Indiana Department of Natural Resources
Division of Forestry

DRAFT
RESOURCE MANAGEMENT GUIDE

Morgan-Monroe State Forest — Compartment 14 Tract 04
Forester: S. Sheldon — Date: 2/9/2010

Management Cycle End Year 2030 — Management Cycle Length 20 years

Location
C14T04 is located along the east side of Bean Blossom Road south of the intersection of Main Forest Road and Beanblossom Road south to the ridge across from the Beanblossom Shelterhouse Gate. This tract is located in Section 16, T10N, R1E of Monroe County.

General Description
C14T04 is 48 acres of closed canopy hardwood forest. Overstory hardwoods range from small to large sawtimber size classes. The northern corner of the tract contains disturbed site species with Sassafras and Black locust present. Beanblossom Road is the western boundary of the tract and Main Forest Road is the northern boundary. The eastern boundary of the tract lies adjacent to the Division of Forestry's Hardwood Ecosystem Experiment (HEE) control core area making this tract a control research buffer area. The 2010 field inventory identifies the following species in the tract's timber strata with the tree species listed in order by dominance.

Overstory	Understory	Regeneration
Black oak	Sugar Maple	American Beech
Yellow poplar	American Beech	Sugar Maple
White oak	Yellow Poplar	Yellow Poplar
Chestnut oak	White Ash	Ironwood
Northern Red oak	American Elm	Dogwood
Pignut hickory	Sassafras	Blue Beech
Scarlet oak	Chestnut Oak	American Elm
Largetooth aspen	White Oak	Sassafras
White ash	Dogwood	White Ash
Black cherry	Pawpaw	Red Maple
Chinquapin oak	Redbud	Pawpaw
American beech	Red Maple	Redbud
Blackgum	American Sycamore	Red Oak
Bitternut hickory	Black Cherry	Chestnut Oak
Red maple		White Oak
Sugar maple		Red Oak
Sassafras		Pignut Hickory
Red elm		Shagbark Hickory
Shagbark hickory		

History
Morgan-Monroe State Forest acquired this tract of timberland in 1929 from landowner Edward Avery. There is no record of any past timber management. This tract was listed as C14 T3 in the previous Compartment designation. At that time, a Quickcruise was completed in 1977 by Forester Julie Akard (1 point/2.2 acres). Her results indicated a 720 BF/acre overall harvest with 2,888 BF/acre of growing stock. Forester Akard recommended the tract not be harvested at that time due to the low harvest volume associated with an overall medium sawtimber size distribution within the tract. She recommended the tract to be re-inventoried in 15 years according to the first tract Management Guide. In February 2010 Forester Sean A. Sheldon inventoried the entire tract and determined that the tract has approximately 7,286 BF/Acre total volume composed of mostly black, chestnut and white oaks along with moderate volume in Yellow Poplar. A preliminary prescription was completed in February 2010.

Landscape Context
Land on all sides of this tract is closed canopy hardwood forest in the central area of the Morgan-Monroe State Forest. The northwest corner of the tract is a day use recreational area associated with the nearby Wall Shelter House and picnic area. A Hardwood Ecosystem Experiment (HEE) unit is nearby to the east. This tract falls within the HEE Control buffer area.

Topography, Geology and Hydrology
The tract's topography is primarily an east-facing slope that runs the length of the tract. The west boundary is the top of the ridge that makes up Beanblossom Road. Slopes from this ridge are steep, ranging from 30-60% grades. The eastern boundary is locally known as Green Hollow. The drainage that makes up this east boundary is a mapped intermittent stream that flows into Greasy Creek. The underlying geology is unglaciated sandstone, siltstone, and/or shale bedrock. Silt loam soils are generally shallower and are derived from weather shale bedrock.

Soils
Overall the soils in this area consist of approximately 85 percent BkF, 10 percent BdB, and 5 percent WmC. The majority of the tract is designated BkF whose properties indicate they do not have significant problems regarding drainage or harvest operations if erosion control BMP practices are observed during harvests.

