

# Indiana Department of Natural Resources – Division of Forestry

**-Draft-**

## Resource Management Guides

### Harrison-Crawford State Forest

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 500-1,000 acres in size and their subunits (tracts) are 50-200 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 1,700 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 for Compartment 12, Tracts 1,2,3,4 contained in this document are part of this year's tracts under review for Harrison-Crawford State Forest.

**To submit a comment on this document, go to:**

[www.in.gov/dnr/forestry/8122.htm](http://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>.

**Harrison Crawford State Forest      Compartment: 12 Tract: 1**

State Forest: Harrison Crawford  
 Inventorying Forester: E. Wilcoxson

Date: October 23, 2017  
 Compartment: 12    Tract: 1

**INVENTORY SUMMARY**

Tract Acreage: 102 acres  
 Number of Stands: 4 stands  
 Permanent Openings: 0 acres  
 Average Basal Area: 83.1

Est. Annual Growth: 181 bdf/acre/yr  
 Est. Cutting Cycle: ~20 years  
 Site Index: 70-80 (upland oaks)

**Table 1. Tract 1201 Inventory Summary**

SPECIES	Bd. Ft. Volume	
	Per acre	Total
White oak	2,901	295,930
Northern red oak	1,169	119,220
Pignut hickory	738	75,310
Black oak	710	72,450
Yellow poplar	616	62,830
<i>Eastern red cedar*</i>	449	45,770
Sugar maple	363	37,000
White ash	286	29,150
American beech	265	27,080
Scarlet oak	129	13,170
Shumard oak	73	7,450
Shagbark hickory	67	6,790
Blackgum	50	5,100
Mockernut hickory	34	3,500
Post oak	33	3,330
Chinkapin oak	32	3,270
<b>Total</b>	<b>7,915</b>	<b>807,350</b>

\* *Cedar volume was calculated using a special cedar scale that counts volume in trees 6" DBH and larger, which results in high volumes for stands of small trees.*

## PART 1 - TRACT INFORMATION

### Location

Tract 1201 is located in Harrison County, Indiana. The tract is located in sections 13, 14, 23, and 24 of T3S R2E. The tract is located approximately 6 miles northeast of the town of Leavenworth, Indiana, 5 miles east of Carefree, Indiana, and 8 miles northwest of Corydon, Indiana. The tract is 0.25 miles north of I-64 and is bordered to the north by the Blue River.

### General Description

The acreage of this tract is approximately 102 acres. There are four distinct cover types on this tract: Oak Hickory, Mixed Mesic Hardwoods, Old Field, and Non-Merchantable. Table 2 details the acreage and volume of a given cover type. See map of cover type locations.

**Table 2. Tract 1201 Stand Acreages and Volumes**

Stand	Acres	Percent of Acreage	Volume	Percent of Volume
Oak Hickory	52	51%	568,030	70%
Mixed Mesic Hardwoods	14	14%	115,800	14%
Old Field	21	21%	126,170	16%
Non-Merchantable Stands	15	15%	-	-
<b>Total</b>	<b>102</b>	<b>100%</b>	<b>810,000*</b>	<b>100%</b>

\*rounded

### Merchantable Cover Types

#### **Stand 1 – Oak Hickory – 52 acres**

This cover type is found across 51% of the tract acreage, it covers majority of the west facing slope. 70% of the volume found on the tract is located within this cover type. 85% of the volume within this cover type is made up of oak and hickory species. The most abundant species is white oak which comprises 46% of the volume (259,240 board feet) within the cover type, Northern red oak is the second most common species making up 15% of the volume (85,040 board feet), and pignut hickory is third with 12% of the volume (65,400 board feet). Other less common oak and hickory species included black oak, scarlet oak, shumard oak, and shagbark hickory.

#### **Stand 2 – Mixed Mesic Hardwoods – 14 acres**

This cover type is found across 14% of the tract acreage, it is situated on the slopes of the drainage which make up the western boundary of the tract. This cover type holds 14% of the volume found on the tract. The most abundant species is American beech which comprises 22% of the volume (25,280 board feet) within the cover type, Northern red oak is the second most common species making up 21% of the volume (24,060 board feet), and sugar maple is third with 14% of the volume (16,430 board feet). Other less common species include yellow poplar, white oak, white ash, black oak, mockernut hickory, and chinkapin oak.

### **Stand 3 – Old Field – 21 acres**

This cover type is found in several pockets, two on the flat ridge top that makes up the eastern tract boundary and another spanning the power line Right-of-Way in the north western corner of the tract. This cover types includes 21% of the tract acreage and holds 16% of the volume found on the tract. The most abundant species is Eastern red cedar which comprises 35% of the volume (44,090 board feet) within the cover type, white oak is the second most common species making up 24% of the volume (30,110 board feet), and yellow poplar is third with 11% of the volume (13,280 board feet). Other less species include black oak, Northern red oak, pignut hickory, sugar maple, post oak, and white ash.

### **Non-Merchantable Cover Types**

Non-Merchantable cover types include 8 acres of Rocky Steep found to the north of the tract along the Blue River, 4 acres of Open which encompasses the power line Right-of-Way running across the northern portion of the tract, and 3 acres of Bottomlands again along the Blue River to the north of the tract.

## **History**

### **Acquisition 1934 to 1982**

The tract was acquired in 5 parcels. August 2, 1934 the northwestern portion of the tract was acquired from the Harrison County Auditor. July 13, 1936 the southwest tip of the tract was acquired from Charles and Emma Lemay. December 31, 1938 the southeast corner of the tract was purchased from Silas E. and Nora Simmons. May 25, 1939 majority of the tract was acquired from Jacob and Minnie E. Hannel as part of a 120 acre acquisition. January 23, 1982 the northeast corner of the tract was acquired from Jane Bolen.

### **Management Plan 1981**

In 1981, forester Russ Dotzauer wrote a management guide for tract 1201. At that time Northern red oak, white oak, black oak, and pignut hickory were the most dominant on the tract. This is still the case for majority of the tract. In the 1981 management guide Dotzauer writes, “The major portion of this tract is in the oak-hickory timber type and about 16 acres of this timber is of harvestable size and quality. The harvestable timber is not in sufficient volume to be sold alone, but this additional volume would increase the chances of selling the merchantable timber available in C. 11 T. 5, C. 12 T. 2 & 3. The ridgetops, powerline right-of-way, and cliffs above Blue River are covered by the oak-cedar type and of poor quality. These areas have very little potential for timber production in the future.”

### **Harvest 1983**

March 3, 1983, a sale with 333,608 board feet in tracts 1104, 1105, 1106, 1201, 1202, and 1203 was sold to Coffman and Crosier for \$56,250. Russ Dotzauer was the marking forester. 355 acres across the 6 tracts were marked. The sale number was 6348302. Table 3 details the volume by species sold during the 1983 harvest.

**Table 3. 1983 Harvest Tract 1201**

<b>Species</b>	<b>Number of Trees</b>	<b>Number of Culls</b>	<b>Volume</b>
Black Oak	246	31	66,462
N. Red Oak	188	21	59,376
White Oak	153	10	43,750
American Beech	151	62	43,570
Sugar Maple	244	41	33,636
White Ash	119	12	31,078
Yellow Poplar	47	8	18,251
Pignut Hickory	62	6	11,165
Scarlet Oak	42	11	8,358
Shagbark Hickory	33	5	5,665
Blackgum	35	13	5,488
Red Maple	10	1	1,744
Black Cherry	11	2	1,288
Basswood	7	6	1,154
Black Walnut	5	0	990
Chinkapin Oak	2	2	849
Red Elm	2	0	255
Chestnut Oak	1	0	206
Sassafras	4	5	183
Eastern Red Cedar	9	1	140
<b>Total</b>	<b>1,371</b>	<b>237</b>	<b>333,608</b>

### **Landscape Context**

The dominant land uses within a 5 mile radius of the tract are agricultural and forestlands. There is more development near I-64 and along SR-66 (west of the tract) and SR-62 (south of the tract). I-64 is less than 0.25 miles south of the tract. Additionally, within 6 miles the towns of Leavenworth and Carefree, the Ohio River, O'Bannon Woods State Park (2,000 acres), and numerous Nature Preserves (1,800 acres) can all be found. The tract is bordered to the north by the Blue River.

### **Topography**

Majority of this tract is made up of the same west facing slope. The west facing slope has two somewhat sizeable drainages running down hill (west) to the larger drainage which makes up the western boundary of the tract. The northern portion of the tract includes bluffs which slope down to the river and a small amount of bottomlands along the river.

### **Soils**

Tract 1201 has 27 acres (26%) covered in Gilpin Silt Loam towards the center of the tract but also in the northeastern corner. There are 23 acres (23%) covered in Corydon Stony Silt Loam, majority of which is located along the drainage that makes up the western boundary and along the Blue

River. Additionally, Gullied Land, Hagerstown Silt Loam, Haymond Silt Loam, and Tilsit Silt Loam are also present.

**Gilpin Silt Loam** (GID2, GID3, GIE2, 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

**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

The Corydon series consists of shallow, well drained soils that formed in as much as 20 cm (8 inches) of loess and in the underlying limestone residuum. The Corydon soils are on hills underlain with limestone. Slope ranges from 6 to 70 percent.

### **Hydrology**

The tract has several small drainages on the west facing slope which run into the larger drainage which is the western boundary of the tract. This drainage runs to the north where it ultimately runs into the Blue River. This area has karst hydrology typical of much of the area, with springs, sinkholes, and caves being common. These features will be avoided, buffered or otherwise treated to minimize adverse impacts during management activities.

### **Access**

Currently there is no developed access into this part of the State Forest. At this time, there is some question as to how far Cox's Road extends to the east. If it is determined Cox's Road extends to the cell tower, located off the south western boundary of tract 1104 (due west of 1201), then access may be developed in the future.

### **Boundaries**

The tract is bounded to the north by the Blue River, to the east by a ridge top (the other side of the ridge is tract 1202), to the south by a small drainage, and to the west by a drainage which runs into the Blue River.

### **Wildlife**

This tract represents typical oak hickory and mixed mesic habitat, in addition to a component of old field successional habitat, with cedar and smaller hardwoods. Consequently, it likely receives use from a typical assemblage of common game and nongame wildlife species such as white-tailed deer, wild turkey, squirrels, songbirds, snakes, box turtles, and others. Hard mast food sources are provided by the abundant oaks and hickories in the tract.

The Division of Forestry has developed compartment level guidelines for two important wildlife structural habitat features: Forest Snag Density, Preferred Live Roost Trees. Snags and preferred live roost trees were tallied in this inventory and summarized in the following tables.

#### **Guidelines for preferred live roost trees (trees/acre)**

<b>Number of live trees per acre</b>	<b>Guidelines Maintenance</b>	<b>Tract 1201 Pre Harvest</b>	<b>Tract 1201 Post Harvest</b>
12-18" DBH class	6	36	17
20" + DBH class	3	10	6
<b>Total</b>	<b>9</b>	<b>47</b>	<b>22</b>

The above table shows that live tree densities both pre and post-harvest on this tract will be above the maintenance guidelines.

#### **Guidelines for snag tree levels (trees/acre)**

<b>Number of snags per acre</b>	<b>Guidelines Maintenance</b>	<b>Tract 1201 actual</b>
6-8" DBH class	1.0	5.3
10-18" DBH class	2.5	5.8
20" + DBH class	0.5	1.4
<b>Total</b>	<b>4.0</b>	<b>12.5</b>

This data shows that all snag densities are above the recommended maintenance levels in all diameter classes on this tract. It is likely that additional snags will be created by harvest operations and post-harvest TSI. Management activities will not intentionally remove snags, with a few exceptions, including when a snag poses a physical hazard to field personnel.

### **Rare, Threatened, and Endangered Species (Public Use)**

A Natural Heritage Database Review is part of the management planning process. If Rare, Threatened or Endangered species were identified for in the area, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species.

### **Exotic Species**

*Ailanthus altissima*, Tree of Heaven or Ailanthus, was in one location on the edge of the powerline Right-of-Way. Measures to control this species should be taken while the species is still in a manageable stage in the area. Multiflora rose was noted scattered across the tract. Garlic Mustard and Stilt Grass were noted along the Blue River and have been working their way uphill using the ATV trails, powerlines and drainages as a conduit. These are common species prevalent throughout the county.

### Recreation

There are no designated recreational trails within this tract. There are several unauthorized ATV trails in neighboring tract 1104 which may tie into those found in the power line Right-of-Way and those along the Blue River. Barricades should probably be put in place to prevent further use of these trails by ATVs.

### Cultural Resources

Cultural resources may be present, but their location(s) are protected. Adverse impacts to significant cultural resources will be avoided during management or construction activities.

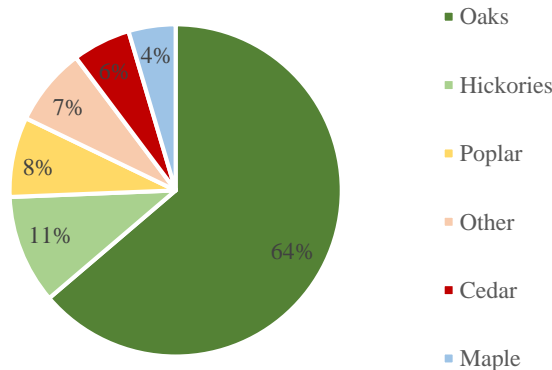
## PART 2 - MANAGEMENT PRESCRIPTION

### Tract Summary – 102 acres

The acreage of this tract is approximately 102 acres. There are three distinct merchantable cover types on this tract: Oak Hickory, Mixed Mesic Hardwoods, and Old Field. There are a total of 87 merchantable acres (85% of the tract acreage) and a total of 15 non-merchantable acres (15% of the tract acreage) within the tract. See map for cover type locations.

There is an estimated total of 807,350 board feet within the merchantable stands, with an average volume of 7,915/acre and average basal area of 83.1 sq.ft./acre and 120 trees/acre.

Graph 1. Volume Distribution by Species





**Stand 1: Oak Hickory (52 acres)**Current condition:

This cover type is found across 51% of the tract acreage, it covers majority of the west facing slope. 70% of the volume found on the tract is located within this cover type. 85% of the volume within this cover type is made up of oak and hickory species. The most abundant species is white oak which comprises 46% of the volume (259,240 board feet) within the cover type, Northern red oak is the second most common species making up 15% of the volume (85,040 board feet), and pignut hickory is third with 12% of the volume (65,400 board feet). Other less common oak and hickory species included black oak, scarlet oak, shumard oak, and shagbark hickory. The mid-story (pole sized timber) is dominated by white oak, sugar maple, and pignut hickory. The understory is dominated by sugar maple. American beech, Eastern redbud, and white ash are also present. The stand inventory is summarized in Table 6 with sawtimber species composition detailed in table 7. Currently, the cover type is 85% stocked.

**Table 6. Oak Hickory - Inventory Summary**

	<b>TOTAL (bd ft)</b>
Volume per acre	10,923
Volume total	568,030
Pole Volume per Acre	2,784
Pole Volume Total	144,750
Basal Area per Acre	101.9
Trees per Acre	137

**Table 7. Oak Hickory - Volume by Species**

<b>Species</b>	<b>TOTAL (bd ft)</b>
White Oak	259,240
Northern Red Oak	85,040
Pignut Hickory	65,400
Black Oak	55,690
Yellow Poplar	35,200
White Ash	16,410
Sugar Maple	16,190
Scarlet Oak	13,430
Shumard Oak	7,600
Shagbark Hickory	6,920
Blackgum	5,200
Eastern Red Cedar	1,710
<b>Total</b>	<b>568,030</b>

Desired future condition:

The objective of this cover type is to provide for multiple economic and ecological services specifically a quality hardwood timber stand, dominated by oak and hickory, while providing hard mast and early to mid-seral habitat for wildlife.

Silvicultural Prescription:

Given current stand conditions and stocking, and to facilitate the desired future condition an improvement harvest is prescribed over the next 2-5 years. Oaks and hickories are not only the best species for supplying hard mast but are also the best quality timber group that is occurring in this stand. According to the inventory data, approximately 268,750 board feet (5,168 board feet per acre) could be removed from this cover type during a managed harvest. Most of this would be removed under a single tree selection routine with regeneration openings targeting groups of low-grade trees or multiple mature or stressed trees growing in close proximity. When possible, selection should also favor releasing future crop trees of timber and wildlife value. The residual stand is expected to be slightly heavier to white oak, with a lesser component of other oak and hickory species, as well as a minor component of mesophytic species. This provides a stand of longer-lived higher-quality white oak that allows for more management options into the future. Openings created by group selection areas will be used to help recruit oak into the future as well as maintain the presence of early seral habitat. Openings should be large enough to achieve regeneration of desirable species and should coincide with the release of advance regeneration when possible. It is estimated that 5-15% of the stand may have regeneration opening treatments. Stocking levels between the regeneration openings is expected to remain in the fully stocked category (above Gingrich B level stocking).

Under uneven aged management trees in all size classes are thinned during management operations to promote stand development and regeneration. Given that many of these will be unmerchantable, post-harvest TSI is prescribed to thin poorly-formed, low-quality trees, and treat the understory to reduce shade tolerant species where appropriate in favor of oaks and other more desirable species. The select girdling of medium to large low value trees may also be undertaken to recruit larger snags and provide habitat. TSI will also be needed to manage invasives that are present on the tract.

