Indiana Department of Natural Resources
Division of Forestry
Draft Resource Management Guide

State Forest Frances Slocum | Compartment 2 Tract 1
Forester: John Friedrich | Date: December 31, 2017
Management Cycle End Year: 2035 | Management Cycle Length: 20 yrs.

Location
This tract is located in Miami County, Butler Township, Reserve # 10, T26N, R5E. It is about 5 miles southeast of Peru.

General Description
This tract contains 91 acres of mostly old river plain site, with some slopes leading to the upland. It is located on the southwest side of the main forest road. This relatively flat area (except for the slopes) was probably the result of the heavy drainage of glacial melt off. After that it was probably only occasionally flooded during extreme precipitation events. It grades gradually uphill from the river bank to the base of the steeper slopes to the upland – sometimes almost a quarter mile away. Any potential flooding in the past half century has been limited by the Army Corp of Engineers Mississinewa Dam.

History
This tract was acquired in two purchases. A portion of it was part of a large 1938 purchase from Margery Rassner. Another portion of it was part of 1941 purchase from Wabash Valley Trust Company.

It is quite obvious from the extensive tree plantings, mostly pine but also quite a few hardwoods, that much of the land was farmed prior to State acquisition.

There is a record of a 1986 harvest of almost 40 MBF. There are limited details about this harvest. It is possible it was concentrated on the area containing steeper slopes, away from the old field plantings.

Landscape Context
This tract and forest is in an area dominated by row crop agriculture. However it is broken up by large rivers (Wabash, Salamonie, Mississinewa) that have scattered woodlands on non-arable land. There are also small scattered woodlots amongst the farm fields. There is also some rural residential development for people who work in nearby cities – Peru, Wabash, and Logansport. But there is not a significant amount of change occurring. Several large Federal flood control reservoirs (Roush, Salamonie and Mississinewa) also are dominant features and provide recreational draws to the area.

Topography, Geology and Hydrology
This area is in the northern part of the Tipton Till Plain, a large glaciated section of central Indiana. While the topography is, by most standards, considered flat, dissection by the small streams that drain into the Mississinewa River, and the river itself, create some locally steep terrain. As is typical, in this tract generally the topography is relatively flat to mildly sloping through most of the acres. Steeper slopes are found along the northern portions of the tract where the terrain grades uphill to the flat uplands.

The bedrock under the glacial till and alluvium derived soil is primarily limestone. This limestone bedrock is exposed in a few places along the river cliffs such as at the Seven Double Pillars formation down river. There is no sign of exposed bedrock in this tract, just some glacial boulders.

The tract drainage all flows into the Mississinewa River via small tributaries, all of which are ephemeral streams. The Mississinewa River, in turn, joins the Wabash River. The floodplain here probably received regular flooding from the river decades ago. But with the construction of the reservoir, I suspect there have been few if any out-of-the-bank flood events since the dam was completed.

Soils
Gessie silt loam is one of the main soils under much of the old field near the river. It is a deep, well-drained soil of flood plains. It has a yellow-poplar site index of 100.
Sloan silty clay loam is another floodplain soil near the river that was formerly farmed. It is a deep, poorly drained soil. It has a pin oak site index of 87.

Ockley silt loam is the another major soil type in the tract, located a little farther from the river slightly uphill, and was also previously farmed. It is a deep, well-drained soil of outwash terraces. It has an upland oak site index of 90, and a yellow-poplar site index of 98.

Morley silt loam is the major soil on the slopes that can get rather steep in the northern portion of the tract rising up from the river to the uplands. It is deep, and well-drained, and formed in glacial till. Upland oak site index 85, and yellow-poplar site index 90.

Hennepin silt loam is a minor soil also found the more sloping sites in the northern part of the tract. It is a deep, well-drained soil on side slopes and the slopes of V-shaped valleys. It has a northern red oak site index of 88.

Shoals silt loam is a minor soil near the river. It is a deep, somewhat poorly drained soil of flood plains, and is only a minor component here. Yellow-poplar site index of 90.

Access
Access to this tract is very good with the main, graveled forest road being along the northeast and east sides of the tract.
Access within the tract is also good due to the relatively gentle terrain. There is a trail system and an old road that can be utilized for access.

