Resource Management Guide

Harrison-Crawford State Forest **Compartment: 30 Tract: 2**
Christine Martin **Date: 9/09**

Acres Commercial forest:	78	Basal Area ≥ 14 inches DBH:	30.9 sqft/acre
Acres Noncommercial Forest:	3	Basal Area < 14 inches DBH:	66.4 sqft/acre
Acres Permanent Openings:	0	Basal Area Culls:	3.5 sqft/acre
Acres Other:	0	Total Basal Area:	101sqft/acre
Acres Total:	81	Number Trees/Acre:	276

Location

This tract is located in Harrison county Indiana 18 T4S R3E. This tract is located near the outside of the contiguous land mass of Harrison-Crawford State Forest.

General Description

There are about 3 different types of stand on this tract of land. There is the mixed hardwood, oak-hickory, and the cedar stand types. The most extensive stand type is the oak-hickory. This stand encompasses 61 acres. The main tree species are chestnut and white oak, which account for 70% of what was found in this stand type.

The second largest stand type is the mixed hardwood stand which is found on the northern portion of the tract and on the flat ridgetop. There are 17 acres of mixed hardwoods on this tract. The yellow poplar is the main species found in this stand type.

The third stand type that was found on this tract is the cedar stand type. This stand mainly has yellow poplar with some white ash as the most prevalent species. There is also a fair amount of cedar is the understory to classify this stand as cedar and not mixed hardwood.

There were sinkholes and a wildlife pond found on this tract. The sinkholes are not very large. The wildlife pond is found on top of the ridge. This pond created habitat for mainly frog and toad species. This pond also provides water for the many wildlife species that were found on this tract.

History

The last management guide for this tract was written in the early eighties. The main species found were chestnut and white oak. There were 500,000 board feet according to the Doyle scale on this tract of land.

In 1985 there was a timber harvest on this tract. The main species removed was black and chestnut oaks. There were 149,104 board feet removed according to the Doyle scale. This sale was sold to Jerry Sanders.

The year following the harvest there was a timber stand improvement marked. This improvement was also marked for 3001. According to the tally there were 488 trees removed from 3002, mainly located in the regeneration openings.

Landscape Context

The tract is surrounded by state forest to the north and south. The majority of the private land is forested. The agriculture and developed areas account for less than 15% of the area surrounding this tract included within a 1 mile radius of tract center.

Topography, Geology, and Hydrology

This tract is mainly comprised of a west facing slope. The southern boundary is made up of a mapped intermittent that runs into Cold Friday Drainage. The northern boundary is also a mapped intermittent drainage. This drainage also ties into Cold Friday Drainage.

Soils

Corydon Stony Silt Loam (CoF) Shallow, moderately steep to very steep, well-drained, stony soils on uplands. Surface layer is about 3 inches. Subsurface is about 6 inches thick. Subsoil about 9 inches thick. The depth to hard limestone bedrock is about 18 inches. High in organic matter and low in natural fertility. Runoff is rapid or very rapid. Soil type is characterized by limestone outcrops, with as much as 15% on benches which are deeper than 20 inches to bedrock.
Degree Slope: 20-60 %
Woodland Suitability Group: 3d7
Site Index: 65-75 (Upland oaks)
Growth range potential (Upland oaks): 155-220
Management concerns: Runoff and erosion

Baxter Cherty Silt Loam (BeC2, BeD2, BeE2, BeF2, Cbsd3)

The Baxter series consists mainly of deep well drained soils on uplands. These soils formed in loess, as much as 20inches and the underlying material is weathered bedrock. The surface horizon is 2 inches thick of a dark brown silt loam. The subsurface is 6 inches of a yellowish brown silt loam. The subsoil is 70inches of which the first 5 is a yellowish brown friable silty clay loam. The last 65inches is red firm to very firm cherty silty clay loam. The lower part has mottling and id 20-40 percent chert fragments. The available water capacity is high and the permeability is moderate.
Degree Slope: 0-35%
Site Index: 75
Growth Range Potential: 222
Management Considerations: runoff and erosion