**Stand 2: Mixed Mesic Hardwoods (14 acres)**Current Condition:

This cover type is found across 14% of the tract acreage, it is situated on the slopes of the drainage which make up the western boundary of the tract. This cover type holds 14% of the volume found on the tract. The most abundant species is American beech which comprises 22% of the volume (25,280 board feet) within the cover type, Northern red oak is the second most common species making up 21% of the volume (24,060 board feet), and sugar maple is third with 14% of the volume (16,430 board feet). Other less common species include yellow poplar, white oak, white ash, black oak, mockernut hickory, and chinkapin oak. The mid-story (pole sized timber) is dominated by sugar maple and American beech. The understory is dominated by sugar maple. The stand inventory is summarized in Table 8 with species composition detailed in Table 9. Currently the cover type is around 70% stocked.

**Table 8. Mixed Mesic Hardwoods - Inventory Summary**

	<b>Board feet</b>
Volume per acre	8,271
Volume total	115,790
Pole Volume per Acre	2,700
Pole Volume Total	37,800
Basal Area per Acre	85
Trees per Acre	95

**Table 9. Mixed Mesic Hardwoods - Volume by Species**

<b>Species</b>	<b>TOTAL (bd ft)</b>
American Beech	25,280
Northern Red Oak	24,060
Sugar Maple	16,430
Yellow Poplar	14,030
White Oak	10,800
White Ash	9,720
Black Oak	4,790
Pignut Hickory	4,380
Mockernut Hickory	3,260
Chinkapin Oak	3,050
<b>Total</b>	<b>115,800</b>

Desired Future Condition:

The objective of this cover type is to provide for multiple economic and ecological services specifically a quality hardwood timber stand, dominated by mid- and late-seral species, while providing hard mast and mid to late-seral habitat for wildlife.

Silvicultural Prescription:

Given current stand conditions and stocking, and to facilitate the desired future condition an improvement harvest is prescribed over the next 2-5 years. According to the inventory data, approximately 54,350 feet (3,882 board feet per acre) could be removed from this cover type during the managed harvest. Most of this would be removed under a single tree selection routine with regeneration openings targeting groups of low-grade trees or multiple mature or stressed trees growing in close proximity. When possible, selection would also favor releasing future crop trees of timber and wildlife value. The residual stand will maintain a variety of mesic species. Similar to Stand 2, regeneration openings may occur on 5-15% of the stand and stocking levels between the regeneration openings are expected to remain in the fully stocked category. . 78% of the proposed harvest volume, within this cover type, would come from non-oak and hickory species, such as Beech, Sugar maple and Ash.

**Stand 3: Old Field (21 acres)**Current Condition:

This cover type is found in several pockets, two on the flat ridge top that makes up the eastern tract boundary and another spanning the power line Right-of-Way in the north western corner of the tract. This cover types includes 21% of the tract acreage and holds 16% of the volume found on the tract. The most abundant species is Eastern red cedar which comprises 35% of the volume (44,090 board feet) within the cover type, white oak is the second most common species making up 24% of the volume (30,110 board feet), and yellow poplar is third with 11% of the volume (13,280 board feet). Other less species include black oak, Northern red oak, pignut hickory, sugar maple, post oak, and white ash. The mid-story (pole sized timber) is dominated by black oak, Eastern red cedar, and pignut hickory. Northern red oak, post oak, and yellow poplar are also common. The understory is dominated by sugar maple, white oak, American beech, Eastern red cedar, and dogwood. The inventory is summarized in Table 10 with species composition detailed in Table 11. Currently the cover type is around 85% stocked.

**Table 10. Old Field Inventory Summary**

	<b>TOTAL (bd ft)</b>
Volume per acre	6,009
Volume total	126,180
Pole Volume per Acre	4,157
Pole Volume Total	87,300
Basal Area per Acre	95.3
Trees per Acre	179

**Table 11. Old Field Volume by Species**

<b>Species</b>	<b>TOTAL (bd ft)</b>
Eastern Red Cedar	44,090
White Oak	30,110
Yellow Poplar	13,280
Black Oak	12,690
Northern Red Oak	10,050
Pignut Hickory	6,470
Sugar Maple	3,510
Post Oak	3,330
White Ash	2,640
<b>Total</b>	<b>126,170</b>

Desired Future Condition:

The objective of this cover type is to provide for multiple economic and ecological services specifically a quality hardwood timber stand, dominated by mid- and late-seral species, while providing hard mast and mid to late-seral habitat for wildlife.

Silvicultural Prescription:

To move the stand towards the desired future condition, the Eastern Red Cedar and the lower grade hardwoods could be removed/thinned from this cover type to release existing midstory oaks and hickories. The use of single tree selection or a regeneration opening may be used in order to remove the cedar and less desirable hardwoods.

**Non-Merchantable Cover Types**

No management action recommended at this time. This cover type should be monitored for invasive species control needs.

### **PART 3 - TRACT SUMMARY**

**Summary of Silviculture throughout the Tract:**

Given the current condition of the stand, a medium level improvement harvest is recommended and could be undertaken in this tract at any time. Overall tract volume would be reduced 30-50%. Most of this would occur under a single tree selection routine with regeneration openings targeting groups of low-grade trees or multiple mature or stressed trees growing in close proximity. This would produce an estimated harvest volume of approximately 300,000-400,000 board feet and leave about 400-500,000 board feet across the tract. It is recommended that Timber Stand Improvement (TSI) be undertaken in this tract after the harvest to accomplish a variety of tasks, including completion of any marked openings, snag creation and manage of invasives.

**Effect of Prescription on Tract Properties:**

Landscape: Landscape forest patterns will remain similar to the current situation due to this tract being kept in a forested condition.

Soils: The management activities prescribed in this plan should have minimal impact on soils in this tract. Some soil disturbance is likely during harvesting but this should be confined to landings and main skid trails. These areas should be properly closed out according to Indiana's BMPs to minimize the impact of management on soils.

Hydrology: Hydrology should not be permanently affected by management on this tract. Water quality and yield should not be altered if BMPs are followed during harvest. BMP use will be contractually required of management operators.

Wildlife: Wildlife in this tract should not be adversely affected. Snags and coarse woody debris should remain at viable levels in the stratum and should continue to provide habitat for the Indiana bat and other species. The main effect on wildlife will be the reduction of the coniferous component (Cedar) of the stratum. This currently provides a limited amount of thermal cover in

the winter for deer and small mammals. This type of cover will be permanently reduced from the tract. Managing to recruit newly established or released oaks and hickories will help to ensure that this important food source is available into the foreseeable future. Regeneration openings, such as prescribed have been shown to be of less an issue from nest predators and generalist species as compared to hard edges such as public roadways, utility corridors and crop field edges. Placement of regeneration openings away from hard edges can minimize these potential impacts. The prescribed activity will promote wildlife diversity and enhance habitat structural components.

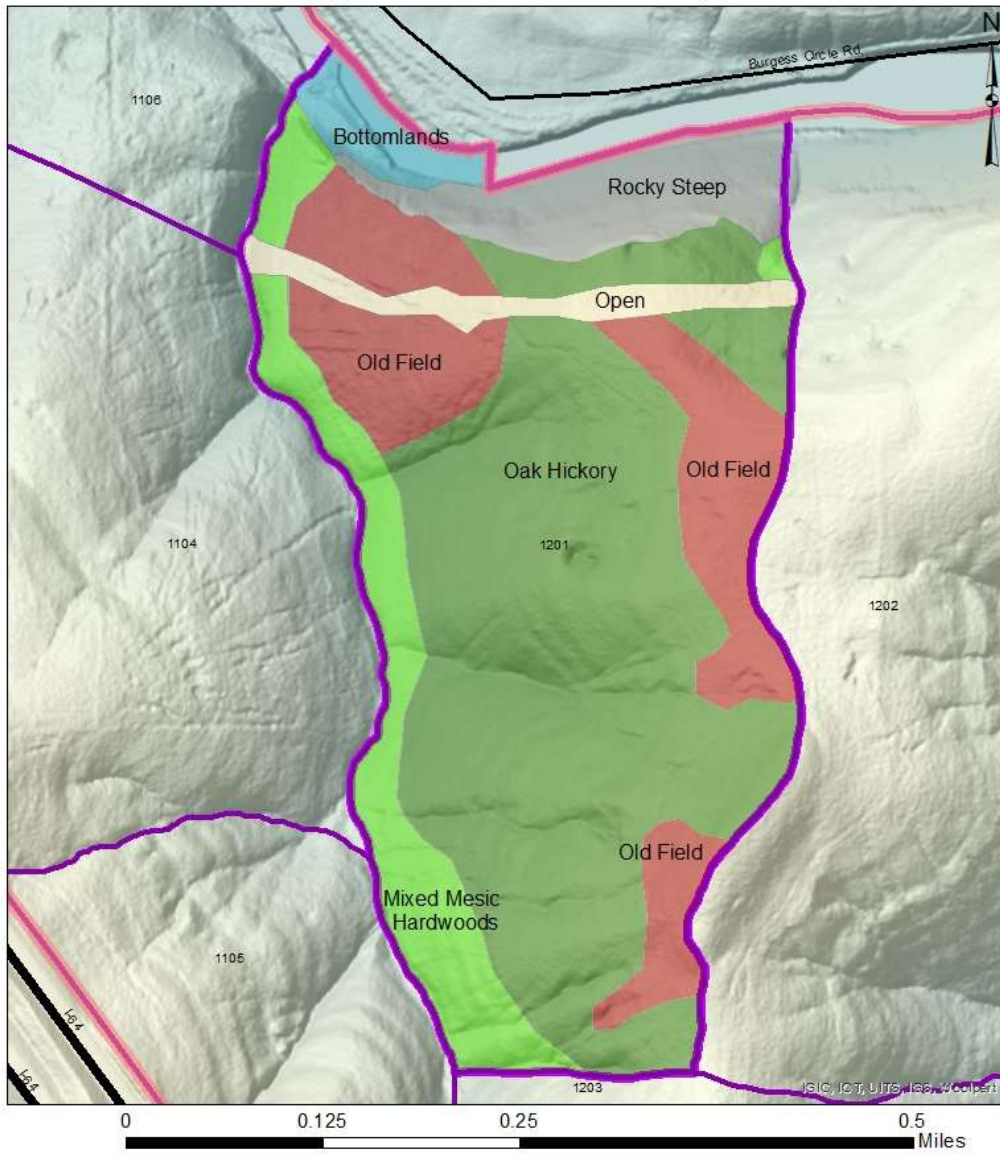
Wildlife Discussion from Ecological Resource Review: Additionally, management activities involving a timber sale should not affect this habitat long-term from the perspective of any wildlife utilizing it due to the maintenance of a forested habitat on the tract. Creation of regeneration openings will improve habitat diversity and create early successional habitat that will be beneficial to certain groups of wildlife dependent upon this habitat. Likely, early successional habitat created with such management will also benefit a wider segment of wildlife species that preferentially utilize such habitat for feeding and cover more so than later successional stage habitat.

Recreation: Given the limited amount of recreation (majority of which is hunting) that is carried out on this tract, it will only be minimally and temporarily affected. Hunting opportunities should be improved by the maintenance of early successional habitat and the recruitment of hard mast producers such as oak and hickory to provide deer and small mammal browse.

#### **PART 4 - PROPOSED ACTIVITIES LISTING**

<b><u>Proposed Activity</u></b>	<b><u>Proposed Date</u></b>
Management Guide	2018
Improve Access	2018-2020
Treat Invasives	2018-2020
Mark Sale	2018-2020
Sell Timber	2019-2022
Post Harvest TSI	One to two years after harvest
Treat Invasives	One to three years after harvest
Monitor regeneration openings	Three to four years after harvest
Re-Inventory	2038
Write new Management Plan	2038

### Cover Type Map Compartment 12 Tract 1



**Harrison Crawford State Forest      Compartment: 12 Tract: 2**

State Forest: Harrison Crawford  
 Inventorying Forester: E. Wilcoxson

Date: April 11, 2018  
 Compartment: 12    Tract: 2

Note: Tract 1202 consists of 212 acres of which 29 acres lies east of the Blue River. This section is referred to as the 'East' portion, stand or section of the tract in this resource management guide. The remaining 183 acres is referred to as the 'West' portion of the tract.

**INVENTORY SUMMARY**

Tract Acreage: 212 acres  
 Number of Stands: 5 stands  
 Permanent Openings: 0 acres  
 Average Basal Area: 106

1202 **West** Acreage: 183 acres  
 Est. Annual Growth: no data  
 Est. Cutting Cycle: ~20 years  
 Site Index: 70-80 (upland oaks)

**Table 2. Tract 1202 West Inventory Summary**

SPECIES	TOTAL	
	Per acre	Total
White Oak	2,895	532,740
Yellow Poplar	1,092	201,000
Northern Red Oak	671	123,440
Pignut Hickory	492	90,470
White Ash	445	81,860
Chinkapin Oak	398	73,260
Black Oak	378	69,500
Scarlet Oak	281	51,770
<i>Eastern Red Cedar*</i>	255	46,880
Shumard Oak	215	39,510
Sugar Maple	166	30,520
Blue Ash	135	24,850
American Sycamore	115	21,140
Shagbark Hickory	108	19,780
Mockernut Hickory	58	10,710
Blackgum	51	9,320
Black Cherry	38	6,970
Chestnut Oak	29	5,270
Ohio Buckeye	28	5,120



<i>Miscellaneous**</i>	83	15,270
<b>Total</b>	7,931	1,459,380

\* Cedar volume was calculated using a special cedar scale that counts volume in trees 6” DBH and larger, which results in high volumes for stands of small trees.

\*\*Miscellaneous includes those species which had a total volume less than 5,000 board feet including basswood, American beech, black walnut, and post oak.

## PART 1 - TRACT INFORMATION

### Location

Tract 1202 as a whole is located in Harrison County, Indiana. The tract is located in sections 13 (northern portion) and 24 (southern portion) of T3S R2E. The majority of the tract is located in section 13. The tract is located approximately 6 miles northeast of the town of Leavenworth, Indiana, 5 miles east of Carefree, Indiana, 8 miles northwest of Corydon, Indiana, and the tract is less than half a mile north of I-64. The Blue River serves as the northern boundary of the tract (also the property boundary), then continues to flow through the tract (the Blue River splits the tract into a 183 acre southwestern piece and a 29 acre piece on the opposite bank), and then serves as the southeastern boundary of the tract (also the property boundary).

### General Description

The acreage of this tract is approximately 212 acres. Of this 212 acres, 183 are located on the west bank of the Blue River and 29 acres are located on the east bank. **That 29 acres were inventoried separately.** Within the west portion of the tract, there are five distinct cover types on this tract: Oak Hickory, Mixed Mesic Hardwoods, Old Field, Rocky Steep, and Open. Table 2 details the acreage and volume of a given cover type.

**Table 2. Tract 1202 West Stand Acreages and Volumes**

Stand	Acres	Percent of Acreage	Volume	Percent of Volume
Oak Hickory	79	43%	833,400	61%
Mixed Mesic Hardwoods	42	23%	332,320	24%
Old Field	29	16%	127,630	9%
Rocky Steep	24	13%	82,440	6%
Open	10	6%	0	0%
<b>Total</b>	<b>184</b>	<b>100%</b>	<b>1,375,830</b>	<b>100%</b>

### Merchantable Cover Types (West Section)

#### **Stand 1 – Oak Hickory – 79 acres**

This cover type is found across 43% of the tract acreage, it covers majority of the ridge top and slopes. 61% of the volume found on the tract is located within this cover type. 90% of the volume within this cover type is made up of oak and hickory species. The most abundant species is white

oak which comprises 55% of the volume (456,520 board feet) within the cover type, Northern red oak is the second most common species making up 9% of the volume (78,040 board feet), and pignut hickory is third with 9% of the volume (71,860 board feet). Other less common oak and hickory species included black oak, chinkapin oak, scarlet oak, shagbark hickory, Shumard oak, mockernut hickory, and post oak.

### **Stand 2 – Mixed Mesic Hardwoods – 42 acres**

This cover type is found across 23% of the tract acreage, it is situated along the slopes above the Blue River in the northern portion of the tract and in the eastern tip of the tract along the bottoms of the Blue River. This cover type holds 24% of the volume found on the tract. The most abundant species is yellow poplar which comprises 36% of the volume (120,840 board feet) within the cover type, white ash is the second most common species making up 12% of the volume (41,350 board feet), and chinkapin oak is third with 9% of the volume (30,230 board feet). Other less common species include scarlet oak, American sycamore, Northern red oak, Shumard oak, pignut hickory, blue ash, black cherry, mockernut hickory, white oak, chestnut oak, Ohio buckeye, basswood, and American beech.

### **Stand 3 – Old Field – 29 acres**

This cover type is found in two pockets and includes 16% of the tract acreage and holds 9% of the volume found on the tract. The most abundant species is yellow poplar which comprises 62% of the volume (78,510 board feet) within the cover type, Eastern red cedar is the second most common species making up 24% of the volume (30,080 board feet), and Northern red oak is third with 7% of the volume (8,780 board feet). Other less common species inventoried included white oak and blackgum.