Boundary
This tract has very well defined boundaries. The gravel forest road is the northeast and east boundary. The Mississinewa River is the southwest boundary. The remaining north and northwest boundaries are against private land and are generally marked with fenceline and fencerow trees.

Wildlife
The inventory was done in winter, therefore numerous summer residents were not evident. There was obvious sign of deer – trails, tracks, and rubs. A variety of resident birds were present including crows and starlings. The variety of habitat here promotes a wide variety of use by wildlife. The planted native hardwoods provide a variety of hard mast with the walnuts. Large hackberries along the river provide soft mast. The pines provide an alternate food source with their pine seeds. Pines also provide cover during

winter weather extremes. Some pine areas have suffered very heavy pine mortality with a result that the area is very brushy. This provides good cover habitat for rabbits and small mammals, and nesting habitat for shrub nesting birds. This area has a large amount of bush honeysuckle, which provides a food source for birds, but is an invasive. The numerous dead stems on the ground provide good downed woody cover for animals such as mice and salamanders as well as an insect source.

Wildlife habitat feature information shows that the legacy trees and snags present on the tract meet all maintenance guidelines, and the optimal snag amount is only missed in the largest size. Some of the snags are the result of ash mortality from emerald ash borer.

The Mississinewa River and the small streams provide a ready water source for the wildlife, as well as Mississinewa Lake.

Communities

There are four community types in this tract. The largest acreage is in the 72 acres of mostly old field that was planted to mixed pine and hardwoods. This is gently sloping floodplain and outwash terrace. The eastern white pine and red pine are still obvious but are both in varying stages of decline. Large areas mostly devoid of living pine appear to have been planted to Scots pine and/or Virginia pine. These have largely dropped out. Planted hardwoods include black walnut and yellow-poplar.

Within this 72 acre area is about one acre of wetland seep. It is open in the middle, and has wet site tree species along the margins, including planted bald cypress.

In the northern part of the tract the river butts up close to the slopes that grade up to the uplands. There are some steeper slopes here and therefore it was not farmed. There are native hardwoods including oak-hickory, maple, ash, and basswood. This area contains about 14 acres.

Within this area a large electric line corridor passes through. This is maintained in a shrubby state due to the regular maintenance from the power company. It contains about 4 acres.

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.

This area, similar to other tracts here at Frances Slocum, has a problem with exotic, invasive plants. Here it is bad since virtually the entire tract was farmed. The primary culprits are bush honeysuckle, autumn olive, and multiflora rose. Most of what is seen was not planted but seeded in from other individuals planted elsewhere on the landscape. The honeysuckle and autumn olive were planted for wildlife – a food source for birds. Multiflora rose was planted as a food and cover source. An attempt will be made to reduce these invasives with a TSI treatment. It is likely that any treatment will need regular followup in order to maximize control.

Recreation

This tract contains a trail route for horse riders which requires periodic maintenance. Hikers may also use this trail. There is also some fishing along the river and hunting. There is no developed recreation.

Cultural
This tract is reviewed for cultural sites during the forest resource inventory and planning process. 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 Subdivision Description and Silvicultural Prescription
Mixed Hardwoods and Pine
This stand covers 72 acres of the tract and contains almost all level to gently sloping ground. Most of it was farmed prior to state ownership. Upon acquisition, the State proceeded to restore forests through tree plantings. Most of it appears to have been planted, with some small areas along the river and small streams grown up without the benefit of planting. The planting appears to mostly be a mix of pine and hardwoods. Eastern white pine and red pine are the readily identifiable pine still standing. Some of the large gaps where the pine is largely on the ground may have been Scots and /or Virginia pine that have now dropped out. As it is, the red pine is rapidly declining and the eastern white pine is not far behind. The planted hardwoods are doing better than the pine, overall. The hardwoods that appear to have been planted are black walnut and yellow-poplar, many reaching medium and large sawtimber size. There are some very nice individual trees among these. Stocking is variable depending on the mortality (especially pine) and the amount of intermixing of pine and hardwoods. In the northern part of this area it appears there was a pure planting of walnut. As is typical, this walnut is doing much poorer in quality and smaller in size, reaching small sawtimber size only in the largest individuals. There are some very large sycamore and hackberry along the river bank. The small streams have some northern red oak, ash and hickory along them. Unfortunately emerald ash borer has reached this forest and the ash trees are rapidly dropping out. A one acre seep area within this old field planting would be buffered.

