvest. If the entire stratum is to be removed there would be closer to 100,000 board feet removed.

This pine has been previously planted. These pines are packed together. There is a board range of diameters in this stratum. This means that some of the trees have been stunted in their growth. These trees that have been stunted will likely never recover and will likely never grow much bigger than they already are. These trees will be the first to die. These stunted pines will need to be taken out in order to improve the overall health. These stunted trees are no longer an asset and need to be removed in order to have a healthy stocking of white pine. It is more prudent to invest in the trees that have shown superior genetics and are still vigorously growing.

There are a couple other tree species growing on the edges and within this pine. These tree species are sweet gum, scarlet oak and yellow poplar. These species of trees like full sunlight to grow, which implies that to get more of these species we would need to make larger holes in the canopy. These hardwood species are native to the area, instead of the white pine. It would be prudent to start to convert some of this back to hardwoods.

This pine could also be completely removed from the stand. This will create a 10 acre regeneration opening thereby letting the shade intolerant trees grow where they would not have had a chance to grow under more shaded conditions. By opening this up it would help facilitate the conversion from white pine to central hardwoods. There are many

shade intolerant species already growing along the edges. When this area is opened up the trees growing along the opening will seed in and start to populate the opening.

This area is also located along the main road that runs through the park area. The aesthetics of these pines should be considered when making plans with what to do with them in the harvest. It may be prudent to thin the pine rather than take all of them, but that decision will be left up to the marking forester.

MIXED HARDWOOD

This stratum is mainly found in the drainage. There are approximately 15 acres found in this type. There is 91 square feet of basal area. There is approximately 20 square feet of basal area that can be removed in the harvest. This would take the stratum from 81% fully stocked to 63 % fully stocked. There is 79,910 total Doyle board feet in this type. There is 18,200 Doyle board feet that is harvestable; which is a little less than a quarter of the total volume.

The main tree species are yellow poplar and white oak. The diameters of the trees are in the range of small to medium sawtimber. There is a lot of small 2-6" sugar maple and American beech trees. There will need to be some small canopy gaps incorporated in the harvest. These small canopy gaps will help establish these small trees and let them grow to the canopy. If they remain in the understory for too long they will get stunted. There is American beech in the understory which is the primary regeneration.

There also was a fair amount of blow down in the drainage. This blow down is mainly hardwood trees. These trees are still salvageable and will need to be taken out in the next year in order to remain salvageable.

Proposed Activities Listing

2013-Timber Sale
2014- Timber stand improvement including a possible burn
2023- re evaluate for next management cycle.

To submit a comment on this document, click on the following link:
http://www.in.gov/surveytool/public/survey.php?name=dnr_forestry

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.