

**Resource Management Guides
Martin State Forest
30-day Public Comment Period**

The Indiana State Forest system consists of approximately 158,000 acres of primarily forested land. These lands are managed under the principle of multiple use-multiple benefit to provide forest conservation, goods, and services for current and future generations. The management is guided by scientific principles, guiding legislation and comprehensive forest certification standards which are independently audited to help insure long term forest health, resiliency, and sustainability.

For management and planning purposes each State Forest is divided into a system of compartments and tracts. In general terms compartments are 300-1,000 acres in size and their subunits (tracts) are 10 - 300 acres in size. Resource Management Guides (RMGs) are then developed for each tract to guide their management through a 15-25 year management period. There are approximately 1,600 tracts in the State Forest system. During annual planning efforts 50-100 tracts are reviewed and RMGs developed based on current conditions, inventories and assessments.

The RMGs listed below and contained in this document are part of the properties annually scheduled forest inventories under review for Martin State Forest.

Compartment 1 Tract 5
Compartment 1 Tract 6
Compartment 3 Tract 8B

To submit a comment on this document, go to:

www.in.gov/dnr/forestry/8122.htm

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 review posted at

<http://www.in.gov/dnr/forestry/3634.htm>.

Note: Some graphics may distort due to compression.

Martin State Forest
Alex Gust
Management Cycle End Year 2041

Compartment 1
Date: 1/22/2021
Management Cycle Length 20 Years

Tract 5
Tract Acres 83

Location

This tract, also known as 6360105, is located in the vicinity of Bear Hill and is often referred to as “Bear Hill” by property staff and local public users despite being east of the actual Bear Hill topographic feature. The specific location is Sections 9, 10, and 15, T 4 N, R 3W Martin County, IN. The tract is about two miles northeast of Trinity Springs, Indiana.

General Description

This tract consists of 83 acres which is all forested. Within the tract most of the acreage is oak-hickory forest type with a small portion in the lower areas being mixed hardwood. Also, within the tract there are slopes of every aspect with most of them being workable except the bluffs in the northern edge of the tract.

History

This tract was acquired in a land transfer with the U.S. Forest Service in October 1968. This transaction is recorded in Deed Record Book 102, pages 418-420. The Forest Service had acquired the land in September 1940 from Kenneth and Pansy Nicholson in a transaction recorded in Deed Record Book 81, page unknown.

Old management files show this tract as having been two individual tracts at one time, tracts 1 and 2. Tract 1 was the forty-acre square in the northwest corner and tract 2 was the east half, containing 44 acres. An inventory by Erickson completed on tract 1 in December 1968 indicated an average of 1,710 bd.ft. per acre with an average DBH of 8-16 inches. Basal area averaged 120 square feet per acre. The red and white oak groups accounted for 77 percent of the volume; the red oak group having 800 bd.ft. per acre and the white oak group having 510 bd.ft. per acre. The narrative indicated that 30 percent of the plots observed fire damage to trees. It also recommended a light thinning, “...followed, as soon as volume permits, by an intermediate cut to release the crop trees.” No old management files were located for tract 2.

At some point, the two tracts were merged into the present tract 5. An inventory by Hahn, probably completed in the early 1970s, indicated 441,056 bd.ft. was present on the tract, averaging 5,728 bd.ft. per acre. Of this volume, 139,755 bd.ft. was tallied as harvest stock. Hahn’s management recommendations included a harvest in the east half of the tract, followed by timber stand improvement (TSI), and then a harvest in the west half of the tract in approximately twenty years. His narrative also mentions a few, very old signs of past cutting and no evidence of past fire.

A harvest was conducted in 1973, with 113,330 bd.ft. being removed on 49 acres. This harvest occurred in the southern portion of the tract and on the east side of the main ridge in the north portion of the tract. Post-harvest TSI was planned to follow the harvest and is assumed to have been completed.

Another inventory was conducted in 2002 by Jim Lauck. This inventory estimated the growing stock to be 2,863 bd.ft. per acre and the harvest stock to be 2,271 bd. ft. per acre. A harvest followed the inventory in 2004. The harvest included most of tract 5 and tract 6. An estimated 1,680 bd.ft. per acre were marked on 46 acres in tract 5. Tim Moffatt of Shoals purchased the timber for \$0.47 per bd.ft.

The last inventory completed in this tract was in June 2012 by Abe Bear. The inventory showed indicated 9,300 bd.ft per acres but most areas still had gaps in the canopy and allowed to grow until the next inventory. Bear also noted that the regeneration openings created during the 2004 harvest were dominated by yellow poplar and contain a lot of brambles and should be evaluated within five years for vine control and any thinning needed. He also noted there is a portion along the north edge of the tract that is steep bluffs which is too steep for any logging to occur and the timber in this area will be left to buffer the geologic feature.

Landscape Context

Land in the area is primarily used for timber production. Land level enough to be used for agriculture is generally open and planted to row crops, hay, or pastured. The closest residential areas are the burg of Trinity Springs to the southwest and the hamlets of Indian Springs and Cale to the northwest. Area south of the tract that was sold by Kimball is currently still used for timber production.

Topography, Geology and Hydrology

Two ridges dominate the topography of this tract. They join to form one ridge near the north property line where the section line intersects the property line. From this point one ridge runs south to the interior corner. The other ridge runs west southwest from the junction toward the western property line. The ridge crosses onto private property midway between the north and south property lines. The northwest corner of the tract is very steep, rocky and almost impassable. The eastern facing slope on the east side of the tract also contains some steep bluff areas. Otherwise, the topography is very workable.

The northwest corner of the tract is drained by Sulfur Creek, the remainder of the tract drains into Indian Creek.

Buffers and best management practices (BMPs) will be implemented during and following any management activities to minimize any impacts to these features within the tract.

Soils

Most of the soils within this tract is Wellston Tipsaw Adyeville complex, 18 to 70 percent slopes and Wellston silt loam, 6 to 12 percent slopes. A small part in the southern portion of the tract is Gatchel loam, 1 to 3 percent slopes, occasionally
Floods, very brief duration

WpfG – Wellston Tipsaw Adyeville complex, 18 to 70 percent slopes- 65.4 Acres

This severe sloping, moderately deep, moderate to excessively drained soils is on side slopes. Equipment limitations and erosion hazards should be considered when planning management activities.

WhfC2 - Wellston silt loam, 6 to 12 percent slopes- 15.6 Acres

This moderately sloping, well drained soils is on narrow ridgetops and on side slopes of the uplands. Well suited for trees. The soil has a site index of 81 for red oak and 90 for yellow poplar.

Gatchel loam, 1 to 3 percent slopes – 2 Acres

This is a nearly level, excessively deep, well drained flood plan soil. Soil is occasionally flooded, very brief duration, and be taken into management plan consideration. No site index was present for this soil.

Access

This tract has good access via gated fire lane 1B through tract 6 southeast of tract 5 to Bear Hill Road. This fire lane is in good shape and accessible to the bottom of the ridge by vehicle but there is a portion of the fire lane to the top of the ridge which is less suited for vehicle access. This fire lane will need some additional stone and grading to keep it accessible.

