

Indiana Department of Natural Resources – Division of Forestry

RESOURCE MANAGEMENT GUIDE

State Forest: Greene-Sullivan Compartment: 6 Tract: 5
Forester: Tom Tompkins Date: 3/18/13
Management Cycle End Year: 2033 Management Cycle Length: 20 Years

Location

Compartment 6, Tract 5 is located in the east ½ of Section 1 – T6N – R8W of Sullivan County and in the west ½ of Section 6 – T6N R7W Greene County. It is approximately 5 miles south of the town of Dugger.

General Description

This tract is approximately 87acres. The various land use components can be delineated as follows:

- Closed Canopy Forest – 80ac
- Water/Riparian Areas – 7ac



Walnut Lake and a few other water holes make up the 7 acres of water in this tract. The rest of the tract is comprised of large strip mine spoil hills. Reforestation in this area has been highly successful. The mixed overburden consisting of mineral rich coarse fragments from lower in the overburden and fine textured soil from the top-dress material has resulted in a suitable growing medium with good soil drainage, nutrient retention, and productive biotic interactions.

History

This tract was deeded to the state forest in January of 1936 from Central Indiana Coal Company. Prior to that the entire area was strip mined.

Boundary and Landscape Context

The tract is bordered by State Forest property on three sides; the eastern border is Cabin Road and an agricultural field. The south border is also Cabin Road, the southwest border is the access road for Walnut and Spencer Lakes and Spencer Creek, and the northwest boundary is Graveyard Lake. A small portion of the tract, ½ acre, lies south of Cabin Road and will probably not be harvested because it is surrounded by county roads. The tract is surrounded by forested area except for the agricultural lands to the east. There are also reclaimed/active mine lands farther to the west.

Topography, Geology and Hydrology

Spoil banks run northwest to southeast throughout the tract with many water holes between them. Walnut lake is located within the south end of the tract and flows into

Spencer Creek. Graveyard Lake makes up the northwest boundary and Spencer Creek flowing from Graveyard Lake into Spencer Lake makes up the a portion of the southwestern boundary.

Soils

All of the soils within this tract are composed of mine spoils except the ½ acre south of Cabin Road and ¼ acre along the eastern boundary.



AvB2 - Ava silt loam, 2 to 6 percent slopes, eroded
.5 Acres

Component: Ava (100%)

The Ava component makes up 100 percent of the map unit. Slopes are 2 to 6 percent. This component is on till plains. The parent material consists of Loess and underlying silty or loamy deposits, and paleosol in till. Depth to a root restrictive layer, fragipan, is 25 to 40 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 30 inches during January, February, March, April, December. Organic matter content in the surface horizon is about 2percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria.

Bo – Bonnie Silt Loam

.25 Acres

Component: Bonnie 100%

This component is located on poorly drained bottomland sites. The parent material is silt loam. The soils are typically 60 inches thick. The soils are moderately drained. In the winter the water table is at or near the surface. The soil has

a high available water capacity. The organic content of this soil is moderate. The soil is frequently flooded and ponded. Nonirrigate land capability classification is 3w.

St/FcG - Strip mines
86.25Acres

Component: Strip mines (90%)

This component is on spoil piles. Slopes are 18 to 35 percent. The parent material consists of Loamy materials overlying graded shaly regolith. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

VgA

0 acres

This soil type is only present underneath the county road on the east side of the tract.

Access

This tract can be accessed from Cabin road and the access for Walnut and Spencer Lakes. Horse trails run along the north boundary along Graveyard Lake. Access into the central portion of the tract is limited to the horse trail. This portion consists of large mine spoil banks with water holes in some of the valleys which will make fire, recreation and management trail construction very difficult in those areas. Most of the trails will be located in the valleys where possible.

Wildlife Habitat Features & Ecological Resource Review

Wildlife habitat suitable for a wide variety of native species should be optimized throughout the tract in order to promote and maintain a high level faunal diversity.

Cover/Habitat Overview

TABLE 1

Habitat/cover type	0%	0 < 1%	1-10%	11-50%	51-90%	>90%	Unknown
Closed-canopy deciduous/mixed forest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pine/conifer plantations or natural stands	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Early successional forest (≤ 20 years old)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shrub-scrub or old field	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grasslands/hayfield	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cropland, pastures, feedlots	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Open water (lakes, ponds, rivers, streams, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Riparian areas	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Developed areas	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Table 1 shows the estimated proportion of each cover/habitat type within 1 mile of tract center. The majority of the area is closed canopy deciduous/mixed forest and agricultural fields. Virtually every habitat type is represented to some extent in the sample area. This diverse landscape has resulted in a large amount of maintained forest edge. The proposed management activities will not significantly alter the relative proportion and availability of habitat/cover types in the assessment area.