Hagerstown Silt Loam (HaC2, HaD2, HgC3, HgD3, HgE3) Deep, moderately sloping to moderately steep, well-drained soils on uplands. Surface layer is dark yellowish brown silt loam about 6 inches thick. The subsoil is about 46 inches thick. The depth to limestone is about 52 inches. Characteristically, this soil is eroded to severely eroded. Moderate in content of organic matter and medium in natural fertility. Available water capacity is moderate or high, and permeability is moderate. Runoff is rapid to very rapid.
Degree Slope: 6-25 %
Woodland Suitability Group: 1o1 or 1r2
Site Index: 85-95 (Upland Oaks)
Growth range potential (Upland oaks): 300-375 bd.ft. /acre/year
Management Concerns: Runoff and erosion

Gilpin Silt Loam (GlD2, GlD3, GlE2, GpF) Moderately deep, strongly sloping to steep, well-drained soils. Surface layer is very dark grayish-brown silt loam about 3 inches thick. Subsurface layer is pale brown silt loam about 9 inches thick. Subsoil is about 17 inches thick. Depth to hard sandstone and shale bedrock is about 29 inches. Moderate in organic matter. Available water capacity is low and permeability is moderate. Runoff is rapid to very rapid.
Degree Slope: 12-30 %
Woodland Suitability Group: 3o10 or 3r12
Growth range potential (Upland oaks): 185-260 bd.ft./acre/year
Site Index: 70-80
Management Concerns: Runoff and erosion

Haymond Silt Loam (Hm) Deep, nearly level, well-drained soils on bottom lands and in basins of sinkholes in uplands. Surface layer is dark-brown about 9 inches thick. Subsoil dark yellowish-brown about 17 inches thick. Underlying material is dark yellowish-brown stratified silt loam that contains less prominent layers of loam. Moderate in content of organic matter. Available water capacity is high, and permeability is moderate. Runoff is slow.
Degree Slope: 0%
Woodland Suitability Group: 1o8
Site Index: (95-105- no rating for upland oaks)
Growth range potential (Tulip poplar-no rating for oaks): 375-450 bd.ft./acre/year
Management Concerns: Flooding between December and June

Tilsit Silt Loam (TlB2) Deep, gently sloping, modrately well drained soils on uplands. Fragipan in the lower part of the subsoil. Surface layer is dark yellowish-brown silt loam about 8 inches thick. Subsoil is about 38 inches thick. Depth to interbedded shale and sandstone bedrock is about 66 inches. Moderate in content of organic matter and low in natural fertility. Available water capacity is moderate and permeability is very slow. Runoff is medium.
Degree Slope: 2-6 %
Woodland Suitability Group: 3d9
Site Index: 70-80 (Upland Oaks)
Growth range potential (Upland oaks): 185-260 bd.ft./acre/year
Management Concerns: Erosion, wetness early in spring, available water capacity, lack of moisture in mid and late summer if rainfall is below normal.

Zanesville Silt Loam (ZaC2, ZaC3, ZaD2) Deep, moderately sloping and strongly sloping, well-drained soils on uplands. Avery firm fragipan in the lower part of the subsoil. Surface layer is very dark grayish-brown silt loam about 3 inches thick. The subsurface layer is about 5 inches thick and dark yellowish-brown. Subsoil is about 42 inches thick. The depth to sandstone bedrock is about 65 inches Moderate or low in content of organic matter and low in natural fertility. Available water capacity is high, and permeability is very slow. Runoff is medium to rapid.
Degree Slope: 6-18%
Woodland Suitability Group: 3d9
Site Index: 70-80 (Upland Oaks)
Growth range potential (Upland oaks): 185-260 bd.ft./acre/year
Management Concerns: Runoff and erosion. Fragipan limits the available water capacity.