Boundary

Beginning at a steel post marking a Section corner (NW corner of section 15 T4N R3W), the property line goes west ¼ mile. Bits of old fencing and Kimball painted trees were found along this line. The line turns north at a heavy wooden fence post. The property line runs north for ¼ mile with fence present all the way to the northwest corner. An outhouse is present at the northwest corner. Some records indicate that there is survey pin just west of the outhouse indicating that it is on the State property. No such pin was found at the time of inventory. The property line turns east for about 3/8 mile. This line is marked by several survey pins (“Floyd” and “Curry”) and a bit of old fence but is difficult to follow due to the steep slopes. The northeast corner was not obviously marked. The northern stretch of the eastern line was not well defined either. Fencing was present along the southern portion of the eastern line. The interior corner on the east line was found and marked with pink ribbon. The line turns east to intersect with a drainage. Here the property line becomes a tract line and runs up the drainage to the southwest, crosses the fire lane at a saddle, and follows another drainage southwest to the property line. At the western property line, the line turns north, again marked by Kimball paint to the point of beginning. Kimball paint found was old and faded along with the orange paint marked by Bear and needs remarked.

Ecological Considerations

Wildlife use this tract heavily and many species were observed during the inventory. Those observed were eastern wild turkey, deer, squirrels, chipmunks, songbirds, hawks, vultures, and a few rabbits. The rock bluffs and outcrops provide unique wildlife habitat and will be maintained as they are. There are numerous mast-producing trees on the tract, especially hard mast. Several den trees or potential den trees were observed during the inventory.

Snags	Maintenance Level	Inventory	Above Maintenance level
5"+ DBH	332	346	14
9"+ DBH	249	193	-56
19"+DBH	41.5	51	9

A snag inventory was conducted along with the timber inventory, and it showed to be above maintenance level for snags < 9" and those 19" and above. For snags between 9 and 18" DBH they are a little below the maintenance level. It is important to note that these are compartment guidelines and that even though the estimated tract data does not quite meet all target levels, it is likely that suitable levels are present for these habitat features in the surrounding landscape. The prescribed management will maintain or enhance the relative abundance of these features.

A Natural Heritage Database Review is part of the management planning process. If Rare, Threatened or Endangered communities 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.

Communities

This tract is predominantly an oak-hickory community with some mixed hardwood areas in the lower portions by ephemeral drainages.

The oak-hickory community overstory is mostly white oak with a good representation of species from the red oak group (e.g., red, black, and scarlet) and some hickories (e.g., shagbark and pignut.) Mid story in this community has a good mix of white oak and pignut hickory with some black oak and shagbark hickory present as well. Openings created in the 2004 harvest are dominated by yellow poplar with briars beneath. Throughout the tract there are some oak saplings but mostly dominated by red and sugar maple, American beech, and white ash. The non-woody community is a mixture of species commonly associated with this forest type which includes but not limited to, green brier, viburnum, and blackberry.

For the mixed hardwood community, the overstory is mostly yellow poplar with American beech, red and sugar maple, some oak (e.g, white, black, and red) and pignut hickory mixed in. In the midstory it is mostly red and sugar maple, American beech, and blackgum with a few pignut hickory and white oaks. For the understory it is almost exclusively sugar maple and American beech with some red maple, white ash, and blackgum. The non-woody community of the stand is a mixture of species commonly associated with this forest type which includes but not limited to, spicebush, viburnum, and various species of grasses.

Recreation

There are no recreational improvements within this tract. Recreational use is mostly hunting (e.g., deer, turkey, squirrel, mushrooms, etc.).

Cultural

This tract was reviewed for cultural sites during the forest resource inventory. Cultural resources may be present on this tract, but their location(s) are protected. Adverse impacts to significant cultural resources will be avoided during any management or construction activities.

Tract Subdivision Description and Silvicultural Prescription Forest Condition

A current forest resource inventory was completed on 01/05/2021 by Forester Alex Gust. A summary of the estimate tract inventory results is below.

This tract can be split into two different cover types with most of the tract being classified as oak-hickory with some areas of mixed hardwood.

Oak-Hickory-67 Acres

Tract Summary Data (Trees > 14" DBH)

Species	# Sawtimber Trees	Estimated Total Bd. Ft.
White Oak	1,784	403,450
Black Oak	391	121,140
Northern Red Oak	168	55,210
Pignut Hickory	189	39,020
Yellow Poplar	140	37,010
Scarlet Oak	32	13,150
Sugar Maple	50	11,870
Blackgum	42	4,720
Red Maple	13	3,540
Shagbark Hickory	13	3,050
Total	2,822	692,160

Inventory analysis for this stand shows an estimated total volume of 692,160 bd.ft. with an estimated 122,275 - 236,845 bd.ft. of potential volume to be removed. For the midstory it is predominantly white oak and hickory (e.g., pignut and shagbark) with a few black/red oaks throughout. Some sugar and red maple are present in the midstory as well. The understory is dominated by red and sugar maple and American beech. There are some oak and hickory saplings present but far fewer and more scattered. With the canopy now closed and crowns compressed the midstory oak and hickory are starting to slowly decline. This tract also has experienced blowdown of red and black oaks in some locations within the last couple of years. This portion of the tract could benefit from an improvement harvest to release midstory oak and hickory, and to capture mortality in the larger black oaks which are declining. The harvest would focus on poor quality, damaged, low vigor, poor health, and salvage of blowdown. Prior to or shortly following the harvest this area would further benefit from the use of prescribed fire to improve oak seed germination and reduce the amount of maple and beech saplings over the entire area focusing mainly on areas identified to have potential for oak and hickory regeneration.

Mixed Hardwood-16 Acres

Tract Summary Data (Trees > 14" DBH)

Species	# Sawtimber Trees	Total Bd. Ft.
Yellow Poplar	95	37,010
White Oak	74	23,760
Red Maple	123	19,040
Black Oak	32	13,470
American Beech	55	9,420
Sugar Maple	46	8,100
Northern Red Oak	20	5,420
Shagbark Hickory	8	3,210
Pignut Hickory	8	2,730
Bitternut Hickory	16	1,600
Total	477	123,760

Inventory analysis of this cover type shows an estimated total volume of 123,760 bd.ft. with an estimated 12,800 - 26,960 bd.ft of potential volume to be removed. For the midstory it is predominantly yellow poplar, red and sugar maple, American beech and blackgum. The understory is almost exclusively red and sugar maple and American beech with some white ash present. Most of this cover type has low quality maple and beech and low basal area (BA) that were identified in the inventory to be good sites for regeneration openings. The goal of these openings would be to promote species that are less shade tolerant. These group and patch-cut openings would be established when the improvement harvest is conducted. With these openings, some of the denser areas will also be marked for an improvement harvest focusing on poor quality, damaged, low vigor, and poor health trees to improve the health of the stand and to release the better-quality trees from competition.

The whole tract would benefit from some post-harvest TSI which would focus on releasing future crop trees from competition and complete openings that were established during the harvest. TSI would focus on removing poor form/vigor stems thus releasing the better quality and healthier saplings in the midstory and understory. TSI would also help with increasing the snag numbers in the 9-19" DBH to make the numbers meet the maintenance level for wildlife habitat.

Summary Tract Silvicultural Prescription and Proposed Activities

Both cover types would benefit from an improvement harvest with some areas using group or patch-cut openings or an oak shelterwood to promote less shade tolerant species. The estimated removal is 135,075-263,805 bd.ft.. Prior to a harvest, some TSI should be completed to treat vines present in the mixed hardwood cover type and openings established during the last harvest. Within two years following the harvest, TSI should be conducted to complete openings and reduce the understory in any oak shelterwood areas to increase light penetration to the ground layer. Starting within two years following post-harvest TSI a prescribed fire regime should be established to reduce the understory and improve oak seed germination to promote species which require light and contact with bare mineral soil for seed germination. Between 3-5 years

following the harvest a walkthrough of the tract should occur to review openings and shelterwoods for established regeneration and invasive species. Between 8-12 years following the post-harvest TSI openings should be monitored for additional TSI needs.