### **Non-Merchantable Cover Types (West Section)**

#### **Stand 4 – Rocky Steep – 24 acres**

This cover type is found along the Blue River on the eastern side of the tract it includes 13% of the tract acreage and holds 6% of the volume found on the tract. The most abundant species is white oak which comprises 16% of the volume (13,520 board feet) within the cover type, chinkapin oak is the second most common species making up 16% of the volume (13,270 board feet), and blue ash is third with 16% of the volume (13,040 board feet). Other less common species inventoried include sugar maple, Eastern red cedar, Northern red oak, Shumard oak, white ash, and scarlet oak.

#### **Stand 5 – Open – 10 acres**

This cover type includes 10 acres most of which is power line right-of way and a small portion of which is the Blue River.

## **History**

### **Acquisition 1938 to 1982**

The entirety of tract 1202 (east and west) was acquired in 5 parcels. December 31, 1938 the southwestern corner of the tract was acquired from Silas E. and Nora Simmons. May 25, 1939 the center of the tract was acquired from Jacob and Minnie E. Hannel. June 7, 1939 the southeastern

corner of the tract was acquired from J. R. and Alma M. Rothrock. October 9, 1979 the northeastern portion of the tract and 1202 east were acquired from an unlisted source. January 23, 1982 the northwestern tip of the tract acquired from Jane Bolen.

### **Aerial Photography 1940 to 1958**

Aerial photography from 1940 through 1955 shows the majority of the peninsula, which juts into the Blue River in the northeastern corner of the tract, being open and seemingly row cropped. Aerial photography of the ridgetop (the center of the western boundary of the tract) shows what is presumably a pasture, which is reverting back to forest as early as 1940 (at that time it was roughly 20 acres). By 1958, this pasture had shrunk to 12 acres and was reverting to forest.

### **Management Plan 1981**

In July 1981, forester Russ Dotzauer wrote a management guide for tract 1202. At that time the tract was only 80 acres (the tract now includes 212 acres), bounded as follows according to the 1981 management guide, “The boundaries of this tract are not easily definable. The west boundary follows the ridgeline to the powerline right-of-way which forms the north line and the eastern boundary is the Blue River. The southern boundary is an arbitrary line not delineated by any natural or man-made features.” It is unclear which tract the northeastern portion of the current 1202, belonged to in 1981. In 1981 at the time of the last inventory, white oak, Northern red oak, black oak, and yellow poplar were the most dominant species on the tract. Currently, similarly to the tract in 1981, white oak, yellow poplar, Northern red oak, and pignut hickory contribute the largest part of the volume on the tract. The 1981 inventory called for 131,118 board feet to be left and 26,560 board feet to be harvested. Thus a total of 157,678 board feet (1,971 board feet per acre) was present on the tract in 1981.

### **Harvest 1983**

March 3, 1983, a sale with 333,608 board feet in tracts 1104, 1105, 1106, 1201, 1202, and 1203 was sold to Coffman and Crosier for \$56,250. Russ Dotzauer was the marking forester. 355 acres across the 6 tracts were marked, including 15 acres in the northern portion of 1202 and 37 acres in the southern portion of 1202. The sale number was 6348302. Table 3 details the volume by species sold during the 1983 harvest across all six tracts.

**Table 3. Sale Number 6348302**

<b>Species</b>	<b>Number of Trees</b>	<b>Number of Culls</b>	<b>Volume</b>
Black Oak	246	31	66,462
N. Red Oak	188	21	59,376
White Oak	153	10	43,750
American Beech	151	62	43,570
Sugar Maple	244	41	33,636
White Ash	119	12	31,078
Yellow Poplar	47	8	18,251
Pignut Hickory	62	6	11,165

Scarlet Oak	42	11	8,358
Shagbark Hickory	33	5	5,665
Blackgum	35	13	5,488
Red Maple	10	1	1,744
Black Cherry	11	2	1,288
Basswood	7	6	1,154
Black Walnut	5	0	990
Chinkapin Oak	2	2	849
Red Elm	2	0	255
Chestnut Oak	1	0	206
Sassafras	4	5	183
Eastern Red Cedar	9	1	140
<b>Total</b>	<b>1,371</b>	<b>237</b>	<b>333,608</b>

### Landscape Context

The dominant land uses within a 5 mile radius of the overall tract are agricultural and forestlands. There is more development near I-64 and along SR-66 (west of the tract) and SR-62 (south of the tract). I-64 is less than a half mile south of the tract. Additionally, within 6 miles the towns of Leavenworth and Carefree, the Ohio River, O'Bannon Woods State Park (2,000 acres), and numerous Nature Preserves can all be found. The Blue River serves as the northern boundary of the tract (also the property boundary), then continues to flow through the tract, and serves as the southeastern boundary of the tract (also the property boundary).

### Topography (West Section)

The western half of this west portion of the tract is made up of a ridgeline crossed by several small drainages which slopes down to the Blue River the north side of this ridge also slopes down to the Blue River. The eastern half of this tract is made up predominantly of a peninsula which juts out into the Blue River. A small portion, roughly 20 acres, of the western half of the tract is made up of north facing slope which slopes down (north) to the Blue River and is found on the opposite bank of the Blue River from the majority of the tract.

### Soils (West Section)

Tract 1202 has 65 acres (31%) covered in Corydon Stony Silt Loam across the bluffs of the tract, this is the most prevalent soil type. There are 23 acres (11%) covered in Gilpin Silt Loam majority of which is located on the slopes just above the bluffs. Additionally, Hagerstown Silt Loam, Haymond Silt Loam, Tilsit Silt Loam, Wellston Silt Loam, and Zanesville Silt Loam are also present.

**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

**Gilpin Silt Loam (GID2, GID3, GIE2, 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

### **Hydrology (West Section)**

The tract has several small drainages running down to the Blue River, the largest of these serves as the southern tract boundary, it too flows into the Blue River. The Blue River which is a well-known and popular recreation waterway and ecological resource. This area also has karst hydrology typical of much of the area, with springs, sinkholes, and caves being common. These features will be avoided, buffered or otherwise treated to minimize adverse impacts during management activities.

### **Access (West Section)**

Currently there is no developed access into this part of the State Forest. When the area was harvested in 1983, the timber was skidded to and yarded at the east end of Cox's Road, a county road. At this time, there is some question as to how far Cox's Road extends to the east. If it is determined Cox's Road extends to the cell tower, located off the south western boundary of tract 1104 (west of 1202), then access may be developed in the future.

### **Boundaries**

The overall tract is bounded to the west by a ridgetop on the other side of which is tract 1201. Majority of the northern boundary of the tract is the Blue River which also serves as the property boundary, although in the northeastern corner there is a small portion of the river bank which is not owned by the State. Older state mapping indicated that the state forest went up to the river through this portion. In the past 10 years or so, investigation of the deeds indicated the state boundary followed the course shown in this document's maps. The eastern boundary of the eastern half of the tract, which is also the property boundary, is the section line. The southern boundary of

the eastern half of the tract, which is also the property boundary, is the quarter section line. The eastern boundary of the western half of the tract, which is also the property boundary, is the Blue River. And the southern boundary of the western half of the tract is a drainage which separates tracts 1202 and 1203.

### **Wildlife (West Section)**

This tract represents typical oak hickory and mixed mesic habitat, in addition to a component of old field successional habitat, with cedar and smaller hardwoods. Consequently, it likely receives use from a typical assemblage of common game and nongame wildlife species such as white-tailed deer, wild turkey, squirrels, songbirds, snakes, box turtles, and others. Hard mast food sources are provided by the abundant oaks and hickories in the tract.

In concert with various agencies and organizations, the Division of Forestry has developed compartment level guidelines for two important wildlife structural habitat features: Forest Snag Density, Preferred Live Roost Trees. Snags and preferred live roost trees were tallied in this inventory and summarized in the following tables.

### **Guidelines for preferred live roost trees (trees/acre) (West Section)**

<b>Number of live trees per acre</b>	<b>Guidelines Maintenance</b>	<b>Tract 1202 Pre Harvest</b>	<b>Tract 1202 Post Harvest</b>
12-18" DBH class	6	26	20
20" + DBH class	3	6	3
<b>Total</b>	<b>9</b>	<b>32</b>	<b>23</b>

The above table shows that live tree densities both pre and post-harvest on this tract will be within the maintenance guidelines.

### **Guidelines for snag tree levels (trees/acre) (West Section)**

<b>Number of snags per acre</b>	<b>Guidelines Maintenance</b>	<b>Actual</b>
6-8" DBH class	1.0	5.9
10-18" DBH class	2.5	5.1
20" + DBH class	0.5	0.8
<b>Total</b>	<b>4.0</b>	<b>11.8</b>

This data shows that all snag densities are above the maintenance level guidelines on this tract. It is likely that additional snags will be created by harvest operations and post-harvest TSI. Management activities will not intentionally remove snags, with a few exceptions, including when a snag poses a physical hazard to field personnel.

### **Rare, Threatened, and Endangered Species**

A Natural Heritage Database Review is part of the overall management planning process. If Rare, Threatened or Endangered species were identified for in the area, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species.

### Exotic Species (West Section)

*Ailanthus altissima*, Tree of Heaven or Ailanthus, was noted in several locations within the tract, predominately in the eastern tip. Measures to control this species should be taken while the species is still in a manageable stage in the area. Also in the eastern tip of the tract, multiflora rose, autumn olive, garlic mustard, J. honeysuckle, and J. stilt grass were noted at the time of the inventory. Paulownia was noted in one location on the western half of the tract.

### Recreation

This tract overall does not currently have any established recreational trails, facilities, or amenities. The area is likely used for hunting by local residents. Due to the proximity to the interstate the tract has very limited potential for developed recreation. However, the Blue River is a well-known and popular recreation waterway and receives use on the stretch bordering this tract.

### Cultural Resources

Cultural resources may be present, but their location(s) tract wide are protected. Adverse impacts to significant cultural resources will be avoided during management or construction activities.

## PART 2 - MANAGEMENT PRESCRIPTION (West Section)

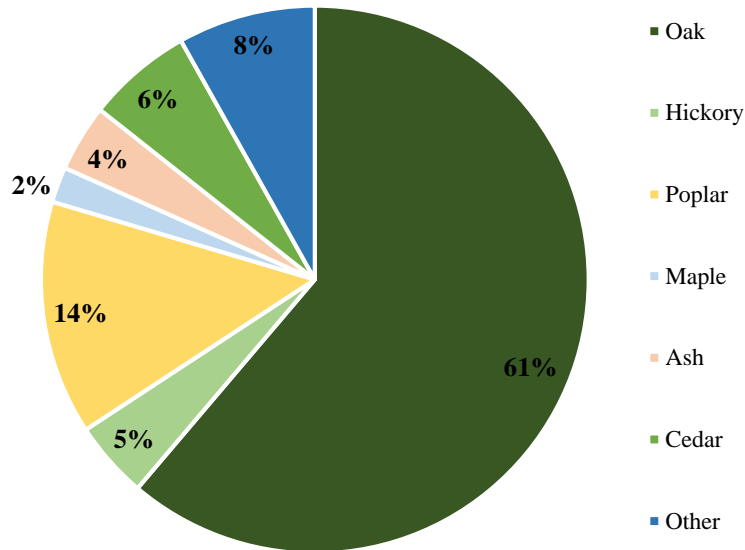
### Tract Summary – 212 acres total 183 acres inventoried

The acreage of this tract overall is approximately 212 acres. Of this 212 acres, 183 are located on the west bank of the Blue River and 29 acres are located on the east bank. **The 29 acres on the east bank of the Blue River were inventoried separately.** Within the West section, there are five distinct cover types: Oak Hickory, Mixed Mesic Hardwoods, Old Field, Rocky Steep, and Open. Of these five cover types, there are three distinct merchantable cover types: Oak Hickory, Mixed Mesic Hardwoods, and Old Field. There are a total of 150 merchantable acres (81% of the tract acreage) and a total of 34 non-merchantable acres (19% of the tract acreage) within the tract. See map of cover type locations. Table 5 details the volume per acre, total volume, basal area, and trees per acre for the entire tract.

**Table 5. Inventory Summary**

	<b>TOTAL</b> (bd ft)
Volume per acre	7,931
Volume total	1,459,380
Pole Volume per Acre	4,209
Pole Volume Total	774,500
Basal area/acre	106.0
Trees/acre	141

Figure 1. Volume Distribution by Species



**Stand 1: Oak Hickory (79 acres)**

Current condition:

This cover type is found across 43% of the West section acreage, it covers majority of the ridge top and slopes. 61% of the volume found on the tract is located within this cover type. 90% of the volume within this cover type is made up of oak and hickory species. The most abundant species is white oak which comprises 55% of the volume (456,520 board feet) within the cover type, Northern red oak is the second most common species making up 9% of the volume (78,040 board feet), and pignut hickory is third with 9% of the volume (71,860 board feet). Other less common oak and hickory species included black oak, chinkapin oak, scarlet oak, shagbark hickory, shumard oak, mockernut hickory, and post oak. The mid-story (pole sized timber) is dominated by white oak, white ash, and sugar maple. However, pignut hickory, Northern red oak, and black oak are also present. The understory is dominated by sugar maple. Currently, the cover type is 103% stocked. The inventory is summarized in Table 6 with sawtimber species composition detailed in table 7.

**Table 6. Oak Hickory Inventory Summary**

	<b>TOTAL (bd ft)</b>
Volume per acre	10,550
Volume total	833,440
Pole Volume per Acre	4,570
Pole Volume Total	361,000
Basal Area per Acre	125.4
Trees per Acre	150



**Table 7. Oak Hickory Volume by Species**

<b>Species</b>	<b>TOTAL (bd ft)</b>
White Oak	456,520
Northern Red Oak	78,040
Pignut Hickory	71,860
Black Oak	62,530
White Ash	35,520
Chinkapin Oak	29,050
Scarlet Oak	19,860
Shagbark Hickory	17,790
Sugar Maple	16,690
Shumard Oak	12,700
Yellow Poplar	12,110
<i>Miscellaneous*</i>	20,770
<b>Total</b>	<b>833,440</b>

*\*Miscellaneous includes those species which had a total volume less than 5,000 board feet including Eastern red cedar (cedar volume was calculated using a special cedar scale that counts volume in trees 6" DBH and larger), blackgum, mockernut hickory, black walnut, blue ash, and post oak.*

Desired future condition:

The objective of this cover type is to provide for multiple economic and ecological services specifically a quality hardwood timber stand, dominated by oak and hickory, while providing hard mast and early to mid-seral habitat for wildlife.

Silvicultural Prescription:

Given the current condition and stocking and to facilitate the desired future condition, an improvement harvest is prescribed over the next 2-5 years. Oaks and hickories are not only the best species for supplying hard mast but are also the best quality timber group that is occurring in this stand. According to the inventory data, approximately 360,000 board feet (4,500 board feet per acre) could be removed from this cover type in a managed harvest. Most of this would be removed under a single tree selection routine with regeneration openings targeting groups of low-grade trees or multiple mature or stressed trees growing in close proximity. When possible, selection should also favor releasing future crop trees of timber and wildlife value. The residual stand is expected to be slightly heavier to white oak, with a lesser component of other oak and mesophytic species. This provides a stand of longer-lived higher-quality white oak that allows for more management options into the future. Openings created by group selection areas will be used to help recruit oak into the future stand as well as maintain the presence of early seral habitat. Openings should be large enough to achieve regeneration of desirable species and should coincide with the release of advance regeneration when possible.

Under uneven aged management trees in all size classes are thinned during harvesting to promote stand development and regeneration. Given that many of these will be un-merchantable, post-harvest TSI is prescribed to thin poorly-formed, low-quality trees and treat the understory to reduce shade tolerant species where appropriate in favor of oaks and other more desirable species. The select girdling of medium to large low value trees may also be undertaken to recruit larger snags for wildlife habitat benefits. TSI will also be needed to manage invasives that are present on the stand.

## **Stand 2: Mixed Mesic Hardwoods (42 acres)**

### Current Condition:

This cover type is found across 23% of the West section tract acreage, it is situated along the slopes above the Blue River in the northern portion of the tract and in the eastern tip of the tract along the bottoms of the Blue River. This cover type holds 24% of the volume found on the West section of the tract. The most abundant species is yellow poplar which comprises 36% of the volume (120,840 board feet) within the cover type, white ash is the second most common species making up 12% of the volume (41,350 board feet), and chinkapin oak is third with 9% of the volume (30,230 board feet). Other less common species include scarlet oak, American sycamore, Northern red oak, Shumard oak, pignut hickory, blue ash, black cherry, mockernut hickory, white oak, chestnut oak, Ohio buckeye, basswood, and American beech. The mid-story (pole sized timber) is dominated by sugar maple. The understory is also dominated by sugar maple. Currently the cover type is around 88% stocked. The inventory is summarized in Table 8 with species composition detailed in Table 9.

