

**Indiana Department of Natural Resources - Division of Forestry  
Resource Management Guide**

**Harrison-Crawford State Forest  
Christine Martin**

**Compartment: 23    Tract: 10  
Date: 7/10**

Acres Commercial forest:	110	Basal Area $\geq$ 14 inches DBH:	63.2sq.ft/acre
Acres Noncommercial Forest:	0	Basal Area < 14 inches DBH:	42sq.ft./acre
Acres Permanent Openings:	2	Basal Area Culls:	3.8sq.ft/acre
Acres Other:	0	Total Basal Area:	109sq.ft/acre
Acres Total:	112	Number Trees/Acre:	332

**Location**

This tract is located in Harrison county Indiana, sec. 7, T4S, R3E.

**General Description**

There are four different stand types on this tract. There is the oak-hickory stand which is the largest stand which comprises 64 acres. The cedar stand is the second largest with 40 acres. The Virginia pine stand is the third stand with 6 acres. The last stand is a field stand type. This stand is located within the Virginia pine stand. There are 2 acres in this stand type.

**History**

The majority of this land was acquired in the late 30's with a small piece being acquired in the 50's.

The last inventory was performed in 1973. The average square feet of basal area per acre was 76.

There was a timber harvest performed in 1991 on this tract and tract 2311, and part of 2312. There was 166,837 Doyle board feet removed from this sale; 69,762 Doyle board feet were removed from this tract.

**Landscape Context**

The main landscape context is forested. This tract is mainly surrounded by Harrison Crawford State Forest. Within a quarter mile of the eastern boundary there are many pasture lots and open fields located on private property.

**Topography, Geology, and Hydrology**

This tract is comprised of a northeast facing slope. The north and east boundaries are drainages that flow into Indian Creek. There was a couple of karst features observed while inventorying the tract.

The minor drainage on the northern boundary will flow into the drainage that comprises most of the eastern boundary. This drainage flows directly into Indian Creek.

## Soils

**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

**Crider Silt Loam (CrB2, CrC2, CsB3, CsC3, CtC2)** Deep, gently sloping and moderately sloping well-drained soils on uplands. Surface layer is dark-brown silt loam about 8 inches thick. Subsoil is about 62 inches thick. Moderate in content of organic matter and in natural fertility. Available water capacity is high and permeability is moderate. Typically, these soils are eroded. Runoff is medium to rapid.

Degree Slope: 2-12%

Woodland Suitability Group: 1o1

Site Index: 85-95 (Upland Oaks)

Growth range potential (Upland oaks): 300-375 bd.ft./acre/year

Management Concerns: Runoff and erosion

### **Haymond Silt Loam (HcgAH, Hm, Ho)**

The Haymond series consists of very deep, well drained, soils that formed in silty alluvium. These soils are on flood plains and flood-plain steps. Slope ranges from 0 to 3 percent. Mean annual air temperature is about 55 degrees F, and mean annual precipitation is about 42 inches. The surface horizon is a brown silt loam plow layer that extends approximately 10 inches. The first subsurface horizon is a dark yellowish brown silt loam that extends to 25 inches. The second subsurface horizon is a yellowish brown silt loam that extends until 44 inches. The stratum is a massive yellowish brown fine sandy loam.

**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

**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

**Gullied Land (Gu)** On uplands in areas that are mostly 3-15 acres in size but in places are as large as 40 acres. Underlain at a depth of 2-6 feet by bedrock of limestone, shale, or sandstone. Bedrock is exposed in the bottoms of gullies in many places. Most of the land is barren, but in places shrubs, weeds, and wild grasses are growing.

Woodland Suitability Group: 4r3

Site Index: 72-85

Growth range potential (Shortleaf and Virginia pine): 100-300 bd.ft./acre/year

Management Concerns: Runoff and erosion.