Annually, the fire lane should be maintained for continued accessibility.

In 2041 this tract will need to be inventoried and a new management guide developed.

Soils/Hydrology: Management activities conducted on this tract will abide by division BMP standards to minimize the impacts of the management on soils and hydrology.

Wildlife: Activities prescribed for this tract will maintain habitat for wildlife and even enhance habitat for some species that require a range of forested habitat for example closed canopy and early successional through management. Also, for bats the number of snags will likely increase with the TSI and prescribed fire within the tract.

Recreation: Access within the tract will be suspended during management activities that could pose a risk of injury to the public. Overall, with the management planned on this tract it will enhance hunting opportunities due to improving crown spacing which will increase hard mast production. Early successional habitat created will provide suitable foraging, refuge, and nesting habitat for a broad range of game and non-game wildlife.

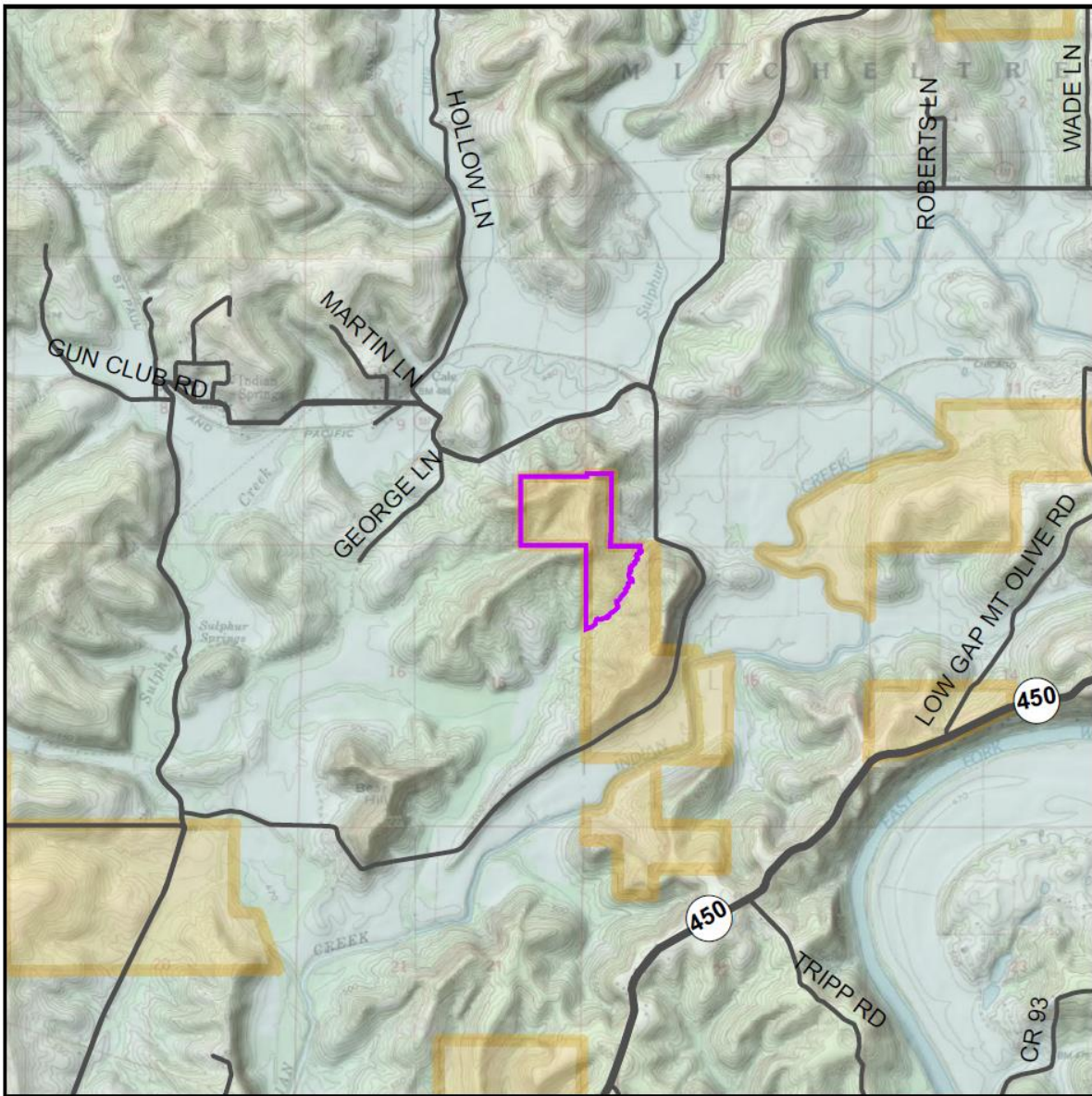
Proposed Management Activity

Pre- Harvest TSI
Timber Harvest
Post-Harvest TSI Including Invasives
Start Fire Regime
Regeneration opening monitoring
Inventory and Write new Guide

Proposed Date

Summer 2021
2023-2026
1-2 Years after Harvest
At least 1Year after TSI
3 years post-harvest-2041
2040-2042