About 14 acres in the northern part of the tract on the slopes to the uplands represent the only substantial area not farmed. This contains native hardwoods including oak, hickory, ash, poplar and maple. The presence of the ash borer means the ash are either dead or dying, so salvage of the larger ash trees here is a consideration. The emphasis will be on retaining oak and hickory since there are so few in the rest of the tract. Otherwise the general prescription here is a thinning/improvement harvest favoring the better, more vigorous trees here.

About 4 acres are in the powerline right-of-way. This area is brushed down regularly for the maintenance of this corridor. It has a considerable amount of brushy species as well as coppiced trees. It also seems to be the epicenter of the invasives in this tract, especially bush honeysuckle and autumn-olive. These two seem to be most prevalent in the forestland surrounding the r-o-w.

Overall this tract could use a combination thinning/improvement/sanitation harvest to capture mortality among the ash and pine, and to thin the better hardwoods

The inventory data covers the entire tract since various planting mixes and stand types are too small and mixed to be worth mapping out individually. The current tract basal area is 141 sq. ft. per acre. This is high for a primarily hardwood stocked tract. The estimated overall volume per acre is an estimated 8,833 bf. This comes to a total of 780,000 bf for the tract. Currently black walnut makes up about 21% of the basal area. Yellow-poplar is the next highest species at nearly 20%. Sugar maple is about 10%. Pines (mostly

eastern white) are also about 10%. Black cherry is at about 9%. Hackberry makes up another 9%. Oaks only account for about 2% of the stocking. It would be nice to increase the oak component because it is such a productive site to add some diversity from a species and mast standpoint. Even though hickory was also a minor component, a number of hickory seedlings/saplings were noted during the inventory, so some openings and gaps should help increase the hickory component.

In general the goal will be to restore the timber in this tract over to quality native hardwoods including black walnut, cherry, oaks, hickory, poplar and maple. This will be accomplished with a timber harvest followed up with timber stand improvement. If marked as estimated by the inventory a harvest here would result in a sale of about 250,000 bf. Basal area would be reduced to about 100 sq. ft. per acre, which is still a bit high for a hardwood dominated stand. This harvest would concentrate on releasing the quality hardwoods – the walnut, cherry, oaks, hickories, poplar, etc. that are vigorous and have good form. It would do this by removing the stagnated and declining pine – most of the red pine and eastern white pine. It would also concentrate on removing the poor quality hardwoods and those species that should not have been planted such as osage-orange. Any salvageable white ash would also be removed. White pine that is in decline or competing against quality croptrees would be removed. But a fair amount of white pine would still remain, providing aesthetic continuity for recreational users and habitat variation for wildlife. The dominance of the black walnut in the residual stand should increase to 25% of the basal area. Meanwhile the dominance of pine should decrease to 3%. Much of this will be done with thinning and improvement marking. Several areas could be designated for regeneration openings. These would be areas where the overstory condition is dominated by poor quality species, low stocking, or stocking of poor quality trees. Openings should be able to regenerate common, shade intolerant species already present such as black walnut and yellow-poplar. Several areas were noted during inventory that had poor established regeneration, such as some areas under declining red pine. These would be prime areas for openings. It might be possible to do some enrichment plantings for possible openings in order to encourage a greater oak presence.