**Table 8. Mixed Mesic Hardwoods Inventory Summary**

	<b>TOTAL (bd ft)</b>
Volume per acre	7,912
Volume total	332,320
Pole Volume per Acre	4,158
Pole Volume Total	174,650
Basal Area per Acre	106.5
Trees per Acre	148

**Table 9. Mixed Mesic Hardwoods Volume by Species**

<b>Species</b>	<b>TOTAL (bd ft)</b>
Yellow Poplar	120,840
White Ash	41,350
Chinkapin Oak	30,230
Scarlet Oak	28,870
American Sycamore	23,580
Northern Red Oak	23,120
Shumard Oak	22,420
Pignut Hickory	11,810

Blue Ash	8,930
Black Cherry	7,780
Mockernut Hickory	7,060
White Oak	6,330
Chestnut Oak	5,880
Ohio Buckeye	5,710
Basswood	5,440
American Beech	5,380
<b>Total</b>	<b>332,320</b>

Desired Future Condition:

The objective of this cover type is to provide for multiple economic and ecological services specifically a quality hardwood timber stand, dominated by mid- and late-seral species, while providing hard mast and mid to late-seral habitat for wildlife.

Silvicultural Prescription:

To guide the stand towards the desired future condition, an improvement harvest is recommended. According to the inventory data, approximately 100,000 board feet (2,400 board feet per acre) could be removed from this cover type during a managed harvest. Most of this would be removed under a single tree selection routine with regeneration openings targeting groups of low-grade trees or multiple mature or stressed trees growing in close proximity. When possible, selection should also favor releasing future crop trees of timber and wildlife values. The residual stand is expected to maintain a variety of mesic species. The majority of the proposed harvest volume, within this cover type, would come from non-oak and hickory species.

**Stand 3: Old Field (13 acres)**Current Condition:

This cover type is found in two pockets and includes 16% of the West section tract acreage and holds 9% of the volume found on the tract. The most abundant species is yellow poplar which comprises 62% of the volume (78,510 board feet) within the cover type, Eastern red cedar is the second most common species making up 24% of the volume (30,080 board feet), and Northern red oak is third with 7% of the volume (8,780 board feet). Other less common species inventoried included white oak and blackgum. The mid-story (pole sized timber) is dominated by Eastern red cedar and yellow poplar although white ash, dogwood, and red maple were also common. The understory is dominated by Eastern red cedar, redbud, and dogwood. Currently the cover type is ~86% stocked. The inventory is summarized in Table 10 with species composition detailed in Table 11.

**Table 10. Old Field Inventory Summary**

	<b>TOTAL (bd ft)</b>
Volume per acre	4,401
Volume total	127,630
Pole Volume per Acre	4,800
Pole Volume Total	139,200
Basal Area per Acre	98.5
Trees per Acre	190

**Table 11. Old Field Volume by Species**

<b>Species</b>	<b>TOTAL (bd ft)</b>
Yellow Poplar	78,510
Eastern Red Cedar	30,080
Northern Red Oak	8,780
White Oak	5,410
Blackgum	4,850
<b>Total</b>	<b>127,630</b>

**Desired Future Condition:**

The objective of this cover type is to provide for multiple economic and ecological services specifically a quality hardwood timber stand, dominated by mid- and late-seral species, while providing hard mast and mid to late-seral habitat for wildlife.

**Silvicultural Prescription:**

In order to guide the area to meet the desired future condition, an improvement harvest is recommended. According to the inventory data, approximately 96,000 board feet (3,300 board feet per acre) should be removed from this cover type. Most of this would be removed under a single tree selection routine with regeneration openings targeting groups of low-grade trees or multiple mature or stressed trees growing in close proximity. The majority of removed material is expected to be drought stressed yellow poplar and Eastern red cedar.

**Non-Merchantable Cover Types**

No management action recommended at this time. This cover type should be monitored for invasive species control needs.

**PART 3 - TRACT SUMMARY (West Section)****Summary of Silviculture throughout the Tract:**

Due to the current condition of the stand, a medium level improvement harvest could be undertaken in this West section of the tract at any time. Most of this would be under a single tree selection routine with regeneration openings targeting groups of low-grade trees or multiple mature or stressed trees growing in close proximity. This would produce a sale volume of approximately

550,000-625,000 board feet or about 3,000-3,500 board feet per acre and leave about 875,000-950,000 board feet across the West section. It is estimated that 5-15% of the area may have regeneration opening treatments. Stocking levels between the openings is expected to remain in the fully stocked category (above Gingrich B level stocking) It is recommended that Timber Stand Improvement (TSI) be undertaken in this tract after the harvest to accomplish a variety of tasks, including completion of any marked openings, snag recruitment and management of invasives.

### **Effect of Prescription on Tract Properties:**

Landscape: Landscape forest patterns will remain similar to the current situation due to this tract being kept in a forested condition.

Soils: The management activities prescribed in this plan should have minimal impact on soils in this tract. Some soil disturbance is likely during harvesting but this should be confined to landings and main skid trails. These areas should be properly closed out according to Indiana's BMPs to minimize the impact of management on soils.

Hydrology: Hydrology should not be permanently affected by management on this tract. Water quality and yield should not be altered if BMPs are followed during harvest. BMP use will be contractually required of management operators.

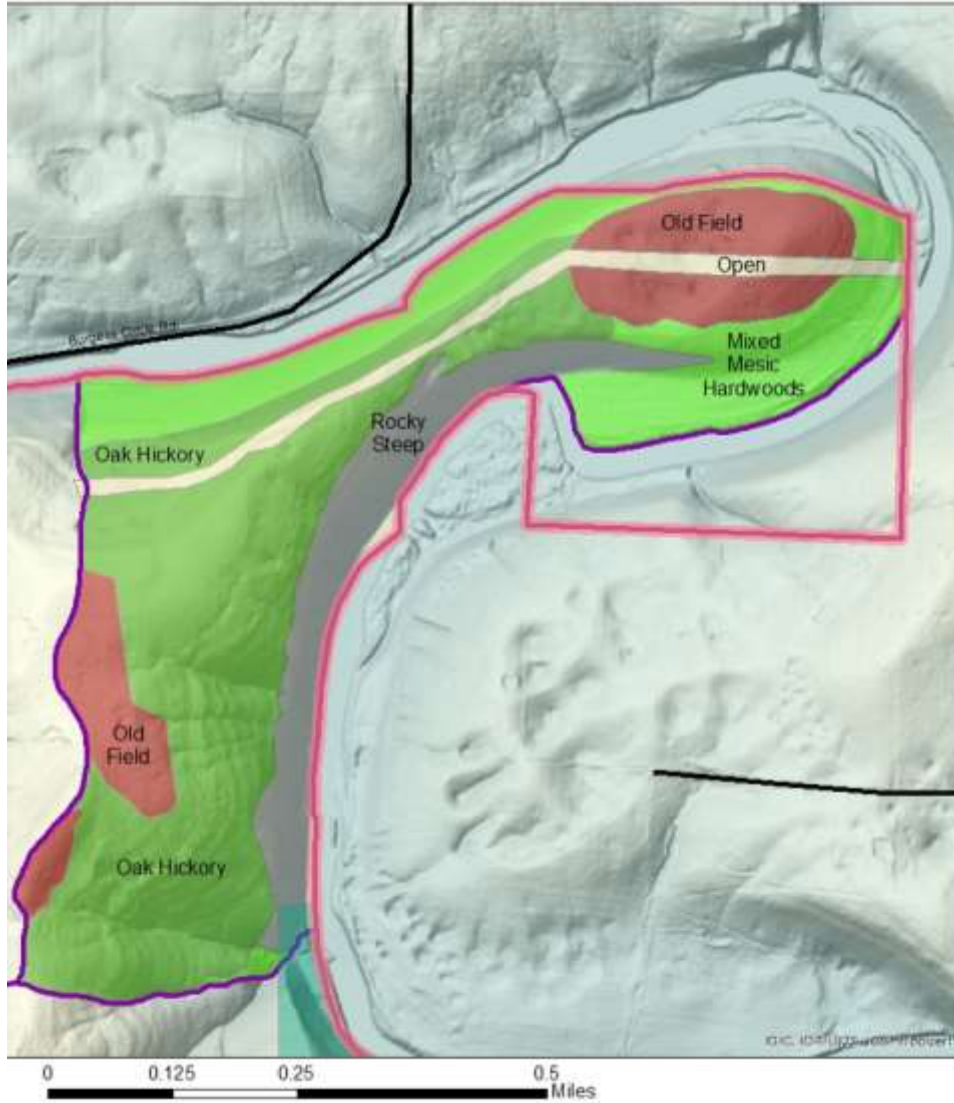
Wildlife: Wildlife in this tract should not be adversely affected. No rare threatened or endangered species will be adversely affected during the planning period. Snags and coarse woody debris should remain at viable levels in the stratum and should continue to provide habitat for the Indiana bat. The main effect on wildlife will be the reduction of the coniferous component of the stratum. This currently provides a limited amount of thermal cover in the winter for deer and small mammals. This type of cover will be permanently reduced from the tract. Managing to recruit newly established or released oaks and hickories will help to ensure that this important food source is available into the foreseeable future. Regeneration openings, such as prescribed have been shown to be of less an issue from nest predators and generalist species as compared to hard edges such as public roadways, utility corridors and crop field edges. Placement of regeneration openings away from hard edges can minimize these potential impacts. The prescribed activity will promote wildlife diversity and enhance habitat structural components.

Wildlife Discussion from Ecological Resource Review: Additionally, management activities involving a timber sale should not affect this habitat long-term from the perspective of any wildlife utilizing it due to the maintenance of a forested habitat on the tract. Creation of regeneration openings will create early successional habitat that will be beneficial to certain groups of wildlife dependent upon this habitat. Likely, early successional habitat created with such management will also benefit a wider segment of wildlife species that preferentially utilize such habitat for feeding and cover more so than later successional stage habitat.

Recreation: Given the limited amount of recreation (majority of which is hunting) that is carried out on this tract as a whole, it will only be minimally and temporarily affected. Hunting opportunities should be improved by the maintenance of early successional habitat and the

recruitment of hard mast producers such as oak and hickory to provide deer and small mammal browse.

### West Section Cover Type Map Compartment 12 Tract 2



**This section of the Tract 1202 management guide is specific to that portion of the tract East of the Blue River Except where otherwise noted.**

### INVENTORY SUMMARY (East Section)

Tract Acreage: 212 acres

Number of Stands: 3 stands

Permanent Openings: 0 acres

Average Basal Area: 92.3

**1202 East** Acreage: 29 acres

Est. Annual Growth: no data

Est. Cutting Cycle: ~20 years

Site Index: 70-80 (upland oaks)

**Table 3. Tract 1202 East Inventory Summary**

SPECIES	TOTAL	
	Per acre	Total
Yellow Poplar	2,409	45,770
White Oak	1,056	20,060
Sugar Maple	773	14,690
American Beech	481	9,140
White Ash	418	7,940
Black Walnut	386	7,330
Chinkapin Oak	381	7,230
Shumard Oak	323	6,140
Mockernut Hickory	290	5,510
Basswood	285	5,410
Shagbark Hickory	260	4,940
Black Oak	248	4,720
Bitternut Hickory	247	4,690
<i>Eastern Red Cedar*</i>	198	3,760
Scarlet Oak	171	3,250
Silver Maple	107	2,030
<b>Total</b>	8,032	152,610

*\* Cedar volume was calculated using a special cedar scale that counts volume in trees 6" DBH and larger, which results in high volumes for stands of small trees.*

## PART 1 - TRACT INFORMATION (East Section)

### General Description

The overall area of tract 1202 is approximately 212 acres. Of this area, 29 acres are located on the east bank of the Blue River and 183 acres are located on the west bank. **The two sides of the Blue River were inventoried separately.** Within the East section of this tract, there are three distinct cover types: Oak Hickory, Mixed Mesic Hardwoods, and Open. Table 2 details the acreage and volume of a given cover type. See the map of cover type locations.

**Table 2. Tract 1202 East Stand Acreages and Volumes**

Stand	Acres	Percent of Acreage	Volume	Percent of Volume
Oak Hickory	5.9	21%	71,520	45%
Mixed Mesic Hardwoods	13.3	46%	87,300	55%
Open	9.5	33%	0	0%
<b>Total</b>	<b>28.7</b>	<b>100%</b>	<b>158,820</b>	<b>100%</b>

### Merchantable Cover Types (East Section)

#### **Stand 1 – Oak Hickory – 5.9 acres**

This cover type is found across 21% of the East section of the tract acreage, it covers part of the slope in the east corner of the section. 45% of the volume found on the section is located within this cover type. 59% of the volume within this cover type is made up of oak and hickory species. The most abundant species is yellow poplar which comprises 41% of the volume (29,330 board feet) within the cover type, white oak is the second most common species making up 35% of the volume (24,820 board feet), and Shumard oak is third with 11% of the volume (7,600 board feet). Other less common species included black oak, chinkapin oak, and mockernut hickory.

### Non-Merchantable Cover Types (East Section)

#### **Stand 2 – Mixed Mesic Hardwoods – 13.3 acres**

This cover type is found across 46% of the East section of the tract acreage, it is situated across the slopes above the Blue River. This cover type holds 55% of the volume found on the section. The most abundant species, by volume in order from greatest to least, are as follows: yellow poplar, sugar maple, American beech, white ash, black walnut, chinkapin oak, basswood, shagbark hickory, bitternut hickory, mockernut hickory, Eastern red cedar, scarlet oak, and silver maple.

#### **Stand 3 – Open – 9.5 acres**

This cover type includes 9.5 acres most of which is open water of the Blue River and a small portion of which is a large sand bar.



## **History (East Section)**

### **Aerial Photography 1940 to 1958**

Aerial photography from 1940 through 1955 shows majority most of the area is reverting from field to forest.

### **Management Plan 1981**

In July 1981, forester Russ Dotzauer wrote a management guide for tract 1202. At that time the tract did not include 1202 east.

### **Harvest 1983**

In March 1983, a harvest was conducted on the overall tract, but did not include 1202 east.

## **Topography (East Section)**

This portion of the tract is made up of a north facing slope which slopes down to the Blue River in the north. This slope is bisected by one sizeable drainage. The tract also contains part of a large sand bar in the Blue River in this vicinity.

## **Soils (East Section)**

This portion of Tract 1202 has 8.7 acres (41%) covered in Hagerstown Silt Loam on the higher slopes in the eastern portion of the tract, this is the most prevalent soil type. There are 7.5 acres (35%) covered in Corydon Stony Silt Loam which is located on the lower slopes above the Blue River. There are 5.1 acres (24%) covered in Haymond Silt Loam which in the lower areas along the Blue River in the western portion of the section.

**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

**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

**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

### **Hydrology (East Section)**

This portion of the tract has one sizeable drainage in the center bisecting the ridge. The Blue River borders the tract section to the north. The Blue River which is a well-known and popular recreation waterway and ecological resource. This area also has karst hydrology typical of much of the area, with springs, sinkholes, and caves being common. These features will be avoided, buffered, or otherwise treated to minimize adverse impacts during management activities.

### **Access (East Section)**

Currently there is no developed access into this part of the State Forest. At the time of the inventory, 1202 was accessed from the south via the Schwartz's property.

### **Boundaries (East Section)**

This portion of the tract is bounded to the north by the Blue River. The other three sides of the tract section are the property boundary. Several fence fragments and several T-posts were found in the southwest corner of the area. A very few fence fragments were found along the southern boundary. A gate and numerous fence fragments were found in the southeast corner of the tract. The eastern line of the tract had recently (probably 2017) been marked with orange paint by a neighbor who had had a timber harvest.

### **Wildlife (East Section)**

This section represents typical oak hickory and mixed mesic habitat, in addition to a component of old field successional habitat, with cedar and smaller hardwoods. Consequently, it likely receives use from a typical assemblage of common game and nongame wildlife species such as

white-tailed deer, wild turkey, squirrels, songbirds, snakes, box turtles, and others. Hard mast food sources are provided by the abundant oaks and hickories in the tract.

In concert with various agencies and organizations, the Division of Forestry has developed compartment level guidelines for two important wildlife structural habitat features: Forest Snag Density, Preferred Live Roost Trees. Snags and preferred live roost trees were tallied in this inventory and summarized in the following tables.

**Guidelines for preferred live roost trees (trees/acre) (East Section)**

<b>Number of live trees per acre</b>	<b>Guidelines</b>	
	<b>Maintenance</b>	<b>Actual</b>
12-18" DBH class	6	33
20" + DBH class	3	9
<b>Total</b>	<b>9</b>	<b>42</b>

The above table shows that live tree densities on this area of the tract are within the maintenance guidelines.

**Guidelines for snag tree levels (trees/acre) (East Section)**

<b>Number of snags per acre</b>	<b>Guidelines</b>	
	<b>Maintenance</b>	<b>Actual</b>
6-8" DBH class	1.0	3.1
10-18" DBH class	2.5	3.9
20" + DBH class	0.5	0.0
<b>Total</b>	<b>4.0</b>	<b>7.0</b>

Snag levels are above recommended maintenance levels in all except the 20"+ DBH class. It is likely that additional snags will be created by through the recommended management operations. Management activities will not intentionally remove snags, with a few exceptions, including when a snag poses a physical hazard to field personnel.