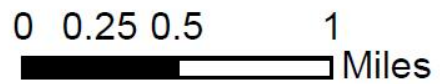
Compartment 1 Tract 5



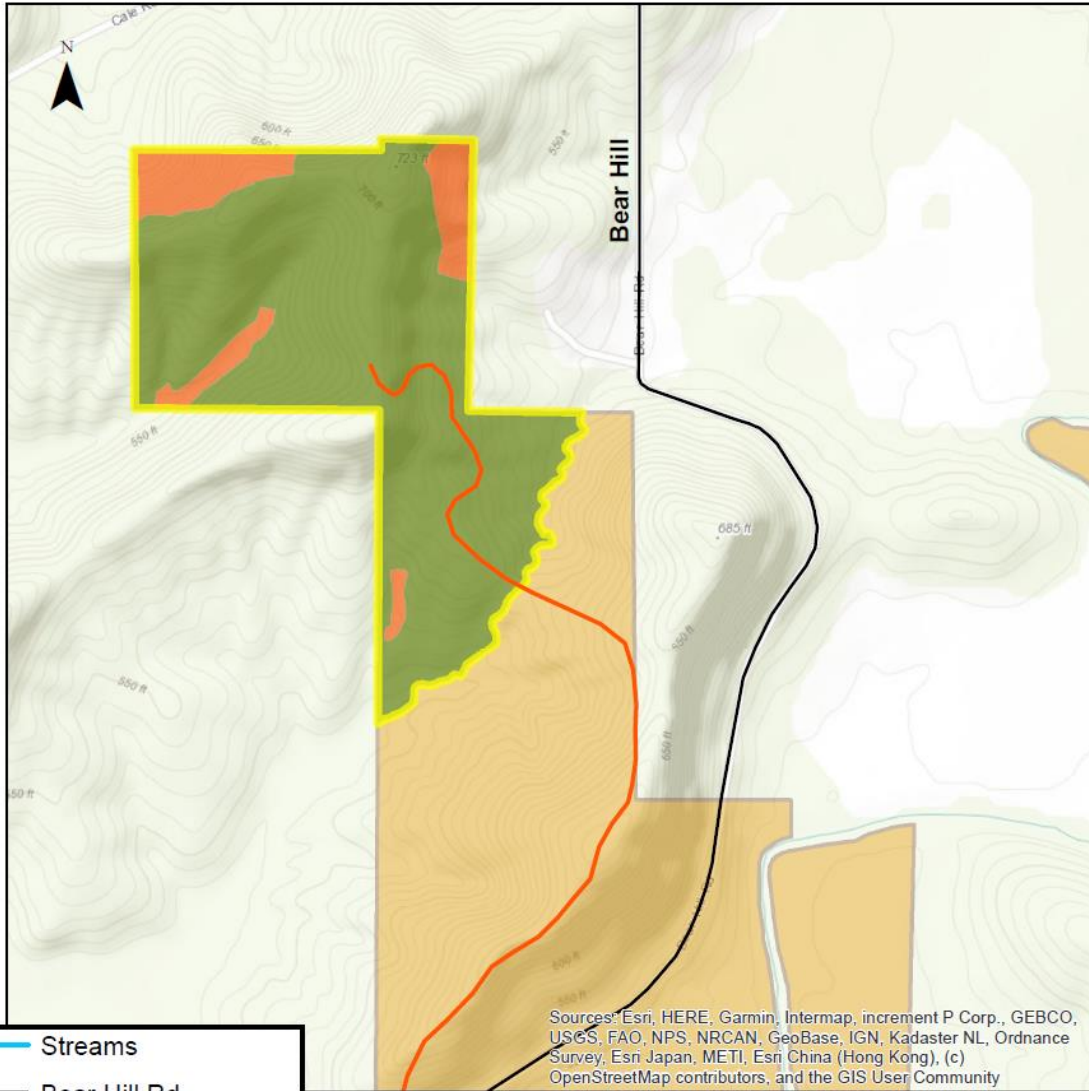
State Forest



Tract



Martin State Forest Compartment 01 Tract 05 Cover Type Map



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

- Streams
- Bear Hill Rd
- Firelane
- Tract Boundary
- Mesic Oak-Hickory
- Mixed Hardwoods
- State Forest Boundary

0 0.125 0.25 Miles

Martin State Forest
Alex Gust
Management Cycle End Year 2041

Compartment 1
Date: 1/27/2021
Management Cycle Length 20 Years

Tract 6
Acres: 79

Location

This tract, also known as 6360106, is in the vicinity of Bear Hill and is often referred to as “Bear Hill” by property staff and some public users despite being east of the actual Bear Hill topographic feature. The specific location is the W ½ Section 15, T 4 N, R 3W Martin County, IN. The tract is about two miles northeast of Trinity Springs, Indiana.

General Description

The tract consists of 79 acres, all of which is forested. Almost all the land is oak-hickory cover type, with only about 12 acres being mixed hardwoods. Much of the tract is south or west facing slopes. Generally, the slopes are workable with the exception being the area of bluffs on the eastern edge of the tract.

History

This tract was purchased by the United States of America from two sellers. The northern portion, approximately twenty-six acres, was purchased on September 28, 1940 from Kenneth and Pansy Nicholson. The remainder of the tract was purchased on September 30, 1940 from the Martin County Bank. This land was then deeded to the State of Indiana on September 28, 1968 in a land exchange with the U.S. Forest Service.

The first management plan for this tract was not dated but was most likely written in the early 1970’s. The narrative indicated that there were no visible signs of a prior harvest, suggesting that this could be interpreted to mean a period of 20-30 years since a harvest had been completed. The narrative also noted that fire had “...swept through the area 5-6 years ago, and many 12-16” stems show butt damage.” Management recommendations in this plan called for a harvest to remove damaged stems and then light post-harvest timber stand improvement (TSI). The plan also recommended improving an existing old road into a fire lane.

A harvest was conducted in November 1975, removing 99,470 board feet (bd.ft.) In July 1989, the current fire lane was built.

Another inventory in 2002 showed 9,160 bd.ft. per acre. This inventory called for a harvest and one was conducted in 2004. Tracts 5 and 6 were harvested together with 129,060 bd.ft. from tract 6. Post-harvest TSI followed the harvest.

In 2012, the tract was inventoried again and showed a total volume of 8,605 bd.ft. per acre. With this, the forester noted the trees still had room to grow and were still expanding to close the gaps in the canopy. He also noted that all regeneration openings that were made in the 2004 harvest had come back to tulip poplar which are very dense, and the openings are also full of brambles. During the inventory the forester found an area with promising oak regeneration and prescribed that the competing American beech, which were very dense, be removed through TSI so the oaks could grow unhindered. Overall, the forester indicated the tract should be left to grow until the next inventory.

Past land uses may have included limited clearing for cropping, but due to the slopes, the land was most likely grazed and used for timber production.

Landscape Context

Land in the area is primarily used for timber production. Land level enough to be used for agriculture generally is open and planted to row crops, hay, or pastured. The closest residential areas are the burg of Trinity Springs to the southwest and the hamlets of Indian Springs and Cale to the northwest.

Topography, Geology and Hydrology

The base of a ridge begins roughly at the southwest corner of this tract and runs to the northeast. In the general area of the interior corner, the ridge turns to run to the north.

The crest of the ridge is just to the east of the state property line. Slopes are southeast facing between the firelane and Bear Hill Road. The area near where Bear Hill road crosses on to private property to the north contains some very steep rock bluffs. The remainder of the tract is generally west facing with some small north and south slopes created by side drainages. A small amount of bottomland area is present in the northwest area. The entire tract is part of the Indian Creek watershed.

Soils

Soils within this tract are Wellston Tipsaw Adyeville complex, 18 to 70 percent slopes and Wellston silt loam, 6 to 12 percent slopes.

WpfG – Wellston Tipsaw Adyeville complex, 18 to 70 percent slopes – 70.5 Acres

This severe sloping, moderately deep, moderate to excessively drained soils is on side slopes. Equipment limitations and erosion hazards should be considered when planning management activities.

WhfC2 - Wellston silt loam, 6 to 12 percent slopes – 8.5 Acres

This moderately sloping, well drained soils is on narrow ridgetops and on side slopes of the uplands. Well suited for trees. The soil has a site index of 81 for red oak and 90 for yellow poplar.

Access

Access is good to this tract with the county road and the internal fire lane. The fire lane is a bit steep for log trucks but has been used for logging in the past. It is generally considered a dry weather road.

Boundary

Beginning at the Southwest corner: The property line runs north for just over ½ mile to a stream channel. The tract boundary turns to follow the creek channel northeast across the fire lane at a saddle and to the northern property line. Here the line turns east along the property line to a corner. The northeast corner has no marker. The line turns south for about ½ mile to a metal stake. This line was marked with white rectangular State Forest signs which are now illegible. At the stake, the line turns east forming an internal corner. This line runs east down very steep

bluffs to the county road. A large shagbark hickory on the east side of the road marks the line. The tract boundary follows the county road south and west to the point of beginning. The property lines were painted orange during the last inventory in 2012 and will need to be remarked within the next couple of years.

Ecological Considerations

Wildlife use this tract heavily and many species were observed during the inventory. Those observed were eastern wild turkey, whitetail deer, squirrels, chipmunks, songbirds, hawks, vultures, and a few rabbits. The rock bluffs and outcrops provide unique wildlife habitat and will be maintained as they are by buffers. There are numerous mast-producing trees on the tract, especially hard mast. Several den trees or potential den trees were observed as well.

The Division of Forestry has developed compartment level guidelines for wildlife structural habitat features: snags. Snags are standing dead or dying trees. Snags provide value to a stand in the form of habitat features for foraging activity, den sites, decomposers, bird perching, and bat roosting. Snags eventually contribute to the future pool of downed woody material. Downed woody debris provides habitat for many species and contributes to healthy soils.