Summary Tract Silvicultural Prescription and Proposed Activities

Overall this tract would benefit from a thinning/improvement harvest. This would release the many quality trees found here, especially among the hardwoods including black walnut, white oak, northern red oak, sugar maple, and yellow-poplar. Openings would be targeted to areas with high mortality and decline, and areas with poor stocking. The expected regeneration will be native hardwoods including yellow-poplar, black walnut, cherry, oak, hickory, maple, and basswood. Any white ash still alive should be removed because of the emerald ash borer infestation. Among the pines, red pine would be all but eliminated as it is showing significant decline. When not competing against decent hardwoods, vigorous eastern white pine should be retained for at least another cycle as it provides an alternate mast source and cover. The other pines planted in this tract either have or are in the process of dropping out, and speeding this along to get native hardwoods established is a good thing. TSI should be done to complete any openings, do thinning not accomplished by the harvest, release desired regeneration in the sapling and small pole sizes in the pine areas, perform vine control, and perform control on the invasives. The overall emphasis will be to decrease the presence of the pine and increase the dominance of native hardwoods. Nonnative hardwoods will be eventually eliminated as part of this management. Despite the mortality in the pine and the ash, this

tract is on a good site and has the potential to produce quality hardwoods as shown by the growth of the poplar and walnut.

The overall tract stocking level is well over 110% on the upland hardwoods stocking chart, based on the tractwide basal area of 141 sq. ft./acre. The proposed management would reduce stocking to the range of about 83% with about 100 sq. ft./acre basal area, still a very fully stocked stand. Of the total tract volume of 780 mbf, about 250 mbf would be harvested. This works out to a per acre average of 8,833 bf, about 2,800 bf of which is considered harvestable. Yellow-poplar would have the largest portion of the harvest volume followed by eastern white pine. White ash, black walnut and cottonwood would also make up a major portion of the harvest volume. This species composition would not make it a high value sale. The only bright spot might be the fair component of walnut. But these would likely be lower quality stems. The harvest volume would be down by a small amount if the ash was mostly past the salvageable stage. But even without ash there would still be a substantial harvest volume. The dominance of black walnut would substantially increase in the residual stand, while the pine would decrease.

The harvest should be done in the near future in order to capture possible ash salvage. Followup TSI on openings and thinning/release should follow within a couple years. Invasives control can be done either before or after the harvest. It should involve one primary control session with at least one followup session to hit any stragglers or new sprouts.

The harvest should have minimal impact to wildlife as the hardwood portion of the tract will remain contiguous forest. While the pine will be greatly reduced, there still will be a pine component left as the tract transitions more to hardwoods. Any openings will provide a habitat type that is really not very common in the landscape of rowcrops with occasional closed canopy forest woodlots. Continued mortality from TSI should keep mortality high with recruitment of snags. In the long term longer lived and larger growing hardwoods should increase in dominance.

Soil and water impacts will be minimized with use of best management practices. There will be a riparian management zone along the river based on the BMP guide. Large sycamore and hackberry trees along the river bank will generally be retained for roosting, nesting and mast.

There will be short term recreation impacts as trails will need to be closed during the harvest period. Access for hunting may also be restricted during harvest operations. In the long term the thinning should reduce the number of dead trees that fall across and block the trails and road. Consideration might be given to timing the harvest operation to the winter season to avoid major recreation seasons.

Estimated Board Foot Volume - Doyle

Species	Harvest	Leave	Total
American beech	0	0	0
American elm	0	0	0
American sycamore	3,680	34,900	38,580
basswood	0	0	0

bitternut hickory	0	7,130	7,130
black cherry	9,470	37,890	47,350
blacklocust	0	0	0
black walnut	14,420	139,390	153,820
chestnut oak	0	0	0
chinkapin oak	0	0	0
eastern cottonwood	7,910	16,930	24,840
eastern white pine	64,640	17,170	81,810
hackberry	0	66,780	66,780
honeylocust	0	0	0
Kentucky coffeetree	0	0	0
largetooth aspen	0	0	0
northern red oak	3,010	17,060	20,070
osage-orange	1,750	0	1,750
pignut hickory	0	0	0
red elm	0	0	0
red maple	0	0	0
red pine	4,220		4,220
Scots pine	0	0	0
shagbark hickory	0	4,820	4,820
sugar maple	0	0	0
sweetgum	0	0	0
white ash	33,810	0	33,810
white oak	0	5,200	5,200
yellow-poplar	100,580	153,400	253,980
TOTAL	249,960	536,170	786,130
Per Acre Average	2,810	6,020	8,830

Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Mark Timber harvest	2018-19
Timber stand improvement	2018-20
Invasives control	2018-20
Trail maintenance	Ongoing
Evaluate prior management	2020
Timber inventory and management guide	2035

