

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

**Harrison-Crawford State Forest**  
**Dieter Rudolph**

**Compartment: 27 Tract: 02**  
**Date: June 10, 2009**

**Reviewed and edited by Dwayne Sieg, February 20, 2014**

Acres Commercial Forest: 77	Basal Area >= 14 inches DBH: 34.91 sqft/ac
Acres Noncommercial Forest: 0	Basal Area < 14 inches DBH: 60.26 sqft/ac
Acres Permanent Opening: 0	Basal Area Culls: 5.6 sqft/ac
Acres Other: 0	Total Basal Area: 95.17 sqft/ac

Acres Total: 77                      Number Trees/Acre: 335.62

Species	Harvest Volume(MBF)	Leave Volume(MBF)	Total Volume(MBF)
Silver Maple	29.44	54.68	84.12
Eastern Cottonwood	19.92	15.81	35.73
American Sycamore	8.54	26.12	34.66
Yellow Poplar	0	19.77	19.77
White Ash	5.26	10.77	16.03
Eastern Red Cedar	0	12.96	12.96
Black Walnut	0	10.73	10.73
American Elm	0	7.08	7.08
Black Cherry	0	6.84	6.84
Honeylocust	2.25	0	2.25
Hackberry	0	1.57	1.57
Boxelder	0	0.92	0.92
Blackgum	0	0	0
Chinkapin Oak	0	0	0
Dogwood	0	0	0
Ohio Buckeye	0	0	0
Persimmon	0	0	0
Redbud	0	0	0
Sassafras	0	0	0
Sugar Maple	0	0	0
<b>Total</b>	<b>65.41</b>	<b>167.25</b>	<b>232.66</b>
<b>Total per Acre</b>	<b>0.85</b>	<b>2.18</b>	<b>3.03</b>

**Location and Access**

This tract is located in Crawford County Indiana, T4S R2E in section 9. The closest public road to this tract that can be used for access is Wyandotte Ave. which does not come right up to the tract. Between this road and the tract is a section of private land. A lane gated at the county road is the deeded r-o-w to this parcel.

**General Description**

This tract can be broken into 3 primary areas; Bottomland Hardwoods (28 acres), Old Field (9 acres), and Old Field Degraded (40 acres). The Bottomland Hardwood area can be found mainly along the Blue River and the lower elevation sites that act as drainages. The Old Field is a thin strip along the Bottomland Hardwoods stand in the east and northeast. The main area within this tract is the Old Field Degraded, being in the center of the tract and having the least number of and lowest quality trees.

### **History**

This tract was purchased in a single segment which totaled 67 acres. It was purchased from Breeden in 1967.

Based on the 1940 aerial photo, nearly the entire tract was once a field and farmstead. There were some large woody trees found during this inventory which were most likely the remnants of the few large trees peppered around the field in the 1940 aerial photo.

The ponds that are shown on the current topographical map, including the two that were still remaining at the time of the inventory, were not present on the 1940 aerial photo meaning they were placed there in the 27 years between the time the photo was taken and the state obtaining the land.

### **Landscape Context**

The tract is a part of the contiguous body of land owned by the state of Indiana. It is bordered by state land to the south and the east. The northern and western boundaries are shared with private property. A section of the private property on the western side is a field and the rest on this side appears to be a continuation of an old degraded field. The northwestern boundary bordering private property appears to be a shrub land associated with the Blue River floodplain as it includes an old ox bow. The area bordering state land is all forested. Power lines do run through the tract creating an area where there is no canopy but this was not delineated separately as it matches many areas within the Old Field Degraded. In the surrounding region to the west, the landscape is made up of much farm land, single family residences and the small town of Leavenworth. A short distance to the south is the Ohio River and Kentucky. A state park property is located directly across Blue River from the tract.