Snags	Maintenance Level	Inventory	Above Maintenance level
5"+ DBH	316	342	26
9"+ DBH	237	269	32
19"+DBH	39.5	70	30

Current assessments indicate the abundance of these habitat features meet or exceed recommended maintenance levels in all diameter classes.

A Natural Heritage Database Review is part of the management planning process. If Rare, Threatened or Endangered communities 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 tract is predominantly an oak-hickory cover type with some mixed hardwoods in the lower portions around the ephemeral drainages.

The oak-hickory overstory is mostly white oak with a good representation of species from the red oak group (e.g., red, black, and scarlet oak) and some hickories (e.g., shagbark and pignut hickory). The mid-story has a good mixture of white oak and pignut hickory with a presence of black oak and shagbark. Regeneration openings created in the 2004 harvest are dominated by yellow poplar with briars beneath them. Throughout the tract there is a presence of oak saplings but mostly dominated by maple (e.g., red and sugar maple), American beech, and white ash. The non-woody community of the stand is a mixture of species commonly associated with this cover type which includes but not limited to, green brier, viburnum, and blackberry. A couple patches of multiflora rose was observed but didn't warrant immediate treatment. However, they should be treated prior to any harvest.

The mixed hardwoods overstory is mostly yellow poplar with American beech, maple (e.g., sugar and red maple), and some oak (e.g., white, black, and red oak) and pignut hickory mixed in. The midstory it is mostly red and sugar maple, American beech, and blackgum with a few

pignut hickory and white oaks. For the understory it is almost exclusively sugar maple and American beech with some red maple, white ash, and blackgum. The non-woody community of the stand is a mixture of species commonly associated with this forest type which includes but not limited to, spicebush, viburnum, and various species of grasses.

Recreation

There are no hiking or other trails located within this tract. The most common form of recreation is likely hunting for deer, turkey, and squirrel.

Cultural

This tract was reviewed for cultural sites during the forest resource inventory. Cultural resources may be present on this tract, but their location(s) are protected. Adverse impacts to significant cultural resources will be avoided during any management or construction activities.

Tract Subdivision Description and Silvicultural Prescription

Forest Condition

A current forest resource inventory was completed on 12/21/2020 by Forester Alex Gust. A summary of the estimate tract inventory results are located in the table below.

Tract Summary Data (Trees > 14” DBH)

Species	# Sawtimber Trees	Total Bd. Ft.
White Oak	1,668	454,870
Black Oak	543	171,920
Yellow Poplar	128	62,290
Northern Red Oak	166	56,480
Pignut Hickory	303	46,590
Bitternut Hickory	77	10,060
Sugar Maple	66	8,920
American Beech	64	8,020
Shagbark Hickory	38	7,630
Red Maple	51	6,940
Chinkapin Oak	50	5,790
Virginia Pine	37	4,710
Scarlet Oak	13	3,120
Total	3,204	847,340

This tract can be split into two different cover types with most of the tract being classified as oak-hickory with lesser amounts of mixed hardwoods.

This tract will be managed as a whole since it is mostly oak-hickory with lesser amounts of mixed hardwoods. Stocking is similar in both cover types. Inventory analysis shows an estimated volume of 847,340 with an estimated 20 – 40 % available for removal. With this, the crowns have fully closed canopy gaps from the most recent harvest and some of the larger black oaks are showing signs of decline. Taking all of this into consideration the tract could use a harvest with a goal of improving the overall health and quality of the stand. This harvest would focus on removing poor quality/vigor, damaged, and poor health trees to achieve these goals. Additionally, where conditions warrant, group selection or patch-cut silviculture should be

utilized to facilitate the regeneration of shade intolerant species as well as a new cohort of young forest habitat. With this, some areas would also be candidates for an oak shelterwood harvest to promote mid shade-tolerant species. Prior to a harvest vine TSI is needed in the old regeneration gaps and in some of the mixed hardwood areas. Also prior to a harvest, areas with greater chance for mid tolerant species to establish should be identified as potential regeneration openings/oak shelterwood to be established during the harvest. Any preparatory work should take place prior to the harvest. Once the harvest is complete post-harvest TSI should follow to complete any openings and release the quality sapling size cohorts. Shortly after the harvest some areas may benefit from prescribed fire to better expose bare mineral soil and reduce the dense beech/maple understory. Skid trails could serve as fire breaks and reduce prep work necessary to carry out a burn. This would facilitate the establishment of species that require more sunlight and bare mineral soil to germinate.

Summary Tract Silvicultural Prescription and Proposed Activities

This tract could use an improvement harvest with areas that would be good for regeneration openings, patch cuts/group selection, or oak shelterwood to promote less shade tolerant species in those areas removing an estimated 20 – 40% of the overall bd.ft. would be removed. Prior to the harvest TSI would be performed to reduce vines in the mixed hardwoods cover type and openings established during the last harvest. Within two years following completion of the harvest, TSI will be conducted to complete openings and reduce the understory in any shelterwood areas to increase light penetration to the ground layer. Starting at least one year after post-harvest TSI a prescribed fire regime should be started. An inspection of any regeneration opens or oak shelterwoods will take place three years following the harvest to assess development and address any additional TSI or invasive treatment needs. The evaluation should be done every 3-5 years after the initial to closely monitor the regeneration and any invasive species that may become established. Also, the fire lane should be maintained on a regular basis. In 2041 this tract will need to be inventoried and a new resource management guide development for future management.

Management activities conducted on this tract will abide by state established best management practices (BMP's) to minimize the impacts of the management on soils and hydrology.

Activities prescribed for this tract will maintain habitat for wildlife and even enhance habitat for some species that require a range of forested habitat for example closed canopy and early successional through management. Also, for bats the number of snags will increase with the TSI and prescribed fire within the tract.

Public access to the tract will be suspended during active forest management activities for public safety. Overall, the management activities for this tract will enhance hunting opportunities through improving overall forest health, increasing both hard and soft mast and woody cover used for cover, forage and protection of young.