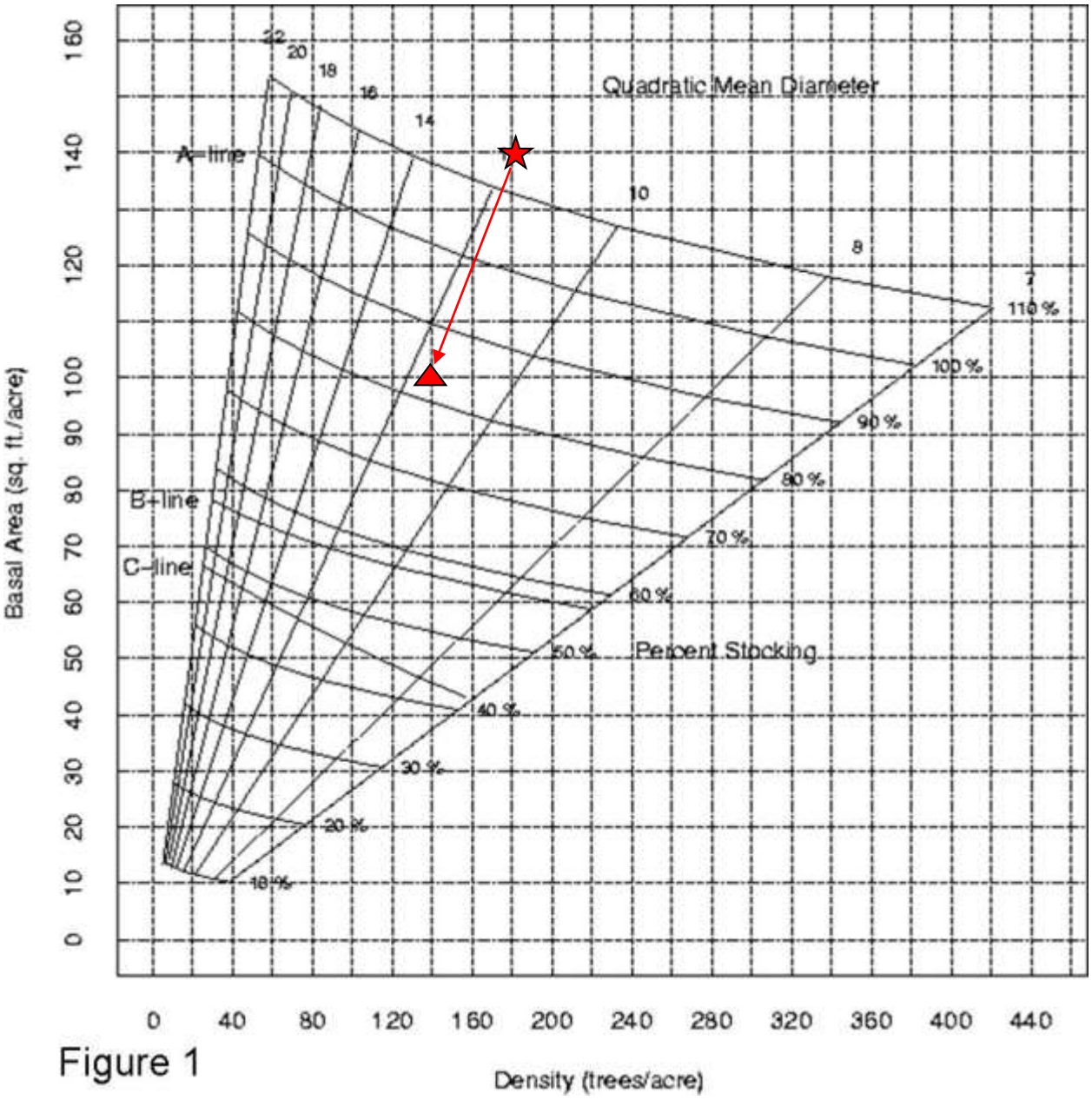