Access

There is relatively good access to this tract; the firelanes need some work to make them passable by heavy equipment. There are two firelanes that were used as access roads. Both of the firelanes start at the end of Kintner Road. There is one good lane that provides access to this site. This firelane is a single use firelane that climbs the hill to the east and joins the horse trail on top of the ridge. This lane needs some of the water diversion ditches repaired. The firelane will need to be brushed out. The lane also needs to be rerouted for approximately 100 feet because the existing roadbed has sunken too far and is not cost effective to try to reshape the old road. For winter logging there will need to be more gravel on the lane.

There is also an old firelane that crosses private property. This firelane follows the horse trail for some distance then cuts over private property to avoid impassable parts of the horse trail. The firelane and horse trail converge and continue to climb up the hill to meet the horsetail on top of the ridge. This firelane has fallen into disrepair and has been rendered impassable. This firelane is beyond repair and is partly on private ground therefore it will not be used.

Boundary

The west side of this tract is bordered by private property. There is a corner stone on the north end of the west line and a Berntsen monument on the south end of the west line. There is a fence running east west along the north line of the property running to Kintner Road. Starting at the north corner running south there are a couple of old metal T-posts marking the boundary line for a couple hundred yards.

The southern boundary line has been surveyed by the state surveyor in the past. The line is comprised of plastic posts that have state forest property signs on them. These posts are a couple hundred feet apart. There is a monument on the west and east corners of the line.

The east boundaries are the firelanes. The north line is comprised of a drainage that runs to Kintner Road. The south line follows the drainage until it meets up with the surveyed line to west of the drainage.

Wildlife

The proposed activities in this tract include a timber harvest, and some timber stand improvement in regards to spraying the ailanthus.

The wildlife in this tract will not be greatly affected by the harvest. The harvest will be an improvement thinning, focusing on single tree selection. Since there will not be many large openings created so there should not be any disturbance in the contiguous forest cover. The first couple years there will be increased light infusion because of the missing trees. This increased light will boost the understory growth. This will increase ground cover, and possible food source. After a few years have passed the surrounding crowns will close up and the light will go back to what it was before the harvest, and the vegetation will also slowly revert to what it was before the harvest.

There may be some regeneration openings created. These openings depending on the size may affect certain interior forest species whereas favoring the forest edge species. These openings will grow up into forest in a few years, and will then favor the interior forest species.

<u>Indiana Bat</u>

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

According to the inventory of this tract there are a sufficient number of live trees per acre to support a timber harvest and still meet the requirements for the Indiana Bat Habitat Guideline. The inventory shows that there are an insufficient number of snags on this tract required for the bat. If it is decided that there should be more snag trees for the bat, a post- harvest TSI could generate the snags needed. This could be done by girdling the cull trees, especially the ones with the desirable bark characteristics.

Recreation

The firelanes on this property double as horse trails. These horse trails can also be used by recreational hikers. In the next tract to the east is the adventure hiking trail.

This tract can also be used for hunting and foraging for edible plants.

Cultural

There were no cultural sites found on this tract.

Summary Tract Silvicultural Description, Prescription and Proposed Activities

Oak-Hickory

This stand has 108 square feet of basal area. There are 110,000 board feet available for removal according to the Doyle scale.

Chestnut and white oak are the main two species found on this tract. The chestnut oak resides closer to the ridgetop. The white oaks are found dispersed throughout the tract. These oaks are around the small to medium sawtimber range. The oaks have good form on this tract. The regeneration that is present is mainly American beech and sugar maple. In some small pockets there was white oak pole timber.

This stand can have a light improvement harvest. There was some storm damage found in this stand from Hurricane Ike that struck in September of 2008. The dead trees from this storm are ideal habitat for wildlife; some of the dying trees can be left to increase the snags and thereby increasing wildlife habitat. The objective of this harvest will be to improve stand quality, by grooming out the trees in low vigor. In some areas the harvest will help release some of the white oak poles that are present in the understory. The best management practices will be followed in this harvest.