**Exotic Species (East Section)**

Japanese honeysuckle, multiflora rose, and garlic mustard were noted across the area. Additionally, several autumn olive bushes were located along the southern boundary of the area. Measures to control these species should be taken while they are still in a manageable stage in the area. It should be noted that these species are common and widespread throughout the county.

**PART 2 - MANAGEMENT PRESCRIPTION & SUMMARY (East Section)**

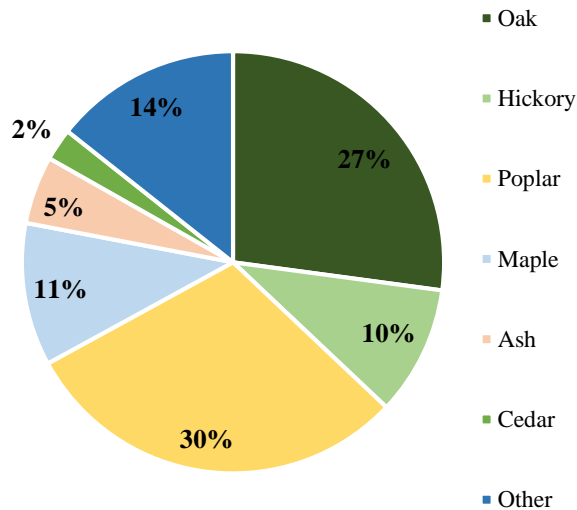
Current Condition:

The tract is approximately 212 acres. Of this 212 acres, 29 are located on the east bank of the Blue River and 183 acres are located on the west bank. **That part of the tract on the west bank of the Blue River was inventoried separately** and is not included in the data or prescription below. The most abundant species by volume on the tract is yellow poplar which comprises 30% of the volume (45,770 board feet), white oak is the second most common species making up 13% of the volume (20,060 board feet), and sugar maple is third with 10% of the volume (14,690 board feet). Other less common species included American beech, white ash, black walnut, chinkapin oak, and Shumard oak. The mid-story (pole sized timber) and the understory are dominated by sugar maple. Currently, the tract is 78% stocked. Table 3 details the volume per acre, total volume, basal area, and trees per acre for the tract.

**Table 3. Inventory Summary**

	<b>TOTAL</b> (bd ft)
Volume per acre	8,032
Volume total	152,610
Pole Volume per Acre	2,974
Pole Volume Total	56,500
Basal area/acre	92.1
Trees/acre	145

**Figure 1. Volume Distribution by Species**



Desired Future Condition:

The objective of this cover type is to provide for multiple economic and ecological services specifically a quality hardwood timber stand, dominated by mid- and late-seral species, while providing hard mast and mid to late-seral habitat for wildlife.

Silvicultural Prescription:

At this time, due to a combination of factors including the limited acreage of the tract (19 acres of forest), the lack of ready access, the tract being bisected by a drainage, the proximity to the Blue River, and the small amount of merchantable timber (mostly due to size) it is recommended tract 1202 east be left to grow and develop during this management cycle. Timber Stand Improvement (TSI) could be undertaken in this tract at this time or in the future to limit stocking, create habitat snags, and control of invasives. It is suggested that tract 1202 east be reinventoried in approximately 15 years.

**Effect of Prescription on Tract Properties:**

Landscape: Landscape forest patterns will remain similar to the current situation due to this tract being kept in a forested condition.

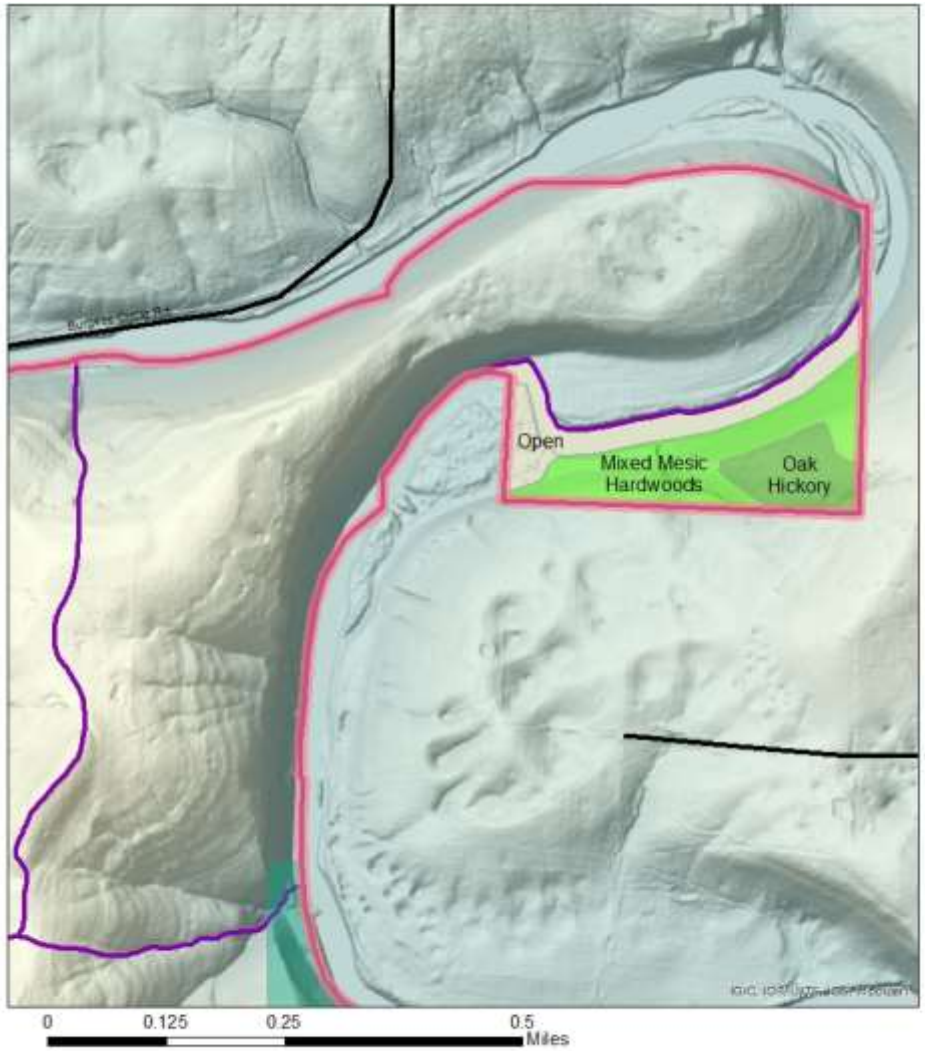
Soils: The management activities prescribed in this plan should have minimal impact on soils in this tract.

Hydrology: Hydrology should not be permanently affected by management on this tract.

Wildlife: Wildlife in this tract should not be adversely affected. Snags and coarse woody debris should remain at viable levels in the stratum and should continue to provide habitat for the Indiana bat. The prescribed activity will promote wildlife diversity and enhance habitat structural components.

Recreation: Given the limited amount of recreation (majority of which is hunting and boating) that is carried out on this tract, it will only be minimally and temporarily affected

### East Section Cover Type Map Compartment 12 Tract 2



**PROPOSED ACTIVITIES LISTING FOR 1202 EAST**

<b><u>Proposed Activity</u></b>	<b><u>Proposed Date</u></b>
Management Guide	2018
Improve Access	2018 - 2020
Possible TSI	2018 - 2033
Re-Inventory	2033
Write new Management Plan	2033

**PROPOSED ACTIVITIES LISTING FOR 1202 WEST**

<b><u>Proposed Activity</u></b>	<b><u>Proposed Date</u></b>
Management Guide	2018
Improve Access	2018 - 2020
Treat Invasives	2018 - 2020
Mark Timber Harvest	2018 - 2020
Sell Timber	2019 - 2021
Post Harvest TSI	One to two years after harvest
Treat Invasives	One to three years after harvest
Monitor regeneration openings	Three to four years after harvest
Re-Inventory	2038
Write new Management Plan	2038

**Harrison Crawford State Forest                      Compartment: 12 Tract: 3**

State Forest: Harrison Crawford  
 Inventorying Forester: E. Wilcoxson

Date: October 23, 2017  
 Compartment: 12    Tract: 3

**INVENTORY SUMMARY**

Tract Acreage: 110 acres  
 Number of Stands: 4 stands  
 Permanent Openings: 0 acres  
 Average Basal Area: 105.4

Est. Annual Growth: 195 bdf/acre/yr  
 Est. Cutting Cycle: ~20 years  
 Site Index: 70-80 (upland oaks)

**Table 4. Tract 1203 Inventory Summary**

SPECIES	TOTAL	
	Per acre	Total
White Oak	3,374	371,160
Black Oak	1,579	173,660
Yellow Poplar	938	103,210
Northern Red Oak	845	92,970
White Ash	821	90,360
Shagbark Hickory	642	70,570
Pignut Hickory	632	69,480
Sugar Maple	604	66,400
American Beech	331	36,360
Scarlet Oak	327	36,020
Chinkapin Oak	202	22,250
Eastern Redcedar	141	15,540
Black Walnut	127	13,930
American Sycamore	83	9,100
Red Maple	54	5,950
Shumard Oak	40	4,440
Hackberry	38	4,130
Basswood	30	3,290
Blue Ash	23	2,520
Post Oak	23	2,480
<b>Total</b>	<b>10,853</b>	<b>1,193,820</b>

\* Cedar volume was calculated using a special cedar scale that counts volume in trees 6" DBH and larger, which results in high volumes for stands of small trees.



**Table 2. Tract 1203 Inventory Summary**  
**(Includes ONLY the portion of 1203 which is not on Scout Mountain Nature Preserve)**

SPECIES	TOTAL	
	Per acre	Total
White Oak	9,487	256,140
Black Oak	5,318	135,640
Shagbark Hickory	2,344	63,290
White Ash	2,113	57,040
Yellow Poplar	2,052	55,400
Pignut Hickory	1,885	50,900
Northern Red Oak	1,704	46,000
Sugar Maple	1,654	44,650
Scarlet Oak	1,012	27,320
American Beech	989	26,710
Eastern Redcedar	1,342	19,590
Red Maple	631	8,200
Black Walnut	164	4,440
Shumard Oak	157	4,240
Hackberry	153	4,130
American Sycamore	141	3,810
Basswood	122	3,290
Chinkapin Oak	107	2,900
Blue Ash	93	2,520
Post Oak	87	2,360
<b>Total</b>	<b>9,862</b>	<b>818,750</b>

\* Cedar volume was calculated using a special cedar scale that counts volume in trees 6" DBH and larger, which results in high volumes for stands of small trees.

## PART 1 - TRACT INFORMATION

### Location

Tract 1203 is located in Harrison County, Indiana. The tract is located in sections 23 and 24 of T3S R2E. Majority of the tract is located in section 24. The tract is located approximately 6 miles northeast of the town of Leavenworth, Indiana, 5 miles east of Carefree, Indiana, and 8 miles northwest of Corydon, Indiana. The tract is bordered by I-64 to the south and by the Blue River in the northeast corner.

### General Description

The acreage of this tract is approximately 110 acres. There are four distinct cover types on this tract: Oak Hickory, Mixed Mesic Hardwoods, Old Field, and Rocky Steep. Table 3 details the acreage and volume of a given cover type. See map of cover type locations.

**Table 3. Tract 1203 Stand Acreages and Volumes**

<b>Stand</b>	<b>Acres</b>	<b>Percent of Acreage</b>	<b>Volume</b>	<b>Percent of Volume</b>
Oak Hickory	63	57%	802,310	73%
Mixed Mesic Hardwoods	26	24%	267,260	24%
Old Field	13	12%	31,020	3%
Rocky Steep	8	7%	-	-
<b>Total</b>	<b>110</b>	<b>100%</b>	<b>1,100,590</b>	<b>100%</b>

### **Merchantable Cover Types**

#### **Stand 1 – Oak Hickory – 63 acres**

This cover type is found across 57% of the tract acreage, it covers majority of the ridge top located in the center of the tract as well as the northeast facing slope above the bluffs leading down to Blue River in the northeast corner of the tract. 73% of the volume found on the tract is located within this cover type. 83% of the volume within this cover type is made up of oak and hickory species. The most abundant species is white oak which comprises 41% of the volume (329,130 board feet) within the cover type, black oak is the second most common species making up 16% of the volume (131,640 board feet), and pignut hickory is third with 7% of the volume (56,490 board feet). Other less common oak and hickory species included Northern red oak, shagbark hickory, scarlet oak, chinkapin oak, shumard oak, and post oak.

#### **Stand 2 – Mixed Mesic Hardwoods – 26 acres**

This cover type is found across 24% of the tract acreage, it is situated mid-slope on the northeast facing ridge. This area is characterized by a sizeable drainage (which ultimately flows into Blue River) with several smaller drainages running into it. This cover type holds 24% of the volume found on the tract. The most abundant species is yellow poplar which comprises 30% of the volume (81,020 board feet) within the cover type, white ash is the second most common species making up 14% of the volume (36,650 board feet), and Northern red oak is third with 11% of the volume (29,490 board feet). Other less common species include American beech, black oak, shagbark hickory, white oak, sugar maple, pignut hickory, scarlet oak, American sycamore, chinkapin oak, black walnut, hackberry, basswood, and blue ash.

#### **Stand 3 – Old Field – 13 acres**

This cover type is found in several pocket and includes 12% of the tract acreage and holds 3% of the volume found on the tract. The most abundant (and only) species inventoried were Eastern red cedar which comprises 50% of the volume (15,450 board feet) within the cover type, red maple is the second most common species making up 26% of the volume (8,200 board feet), and black oak is third with 24% of the volume (7,370 board feet).

### **Non-Merchantable Cover Types**

Non-Merchantable cover types includes 8 acres of Rocky Steep found in the northeast corner of the tract along the banks of the Blue River. All of this cover type is found within Scout Mountain Nature Preserve.

### **History**

#### **Acquisition 1931 to 1975**

The tract was acquired in 6 parcels. December 18, 1931 majority of the western portion of the tract was acquired from Victor and Rhea Rothrock. July 13, 1936 the westernmost portion of the tract was acquired from Charles and Emma Lemay. December 31, 1938 the northwestern corner of the tract was purchased from Silas E. and Nora Simmons. June 7, 1939 the northeastern corner of the tract was acquired from J.R. and Allma M. Rothrock. January 30, 1941 majority of the eastern portion of the tract was acquired from George and Winifred Doolittle. November 19, 1975 the easternmost portion of the tract was acquired from the Indiana Department of Transportation.

#### **Management Plan 1981**

In July 1981, forester Russ Dotzauer wrote a management guide for tract 1203. At that time white oak, Northern red oak, black oak, and white ash were the most dominant on the tract. This is still the case for majority of the tract. At this time, yellow poplar is the third most common species by volume.

#### **Harvest 1983**

March 3, 1983, a sale with 333,608 board feet in tracts 1104, 1105, 1106, 1201, 1202, and 1203 was sold to Coffman and Crosier for \$56,250. Russ Dotzauer was the marking forester. 355 acres across the 6 tracts were marked, including 75 acres within the northwest portion of tract 1203. The sale number was 6348302. Table 4 details the volume by species sold during the 1983 harvest.

**Table 4. 1983 Harvest Tract 1203**

<b>Species</b>	<b>Number of Trees</b>	<b>Number of Culls</b>	<b>Volume</b>
Black Oak	246	31	66,462
N. Red Oak	188	21	59,376
White Oak	153	10	43,750
American Beech	151	62	43,570
Sugar Maple	244	41	33,636
White Ash	119	12	31,078
Yellow Poplar	47	8	18,251
Pignut Hickory	62	6	11,165
Scarlet Oak	42	11	8,358
Shagbark Hickory	33	5	5,665
Blackgum	35	13	5,488
Red Maple	10	1	1,744
Black Cherry	11	2	1,288
Basswood	7	6	1,154

Black Walnut	5	0	990
Chinkapin Oak	2	2	849
Red Elm	2	0	255
Chestnut Oak	1	0	206
Sassafras	4	5	183
Eastern Red Cedar	9	1	140
<b>Total</b>	<b>1,371</b>	<b>237</b>	<b>333,608</b>

### Landscape Context

The dominant land uses within a 5 mile radius of the tract are agricultural and forestlands. There is more development near I-64 and along SR-66 (west of the tract) and SR-62 (south of the tract). I-64 borders the tract to the south. Additionally, within 6 miles the towns of Leavenworth and Carefree, the Ohio River, O'Bannon Woods State Park (2,000 acres), and numerous Nature Preserves (1,800 acres) can all be found. The tract is bordered to the northeast by the Blue River.

### Topography

Majority of this tract is made up of a ridgeline which runs from a knob in the southwestern portion of the tract across the south half of the tract in a northeasterly direction towards the Blue River. There is a quite sizeable drainage within this tract, which has several smaller drainages running into it, that ultimately flows into the Blue River on the northeast side of the tract. The northeastern portion of the tract includes steep bluffs which slope down to the Blue River.

### Soils

Tract 1203 has 34 acres covered in Gilpin Silt Loam across the tract, this is the most prevalent soil type. There are 20 acres covered in Corydon Stony Silt Loam majority of which is located along the drainage running into the Blue River. Additionally, Gullied Land, Hagerstown Silt Loam, Tilsit Silt Loam, and Wellston Silt Loam are also present.