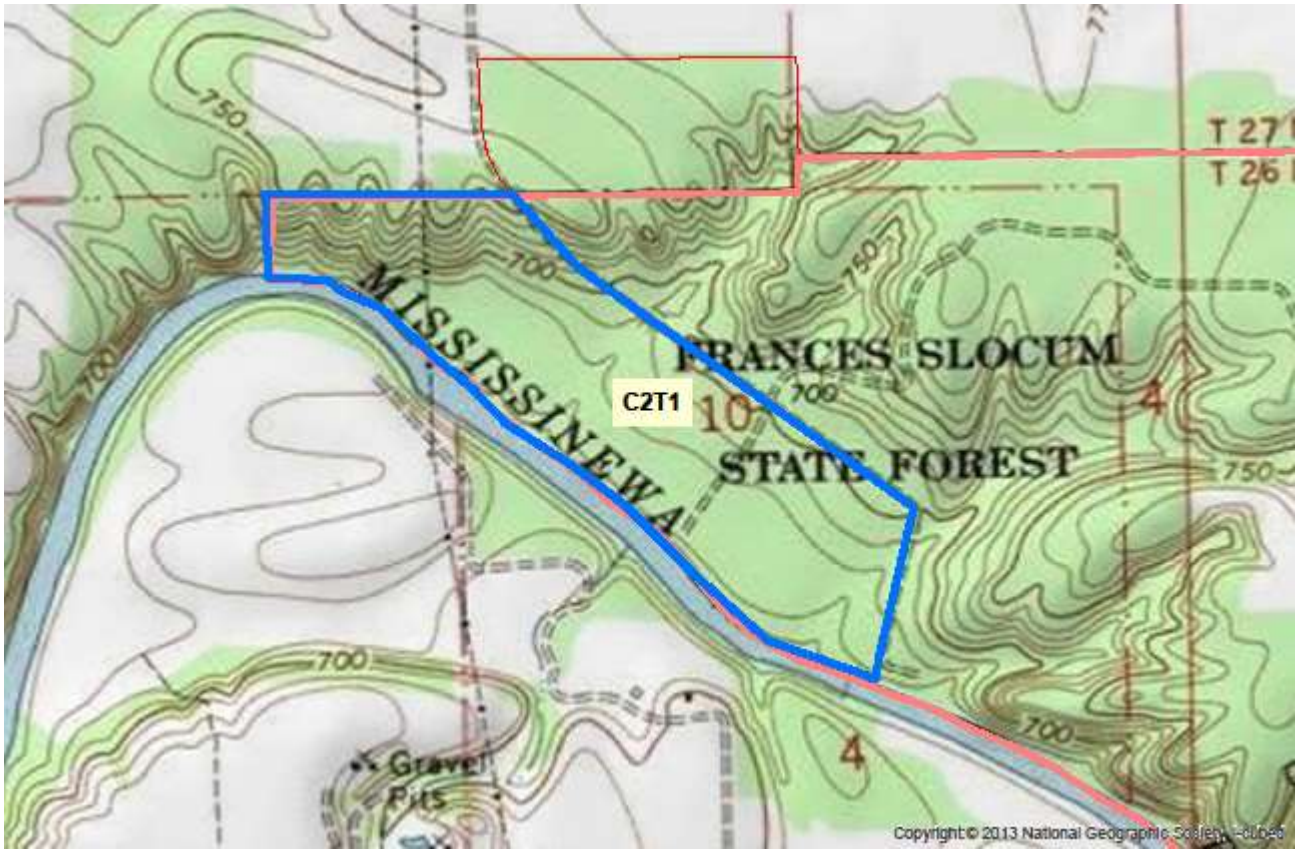