**Tipsaw Very Fine Sandy Loam ( TbIG )**

The Tipsaw series consists of moderately deep, somewhat excessively drained soils. They formed in loamy residuum from sandstone with shale and siltstone. The surface is a dark grey very fine sandy loam about 2 inches thick. The subsurface horizon is also a very fine sandy loam about 3 inches thick. The subsoil is 15 inches is a fine sand loam and the last 20 inches is a loam. The bedrock consist of a weakly cemented and moderately cemented sandstone with shale, siltstone. The mean annual precipitation is about 43 inches, and mean annual temperature is about 54 degrees F. Permeability is moderate or moderately rapid

Degree Slope: 20-70%

Woodland Suitability: 3r12

Site Index: 70

Growth Range potential: 342

Management Concerns: runoff and erosion

**Zanesville Silt Loam** (ZaC2, ZaC3, ZaD2) Deep, moderately sloping and strongly sloping, well-drained soils on uplands. A very firm fragipan in the lower part of the subsoil. Surface layer is very dark grayish-brown silt loam about 3 inches thick. The subsurface layer is about 5 inches thick and dark yellowish-brown. Subsoil is about 42 inches thick. The depth to sandstone bedrock is about 65 inches. Moderate or low in content of organic matter and low in natural fertility. Available water capacity is high, and permeability is very slow. Runoff is medium to rapid.

Degree Slope: 6-18%

Woodland Suitability Group: 3d9

Site Index: 70-80 (Upland Oaks)

Growth range potential (Upland oaks): 185-260 bd.ft./acre/year

Management Concerns: Runoff and erosion. Fragipan limits the available water capacity.

### **Access**

There is no direct vehicle access to this tract. The best way to get to this tract is use the firelane located off of Knitner Road and park on the ridgetop. The firelane that runs south on the ridgetop will run on the west side of the tract, but the lane is in bad shape and a pickup truck would not be able to drive on it certain times a year.

This firelane will need to be repaired. The lane will need more water diversion ditches and will need to be ditched on the uphill side. There are many places where the road bed is starting to sink. These areas will need to be built up to prevent the ponding of water in the road. The road will also need to be re-routed in places. There are some mud holes that would be better if avoided. There will also need to be some pine removal in this area. Many of these pines will need to be removed to straighten the road. The pines will also need to be removed from the edge of the road so the sunlight can reach the road and dry it out faster. There will also need to be rock placed on this road in order for it to be used for winter logging. There is also a proposed new addition to this firelane system. This new section of lane will connect two of the firelanes and make it easier to negotiate the turn with a log truck.

### **Boundary**

The north boundary is comprised of a drainage. The west boundary is the firelane. The south boundary runs down the hillside. The eastern boundary starts where the northern drainage meets a larger drainage, then the boundary follows this drainage south until it meets up with the cave in the north side of the drainage. After the cave the drainage runs south. The eastern boundary mainly butts up against private property.

## **Wildlife**

### Indiana Bat

Timber harvest activities may have both positive and negative effects on the Indiana bat. While undetected but occupied roost trees could be cut during spring, summer or fall, the probability of disturbance or direct injury or death to bats is extremely small. Timber harvest could create conditions that are beneficial to Indiana bats. Roads and/or skid trails provide improved canopy foraging conditions by reducing clutter. Roosting habitat could also be improved by reducing clutter around roost trees. Edges of log landings and regeneration openings could provide roost trees with improved solar exposure, thus improving microclimate/thermal conditions for roosting areas. This would improve reproductive success and fitness, contributing to local population stability or increase. In cases of maternity trees this could provide conditions that increase growth and activity rates of young bats, leading to reduced time for parental care.

Suitable roost trees such as large diameter snags or live trees with loose or exfoliating bark will be retained in sufficient numbers to provide continuing roosting habitat for the Indiana bat

According to the inventory of this tract there are a sufficient number of live trees per acre to support a timber harvest and still meet the requirements for the Indiana Bat Habitat Guideline. The inventory shows that there are an insufficient number of snags on this tract required for the bat. If it is decided that there should be more snag trees for the bat, a post-harvest TSI could generate the snags needed. This could be done by girdling the cull trees, especially the ones with the desirable bark characteristics.