**Gilpin Silt Loam** (GID2, GID3, GIE2, 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

**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

The Corydon series consists of shallow, well drained soils that formed in as much as 20 cm (8 inches) of loess and in the underlying limestone residuum. The Corydon soils are on hills underlain with limestone. Slope ranges from 6 to 70 percent.

### **Hydrology**

The tract has a somewhat sizeable drainage running from the center of the tract to the northeast corner of the tract where it flows into Blue River. The tract is bounded on its' northeastern boundary by the Blue River which is a well-known and popular recreation waterway and ecological resource. This area also has karst hydrology typical of much of the area, with springs, sinkholes, and caves being common. These features will be avoided, buffered or otherwise treated to minimize adverse impacts during management activities.

### **Access**

Currently there is no developed access into this part of the State Forest. At this time, there is some question as to how far Cox's Road extends to the east. If it is determined Cox's Road extends to the cell tower, located off the south western boundary of tract 1104 (west of 1203), then access may be developed in the future.

### **Boundaries**

The tract is bounded to the north by drainages which stem from a flat ridge top towards the center of the tract. The northeast boundary of the tract is the Blue River. The southern boundary on the east side of the tract is a decent sized drainage and on the west side of the tract the southern boundary is I-64. The western boundary of the tract is a sizeable drainage which likely receives runoff from I-64. Roughly 25 acres of Scout Mountain Nature Preserve is located within tract 1203 on the east side.

### **Wildlife**

This tract represents typical oak hickory and mixed mesic habitat, in addition to a component of old field successional habitat, with cedar and smaller hardwoods. Consequently, it likely receives use from a typical assemblage of common game and nongame wildlife species such as white-tailed deer, wild turkey, squirrels, songbirds, snakes, box turtles, and others. Hard mast food sources are provided by the abundant oaks and hickories in the tract.

The Division of Forestry has developed compartment level guidelines for two important wildlife structural habitat features: Forest Snag Density, Preferred Live Roost Trees. Snags and preferred live roost trees were tallied in this inventory and summarized in the following tables.

**Guidelines for preferred live roost trees (trees/acre)**

<b>Number of live trees per acre</b>	<b>Guidelines Maintenance</b>	<b>Tract 1203 Pre Harvest</b>	<b>Tract 1203 Post Harvest</b>
12-18" DBH class	6	35	18
20" + DBH class	3	14	8
<b>Total</b>	<b>9</b>	<b>50</b>	<b>26</b>

The above table shows that live tree densities both pre and post-harvest on this tract will be above the maintenance guidelines.

**Guidelines for snag tree levels (trees/acre)**

<b>Number of snags per acre</b>	<b>Guidelines Maintenance</b>	<b>Tract 1203 actual</b>
6-8" DBH class	1.0	9.4
10-18" DBH class	2.5	5.5
20" + DBH class	0.5	1.8
<b>Total</b>	<b>4.0</b>	<b>16.7</b>

This data shows that all snag densities are above the recommended maintenance levels in all diameter classes on this tract. It is likely that additional snags will be created by harvest operations and post-harvest TSI. Management activities will not intentionally remove snags, with a few exceptions, including when a snag poses a physical hazard to field personnel.

**Rare, Threatened, and Endangered Species**

A Natural Heritage Database Review is part of the management planning process. If Rare, Threatened or Endangered species were identified for in the area, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species.

**Exotic Species**

*Ailanthus altissima*, Tree of Heaven or Ailanthus, was noted in two locations within the tract. Measures to control this species should be taken while the species is still in a manageable stage in the area. Multiflora rose was noted in scattered patches across the tract. Garlic Mustard and Stilt Grass were also noted at the time of the inventory. These are common species prevalent throughout the county.

**Recreation**

This tract does not currently have any established recreational trails, facilities, or amenities. There may be unauthorized trails going in from adjoining properties (but none were noted at the time of

the inventory) and the area is likely used for hunting by local residents. Due to the proximity to the interstate and the Mulzer Quarry the tract has very limited potential for developed recreation.

**Cultural Resources**

Cultural resources may be present, but their location(s) are protected. Adverse impacts to significant cultural resources will be avoided during management or construction activities.

**PART 2 - MANAGEMENT PRESCRIPTION**

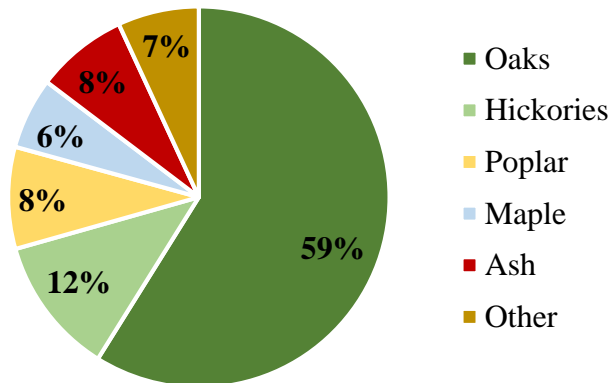
**Tract Summary – 110 acres**

The acreage of this tract is approximately 110 acres. There are three distinct merchantable cover types on this tract: Oak Hickory, Mixed Mesic Hardwoods, and Old Field. There are a total of 102 merchantable acres (93% of the tract acreage) and a total of 8 non-merchantable acres (7% of the tract acreage) within the tract. There is a total of 1,193,800 board feet within the merchantable stands. See map of cover type locations. Table 5 details the total volume per acre, total volume, basal area, and trees per acre for the entire tract.

**Table 5. Inventory Summary**

	<b>TOTAL</b> (bd ft)
Volume per acre	10,853
Volume total	1,193,820
Pole Volume per Acre	2,541
Pole Volume Total	279,500
Basal area/acre	102.5
Trees/acre	135

**Figure 8. Volume Distribution by Species**



**Stand 1: Oak Hickory (63 acres)**

Current condition:

This cover type is found across 57% of the tract acreage. It covers majority of the ridge top located in the center of the tract as well as the northeast facing slope above the bluffs leading down to Blue River in the northeast corner of the tract. 15 acres and 240,560 board feet within this cover type are located within Scout Mountain Nature Preserve, which is exempt from timber management. 73% of the volume found on the tract is located within this cover type. 83% of the volume within this cover type is made up of oak and hickory species. The most abundant species is white oak which comprises 41% of the volume (329,130 board feet) within the cover type, black oak is the second most common species making up 16% of the volume (131,640 board feet), and pignut hickory is third with 7% of the volume (56,490 board feet). Other less common oak and hickory species included Northern red oak, shagbark hickory, scarlet oak, chinkapin oak, shumard oak, and post oak. The mid-story (pole sized timber) is dominated by sugar maple. However, white oak, white ash, and pignut hickory are also present. The understory is dominated by sugar maple. The inventory is summarized in Table 6 with sawtimber species composition detailed in table 7. Currently, the cover type is 90%.

**Table 6. Oak Hickory - Inventory Summary**

	<b>TOTAL (bd ft)</b>
Volume per acre	12,735
Volume total	802,310
Volume on Scout Mountain NP	240,560
Pole Volume per Acre	2,267
Pole Volume Total	142,800
Basal Area per Acre	110.4
Trees per Acre	125

**Table 7. Oak Hickory Volume by Species**

<b>Species</b>	<b>TOTAL (bd ft)</b>
White Oak	329,130
Black Oak	131,640
Pignut Hickory	56,490
Northern Red Oak	55,490
Sugar Maple	52,950
White Ash	46,000
Shagbark Hickory	45,800
Scarlet Oak	27,010
Chinkapin Oak	15,640
Yellow Poplar	13,720
Black Walnut	8,640
American Beech	5,910
Shumard Oak	4,040
Eastern Redcedar	3,950
American Sycamore	3,640



Post Oak	2,260
<b>Total</b>	<b>802,310</b>

Desired future condition:

Exclusive of the Nature Preserve acreage, the objective of this cover type is to provide for multiple economic and ecological services specifically a quality hardwood timber stand, dominated by oak and hickory, while providing hard mast and early to mid-seral habitat for wildlife.

Silvicultural Prescription:

Given current stand conditions and stocking and to facilitate the desired future condition, an improvement harvest is prescribed over the next 2-5 years. Oaks and hickories are not only the best species for supplying hard mast but are also the best quality timber group that is occurring in this stand. According to the inventory data, approximately 220,000 board feet (4,600 board feet per acre) could be removed from the managed forest area of this cover type during a managed harvest. Most of this would be removed under a single tree selection routine with regeneration openings targeting groups of low-grade trees or multiple mature or stressed trees growing in close proximity. When possible, selection should also favor releasing future crop trees of timber and wildlife value. The residual stand is expected to be slightly heavier to white oak, with a lesser component of other oak and hickory species, as well as a minor component of mesophytic species. This provides a stand of longer-lived higher-quality white oak that allows for more management options into the future. Openings created by group selection areas will be used to help recruit oak into the future stand as well as maintain the presence of early seral habitat. Openings should be large enough to achieve regeneration of desirable species and should coincide with the release of advance regeneration when possible. It is estimated that 5-15% of the stand may have regeneration opening treatments. Stocking levels between the regeneration openings is expected to remain in the fully stocked category (above Gingrich B level stocking).

Under uneven aged management trees in all size classes are thinned during harvesting to promote stand development and regeneration. Given that many of these will be un-merchantable, post-harvest TSI is prescribed to thin poorly-formed, low-quality trees and treat the understory to reduce shade tolerant species where appropriate in favor of oaks and other more desirable species. The select girdling of medium to larger low value trees may also be undertaken to recruit larger snags for wildlife habitat benefits. TSI will also be needed to manage invasives that are present on the tract.

**Stand 2: Mixed Mesic Hardwoods (26 acres)**Current Condition:

This cover type is found across 24% of the tract acreage, it is situated mid-slope on the northeast facing ridge. This area is characterized by a sizeable drainage (which ultimately flows into Blue River) with several smaller drainages running into it. Four acres and 41,460 board feet within this cover type are located within Scout Mountain Nature Preserve, which is exempt from timber management. This cover type holds 24% of the volume found on the tract. The most abundant

species is yellow poplar which comprises 30% of the volume (81,020 board feet) within the cover type, white ash is the second most common species making up 14% of the volume (36,650 board feet), and Northern red oak is third with 11% of the volume (29,490 board feet). Other less common species include American beech, black oak, shagbark hickory, white oak, sugar maple, pignut hickory, scarlet oak, American sycamore, chinkapin oak, black walnut, hackberry, basswood, and blue ash. The mid-story (pole sized timber) is dominated by sugar maple and American beech. The understory is dominated by sugar maple. The stand inventory is summarized in Table 8 with species composition detailed in Table 9. Currently the cover type is around 85% stocked.

**Table 8. Mixed Mesic Hardwoods Inventory Summary**

	<b>TOTAL (bd ft)</b>
Volume per acre	10,280
Volume total	267,260
Volume on Scout Mountain NP	41,460
Pole Volume per Acre	1,364
Pole Volume Total	85,950
Basal Area per Acre	105.4
Trees per Acre	140

**Table 9. Mixed Mesic Hardwoods Volume by Species**

<b>Species</b>	<b>TOTAL (bd ft)</b>
Yellow Poplar	81,020
White Ash	36,650
Northern Red Oak	29,490
American Beech	27,450
Black Oak	21,910
Shagbark Hickory	18,660
White Oak	9,140
Sugar Maple	7,620
Pignut Hickory	6,870
Scarlet Oak	5,860
American Sycamore	4,700
Chinkapin Oak	4,670
Black Walnut	4,080
Hackberry	3,800
Basswood	3,020
Blue Ash	2,320
<b>Total</b>	<b>267,260</b>

Desired Future Condition:

Exclusive of the Nature Preserve acreage, the objective of this cover type is to provide for multiple economic and ecological services specifically a quality hardwood timber stand, dominated by mid- and late-seral species, while providing hard mast and mid to late-seral habitat for wildlife.

**Silvicultural Prescription:**

Given current stand conditions and stocking and to facilitate the desired future condition, an improvement harvest is prescribed over the next 2-5 years. According to the inventory data, approximately 90,000 board feet (4,100 board feet per acre) could be removed from the managed forest area of this cover type during a managed harvest. Most of this would be removed under a single tree selection routine with regeneration openings targeting groups of low-grade trees or multiple mature or stressed trees growing in close proximity. When possible, selection would also favor releasing future crop trees of timber and wildlife value. The residual stand will maintain a variety of mesic species. Similar to the Oak Hickory Stand, regeneration opening treatments may occur on 5-15% of the stand. Stocking levels between the regeneration openings are generally expected to remain in the fully stocked category. The vast majority of the proposed harvest volume, within this cover type, would be non-oak and hickory species, such as Beech, Ash and Yellow Poplar.

**Stand 3: Old Field (13 acres)****Current Condition:**

This cover type is found in several pockets and includes 12% of the tract acreage and holds 3% of the volume found on the tract. The most abundant (and only) species inventoried were Eastern red cedar which comprises 50% of the volume (15,450 board feet) within the cover type, red maple is the second most common species making up 26% of the volume (8,200 board feet), and black oak is third with 24% of the volume (7,370 board feet). The mid-story (pole sized timber) is dominated by sassafras. Eastern red cedar, Northern red oak, white ash, blackgum, and black oak were also present. The understory is dominated by sassafras and sugar maple. The inventory is summarized in Table 10 with species composition detailed in Table 11. Currently the cover type is around 65% stocked.

**Table 10. Old Field Inventory Summary**

	<b>TOTAL (bd ft)</b>
Volume per acre	2,386
Volume total	31,020
Pole Volume per Acre	3,031
Pole Volume Total	39,400
Basal Area per Acre	69.2
Trees per Acre	237

**Table 11. Old Field Volume by Species**

<b>Species</b>	<b>TOTAL (bd ft)</b>
Eastern Redcedar	15,450
Red Maple	8,200
Black Oak	7,370
<b>Total</b>	<b>31,020</b>

Desired Future Condition:

The objective of this cover type is to provide for multiple economic and ecological services specifically a quality hardwood timber stand, dominated by mid- and late-seral species, while providing hard mast and mid to late-seral habitat for wildlife.

Silvicultural Prescription:

In order to direct the stand towards the desired future condition, an improvement harvest is recommended. According to the inventory data, approximately 11,000 feet could be removed from this cover type under a managed harvest. Most of this would be removed under a single tree selection routine with regeneration openings targeting groups of low-grade trees or multiple mature or stressed trees growing in close proximity. When possible, selection should also favor releasing future crop trees of timber and wildlife value. Stocking in this cover type would remain above the B level between openings. The primary species projected for removal is Red cedar.

**Scout Mt. Nature Preserve**

Scout Mt. Nature Preserve is a 40 acre preserve within the Harrison-Crawford State Forest and is managed by the INDR Division of Nature Preserves in partnership with the Division of Forestry.

**PART 3 - TRACT SUMMARY**

**Summary of Silviculture throughout the Tract:**

Due to the current condition of the stand, a medium level improvement harvest is recommended, and could be undertaken in this tract at any time. The harvest volume is projected at 300,000-350,000 board feet of the current overall managed area volume of 820,000 board feet. Most of this would occur under a single tree selection routine with regeneration openings targeting groups of low-grade trees or groupings of matured or stressed trees. It is recommended that Timber Stand Improvement (TSI) be undertaken in this tract after the harvest to accomplish a variety of tasks, including completion of any marked openings, snag recruitment and control of invasives.

**Effect of Prescription on Tract Properties:**

Landscape: Landscape forest patterns will remain similar to the current situation due to this tract being kept in a forested condition.

Soils: The management activities prescribed in this plan should have minimal impact on soils in this tract. Some soil disturbance is likely during harvesting but this should be confined to landings and main skid trails. These areas should be properly closed out according to Indiana's BMPs to minimize the impact of management on soils.

Hydrology: Hydrology should not be permanently affected by management on this tract. Water quality and yield should not be altered if BMPs are followed during harvest. BMP use will be contractually required of management operators.

Wildlife: Wildlife in this tract should not be adversely affected. Snags and coarse woody debris should remain at viable levels in the stratum and should continue to provide habitat for the Indiana bat and other species. The main effect on wildlife will be the reduction of the coniferous component (Cedar) of the stratum. This currently provides a limited amount of thermal cover in the winter for deer and small mammals. This type of cover will be permanently reduced from the tract. Managing to recruit newly established or released oaks and hickories will help to ensure that this important food source is available into the foreseeable future. Regeneration openings, such as prescribed have been shown to be of less an issue from nest predators and generalist species as compared to hard edges such as public roadways, utility corridors and crop field edges. Placement of regeneration openings away from hard edges can minimize these potential impacts. The prescribed activity will promote wildlife diversity and enhance habitat structural components.