Figure 1

☆ **Indicates the current stocking condition**
△ **Approximates the proposed (post harvest) condition**

The hardwood stocking chart is used instead of the mixed chart because pines make up less than a quarter of the stocking.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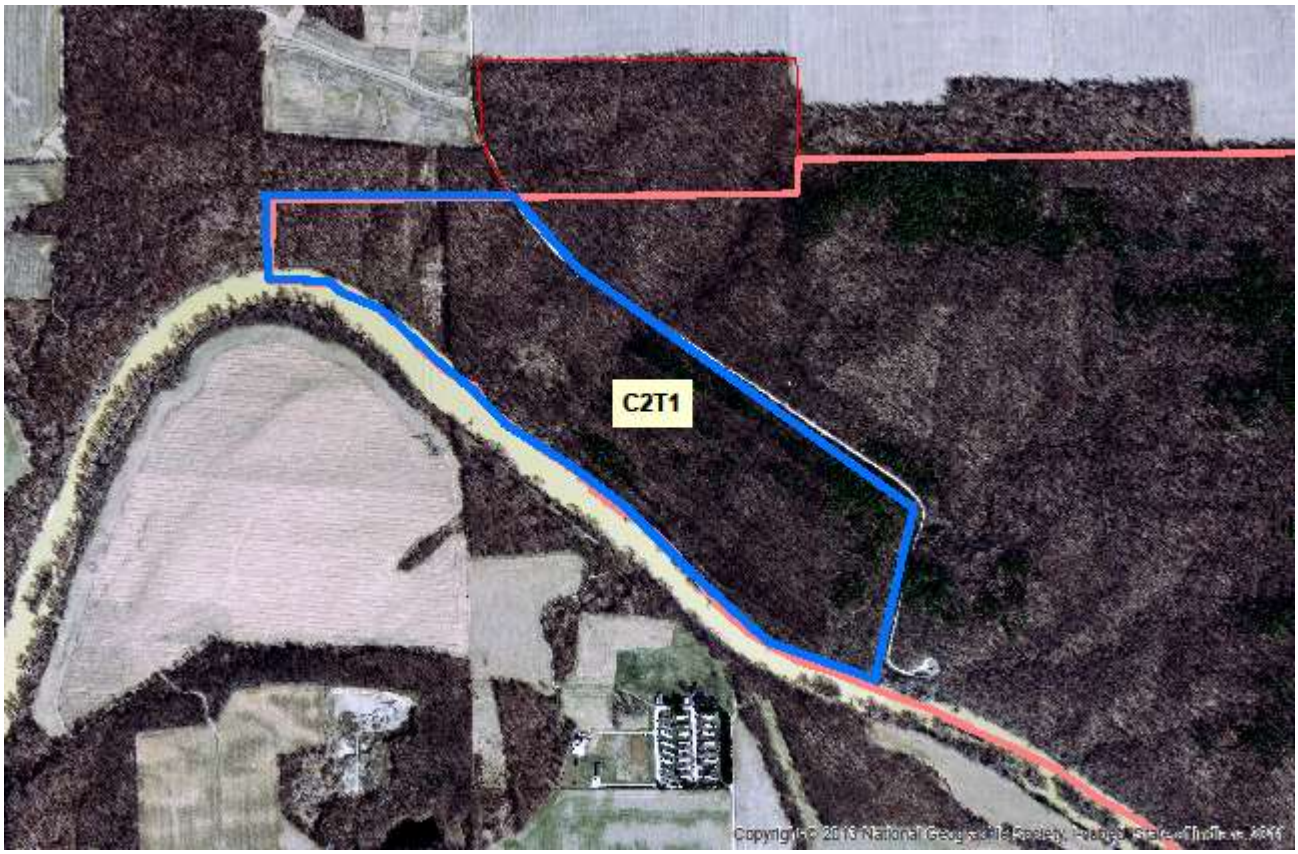
C2T1

Wildlife Habitat Feature Tract Summary

Inventory Filename: C:\Documents and Settings\pjones\My Documents\TCruisePC\Tcd_Docs\6410201I
State Forest: Salamonie **Compartment Number:** 02 **Tract:** 01
Reference Number: 6410201 **Tract Acres:** 89

	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal	Marked For Harvest	Residual Above Maintenance	Residual Above Optimal
Legacy Trees *								
11"+ DBH	801		1284	483				
20"+ DBH	267		134	-133				
Snags (all species)								
5"+ DBH	356	623	3980	3624	3357			
9"+ DBH	267	534	1578	1311	1044			
19"+ DBH	44.5	89	60	15	-29			
Cavity Trees (all species)								
7"+ DBH	356	534	0	-356	-534			
11"+ DBH	267	356	0	-267	-356			
19"+ DBH	44.5	89	0	-45	-89			

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

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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 and posted at http://www.in.gov/dnr/forestry/3634.htm. Note: Some graphics may distort due to compression.