### Ecological resource guide discussions

The proposed management activities in this tract are a timber harvest, road building, and timber stand improvement. These are the activities that can alter the habitat present for the wildlife.

The harvest will affect the understory vegetation in the short term. Trees are removed thereby letting more sunlight hit the forest floor, creating more understory vegetation growth. As time passes the trees in the overstory will grow and overtake these holes in the canopy so therefore there is a decrease of light hitting the forest floor. The decreased light creates a decrease in understory vegetation growth. Approximately 5 years after the harvest the vegetation is what it was before the harvest took place.

The harvest will also provide more habitat for some wildlife. There will be more coarse woody debris on the ground after the harvest. This large amount of down material is great habitat for wildlife.

This harvest should not affect any travel corridors or drastically alter the cover types of the area. The method used in this harvest will be single tree selection. There may be areas of regeneration openings that may exceed 5 acres in size. These openings will not overall affect the continuity of the forest. These regeneration areas will provide habitat for wildlife.

The timber stand improvement should have minimal affect on overall forest continuity.

There were a few karst features found in this tract. Most of these features were minor sinkholes, but there was one that could possibly be a cave. These karst features show that there is an underground water system in place. These karst features will be buffered if a harvest is to take place.

### **Recreation**

There are a couple of opportunities for recreation of this tract. The Adventure Hiking Trail runs through a portion of this tract. This section of Adventure Hiking trail is heavily used.

There is also one illegal horsetrail that is heavily used. This horsetrail cuts off the legal horsetrail in tract 2311 and runs through the field opening down the hill to private property.

### **Cultural**

Cultural resources may be present on the tract but their location is protected. Adverse impacts to significant cultural resources will be avoided during any management or construction projects.

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

#### *Oak Hickory*

This stand is the largest on this tract, with 64 acres. There is a total of 462,000 Doyle board feet in this stand type. There is a total basal area of 112 square feet per acre. If this stand is to be harvested in the basal area would be reduced to 87 square feet per acre. The two main species of trees are white oak and red oak.

The majority of this stand is good quality stand with a predominance of white oaks. The regeneration is mainly of sugar maple. The maples are 2-10 inches in diameter.

There is a section that is adjacent to the cedar stand that is poor quality trees. This section of the stand is more of a mixed hardwood stand type. There are many poor formed maples growing in this location. These areas are predominantly American beech and sugar maple regeneration. There could be an improvement harvest to remove the poor formed trees and improve the overall stand health.

The overall stand could us an improvement harvest. In the sections with more oak regeneration the oak should be favored. The maples are the dominant regeneration and by encouraging the oaks would provide stand diversity. The oaks are also a good wildlife tree therefore would benefit the overall wildlife diversity. This harvest will also help the vitality of the stand, by removing the trees which are in poor health.

#### *Cedar*

There are two separate stands of cedar in this tract. The first stand of cedar is the smaller stand of cedar which is located in the north part of this tract, west of the larger cedar stand. This stand has 7 acres of cedar. The second stand is the larger stand and is located along the eastern side of this tract. The larger section of cedar has 33 acres. There is a total of 195,000 board feet located within this stand. There is an average of 114 square feet of basal area per acre in this stand.

The smaller stand of cedars has larger trees in the sawtimber size class associated with it. There is not much oak regenerating in the understory. There are many sugar maples and ash regenerating in the understory.

In the larger stand of cedars the trees are smaller in diameter. There are several pockets of larger diameter cedar trees intermixed within this stand. The main regeneration in this stand is of maple and American beech. There are also places of gully erosion. These places have small diameter trees. There are some poplar, red maple, and black cherry intermixed within this stand. These hardwood trees are small diameter and most have poor form. In some areas the cedars have started to decline and the mixed hardwoods are starting to take over.