Proposed Activities Listing

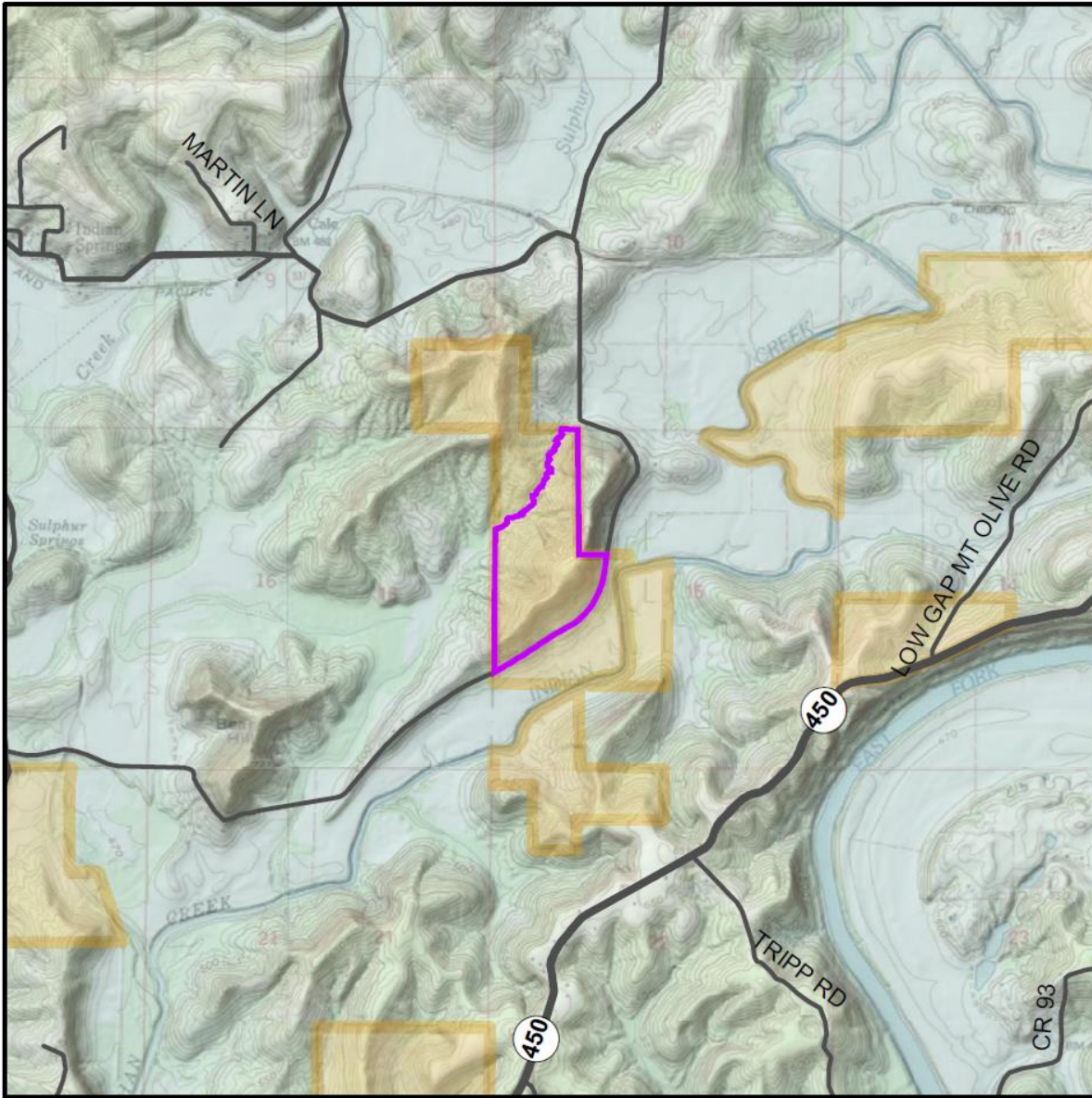
Proposed Management Activity

Pre- Harvest TSI
Timber Harvest
Post-Harvest TSI Including Invasive control
Start Fire Regime
Regeneration opening monitoring
Inventory and Write new Guide


Proposed Date

Summer 2021
2022-2024
1-2 Years after Harvest
At least 1Year after TSI
3 years post-harvest-2041
2040-2042

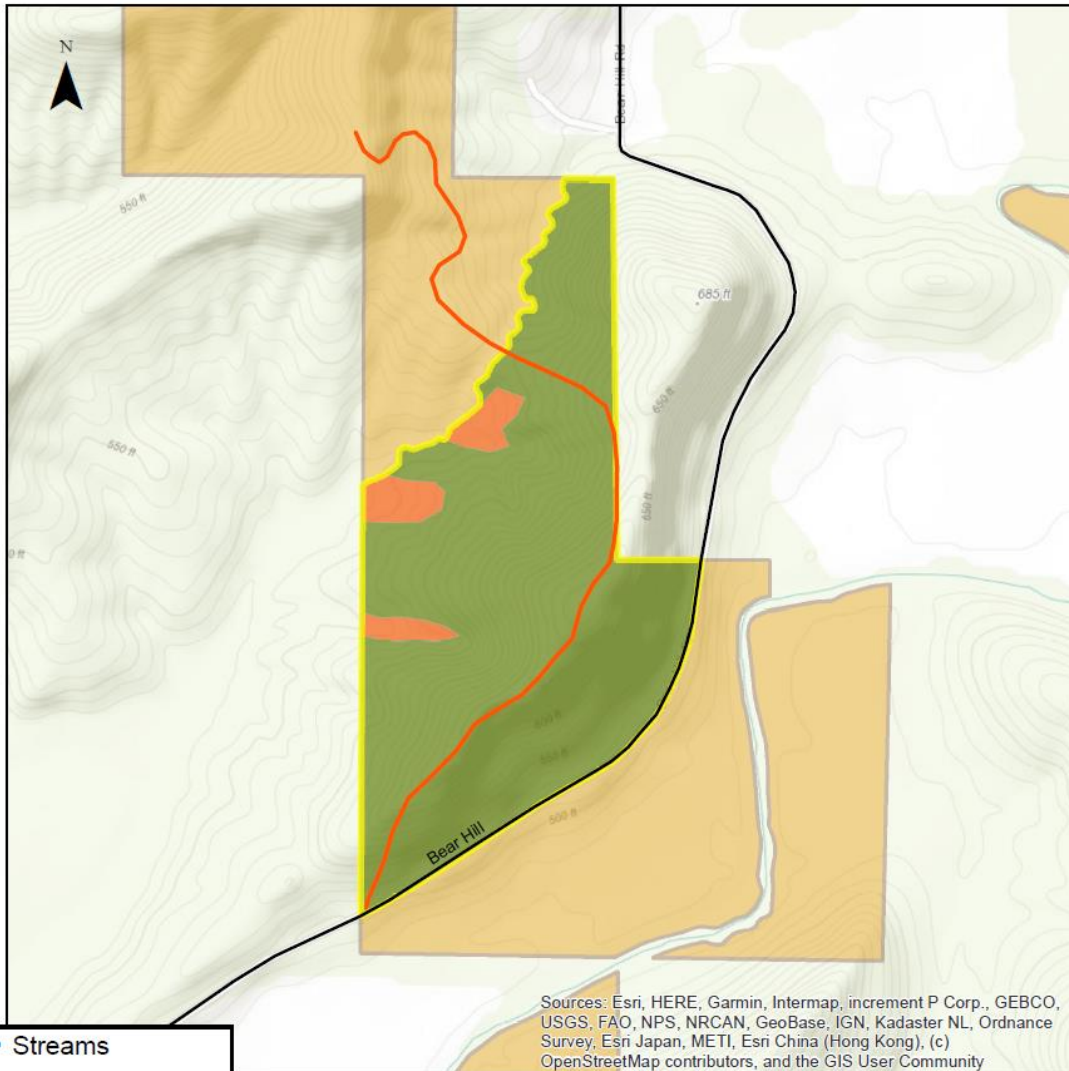
Compartment 1 Tract 6



 State Forest

0 0.25 0.5 1
 Miles

Martin State Forest Compartment 01 Tract 06 Cover Type Map



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

- Streams
- Bear Hill Road
- Fire lane
- 6360106
- Mesic Oak-Hickory
- Mixed Hardwoods
- State Forest

0 0.125 0.25 Miles

Martin State Forest
Forester Kush
Management Cycle End 2038

Compartment 3 Tract 8B
Date 12/13/2018 Acres 84
Management Cycle Length 20yrs

Location

Located in Martin County, sections 35 & 36, T4N and 3W, and approximately 10 miles from Shoals heading 8miles on 50east turning on to Clark Cemetery Road following it to Bex Lane.

General Description

This tract, also known as 6300308, has been split as the north portion was harvested in 2009. The southern portion of the tract (i.e., 8B) inventoried is 84 acres, predominantly mixed hardwoods. Oak-hickory dominates the main ridge while mixed hardwoods the lower elevations throughout the tract. There is a large drainage area on the eastern side of the tract that shows signs of an old field area. The younger timber is maturing and has opportunity to release quality growing stock. An area of planted pine is present in the eastern portion of the tract boarding Mundy cemetery lane.