Mixed Hardwood

This stand is 17 acres in size. The total basal area in this stand is 84 square feet. There is 17,290 board feet according to the Doyle scale available for removal.

There were two different pockets of this stand on this tract. The first is on the northern portion of this tract on the lower slope. The second is on top of the ridge, next to a wildlife pond.

The first pocket has some mature American beech. Some of these beeches can be removed in order for other hardwood trees to provide more diversity in the stand. This stand also has an oak component. The main tree species are yellow poplar, white oak, and American beech. Some of these beech and yellow poplars can be removed to favor the more ecologically important white oak. The main regeneration is American beech.

There was one major pocket of ailanthus found on in this stand type. This pocket will have to be treated before a harvest can occur on this tract.

The second stand on top of the ridge mainly consists of large yellow poplars. The understory is mainly American beech. Some of these poplars need to be removed so there can be more sunlight to reach the ground and promote growth of other trees species to create diversity in the regeneration.

This stand can withstand an improvement harvest. There are some beech that can be removed in order to help diversify the stand and increase stand vigor. Some of the poplars should also be removed to promote stand diversity. The best management practices will be followed in this harvest.

Cedar
This stand has 80 square feet per acre of basal area. There is 600 board feet to the acre in this stand according to the Doyle scale.

This stand is primarily comprised of smaller diameter yellow poplars. There is a strong component of red cedar in the understory. These cedars range from pole size to small sawtimber. The majority of the yellow poplars have out competed the cedars and are now over shading them.

The hardwoods are not of merchantable size in this stand. The cedars could be taken out to make room for hardwood regeneration.

Proposed Activities Listing

Ailanthus Control	**2009**
Firelane Rehab	**2009/10**
Timber Harvest	**2010/11**
TSI	**2013**

Average Site Index: 78 Stocking Level : Fully Stocked (93%)
Calculated annual Growth (bd. ft.): 208 bdft/acre/year

Species	Harvest	Leave	Total
Chestnut Oak	61330	119200	180530
White Oak	9860	76450	86310
Yellow Poplar	24820	36490	61310
Black Oak	13160	9430	22590
Pignut Hickory	3330	18870	22200
American Beech	0	16660	16660
Northern Red Oak	2380	12970	15350
White Ash	2220	10770	12990
Sugar Maple	4160	7030	11190
Basswood	0	2380	2380
Shagbark Hickory	0	2380	2380
Post Oak	1000	1140	2140
Scarlet Oak	0	2000	2000
Chinkapin Oak	0	1470	1470
Black Walnut	0	1140	1140
Total	**122260**	**318380**	**440640**
Total/Acre	**1509.383**	**3930.617**	**5440**

Wildlife Habitat Feature Tract Summary

Inventory C:\Documents and Settings\cmartin\Desktop\TCruisePC\Tcd_Docs\3002I.tcd

State Forest: Harrison-Crawford **Compartment Number:** 30 **Tract:** 02

Reference Number: 6453002 **Tract Acres:** 81

	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal
Legacy Trees *					
11"+ DBH	729		1121	392	
20"+ DBH	243		193	-50	
Snags (all species)					
5"+ DBH	324	567	256	-68	-311
9"+ DBH	243	486	48	-195	-438
19"+ DBH	40.5	81	24	-17	-57
Cavity Trees (all species)					
7"+ DBH	324	486	324	0	-162
11"+ DBH	243	324	276	33	-48
19"+ DBH	40.5	81	107	67	26