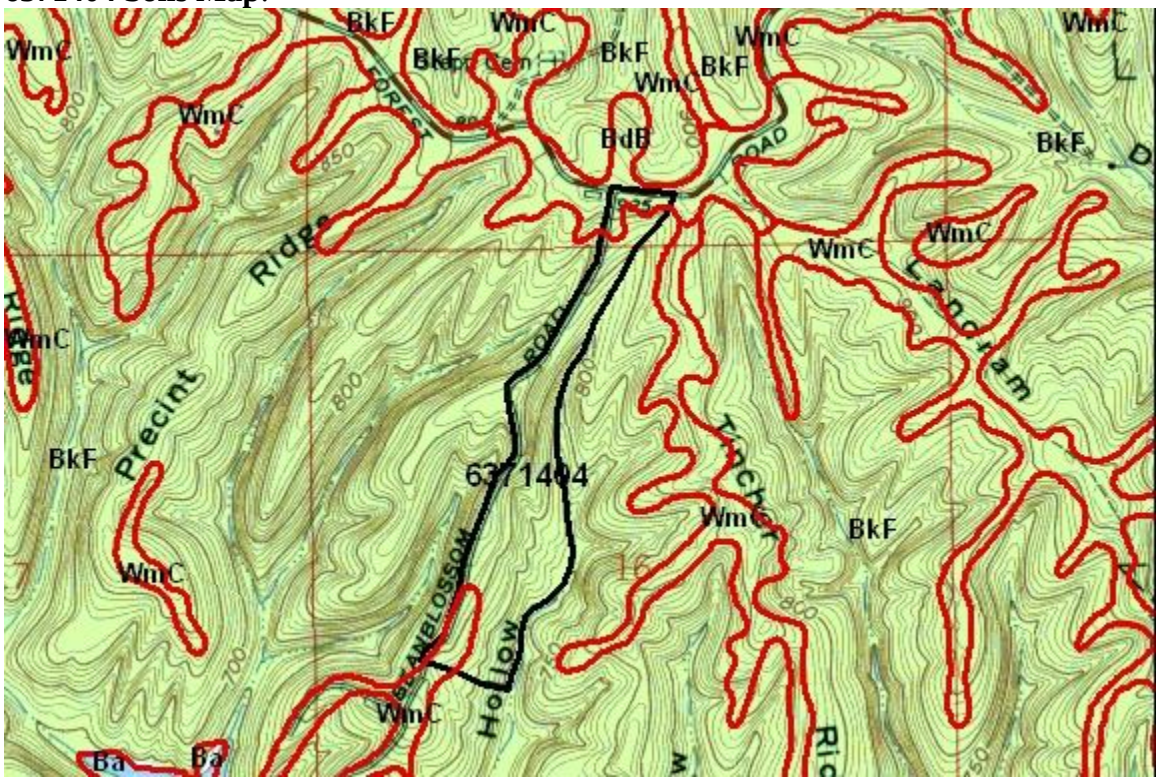
<u>Berks-Weikert (BkF):</u>
These soils typically are steep to very steep with slopes ranging from 25-75 percent. Berks soils constitute the upper slopes while Weikert is restricted to the gradually sloped and lower land areas. This soil type is not suited to any residential, pasture or farming management uses however timberland is preferable above all others. Bedrock depth limits the number of trees able to survive in the area and those that survive are generally

not high quality trees. It is recommended that road construction follow contours to lessen erosion hazards.

Bedford Silt Loams (BdB):
Bedford Silt Loams have very slight slopes ranging from 2-6 percent with well-drained soils and a fragipan present in some areas at about 20 inches. There are areas of depressions that can create poor drainage. There is low organic material in this soil with a seasonal high water table of 2-4 inches between March and April; also because of the fragipan root penetration is restricted. This soil type can become wet and seepy during the spring and is prone to frost action and low soil strength. Harvest activities are best suited to the middle of winter or dry summers in order to lessen erosion potential. Erosion hazard, equipment limitation, seedling mortality, and windthrow hazards are all slight for this soil type.

Wellston-Gilpin (WmC):
These soils have gentle to moderate slopes ranging from 6-20 percent with very well drained soils. Wellston soils have moderate water capacity and permeability with medium surface run off whereas Gilpin soils have low water capacity, moderate permeability and rapid runoff. These characteristics combined with the low organic content of both soils and the acidic surface layer tendencies indicate higher erosion hazards. This soil type is more preferable for timberland than any other land use type if the following practices are observed: logging roads are constructed on the contours and management focuses on removal of mature trees and protection of healthy seed trees.

6371404 Soils Map:



Access
General public access to this tract is excellent as Beanblossom Road and Main Forest Road bound this tract. Specific harvest access routes are being examined. An existing old skid trail at the south end of the tract does allow limited south access from Beanblossom Road.