History

- The land in this tract was purchased in 1940 from Robert B. Reeves for the sum of \$565.00.
- 1967-68 -approximately 15-20 acres were planted to red pine on the ridge top.
- 1973 – Timber Inventory by Ben Hubbard. Average 1,567 bd. ft. per acre. much of the tract is abandoned old fields and “...is returning to the hardwood forest through the sassafras stage”. That inventory also indicated that areas that weren’t cleared for farming were evidently cut over 25 to 40 years prior to the inventory (1930’s – 1950’s). Management recommendations from that inventory included a possible harvest in the cooler drainages in 10-15 years (1983-1988) and possible harvest in the remainder of the tract in 30-40 years (2003-2013).
- 1977- TSI performed on tract.
- 1985- Timber Inventory by Janet Eger Average 3,995 bd. ft. per acre for both tracts A&B. The inventory indicated that both red and white pine were planted on the ridge, with the area being around twelve acres. The guide indicated that fire damage was evident on the tract, especially near the old field sites. A harvest was recommended for the north portion of the tract in approximately five years (1990) and in the southern portion in ~1996.
- 1997- Timber Inventory by Jim Lauck Average 6,229 bd. ft. per acre with recommendation from Eger’s for an improvement harvest scheduled around 1996.
- 1997- Vine TSI was completed in 1997 and an improvement harvest was completed in November 1998. This harvest removed just over 1,800 board feet per acre on fifty-four of the eighty-four acres of the tract. Two regeneration openings totaling three acres were included in the harvest. Post-harvest TSI was completed on the tract in February 1999.
- 2007 Timber Inventory C3 T8B by Darren Bridges and Jim Lauck Average 3,925 bd. ft. per acre.
- 2013 Vine TSI completed by Joe Morgan
- 2018- Timber Inventory and Management guide by Joshua Kush 7,595 bd. ft. per

acre.

Landscape Context

The property surrounding the tract is predominantly closed canopy deciduous forest. Another minor cover/habitat present includes a pine/conifer planting. This tract is part of a roughly 1,000-acre parcel of Martin State Forest. The west and south boundaries are against private ownership. Privately owned lands bordering the area is a mix of forested and small agriculture fields with scattered residences along the road. Land uses seem to be relatively stable.

Topography, Geology and Hydrology

This tract is made up of a main ridge running out the eastern boundary with smaller fingers falling west to a map intermittent stream. Water flows into the White River located just under a mile away. The wide creek bottom is covered with vegetation, which acts as a filter for any runoff. Best management practices (BMPs) will be employed during and following any management harvest on this tract.

Soils

AgrB - Apalona-Zanesville silt loams, 2 to 6 percent slopes

This is a gradual sloping, moderately drained soil found on uplands and upper side slopes. The fragipan can limit rooting depth. This soil has a site index of 70 for white oak and 88 for yellow poplar.

GacAW - Gatchel loam, 1 to 3 percent slopes

This is a nearly level, excessively deep, well drained flood plain soil. Soil is occasionally flooded, very brief duration, and be taken into management plan consideration.

WhfC2 - Wellston silt loam, 6 to 12 percent slopes

This moderately sloping, well drained soils is on narrow ridgetops and on side slopes of the uplands. Well suited for trees. The soil has a site index of 81 for red oak and 90 for yellow poplar.

WhfD2 - Wellston silt loam, 12 to 18 percent slopes

This steeply sloping, moderately well drained soils on structural scarps, ridges, and hill slopes. The soil has a site index of 81 for red oak and 90 for yellow poplar.

WpfG – Wellston Tipsaw Adyeville complex, 18 to 70 percent slopes

This severe sloping, moderately deep, moderate to excessively drained soils is on side slopes. Equipment limitations and erosion hazards should be considered when planning management activities.

Access

Bex Lane and Mundy Cemetery Road are maintained county gravel roads providing access to the tract.

Boundary

Bex Lane and Mundy Cemetery Road (state forest fire lane) make up the east boundary of the

tract. The north boundary follows a major drainage that intersects Mundy Cemetery Road and extends west to private property until reaching the northwest corner. The west boundary adjoins private property and follows this boundary reaching a corner where there is a “s” jog in the boundary traveling east a short distance and then cornering and going south again until reaching the southwest corner. The south boundary follows private property which is partially fenced and makes up the entire south boundary. The south boundary intersects with Bex Lane at the southeast corner.

Ecological Considerations

This area is well suited for wildlife in that it has many small drainages leading to sloping hillsides and rocky ledges before reaching the ridge tops. Dense under story between the ridges provide a good food source as well as shelter. The mature ok-hickory provides much of the food source for wildlife in this tract. Deer, turkey, small mammals, and birds were a few noted in this tract as mentioned the mixture of habitat and different stages of the forest growth provide variety for species to thrive.

A Natural Heritage Database Review was completed. If Rare, Threatened or Endangered species (RTE’s) were identified near or within this tract, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species.

The Division of Forestry has developed compartment level guidelines for an important wildlife structural habitat feature: snags. Snags are standing dead or dying trees. Snags provide value to a stand in the form of habitat features for foraging activity, den sites, decomposers, bird perching, and bat roosting. Snags eventually contribute to the future pool of downed woody material. Downed woody debris provides habitat for many species and contributes to healthy soils.

	Maintenance Level	Inventory	Available Above Maintenance
Snag 5" + DBH	336	195	-141
Snag 9" +DBH	252	195	-57
Snag 19" +DBH	42	56	14

This data shows that all snag densities 5”+ and 9”+ below targeted maintenance levels.

It is important to note that these are compartment guidelines and that even though the estimated tract data does not quite meet all target levels, it is likely that suitable levels are present for these habitat features in the surrounding landscape. The prescribed management will maintain or enhance the relative abundance of these features, particularly the 5” and 9” diameter classes. Timber stand improvement (TSI) following the harvest is planned which will further increase standing snag counts and provide habitat benefits. Management practices conducted on this tract will be conducted in a manner that will enhance habitat diversity and maintain the long-term forest habitats for wildlife populations.

Communities

Two main plant communities are found on the tract. The tract is dominated by mixed hardwoods found on the mid to lower slopes. The main ridge top is oak-hickory. The mid story and understory in the hardwood areas is mainly sugar maple and American beech. Mature timber is present throughout the tract. A pine planting is the other community present on the tract. The pines have never been thinned.

Recreation

There are no developed recreational trails on this tract. The only recreational developments t are the parking units primarily used by hunters. Minor illegal ATV activity was observed.

Cultural

Cultural resources may be present, but their location is protected. Adverse impacts to significant cultural resources will be avoided during any activities.”

Tract Subdivision Description and Silvicultural Prescription

The current forest resource inventory was completed on 12/13/2018 by Josh Kush A summary of the tract inventory results is located below.

Total Trees/Acre. = 61 Trees/Ac.

Overall % Stocking = 72%

BA/A = 93.4 Ft²/Ac.

Sawtimber/Ac. = 33 Trees/Ac.

Present Volume = 7,595 Bd. Ft /Ac.

Approx. Harvest Volume = 1,035-2,285 Bd.Ft./Ac.