### **Topography, Geology, and Hydrology**

The bulk of this tract is gently sloping, with a change in elevation of only 80 feet. There is a zone of short steep slope at the north edge along Blue River. The areas of Bottomland Hardwoods are lower in elevation but the slope is short and not drastic. Multiple sinkholes existed throughout the site, one or more with openings. One large sinkhole exists in the middle western section of the tract and can be seen clearly in the topographical map. This sinkhole area is forested (Bottomland Hardwoods) and acts as an area drainage. Other than sinkholes the tract generally drains directly into Blue River.

The segment of the Blue River that borders this tract is within a zone of the permanent pool of backwater from the Ohio River, the confluence being only about .8 mile downstream from the tract.

The topographical map displays four ponds within the tract. In the course of the inventory two were found, both appearing to drastically vary in size according to the season.

## **Soils**

### **Alford Silt Loam (AcuB2)**

The Alford series consists of very deep, well drained soils formed in loess. These soils are commonly on loess hills and less commonly on outwash plains. The surface horizon consists of silt loam which is a light yellowish brown color, which is 6 inches deep. The subsoils consists of 4 horizons that accumulate more clay the further down the profile. The subsoil is 66 inches thick. These subsoil horizons are mainly a silty clay loam with the last horizon before the parent material is a silt loam. The last horizon starts at 72 inches and is a brown silt loam with weak structure. The permeability of this soil is moderate. The mean annual temperature is about 56, the mean annual precipitation is 42 inches.

Degree Slope: 2-60%

Site Index: 70

Growth Range Potential: 342

Management Concerns: Runoff and erosion

### **Corydon Stony Silt (CqyG)**

The Corydon series consists of shallow, well drained soils that formed in as much as 8 inches of loess and in the underlying limestone residuum. The Corydon soils are on hills underlain with limestone. The surface horizon is 8 inches of a silt loam. The subsoil is 9 inches of clay. The bottom of the profile is unweathered bedrock. Mean annual precipitation is about 44 inches, and mean annual air temperature is about 54 degrees F.

Degree Slope: 20-60%

Woodland suitability group: 1o8

Site Index: 64

Growth Range potential: 258

Management Concerns: runoff and erosion

## **CspB, CspC2**

### **Haggatt Silt Loam (HarE2, HarD2) Silty Clay (HafC3, HafD3)**

The Haggatt series consists of deep, well-drained soils formed in clayey residuum that can be capped with up to 20 inches of loess. They are on hills and in sinkholes underlain with limestone. The Surface Horizon is a silt loam that is 5 inches thick. The first 11 inches of the subsoil is a silty clay loam. The next 28 inches of the subsoil is clay. The bedrock is fractured, indurated limestone bedrock. Mean annual precipitation is about 43 inches, and mean annual temperature is about 54 degrees F.

Degree Slope: 2-25%

Woodland suitability group: 1o1  
Site Index: 68  
Growth Range potential: 300  
Management Concerns: runoff and erosion

## **HufAK**

### **Markland Silty Clay (McpC3, McpD3)**

The Markland series consists of very deep, well drained soils on lake plains. They formed in thin loess and the underlying calcareous, fine-textured lacustrine sediments. The surface horizon is a pale brown silt loam which extends for approximately 4 inches. The subsoils are comprised of two horizons of increasing clay. These horizons are yellowish silty clay. The two horizons are 24 inches thick. The next three horizons are comprised of increasing clay and calcium. These soils are a yellowish brown silty clay loam. These three horizons are 31 inches thick. The final horizon is the substratum which is a yellowish brown silty clay loam with weak structure. The permeability is moderately slow to slow. The mean annual precipitation is 43 inches and the mean annual temperature is 54 degrees F.

Degree Slope: 12-50%  
Site Index: 72  
Growth Range Potential: 342  
Management Concerns: runoff and erosion

## **MdeG**

### **Millstone Loam (MscB2, MsC2, MscE2)**

The Millstone series consists of very deep, well drained soils on stream terraces and flood-plain steps. They formed in loamy alluvium. Mean annual precipitation is about 43 inches, and mean annual temperature is about 54 degrees F. The surface horizon consists of a plowed A horizon. This horizon is a light yellowish brown loam. The next eight mapped horizons are argillic. These all are a strong brown loam. The profile description extends to 80 inches and does not stop at the substratum.