As stated in the previous management guide these cedars should be removed to improve the health of the stand. These cedars are contributing to a low quality site with poorly formed trees. The cedar trees are starting to decline and removing them would capture the mortality from these trees. The only problem with removing these trees is the location of the timber. There is no good way into this stand. There would need to be a long skid trail to get these trees out.

#### Virginia Pine

This pine stand is stagnant and the pines are blowing down in pockets. These pine trees are at the end of their life cycle. It would improve the vigor of the tract if these pines were removed. There are a total of 56 cords of timber in this stand. There is a total basal area of 109 square feet per acre.

There are mainly American beech and sugar maple regenerating in this stand. There is also a plethora of briars. The blown down pockets of pine have let in enough light that the briars are growing vigorously in the understory.

The western edge of this pine stand is the firelane that access this tract. The pines growing against the firelane will need to be removed to widen the lane and let the sun light hit the lane and let it dry out faster.

#### Field

This stand is located within the pine stand. There are 2 acres of maintained field. Within this maintained field there are some pockets of small trees for wildlife cover located within the open field. There is some yellow poplar and young Virginia pine located in these pockets. There was some ailanthus found growing in one of these pockets. This ailanthus should be chemically treated before the ailanthus gets out of control.

The illegal horsetrail runs down through the middle of the wildlife opening. This horsetrail is heavily used.

### **Proposed Activities Listing**

**2010- Firelane improvement project**

**2012- Hardwood timber harvest**

**2014- TSI possible openings from harvest**

**2015- if possible cedar harvest**

**2032- Re-inventory and re-proscribe treatments**

**To submit a comment on this document, click on the following link:**

**[http://www.in.gov/surveytool/public/survey.php?name=dnr\\_forestry](http://www.in.gov/surveytool/public/survey.php?name=dnr_forestry)**