Boundary
There are no private land boundaries adjacent to the tract. The northern boundary is Main Forest Road. The western boundary is Beanblossom Road. The southern and eastern boundaries are comprised of drainages that may need to be flagged prior to any management activity.

Wildlife
At present the tract is an excellent area for providing habitat and food for a great diversity of wildlife that live in mixed hardwood and oak-hickory stands. The best management of the tract would be to selectively favor the oaks and hickories that are most adapted to the soils present on the tract. These species are longer-lived and provide the most abundant and consistent mast. Beeches are common in the understory as well as present in the overstory. At present, the larger sawtimber sized stands do have areas of windthrow and mortality creating small openings along with modest successional stands of Yellow poplar, beech and maple. This tract is well adapted for the squirrels, white-tailed deer, ruffed grouse and wild turkey game species as well as non-game songbirds that thrive in mixed hardwood and oak forests. Our timber management utilizes Division of Forestry Wildlife Feature standards to provide habitat requirements for diversity of wildlife species. An appropriate number of shagbark hickories, mast producing species and den trees will be retained to provide additional habitat benefits. During the tract inventory information relating to these wildlife features was collected and noted that there was a deficiency of larger diameter snags beginning at nine inches therefore an effort will be made to retain these larger snags. Post-harvest Timber Stand Improvement (TSI) is planned to increase snag density as well as increase the tract's viability for Indiana Bat habitat. There do exist an abundance of legacy trees in all size classes and small diameter snags (5"-9"). Cavity trees in all size classes appear to be deficient according to the inventory. Consideration will be taken during management activities to retain trees with cavities that offer potential wildlife habitat.

Legacy Trees inventoried on 6371404

Legacy Trees*	Maintenance Level	Inventory	Available Above Maintenance
11"$^{+}$ DBH	432	672	240
20"$^{+}$ DBH	144	203	59

* Species include: American Elm, Bitternut Hickory, Cottonwood, Green Ash, Red Oak, Post Oak, Red Elm, Shagbark Hickory, Shellbark Hickory, Silver Maple, Sugar Maple, White Ash, and White Oak

Snags inventoried on 6371404

Snags (All Species)	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal
5"+ DBH	192	336	403	211	67
9"+ DBH	144	288	104	-40	-184
19"+ DBH	24	48	19	-5	-29

Cavity Trees inventoried on 6371404.

Size Classes	Maintenance Level	Optimal Level	Inventory	Available above Maintenance	Available above Optimal
7"+ DBH	192	288	57	-135	-231
11"+ DBH	144	192	57	-87	-135
19"+ DBH	24	48	11	-13	-37

Communities

An Indiana Natural Heritage Database review was obtained for this tract. If, rare, threatened or endangered species were identified for this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species.

Forest Condition

The current 2010 inventory indicates 7,286 Bd. ft. per acre Total volume. There is 3,338 bd. ft. per acre Harvest volume and 3,948 bd. ft. per acre Leave volume. The overall tract stocking is at 77% with an average diameter of 13.2" (see attached Inventory Summary). The current inventory shows close to 50% of Total volume as harvestable volume. This percentage is likely due to the large diameter BLO and YEP in the stand tallied during the inventory. Following the inventory a closer examination of the tract indicated that the more vigorous, large diameter BLO and YEP could be retained in the event regeneration is not prescribed due to the proximity of the HEE project and roadway aesthetics, therefore the harvestable volume could be modestly reduced. In the previous inventory, Forester Akard's inventory in 1976 showed 3,620 Total Bd. Ft. per acre. Her inventory had 961 Bd. Ft. per acre harvest volume and 2,659 Bd. Ft. per acre residual volume. In the 34 years since the last inventory in this tract, the overall tract total volume has increased nearly 50% with an annual growth of 108 bd. ft./ac/yr. Species composition in the tract at Forester Akard's inventory was relatively the same to the most current inventory. BLO, SCO, YEP, and WHO currently comprise the primary species on the tract in terms of volume. Modest wildfire damage was noted on the upper northern slopes as well as a modest amount of windthrow was observed on this tract. This may be the result of the timber resource maturing to site due to average soil depth. There are also pockets of dead trees primarily of largetooth aspen, an early successional hardwood species. Overall, the tract is in need of an improvement harvest with some possible areas of group selection regeneration prescribed.