Degree Slope: 0-40%  
Site Index: 80  
Growth Range Potential: 342

### **Access**

This tract can be accessed by the firelane that comes off of Wyandotte Ave. and passes through private property. This firelane travels about halfway into the tract allowing for easy access for a majority of the tract.

### **Boundary**

The Blue River acts as the boundary on the northern, eastern, and southern sides of this tract. The western boundary follows the section line and has an old fence running along it which appears to be an accurate representation of the boundary.

### Wildlife and Plant Species

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

Other wildlife noted on this stand were those typical of the area. As a large portion of the area is a degraded field, there is a large amount of fringe habitat which is utilized by species such as deer, turkey, ruffed grouse, and squirrels. The power lines provide ideal hunting habitat for red tail hawks and the riparian area provides for the red shouldered hawk. All species mentioned with an exception of ruffed grouse were noted during the inventory. The beaver is another mammal species inhabiting the tract along the river, here.

#### Indiana Bat

Under current strategies for conservation of Indiana bat most management activities are performed in the winter months to minimize species impacts and avoid take. Resource management roads and trails created in this tract could improve the habitat for the Indiana bat by improving the canopy foraging conditions due to the reduction of understory clutter. Furthermore, the areas around likely roost trees can be opened up to benefit the bat. The edge of log yards can increase the solar exposure of roost trees which improves the microclimate and thermal conditions of the roosting areas.

Trees that are ideal for roosting bats such as large snags and large trees that have loose/exfoliating bark can be retained to provide for the Indiana bat. Furthermore, the growth of ideal tree species for the Indiana bat can be managed to promote growth to increase the recruitment of trees into the categories suitable for the Indiana bat. The tract contains a surplus of live trees in the diameter classes between 11 and 20 inches in diameter and those greater than 20 inches in diameter. Snags in either preferred size classes throughout the tract are below target levels. Girdling trees to create snags would not be a method to increase the amount of large snags for the bat due to the low number of 20"+ trees per acre.

#### **Indiana bat habitat guidelines (entire tract, desired species only)**

Category	Target	Inventory	Above target level
<b>Live trees</b>			
11"+	693	2989	2296
20"+	231	255	24
<b>Snags</b>			
9"+	462	218	-244
19"+	77	23	-54

### Recreation

No legal forms of recreation were noted within this tract while performing this inventory. Hunting remains a possibility but the largest stand, the Old Field Degraded, had a large

amount of blackberries making travel difficult which would likely discourage hunters. The proximity of the Blue River makes this area a spot for boaters and fishermen.

Along the power lines were illegal ATV trails. These trails split off from the lines when they cross the Blue River and made a loop returning back to an earlier section of the trails. Near the Blue River was an area that appeared to be a campsite utilized by the ATV drivers. This site had all vegetation cleared to bare soil and had a lounge chair in it as well as a small American flag nailed to a small silver maple. Campsite to be removed and trail use discouraged.

### **Cultural**

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

### **Invasive Species**

Ailanthus was marked as being an upcoming problem within one area of the tract (marked on the map). The area was not large but the Ailanthus had established itself and should be controlled before it becomes the successional species for the old field. Multi flora rose is also pervasive within this tract, a holdover from past ag use, inhabiting the abandoned fields. Rose rosette disease is present and may control this species over time, but has not yet appreciably reduced this species presence. Other control measures should be investigated where practicable.

### **Management Limitations**

To minimize negative site impacts best management practices should be followed and buffers should be placed around any sensitive areas noted.