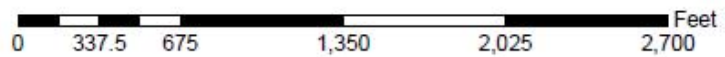
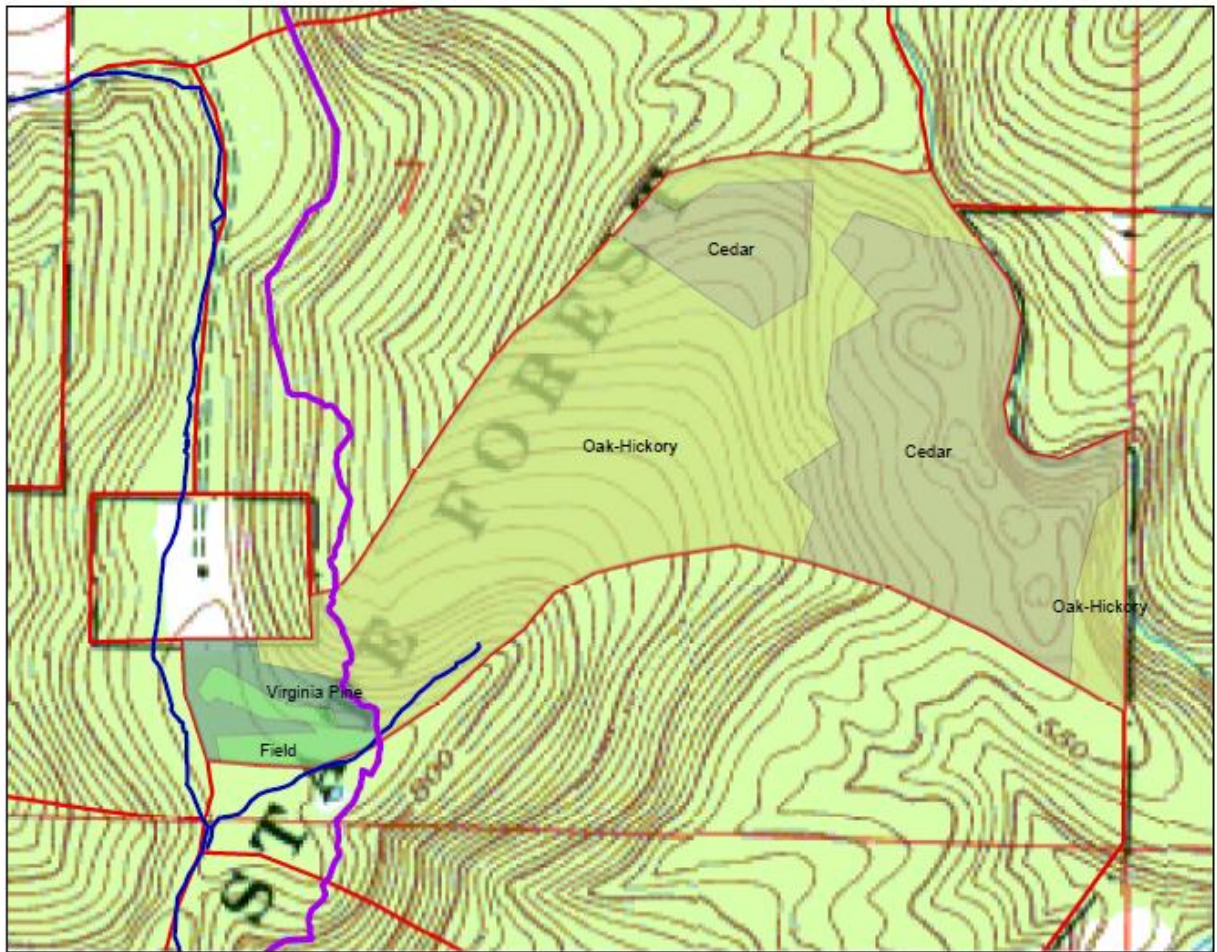
You **must** indicate the State Forest Name, Compartment Number and Tract Number in the “Subject or file reference” line to ensure that your comment receives appropriate consideration. Comments received within 30 days of posting will be considered.