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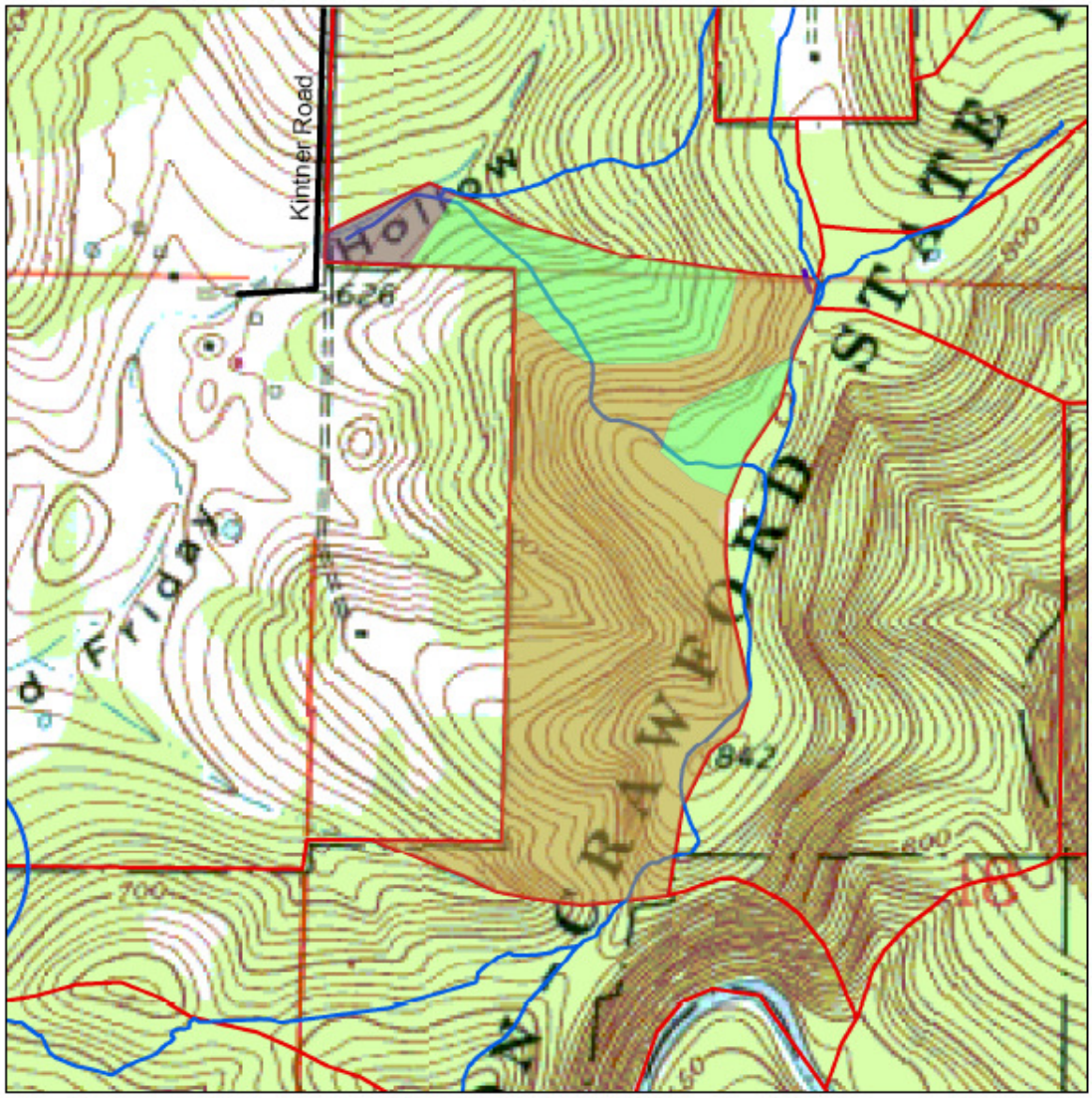
3002 Stand Map



Legend

- Firelane
- HCSF Tracts
- Kitner Road

stands

- Cedar
- Mixed Hardwoods
- Oak-Hickory

8

0 0.05 0.1 0.2 0.3 0.4 Miles