### **Summary Tract Silvicultural Description, Prescription, and Proposed Activities**

#### Bottomland Hardwoods (28 acres)

This stand was located along the Blue River and some of the larger drainages. The total basal area for the tract showed it to be overstocked (at 136.5 sqft/ac). The inventory deemed 35.5 sqft/ac harvestable, leaving 101 sqft/ac. The volume that would be removed from following this marking guide would be 1,910 bf/ac leaving 3,970 bf/ac. The main species within this stand, both in terms of basal area and volume, was silver maple followed by American sycamore at about half the former's volume.

While this stand seems the most harvestable of the stands within the tract, it is not prescribe for harvest at this time. As this stand is along the Blue River near its mouth into the Ohio River, BMPs would receive extra emphasis.

#### Old Field (9 acres)

As the smallest stand within the tract, no management practices should be performed in this stand alone. The the stand is relatively lower on timber and stocking than the Bottomland Hardwoods stand. There was a total of 105.3 sqft/ac and 2,860 bf/ac. Of

this, 7.1 sqft/ac and 880 bf/ac were deemed harvestable, leaving 98.2 sqft/ac and 2,390 bf/ac.

The composition of this stand was mainly black walnut and yellow poplar based on the basal area. However, most of these two species were pole-sized or small sawtimber making it advisable to leave them to grow and accumulate volume. The largest amount of volume from this stand is contained in eastern cottonwood, which was lower in basal area but significantly larger in size than a majority of the other trees in this stand.

#### Old Field Degraded (40 acres)

Both the largest and least productive stand of the tract, this area has very little potential if allowed to naturally progress. Based on the current land cover it appears that this land was once heavily farmed, resulting in poor site quality. The trees that were in this stand were mostly submerchantable or pole sized. The trees that were of sawtimber size of pole sized were often in poor form. Areas within this stand had a canopy cover, though thin and low, while others were dominated by a shrub layer with few to no trees present. These differences were all placed in one stand type due to the likelihood that the management options would be the same due to the low probability of future value based on the current composition. In terms of volume, there were 650 bf/ac, all of which was considered as leave in order to create a seed bank. All of this volume came from three species; black cherry, eastern red cedar, and yellow poplar. In terms of basal area, the stand had 58.6 sqft/ac.

As there appears to be very poor potential for this site if left as is, a prescribed burn could be considered. Site features as well as the power line would need to be protected from the fire through the use of firebreaks. A burn would cause a return of nutrients to the soil layer which will help increase productivity for the site. Immediately following the burn the stand will likely be dominated by an herbaceous layer that will move in from surrounding areas. However, without further disturbance, such as soil scarification, it is uncertain whether a fully stocked forested stand could be expected. Yellow poplar and white ash could provide a great deal of seed, blowing in from the many trees in the immediate vicinity and there is a local source of black cherry seed. However, scarification would greatly increase the seeding success of these species. Other native hardwood species could be hand planted to increase diversity. Additionally, ailanthus and multi flora rose would need control efforts, prior to such and undertaking to prevent them from dominating the site. These efforts would need periodic monitoring afterwards to assess desirable regeneration and any problems with invasive species. Available manpower and opportunities are currently limiting factors to attempt such an involved prescription.

**TRACT ACCOMPLISHMENT RECORD**  
**Compartment 27, Tract 2**

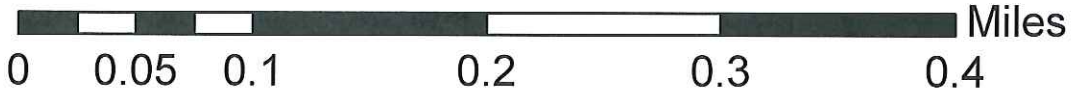
<b>DATE PLANNED</b>	<b>ACTIVITY / REMARKS</b>	<b>DATE COMPLETED</b>
2013-15  2013 2019	Ailanthus Control  Monitor tract for trespass Re-enter for inventory	

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<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. Note: Some graphics may distort due to compression.



# 2702



## Legend

### stands

-  Bottomland Hardwoods
-  Old Field
-  Old Field (Degraded)