Recreation
As the majority of the tract is easily accessible to the public, the major recreational activities are hunting, hiking, biking along Beanblossom Road & mushrooming. Wall Shelterhouse and Picnic Area are adjacent to the northwest corner of the tract. Beanblossom Road is a popular scenic drive as well as a route for cyclists. A modest Visual Enhancement Area (VEA) will be prescribed for the entire length of the tract adjacent to Beanblossom Road.

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

Tract Subdivision Description and Prescription

Table 1: Overall Tract Stocking Chart for 6371404
2010 Inventory Data

Species	Harvest Volume	Growing Stock	Total Volume
Black oak	65,180	55,010	120,190
Yellow poplar	38,240	13,100	51,340
White oak	8,220	41,020	49,240
Chestnut oak	16,090	26,270	42,360
Northern Red oak	17,170	23,270	40,440
Pignut hickory	950	15,770	16,720
Scarlet oak	2,040	5,020	7,060
Largetooth aspen	3,750	0	3,750
White ash	1,050	2,330	3,380
Black cherry	0	2,800	2,800
Chinquapin oak	0	2,320	2,320
American beech	2,760	0	2,760
Blackgum	1,890	0	1,890
Bitternut hickory	0	1,430	1,430
Red maple	700	700	1,400
Sugar maple	1,350	0	1,350
Sassafras	830	0	830
Red elm	0	470	470
Totals (Bd. Ft.)	**160,220**	**189,510**	**349,730**
Averages (BF/Acre)	**3,338**	**3,948**	**7,286**

Tract Management Units

Oak-Hickory-Yellow poplar - 4Ac.
There are approximately 4 acres of this tract that have a prominent component of large sawtimber Yellow Poplar. The proposed management of this portion is an improvement thinning to remove poorly growing poplar from the overstory to create spacing needs for healthy and vigorous oak and hickory. Healthy poplar that are of small to medium

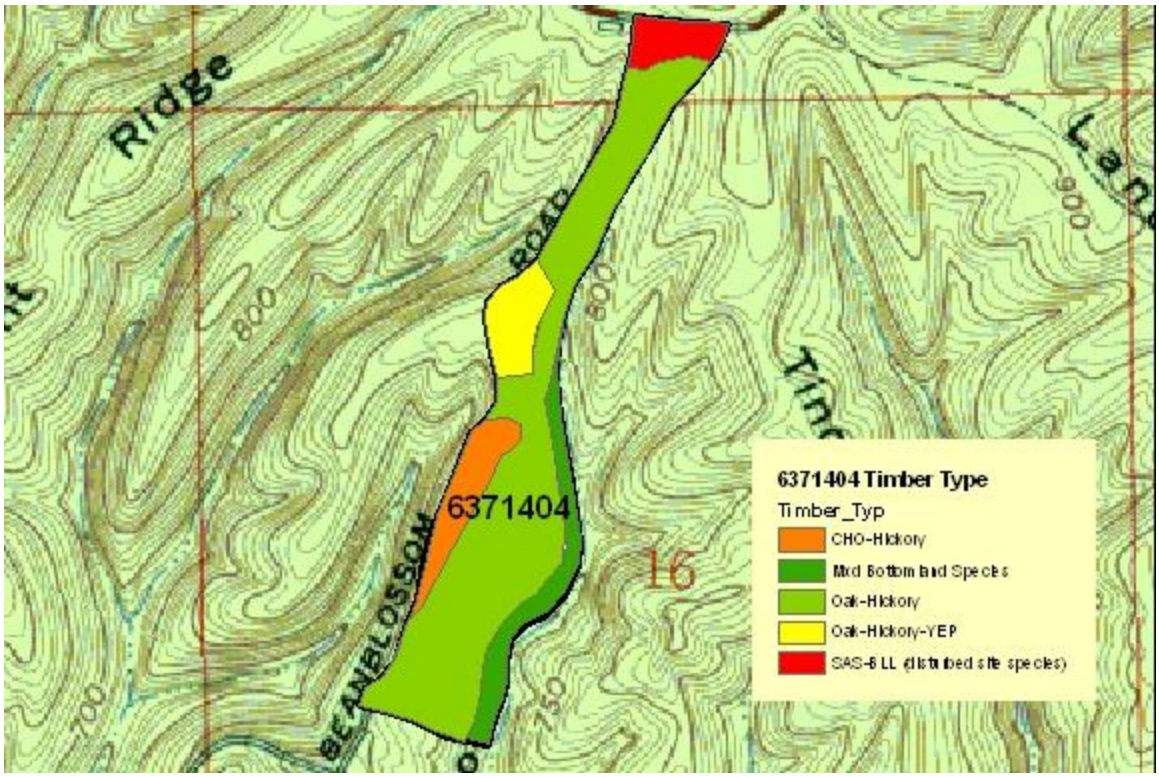
sawtimber size will remain in areas where they are not directly competing with oak-hickory individuals.