Species	Number Trees	Total BD. FT.
Black Oak	569	147,450
Yellow Poplar	331	122,400
White Oak	296	89,520
Red Oak	291	84,866
Sugar Maple	346	59,208
Bitternut Hickory	241	40,396
Shagbark Hickory	76	20,575
Eastern White Pine	123	19,407
American Beech	120	12,137
Chinkapin Oak	91	9,466
Sycamore	23	9,456
Black Cherry	93	7,475
Pignut Hickory	25	7,341
Red Maple	37	3,735
Black Gum	24	2,124
Sassafras	16	1,377
Black Walnut	31	1,006
Total	2,733	637,939

Mixed Hardwood Subdivision 64.5 acres

This cover type is more prevalent in this tract. It is off the main ridge top spanning to the drainages. Primary species include yellow poplar, sugar maple, red maple, white ash, and some oak and hickory. Sugar maple, sassafras, American beech in a wide array of pole sizes dominate this subdivision's understory. A combination of free thinning techniques is prescribed for this tract. The goal is to improve growth and vigor on the highest quality mixed hardwood stems. Trees targeted for removal should include the following: competing mixed hardwoods; suppressed trees; trees damaged by past fire or grazing; wind-damaged trees; drought-stressed trees; and any other dominant or co-dominant trees that are overtopping or suppressing quality growing stock. Small group or patch-cut selection openings may be implemented to remove clusters of poor growing stock and create important early successional habitat.

Oak-Hickory Subdivision 16 acres

This cover type is located on the main ridge top. Primary species include white oak, black oak, red oak, and hickory. A mix of diameters is present, but the timber resource consists of a mostly medium to large sawtimber size class. Quality is good throughout the stand, with oaks consistently having the highest quality. The understory is mixed with beech, maple, and ash. Most of this area should receive selection thinning to favor retention of the healthiest and highest quality oak and hickory trees. Trees targeted for removal should include mixed hardwoods as well as drought-stressed, fire damaged, suppressed, defective, poorly formed, over-mature and some mature oaks and hickories.

Pine/Conifer Subdivision 3.5 acres

This cover type is a planting of eastern white pine in the southcentral portion of the tract. It appears the planting has never been thinned and is mature. The trees range in size from large pole to large saw timber of good quality. The understory is dominated by American beech and red maple. This area should have continued management of white pine through selection thinning.

Summary Tract Silvicultural Prescription and Proposed Activities

The overall silvicultural prescription for this tract is a combination of free thinning and improvement cuts. Tree selection for removal will include poorly formed, mature/declining stems for improved spacing and advancement of residual trees. Small group or patch-cut selection openings may be implemented in areas dominated with poor growing stock, creating a component of young forest and important early successional habitat. The use of forestry BMPs during and following the harvest operation will minimize soil erosion and protect water quality. Prompt installation of water diversions in conjunction with seed and straw (where needed) following harvesting will be employed to minimize impacts to water quality. Prior to the harvest, vine control is prescribed. Portions of or all of this tract will receive post-harvest TSI to ensure opening completion and crop tree release in other portions of the tract as well as in older openings. Invasive species control will be prescribed on a situational approach. A field review for regeneration opening success is planned 3-4 years following the harvest. Due to the soils, tree inventory data and scale of proposed actions, a 20-year harvest reentry cycle is suggested and should be reassessed at that time. The current inventory indicates an approximate removal of 86,940-191,140bd.ft. (1,035-2,285 bd. ft. / acre).

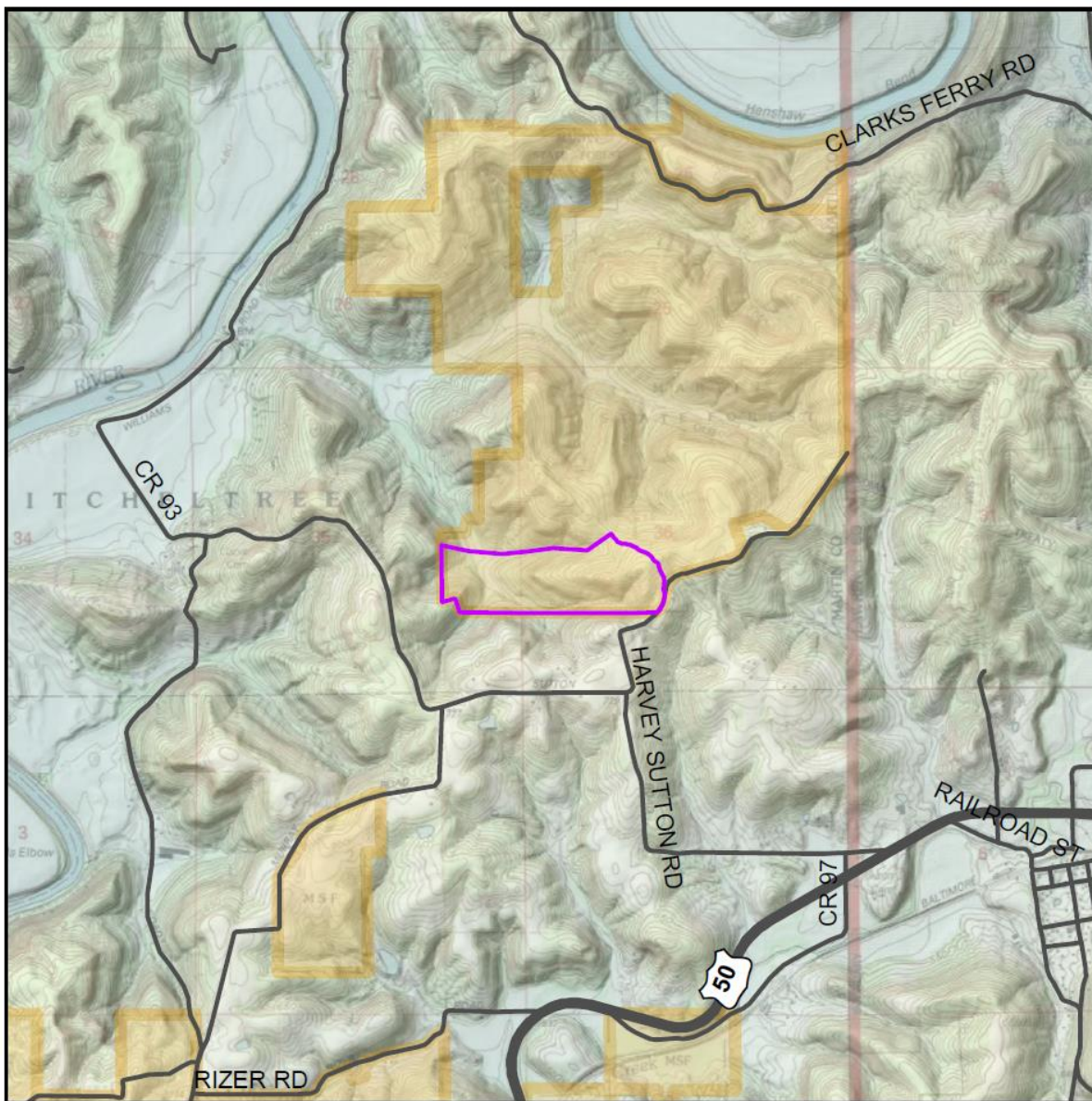
Proposed Management Activity

Pre-Harvest vine TSI
Timber Harvest
Post-Harvest TSI
3-year regeneration opening inspection
Re-inventory and develop guide

Proposed Date

2020
2021-2023
2023-2025
2026
2038

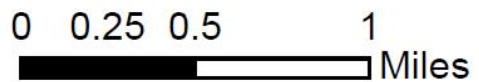
Compartment 3 Tract 8B



State Forest



Tract



Martin State Forest Compartment 3 Tract 8B Cover Types Map



- Mesic Oak-Hickory
- Mixed Hardwoods
- Conifer

- Wildlife Ponds
- Tract Boundary