# Stand Map

## Compartment 23 Tract 10

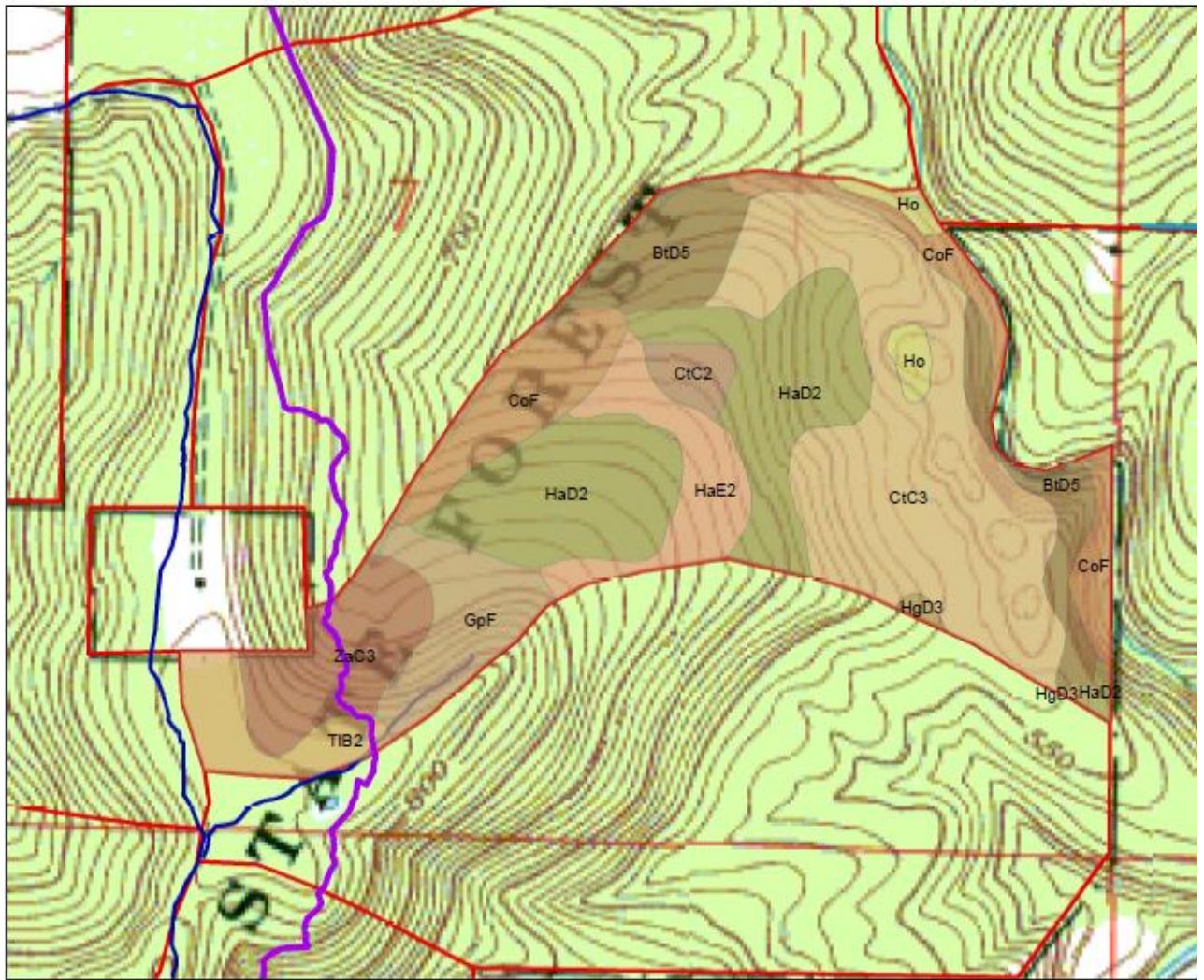
### T4S R3E 7













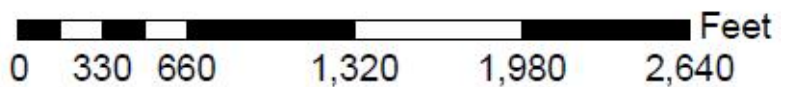
# Soil Map

## Compartment 23 Tract 10

### T4S R3E 7



Soil Types			
	BtD5		GpF
	CoF		HaD2
	CtC2		Ho
	CtC3		TIB2
	HgD3		ZaC3



Average Site Index: 84

Stocking Level : overstocked(103%)

Calculated annual Growth (bd. ft.): 272 bd.ft./acre/year

**Totals based on the Doyle scale (board foot)**

Species	Harvest	Leave	Total
Shagbark Hickory	0	3180	3180
Red Elm	0	3660	3660
Scarlet Oak	0	4740	4740
Black Walnut	0	4760	4760
Blackgum	2590	2720	5310
American beech	0	11660	11660
Sugar Maple	10590	6300	16890
White Ash	1500	15390	16890
Chestnut oak	6210	18470	24680
Pignut Hickory	2030	23180	25210
Yellow Poplar	44280	12550	56830
Black Oak	31870	55020	86890
Northern Red Oak	21410	108950	130360
White Oak	16780	136430	153210
<b>Hardwood Total</b>	<b>137260</b>	<b>407010</b>	<b>544270</b>
Eastern Red Cedar	139580	0	139580
<b>Stand Total</b>	<b>276840</b>	<b>407010</b>	<b>683850</b>
<b>Total per acre</b>	<b>2471</b>	<b>3634</b>	<b>6105</b>

	harvest
Virginia Pine	35 Cords