Disturbed Site Species - 3Ac.
There are approximately 3 acres of "scrub" conditions in the northern portion of this tract. This area includes SAS, BLL, VIP, and other disturbed site species. Grapevines and exotic species (Multiflora rose, Japanese and Bush honeysuckle, and Black locust) are also present in this area. Most of the sawtimber trees tend to be of small diameter and exhibit poor form. The proposed management prescription for this area is TSI along with exotic species control using a selective herbicide. The herbicide could be applied using a backpack sprayer. Some of the trees in this area will be left for wildlife habitat as they are beginning to die out. With TSI of grapevines present in the understory and the removal of the competing exotic species, this area could slowly regenerate into more desirable hardwood species.

Oak-Hickory - 36Ac.
The majority of this tract falls within the Oak-Hickory stand type. The proposed management prescription for this area will be a combination improvement cutting and selective cutting to remove larger black, white and chestnut oaks due to maturity and/or material defect as well as to do some free thinning in the remaining oak-hickory stands. The white oak stands are of fair to excellent quality and approximately 15% of the tree's volume appears to be in the prime to veneer quality category. Favoring the higher quality and vigorous black, white, and chestnut oaks will be the prescription for this tract during any proposed timber marking.

Mixed Bottomland species - 5Ac.
There are approximately 5 acres of this stand in wet site, bottomland species. These sites are flat and follow most of the creek that makes up the eastern boundary. BMP guidelines for Riparian Management Zones (RMZ) near intermittent streams call for up to a 25' foot buffer from the stream for harvesting activities. Harvests in these areas is permissible provided adequate overstory stocking is retained following the harvest, avoiding the placement of skidtrails near the streambed and falling tops away from the stream is observed. For more information consult the Division of Forestry *BMP Field Guide*.

6371404 Timber Stand Type Map



Tract Prescription and Proposed Activities

HEE guidelines

6371404 is a "Buffer Tract" of the Division of Forestry's 100 Year Hardwood Ecosystem Experiment (HEE). There are 3 research treatments defined within this Hardwood Experiment: 1) Evenaged Harvest areas (clearcut treatments), 2) Unevenaged Harvest areas (improvement and small group selection opening treatments) and 3) Control areas (no harvest areas). Each treatment has a designated "Core Area" of approximately 200 acres. All Core Areas have 3 replications so 9 Management Units have been designated. Forest tracts adjacent to each core area have also been designated as "Buffer Tracts" to lessen outside influences on Core areas. This particular tract is designated as a Control Buffer for Management Unit #4.

The following is an excerpt from the HEE guidelines regarding silvicultural treatments of "Buffer Areas":

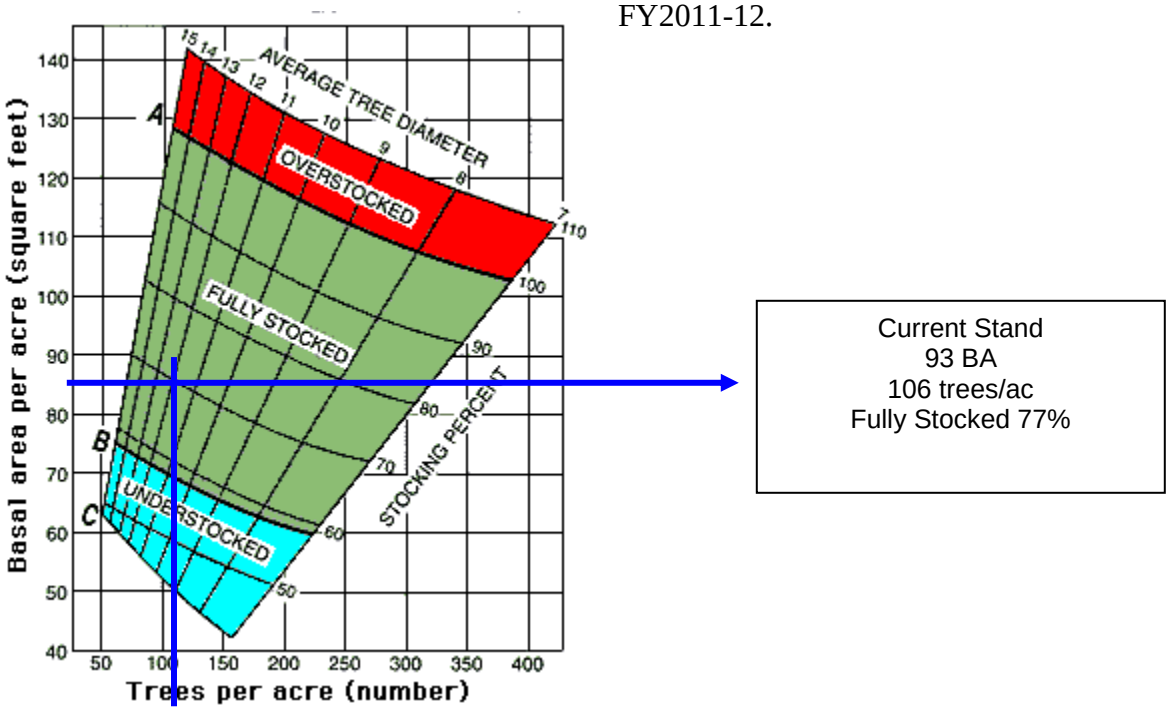
Buffer Areas:

- Roadwork through Core areas to access Core buffers is permissible but should be of a minimally constructive nature.
- Within all buffer areas (around even-aged, uneven-aged, and control units) single tree selection will bring the stocking levels to a minimum of 70 sq. ft. per acre (areas in between group selection openings).
- If it is deemed silviculturally appropriate for a group (selection) opening, an opening should be between 1 and 3 acres and these groups may not be created within 100 meters of the Core area boundary.

- The total acreage cut in group selections within a management tract should not exceed 5% of the management tract area.

Prescription & Proposed Activities

This tract is presently 77% percent stocked. The majority of harvestable volume comes from BLO (26%), YEP (15%), WHO (14%) and CHO (12%). From the inventory this first tract prescription will predominantly be an improvement cutting which is typically an intermediate harvest to release the most vigorous and quality croptrees as well as to remove those species and individuals of lower value, quality or vigor. In addition, some selected areas for group selection could be targeted for forest regeneration in areas where excessive fire damage, low stocking or poorer species groups predominate. These groups would necessarily need to be marked outside of the 100 meter HEE opening restriction area. The steepness and lack of flat areas for yarding will make this tract difficult to harvest. There are, however, a few areas on the top of the ridge adjacent to Beanblossom Road that could be utilized as logging decks however they will need archaeological review. It is also possible that a previously constructed yard from adjacent tracts to the east, south, and north could be used for hauling & loading. In recent years, tracts to the west and south of this tract have been harvested. As Beanblossom Road is a scenic roadway, harvests are staggered through a cutting cycle by at least 3 years to reduce visual effects from logging. As such, when a harvest is scheduled a Visual Enhancement Area (VEA) zone along Beanblossom Road will be observed its entire length. Therefore the harvest immediately adjacent to Beanblossom Road will be limited to removing the timber resource that is a hazard to the roadway or susceptible to decline or loss within the current management cycle. Also, residual harvest slash within the roadway VEA can be reduced promptly following the harvest by the Property's public firewood program. Directional felling, road spotters or a temporary road closing will be utilized during the active harvest along the length of Beanblossom Road. The majority of the east drainage falls within the Division's Riparian Management Zone guidelines. Any proposed timber harvest will identify these Zones for treetop and debris removal in the event tops fall into the stream. Logging activities elsewhere on the tract will need to be conducted carefully to reduce erosion hazards. Careful timber marking and road layout as well as prompt closing out of skid trails and logging roads will moderate these hazards significantly. Given the current harvest schedule of the adjacent tracts this sale will be planned for FY2011-12.



Proposed Activities Listing
Timber Harvest marking planned in 2011.
Timber Sale planned in 2011-12 fiscal year.
TSI work during 2011-12 fiscal year.
Stand Re-inventory work 2030.

Attachments
The following attachments are kept in the tract file:
Ecological Resource Review
Aerial photo map with noted special features
Aerial photo map with noted unique areas
Soil type tract map
Indiana Natural Heritage Database Map
TCruise reports

References Cited:
Draft Environmental Assessment for Indiana State Forests – May, 2008

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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.