Structural Habitat Features

TABLE 2

Diameter (DBH) Distribution	Target Snag Density	
	Goal	C6T5
<i>Including</i> at least this many snags per acre $\geq 5''$:	4	27.6
<i>Including</i> at least this many snags per acre $\geq 9''$:	3	10.1
<i>Including</i> at least this many snags per acre $\geq 19''$:	0.5	0.3

Table 2 shows how this tract compares with the DoF guidelines for forest stand snag density. The data suggests that the tract greatly exceeds target goals in the maintenance level for snags 0-18" but does not meet the goals for snags over 19". Obviously this is still a young stand, with a small average diameter, and as it ages and grows, natural mortality will occur. If these dead trees remain as standing snags, then this should result in an increase in the upper level diameter distribution in this category. In the near future, a post harvest TSI treatment could increase the number of standing, large diameter snags. The tract greatly exceeds snag density goals for small – medium diameter trees because the white pine in the stand appears to be suffering from unusually high mortality.

TABLE 3

Diameter (DBH) Distribution	Preferred Roost Trees per Acre	
	Goal	C6T5
TOTAL minimum roost trees per acre $\geq 11''$:	9	13.5
<i>Including</i> at least this many roost trees $\geq 20''$:	3	1.6

(Roost trees include the following species: shagbark, shellbark and bitternut hickories, silver and sugar maples, green and white ash, eastern cottonwood, northern red, post and white oaks, slippery and American elm and black locust.)

Table 3 shows how this tract compares to the Indiana Bat guidelines for live roost trees. The inventory data suggests that the stand is deficient in the large size class. This is mostly due to the fact that the stand has a smaller average size; therefore most trees in the stand are below 20" diameter. It is also because there are very few of the bat preferred species located within the tract. Based on the inventory data, it is likely that this particular tract may remain deficient for some time.

IDNR Natural Heritage Database Review

A Heritage Database Review was completed 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.

Exotic/Invasive Species

Species	Management Actions (check all that apply)		Mapped?
	Immediate Management Required	Monitoring/ Re-evaluation Recommended	
Multiflora Rose	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Japanese Honeysuckle	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Autumn Olive	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Bush Honeysuckle	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ailanthus	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Phragmites	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Multiflora rose and Autumn Olive were present throughout the tract in abundance. Japanese and Bush Honeysuckle were present in small amounts throughout the tract. Ailanthus was found in two areas within the tract, these were mapped during the inventory. Phragmites was found in two very small patches, one in the outlet of Walnut Lake and the other in the ditch along Cabin Road on the eastern edge of the tract. Control of the ailanthus and phragmites should be done as soon as possible to reduce spread. Other species should be monitored and controlled prior to harvest activities.

Recreation

Opportunities for recreation in this area include hunting, fishing, horseback riding, hiking and bird watching.

Cultural

No cultural features were observed within this tract. If present their location is protected. Adverse impacts to significant cultural resources noted will be avoided during any management or construction activities.

Stand Descriptions and Silvicultural Prescriptions

C6T5 Mixed Hardwood/Pine – 87 ac (Harvest Ac – 80)

Current Condition

This stand was inventoried in March of 2013. The topography, soil map, GIS data, and old aerial photography for this area indicates that nearly the entire stand was strip mined during the early 1930's. The dominant trees in this area are approximately 60 years old. Listed below is a table showing size classes and the percentage by volume and basal area (BA) of the major sawtimber species present in the harvest area.

SPECIES	% VOL.	% BA	Size Class
White Pine	30%	13%	M
Sycamore	16%	7%	M
Yellow Poplar	13%	7%	S - M
Sweetgum	12%	11%	S
Cottonwood	9%	4%	M - L
Black Walnut	4%	3%	S - M
Pin Oak	3%	3%	S - M
Black Locust	3%	2%	M
Black Cherry	3%	2%	S

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S = Small Sawtimber

M = Medium Sawtimber, L = Large Sawtimber

The canopy is dominated by white pine, yellow poplar, sweetgum, sycamore, and cottonwood. Mid story trees consist of sweetgum, sycamore, black walnut, and oaks. Regeneration is mostly sweetgum, yellow poplar, white pine and sycamore. The species composition is very good, except for the white pine. Most species have good form and height but appear to be growing slowly due to closed canopy conditions. The white pine appears to be dying off in many areas possibly due to drought.