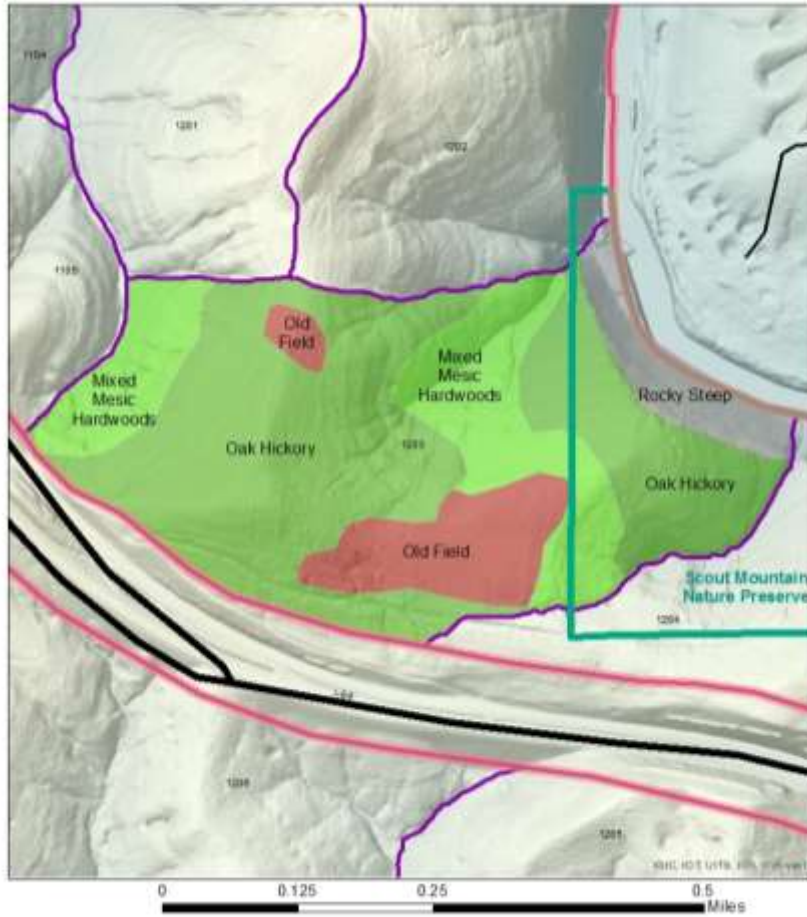
Wildlife Discussion from Ecological Resource Review: Additionally, management activities involving a timber sale should not affect this habitat long-term from the perspective of any wildlife utilizing it due to the maintenance of a forested habitat on the tract. Creation of regeneration openings will improve habitat diversity and create early successional habitat that will be beneficial to certain groups of wildlife dependent upon this habitat. Likely, early successional habitat created with such management will also benefit a wider segment of wildlife species that preferentially utilize such habitat for feeding and cover more so than later successional stage habitat.

Recreation: Given the limited amount of recreation (majority of which is hunting) that is carried out on this tract, it will only be minimally and temporarily affected. Hunting opportunities should be improved by the maintenance of early successional habitat and the recruitment of hard mast producers such as oak and hickory to provide deer and small mammal browse.

#### **PART 4 - PROPOSED ACTIVITIES LISTING**

<b><u>Proposed Activity</u></b>	<b><u>Proposed Date</u></b>
Management Guide	2018
Improve Access	2018-2020
Treat Invasives	2018-2020
Mark Timber Harvest	2018-2020
Sell Timber	2019-2022
Post Harvest TSI	One to two years after harvest
Treat Invasives	One to three years after harvest
Monitor regeneration openings	Three to four years after harvest
Re-Inventory	2038
Write new Management Plan	2038

### Cover Type Map Compartment 12 Tract 3



**Harrison Crawford State Forest****Compartment: 12 Tract: 4**

State Forest: Harrison Crawford

Date: January 1, 2018

Inventorying Foresters: E. Wilcoxson &amp; W. Irion

Compartment: 12 Tract: 4

**INVENTORY SUMMARY**

Tract Acreage: 155 acres

Est. Annual Growth: no data

Number of Stands: 5 stands

Est. Cutting Cycle: ~20 years

Permanent Openings: 0 acres

Site Index: 70-80 (upland oaks)

Average Basal Area: 110.0

**Table 5. Tract 1204 Inventory Summary**

SPECIES	TOTAL	
	Per acre	Total
White Oak	1567	239,630
Northern Red Oak	1246	190,710
Yellow Poplar	1016	155,440
Black Oak	537	82,170
Eastern Redcedar	357	54,640
White Ash	291	44,510
Black Walnut	235	35,970
Chinkapin Oak	228	34,830
Scarlet Oak	204	31,170
A. Sycamore	188	28,790
Pignut Hickory	180	27,520
American Beech	163	24,960
Shagbark Hickory	125	19,060
Sugar Maple	122	18,690
Blue Ash	100	15,370
Ailanthus	52	8,010
Basswood	34	5,190
<b>Total</b>	<b>6,645</b>	<b>1,016,660</b>

\* Cedar volume was calculated using a special cedar scale that counts volume in trees 6" DBH and larger, which results in high volumes for stands of small trees.

**Table 2. Tract 1204 Inventory Summary Including ONLY  
the portion of tract 1204 which is not on Scout Mountain Nature Preserve  
(Numbers are Approximate)**

SPECIES	TOTAL	
	Per acre	Total
White Oak	2,226	302,705
Northern Red Oak	1,378	187,436
Yellow Poplar	780	106,068
Black Oak	626	85,177
Eastern Redcedar	300	40,805
White Ash	231	31,395
Black Walnut	207	28,111
Chinkapin Oak	275	37,404
Scarlet Oak	293	39,833
American Sycamore	137	18,689
Pignut Hickory	193	26,298
American Beech	105	14,245
Shagbark Hickory	187	25,471
Sugar Maple	125	17,049
Blue Ash	87	11,775
Ailanthus	43	5,870
Basswood	22	2,958
Total	7,215	981,288

## **PART 1 - TRACT INFORMATION**

### **Location**

Tract 1204 is located in Harrison County, Indiana. The western half of the tract is located in section 24 of T3S R2E and the eastern half of the tract is located in section 19 of T3S R3E. Majority of the tract is located in section 24. The tract is located approximately 6 miles northeast of the town of Leavenworth, Indiana, 5 miles east of Carefree, Indiana, and 8 miles northwest of Corydon, Indiana. The tract is bordered by I-64 to the south and by the Blue River along some of the northern boundary.

### **General Description**

The acreage of this tract is approximately 155 acres, of which 18 acres are within the Scout Mt. Nature Preserve. There are five distinct cover types on this tract: Oak Hickory, Mixed Mesic Hardwoods, Old Field, Rocky Steep, and Bottomlands. Table 3 details the managed forest and Scout Mountain Nature Preserve acreage for the tract by cover type. See map of cover type locations.



**Table 3. Tract 1204 Cover Types Acreages**

Cover Type	Managed SF Forest Acreage	Scout Mountain NP Acreage	Total Acreage	Percent of Total Tract Acreage in Cover Type
Oak Hickory	46	5	51	33%
Mixed Mesic Hardwoods	24	10	34	22%
Old Field	35	1	36	23%
Rocky Steep	17	2	19	12%
Bottomlands	14	0	14	9%
<b>Total</b>	<b>136</b>	<b>18</b>	<b>~155</b>	<b>100%</b>

**Table 4. Tract 1204 Cover Types Volumes (Board Feet) (Numbers are Approximate)**

Cover Type	Managed SF Area Volume	Scout Mountain NP Volume	Total Volume	Percent of Total Tract Volume in Cover Type
Oak Hickory	593,382	64,498	657,880	58%
Mixed Mesic Hardwoods	186,586	77,774	264,330	23%
Old Field	133,369	3,811	137,180	12%
Rocky Steep	32,121	3,779	35,900	3%
Bottomlands	35,830	0	35,830	3%
<b>Total</b>	<b>981,288</b>	<b>149,832</b>	<b>1,131,120</b>	<b>100%</b>

### Merchantable Cover Types

#### **Stand 1 – Oak Hickory – 51 acres**

This cover type is found across 33% of the tract acreage in several areas. This cover type is found on the slopes above the rocky steep areas and on the ridge top surrounding several large sinkholes. 58% of the volume (657,880 board feet) found on the tract is located within this cover type. 95% of the volume within this cover type is made up of oak and hickory species. The most abundant species is white oak which comprises 48% of the volume (317,360 board feet) within the cover type, Northern red oak is the second most common species making up 23% of the volume (148,490 board feet), and black oak is third with 9% of the volume (61,060 board feet). Other less common oak and hickory species included scarlet oak, shagbark hickory, pignut hickory, and chinkapin oak. White ash, black walnut, yellow poplar, sugar maple, and Ohio buckeye were also noted in the overstory at the time of the inventory. The midstory was dominated by sugar maple although pignut hickory, chinkapin oak, and white oak were present as well. Again the understory was dominated by sugar maple with a component of white oak, Ohio buckeye, and American beech. Table 5 details the acreage and volume within the oak hickory cover type.

**Table 5. Oak Hickory Cover Type**

<b>Oak Hickory</b>	<b>Acreage</b>	<b>Bd. Ft. Volume</b>
Managed Forest	46	593,382
Scout Mt. Nature Preserve	5	64,498
Total	51	657,880

**Stand 2 – Mixed Mesic Hardwoods – 34 acres**

This cover type is found across 22% of the tract acreage, it is situated in several pockets mid-slope and around several drainages. This cover type holds 23% of the volume found on the tract 264,330 board feet. The most abundant species are Northern red oak and yellow poplar which each comprises 25% of the volume (65,150 board feet of Northern red oak and 65,140 board feet of yellow poplar) within the cover type. White ash is the third most common species making up 10% of the volume (27,470 board feet). Other less common species include American beech, black walnut, black oak, white oak, American sycamore, chinkapin oak, blue ash, sugar maple, pignut hickory, black oak, basswood, Eastern redcedar, Ohio buckeye, shagbark hickory, mockernut hickory, and black cherry. The midstory was dominated by sugar maple although mulberry, Ohio buckeye, hackberry, yellow poplar, American elm, and ailanthus were present as well. The understory was dominated by sugar maple and chinkapin oak with a component of American beech, American elm, pignut hickory, leatherwood, blue ash, and pawpaw. Table 6 details the acreage and volume within the mixed mesic hardwoods cover type.

**Table 6. Mixed Mesic Hardwoods Cover Type**

<b>Mixed Mesic Hardwoods</b>	<b>Acreage</b>	<b>Bd. Ft. Volume</b>
Managed Forest	24	186,586
Scout Mt. Nature Preserve	10	77,744
Total	34	264,330

**Stand 3 – Old Field – 36 acres**

This cover type is found in numerous scattered pockets and includes 23% of the tract acreage and holds 12% of the volume found on the tract. The most abundant species are Northern red oak and yellow poplar which each comprises 25% of the volume (65,150 board feet of Northern red oak and 65,140 board feet of yellow poplar) within the cover type. White ash is the third most common species making up 10% of the volume (27,470 board feet). Other less common species include American beech, black walnut, black oak, white oak, American sycamore, chinkapin oak, blue ash, sugar maple, pignut hickory, black oak, basswood, Eastern redcedar, Ohio buckeye, shagbark hickory, mockernut hickory, and black cherry. The midstory was dominated by sugar maple although mulberry, Ohio buckeye, hackberry, yellow poplar, American elm, and ailanthus were present as well. The understory was dominated by sugar maple and chinkapin oak with a

component of American beech, American elm, pignut hickory, leatherwood, blue ash, and pawpaw. Table 7 details the acreage and volume within the old field cover type.

**Table 7. Old Field Cover Type**

<b>Old Field</b>	<b>Acreage</b>	<b>Bd. Ft. Volume</b>
Managed Forest	35	133,369
Scout Mt. Nature Preserve	1	3,811
Total	36	137,180

### **Non-Merchantable Cover Types**

#### **Stand 4 – Rocky Steep – 19 acres**

This cover type is found along the bluffs of the Blue River on the north side of the tract and between the top of the ridge and the bottomlands in the eastern half of the tract. This cover type encompasses 12% of the tract acreage and holds 3% of the volume found on the tract. The most abundant species (and the only three species noted in the inventory plots) were Northern red oak which comprises 67% of the volume (23,990 board feet), sugar maple which comprises 18% of the volume (6,450 board feet), and blue ash which comprises 15% of the volume (5,460 board feet). Other less common species present in the overstory include Eastern redcedar which was mostly pole sized, post oak, chinkapin oak, and white ash. The midstory was dominated by ailanthus, Eastern redbud, and hackberry. The understory was dominated ailanthus, American elm, and chinkapin oak.

#### **Stand 5 – Bottomlands – 14 acres**

This cover type is found in the eastern tip of the tract along the banks of the Blue River. This cover type encompasses 9% of the tract acreage and holds 3% of the volume found on the tract. The most abundant species were American sycamore which comprises 29% of the volume (10,240 board feet), yellow poplar which comprises 28% of the volume (9,940 board feet), and black walnut which comprises 27% of the volume (9,780 board feet). Other less common species present in the overstory include box elder, Eastern redcedar, ailanthus, white ash, blue ash, red maple, silver maple, yellow poplar, pignut hickory, American beech, cottonwood, and American elm. The midstory was dominated by Eastern redcedar, Ohio buckeye, and American elm although sugar maple, persimmon, yellow poplar, white ash, and ailanthus were also present. The understory was dominated by autumn olive.

### **History**

#### **Acquisition 1941 to 1975**

The tract was acquired in 2 parcels. January 30, 1941 the western tip of the tract was acquired from George and Winifred Doolittle. November 19, 1975 the majority of the tract was acquired from the Indiana Department of Transportation.

### **1975 to Present**

May 27, 1976 the 40 acre Scout Mountain Nature Preserve was dedicated to facilitate the protection of Indiana Bats. No pre-2018 inventory or harvest record is noted in the file. There was evidence of Eastern red cedar having been harvested in the rocky steep cover type in the eastern half of the tract. This cutting most likely was done for fence posts prior to acquisition by the State, since there are no records of such harvesting there and rot resistant cedar stumps can last for several decades.

### **Landscape Context**

The dominant land uses within a 5 mile radius of the tract are agricultural and forestlands. There is more development near I-64 and along SR-66 (west of the tract) and SR-62 (south of the tract). I-64 borders the tract to the south. Additionally, within 6 miles the towns of Leavenworth and Carefree, the Ohio River, O'Bannon Woods State Park (2,000 acres), and numerous Nature Preserves can all be found. The tract is bordered by the Blue River in places and the river runs through the tract in others.

### **Topography**

The western portion of this tract is made up primarily of a single hillside sloping north down to the Blue River. There is a single sizeable drainage bisecting this hillside. The eastern tongue of this tract is characterized by a bluff which drops off sharply onto a relatively flat peninsula which is bounded by the Blue River to the north and I-64 to the south.

### **Soils**

Tract 1204 has 36 acres (22%) covered in Corydon Stony Silt Loam across the tract especially on the steep slopes, this is the most prevalent soil type. There are 33 acres (20%) covered in Hagerstown Silt Loam majority of which is located on the ridge top. Additionally, Crider Silt Loam, Elkinsville Silt Loam, Gilpin Silt Loam, Haymond Silt Loam, Pekin Silt Loam, Tilsit Silt Loam, Wellston Silt Loam, and Zanesville Silt Loam are also present.

**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

The Corydon series consists of shallow, well drained soils that formed in as much as 20 cm (8 inches) of loess and in the underlying limestone residuum. The Corydon soils are on hills underlain with limestone. Slope ranges from 6 to 70 percent.

**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

The Hagerstown series consists of deep and very deep, well drained soils formed in residuum of hard gray limestone. Slope ranges from 0 to 45 percent. Permeability is moderate.

### **Hydrology**

The tract has one sizeable drainage in the western portion of the tract. This drainage runs north down the hillside to meet the Blue River. The tract is bordered to the north by the Blue River and includes an area of bottomlands along the Blue River in the eastern tip of the tract. The Blue River which is a well-known and popular recreation waterway and ecological resource. This area also has karst hydrology typical of much of the area, with springs, sinkholes, and caves being common. These features will be avoided, buffered or otherwise treated to minimize adverse impacts during management activities.

### **Access**

Currently there is no developed access into this part of the State Forest. At this time, there is some question as to how far Cox's Road extends to the east. If it is determined Cox's Road extends to the cell tower or close to it, located off the south western boundary of tract 1104 (west of 1204), then access may be developed in the future.

### **Boundaries**

The tract is bounded to the south by I-64. The western boundary is a drainage which separates tract 1204 from tract 1203. The northern/eastern boundary is a combination of the Blue River and the property boundary. Roughly 18 acres of Scout Mountain Nature Preserve is located within tract 1204 on the west side.

### **Wildlife**

This tract represents typical oak hickory and mixed mesic habitat, in addition to a component of old field successional habitat, with cedar and smaller hardwoods. Consequently, it likely receives use from a typical assemblage of common game and nongame wildlife species such as white-tailed deer, wild turkey, squirrels, songbirds, snakes, box turtles, and others. Hard mast food sources are provided by the abundant oaks and hickories in the tract.

The Division of Forestry has developed compartment level guidelines for two important wildlife structural habitat features: Forest Snag Density, Preferred Live Roost Trees. Snags and preferred live roost trees were tallied in this inventory and summarized in the following tables.