Figure 1

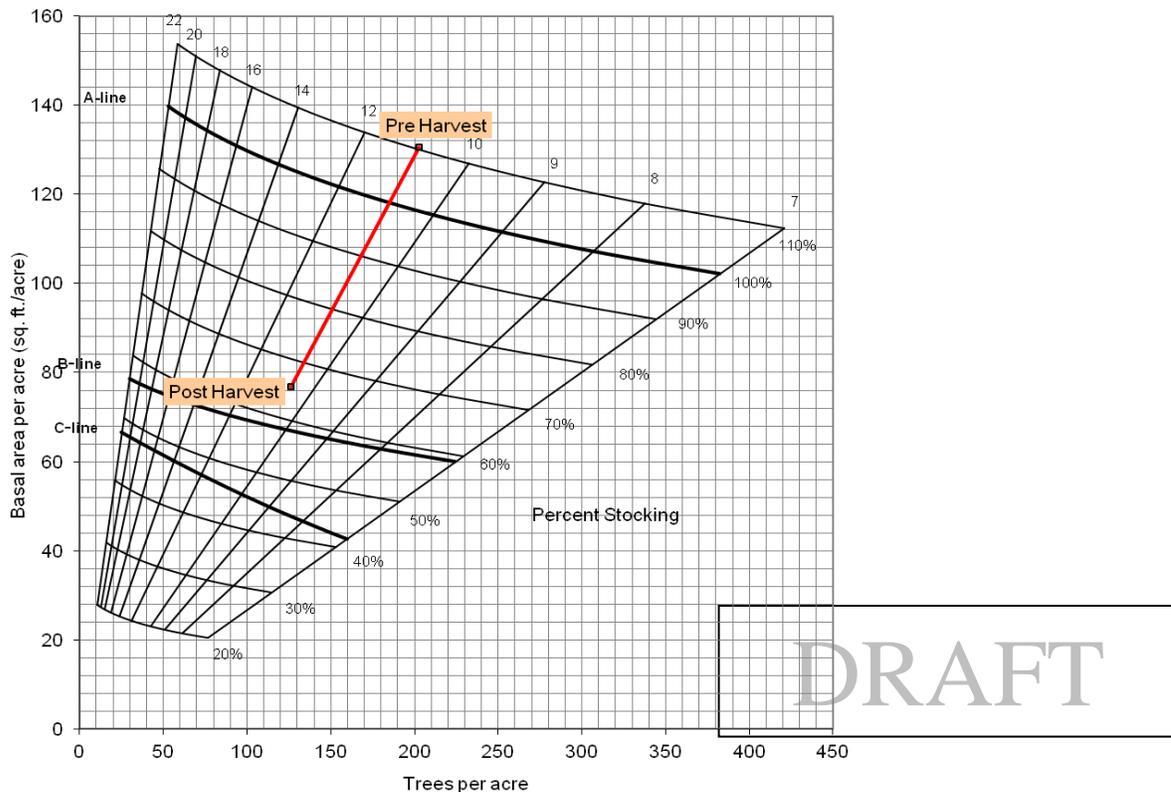


Figure 1 shows the stocking level of this stand both before and after the proposed timber harvest. The stand has a current stocking of 111%, with a BA of 130.5 sq.ft. and 203 trees/acre. The volume of this stand is 5,138 bdf/acre. After the harvest the stand will approximate a stocking of 65% with a BA of 77 sq.ft. and 126 trees/acre.

Prescription

The main objective in this stand should be to remove poor form and undesirable species to release crop trees expected to maintain good growth for the next 25 years. This can be accomplished by selectively marking throughout the 80 acres. In areas with large amounts of poor quality or undesirable trees group selection openings can be created to regenerate the areas.

The inventory suggests that at least 144,780bd.ft. could be harvested from this stand. Overall, the majority of the sawtimber volume would be comprised of white pine (37%), cottonwood (15%), sycamore (12%), sweetgum (12%), yellow poplar (7%) and black cherry (4%). The remainder of the volume would be comprised of pin oak, white ash, and Virginia pine. Primary crop trees include sweetgum, walnut, yellow poplar, and sycamore. A harvest at inventory levels would result in a residual stocking of 65%, 76.9 ft² BA, 126TPA, and 3,328 bd.ft./ac. Because of the difficult access within this tract some areas may not be able to be harvested which would lower the harvest volume.

Pre harvest TSI should consist of invasive species control throughout all portions of the tract. Post harvest TSI may consist of crop tree release, cull removal, vine control, and follow up invasive control.

Tract Summary

Control of ailanthus and phragmites is prescribed.

As long as harvesting operations are not conducted during wet periods and skidding and hauling equipment remain in designated areas, there should not be any long lasting negative impacts to the soil. Wildlife habitat, timber quality, and biodiversity should be enhanced as a result of the proposed harvesting and TSI operations.

The tract would need to be closed to the public during harvesting operations. Therefore, hunting and horseback riding activities would be adversely affected during this period. However, there are numerous locations in the surrounding property that offer the same opportunities.

Proposed Activities Listing

<u>Proposed Management Activity</u>	<u>Proposed Date</u>
Ailanthus/Bush Honeysuckle TSI	2013 - 2014
Skid Trail / Log Yard Construction	2019 - 2020
Pre-Sale TSI	2019 - 2020
Timber Marking	2019 - 2020
Harvest	2020 - 2022
Close Out	2021 - 2022
TSI (Post-Harvest)	2021 - 2023
Re-Inventory	2033

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