**Guidelines for preferred live roost trees (trees/acre)**

<b>Number of live trees per acre</b>	<b>Guidelines Maintenance</b>	<b>Tract 1204 Pre Harvest</b>	<b>Tract 1204 Post Harvest</b>
11-19" DBH class	6	24	18
20" + DBH class	3	6	3
<b>Total</b>	<b>9</b>	<b>30</b>	<b>21</b>

The above table shows that live tree densities both pre and post-harvest on this tract will be within the maintenance guidelines.

**Guidelines for snag tree levels (trees/acre)**

<b>Number of snags per acre</b>	<b>Guidelines Maintenance</b>	<b>Tract 1204 actual</b>
6-8" DBH class	1.0	15.7
10-18" DBH class	2.5	10.1
20" + DBH class	0.5	0.6
<b>Total</b>	<b>4.0</b>	<b>26.3</b>

This data shows that all snag densities are above the recommended maintenance levels in all diameter classes on this tract. It is likely that additional snags will be created by harvest operations and post-harvest TSI. Management activities will not intentionally remove snags, with a few exceptions, including when a snag poses a physical hazard to field personnel.

**Rare, Threatened, and Endangered Species**

A Natural Heritage Database Review is part of the management planning process. If Rare, Threatened or Endangered species were identified for in the area, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species.

**Exotic Species**

*Ailanthus altissima*, Tree of Heaven or Ailanthus, was noted in several locations within the tract. In particular the rocky steep areas of the tract have quite extensive ailanthus infestations in some areas. Additionally, there are monocultures of variously sized ailanthus present along the edge of I-64 bordering the tract. Measures to control this species should be taken. Multiflora rose and autumn olive were noted in scattered patches across the tract. Autumn olive was very dense in the bottomlands. Several scattered bush honeysuckle plants were also noted in the bottomlands. Garlic mustard, stilt grass, wineberry, and Japanese honeysuckle were also noted and mapped at the time of the inventory. Wineberry is a cultivated raspberry that has escaped to a wide variety of habitats and plant communities throughout the eastern United States. .

### Recreation

This tract does not currently have any established recreational trails, facilities, or amenities. There may be unauthorized trails going in from adjoining properties (but none were noted at the time of the inventory) and the area is likely used for hunting by local residents. Due to the proximity to the interstate the tract has limited potential for developed recreation. However, the Blue River is a well-known and popular recreation waterway and receives use on the stretch bordering this tract.

### Cultural Resources

Cultural resources may be present, but their location(s) are protected. Adverse impacts to significant cultural resources will be avoided during management or construction activities.

## PART 2 – STAND DESCRIPTIONS AND MANAGEMENT PRESCRIPTION

### Cover Type 1: Oak Hickory (51 acres)

#### Current condition:

This cover type is found across 33% of the tract acreage in several areas. This cover type is found on the slopes above the rocky steep areas and on the ridge top surrounding several large sinkholes. 58% of the volume found on the tract is located within this cover type 657,880 board feet. 95% of the volume within this cover type is made up of oak and hickory species. The most abundant species is white oak which comprises 48% of the volume (317,360 board feet) within the cover type, Northern red oak is the second most common species making up 23% of the volume (148,490 board feet), and black oak is third with 9% of the volume (61,060 board feet). Other less common oak and hickory species included scarlet oak, shagbark hickory, pignut hickory, and chinkapin oak. White ash, black walnut, yellow poplar, sugar maple, and Ohio buckeye were also noted in the overstory at the time of the inventory. The midstory was dominated by sugar maple although pignut hickory, chinkapin oak, and white oak were present as well. Again the understory was dominated by sugar maple with a component of white oak, Ohio buckeye, and American beech. The inventory is summarized in Table 8 with sawtimber species composition detailed in Table 9. Currently, the cover type is over 110% stocked.

**Table 8. Oak Hickory Inventory Summary**

	<b>TOTAL</b> (bd ft)
Volume per Acre	12,899
Volume Total	657,870
Volume on Scout Mountain NP	64,498
Pole Volume per Acre	5,674
Pole Volume Total	289,350
Basal Area per Acre	147.5
Trees per Acre	204

**Table 9. Oak Hickory Volume by Species**

<b>Species</b>	<b>TOTAL (bd ft)</b>
White Oak	317,360
Northern Red Oak	148,490
Black Oak	61,060
Scarlet Oak	41,500
Shagbark Hickory	28,240
Pignut Hickory	17,690
Black Walnut	10,510
White Ash	10,280
Yellow Poplar	8,860
Chinkapin Oak	8,390
Sugar Maple	5,500
<b>Total</b>	<b>657,880</b>

Desired future condition:

The objective of this cover type is to provide for multiple economic and ecological services specifically a quality hardwood timber stand, dominated by oak and hickory, while providing hard mast and early to mid-seral habitat for wildlife.

Silvicultural Prescription:

Given current stand conditions and stocking and to facilitate the desired future condition, an improvement harvest is prescribed over the next 2-5 years. . Oaks and hickories are not only the best species for supplying hard mast but are also the best quality timber group that is occurring in this stand. According to the inventory data, approximately 225,000 board feet (5,000 board feet per acre) could be removed from the managed forest area of this cover type during a managed harvest. Most of this would be removed under a single tree selection routine with regeneration openings targeting groups of low-grade trees or multiple mature or stressed trees growing in close proximity. When possible, selection should also favor releasing future crop trees of timber and wildlife value. The residual stand is expected to be slightly heavier to white oak, with a lesser component of other oak and hickory species, as well as a minor component of mesophytic species. This provides a stand of longer-lived higher-quality white oak that allows for more management options into the future. Openings created by group selection areas will be used to help recruit oak into the future stand as well as maintain the presence of early seral habitat. Openings should be large enough to achieve regeneration of desirable species and should coincide with the release of advance regeneration when possible. It is estimated that 5-15% of the stand may have regeneration opening treatments. Stocking levels between the regeneration openings is expected to remain in the fully stocked category (above Gingrich B level stocking).

Under uneven aged management trees in all size classes are thinned during harvesting to promote stand development and regeneration. Given that many of these will be un-merchantable, post-harvest TSI is prescribed to thin poorly-formed, low-quality trees and treat the understory to reduce shade tolerant species where appropriate in favor of oaks and other more desirable species. The



select girdling of medium to large low value trees may also be undertaken to recruit larger snags for wildlife habitat benefits. TSI will also be needed to manage invasives that are present on the tract.

## Stand 2: Mixed Mesic Hardwoods (34 acres)

### Current Condition:

This cover type is found across 22% of the tract acreage, it is situated in several pockets mid-slope and around several drainages. This cover type holds 23% of the volume found on the tract 264,330 board feet. The most abundant species are Northern red oak and yellow poplar which each comprises 25% of the volume (65,150 board feet of Northern red oak and 65,140 board feet of yellow poplar) within the cover type. White ash is the third most common species making up 10% of the volume (27,470 board feet). Other less common species include American beech, black walnut, black oak, white oak, American sycamore, chinkapin oak, blue ash, sugar maple, pignut hickory, black oak, basswood, Eastern redcedar, Ohio buckeye, shagbark hickory, mockernut hickory, and black cherry. The midstory was dominated by sugar maple although mulberry, Ohio buckeye, hackberry, yellow poplar, American elm, and ailanthus were present as well. The understory was dominated by sugar maple and chinkapin oak with a component of American beech, American elm, pignut hickory, leatherwood, blue ash, and pawpaw. The inventory is summarized in Table 10 with species composition detailed in Table 11. Currently the cover type is around 100% stocked.

**Table 10. Mixed Mesic Hardwoods Inventory Summary**

	<b>TOTAL (bd ft)</b>
Volume per Acre	7,774
Volume Total	264,310
Volume on Scout Mountain NP	77,744
Pole Volume per Acre	6,885
Pole Volume Total	234,100
Basal Area per Acre	117.9
Trees per Acre	182

**Table 11. Mixed Mesic Hardwoods Volume by Species**

<b>Species</b>	<b>TOTAL (bd ft)</b>
Northern Red Oak	65,150
Yellow Poplar	65,140
White Ash	27,470
American Beech	20,180
Black Walnut	12,540
White Oak	12,270
American Sycamore	11,970
Chinkapin Oak	11,860
Blue Ash	9,760

Sugar Maple	8,950
Pignut Hickory	6,470
Black Oak	4,770
Basswood	4,190
Eastern Redcedar	3,610
<b>Total</b>	<b>264,330</b>

Desired Future Condition:

The objective of this cover type is to provide for multiple economic and ecological services specifically a quality hardwood timber stand, dominated by mid- and late-seral species, while providing hard mast and mid to late-seral habitat for wildlife.

Silvicultural Prescription:

Given current stand conditions and stocking and to facilitate the desired future condition, an improvement harvest is prescribed over the next 2-5 years. According to the inventory data, approximately 85,000 board feet (3,500 board feet per acre) could be removed from the managed forest areas of this cover type under the managed harvest. Most of this would be removed under a single tree selection routine with regeneration openings targeting groups of low-grade trees or multiple mature or stressed trees growing in close proximity. When possible, selection would also favor releasing future crop trees of timber and wildlife value. The residual stand will maintain a variety of mesic species. Similar to the Oak Hickory Stand, regeneration opening treatments may occur on 5-15% of the stand. Stocking levels between the regeneration openings are generally expected to remain in the fully stocked category. The vast majority of the proposed harvest volume, within this cover type, would be non-oak and hickory species, such as Beech, Ash and Yellow Poplar.

**Stand 3: Old Field (36 acres)**Current Condition:

This cover type is found in numerous scattered pocket and includes 23% of the tract acreage and holds 12% of the volume found on the tract. The most abundant species are Northern red oak and yellow poplar which each comprises 25% of the volume (65,150 board feet of Northern red oak and 65,140 board feet of yellow poplar) within the cover type. White ash is the third most common species making up 10% of the volume (27,470 board feet). Other less common species include American beech, black walnut, black oak, white oak, American sycamore, chinkapin oak, blue ash, sugar maple, pignut hickory, black oak, basswood, Eastern redcedar, Ohio buckeye, shagbark hickory, mockernut hickory, and black cherry. The midstory was dominated by sugar maple although mulberry, Ohio buckeye, hackberry, yellow poplar, American elm, and ailanthus were present as well. The understory was dominated by sugar maple and chinkapin oak with a component of American beech, American elm, pignut hickory, leatherwood, blue ash, and pawpaw. The inventory is summarized in Table 12 with species composition detailed in Table 13. Currently the cover type is around 95% stocked.

**Table 12. Old Field Inventory Summary**

	<b>TOTAL (bd ft)</b>
Volume per Acre	3,810
Volume Total	137,180
Volume on Scout Mountain NP	3,811
Pole Volume per Acre	5,840
Pole Volume Total	210,250
Basal Area per Acre	104.4
Trees per Acre	291

**Table 13. Old Field Volume by Species**

<b>Species</b>	<b>TOTAL (bd ft)</b>
Yellow Poplar	43,360
Eastern Redcedar	39,350
Black Oak	27,500
White Oak	8,020
Northern Red Oak	7,730
Pignut Hickory	5,940
White Ash	2,810
Scarlet Oak	2,470
<b>Total</b>	<b>137,180</b>

**Desired Future Condition:**

The objective of this cover type is to provide for multiple economic and ecological services specifically a quality hardwood timber stand, dominated by mid- and late-seral species, while providing hard mast and mid to late-seral habitat for wildlife.

**Silvicultural Prescription:**

In order to direct the stand towards the desired future condition, an improvement harvest is recommended. According to the inventory data, approximately 60,000 feet (1,700 board feet per acre) could be removed from the managed forest areas of this cover type under the managed harvest. Most of this would be removed under a single tree selection routine with regeneration openings targeting groups of low-grade trees or multiple mature or stressed trees growing in close proximity. When possible, selection should also favor releasing future crop trees of timber and wildlife value. Stocking in this cover type would remain above the B level between openings. The primary species projected for removal is Red cedar and Yellow Poplar.

**Non-Merchantable Cover Types**

Other than invasives species monitoring and control, no management action recommended at this time.

**PART 3 - TRACT SUMMARY**

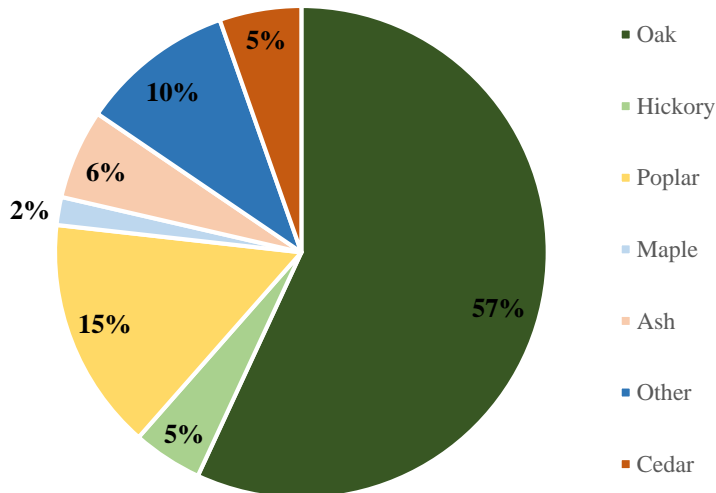
**Tract Summary – 155 acres**

The acreage of this tract is approximately 155 acres. There are three distinct merchantable cover types on this tract: Oak Hickory, Mixed Mesic Hardwoods, and Old Field. There are a total of 105 merchantable acres (68% of the tract acreage) within tract 1204 and there is an estimated total of 913,337 board feet. There are two non-merchantable covers types, Rocky Steep and Bottomlands, as well as a portion of the tract which is included in the Scout Mountain Nature Preserve. These non-merchantable areas cover 49 acres (32% of the tract acreage) and include 217,783 board feet. See the map for cover type locations. Table 14 details the total volume per acre, total volume, basal area, and trees per acre for the entire tract.

**Table 14. Inventory Summary**

	<b>TOTAL (bd ft)</b>
Volume per acre	6,645
Volume total	1,016,660
Pole Volume per Acre	5,552
Pole Volume Total	860,500
Basal area/acre	110.0
Trees/acre	215

Figure 17. Volume Distribution by Species



**Summary of Silviculture throughout the Tract:**

Due to the current condition of the tract, a medium level improvement harvest is recommended in this tract at any time. Most of this would be harvested under a thinning or single tree selection routine with regeneration openings targeting groups of low-grade trees or groupings of mature and or stressed trees. A timber harvest in the merchantable cover types of 1204 lying outside of Scout

Mountain Nature Preserve is projected at 325,000-400,000 board feet. It is recommended that Timber Stand Improvement (TSI) be undertaken in this tract after the harvest to accomplish a variety of tasks, including completion of any marked openings and management of invasives.

**Effect of Prescription on Tract Properties:**

Landscape: Landscape forest patterns will remain similar to the current situation due to this tract being kept in a forested condition.

Soils: The management activities prescribed in this plan should have minimal impact on soils in this tract. Some soil disturbance is likely during harvesting but this should be confined to landings and main skid trails. These areas should be properly closed out according to Indiana's BMPs to minimize the impact of management on soils.

Hydrology: Hydrology should not be permanently affected by management on this tract. Water quality and yield should not be altered if BMPs are followed during harvest. BMP use will be contractually required of management operators.

Wildlife: Wildlife in this tract should not be adversely affected by the scale of operations. Snags and coarse woody debris should remain at viable levels in the stratum and should continue to provide habitat for the Indiana bat. The main effect on wildlife will be the reduction of the coniferous component of the tract as cedar areas transition to native hardwoods. This currently provides a limited amount of thermal cover in the winter for deer and small mammals. While not eliminated, this type of cover will be reduced in the tract. Managing to recruit newly established or released oaks and hickories will help to ensure that this important food source is available into the foreseeable future. Regeneration openings, such as prescribed have been shown to be of less an issue from nest predators and generalist species as compared to hard edges such as public roadways, utility corridors and crop field edges. Placement of regeneration openings away from hard edges can minimize these potential impacts. The prescribed activity will promote wildlife diversity and enhance habitat structural components.

Wildlife Discussion from Ecological Resource Review: Additionally, management activities involving a timber sale should not affect this habitat long-term from the perspective of any wildlife utilizing it due to the maintenance of a forested habitat on the tract. Creation of regeneration openings will improve habitat diversity and create early successional habitat that will be beneficial to certain groups of wildlife dependent upon this habitat. Likely, early successional habitat created with such management will also benefit a wider segment of wildlife species that preferentially utilize such habitat for feeding and cover more so than later successional stage habitat.

Recreation: Given the limited amount of recreation (majority of which is hunting) that is carried out on this tract, it will only be minimally and temporarily affected. Hunting opportunities should be improved by the maintenance of early successional habitat and the recruitment of hard mast producers such as oak and hickory to provide deer and small mammal browse.

**PART 4 - PROPOSED ACTIVITIES LISTING**

<u>Proposed Activity</u>	<u>Proposed Date</u>
Management Guide	2018
Improve Access	2018 - 2020
Treat Invasives	2018 - 2020
Mark Timber Harvest	2018 - 2020
Sell Timber	2019 - 2022
Post Harvest TSI	One to two years after harvest
Treat Invasives	One to three years after harvest
Monitor regeneration openings	Three to four years after harvest
Re-Inventory	2038
Write new Management Plan	2038

**Cover Type Map Compartment 12 tract 4**

