Indiana Department of Natural Resources
Division of Forestry
DRAFT
RESOURCE MANAGEMENT GUIDE

State Forest: Harrison-Crawford
Forester: John Segari
Management Cycle: 20 yrs

Compartment: 13 Tract: 08
Date: September 18, 2013

INVENTORY SUMMARY

Number of Stratum: 4
Permanent Openings: 0.1 ac
Average Basal Area: 100 sq. ft/ac

Est. Annual Growth: 185 bd. ft/ac/yr*
Tract Acreage: 151
Site Index: 70-80 (for upland oaks)

Table 1. Tract 1308 Inventory Summary

Species	Harvest		Leave		Total	
	Total	Per acre	Total	Per acre	Total	Per acre
Yellow poplar	61,400	406.62	93,580	619.74	154,980	1,026.36
White oak	38,990	258.21	204,860	1,356.69	243,850	1,614.90
Black oak	34,780	230.33	205,670	1,362.05	240,450	1,592.38
Eastern redcedar*	20,420	135.23	10,630	70.40	31,050	205.63
Northern red oak	17,110	113.31	120,740	799.60	137,850	912.91
Pignut hickory	15,700	103.97	32,730	216.75	48,430	320.73
White ash	14,640	96.95	5,040	33.38	19,680	130.33
Scarlet oak	8,640	57.22	5,590	37.02	14,230	94.24
Chestnut oak	8,560	56.69	21,300	141.06	29,860	197.75
Sugar maple	5,800	38.41	24,050	159.27	29,850	197.68
Blackgum	5,790	38.34	0	0.00	5,790	38.34
Black cherry	3,250	21.52	3,890	25.76	7,140	47.28
American beech	2,480	16.42	5,390	35.70	7,870	52.12
Bitternut hickory	1,410	9.34	2,480	16.42	3,890	25.76
Basswood	0	0.00	4,090	27.09	4,090	27.09
Chinkapin oak	0	0.00	11,990	79.40	11,990	79.40
Mockernut hickory	0	0.00	3,680	24.37	3,680	24.37
Shagbark hickory	0	0.00	8,880	58.81	8,880	58.81
Shumard oak	0	0.00	7,010	46.42	7,010	46.42
Total	**238,970**	**1,582.58**	**771,600**	**5,109.93**	**1,010,570**	**6,692.52**

** 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.*

Location

This tract is located in Crawford County, Jennings Township. It comprises portions of Sections 22, 26, and 27 in T3S R2E. It is on the east side of Wyandotte Cave Rd., approximately 5 miles by road east of Leavenworth.

General Description

This tract comprises 151 acres and includes four distinct strata. Oak-Hickory covers 121 acres, Old Field comprises 15 acres, Rocky South Slope comprises 10 acres, and Mesic Hardwoods the remaining 5 acres. This tract is medium quality hardwoods with north and south facing slopes of respective quality. There are Karst features and recreational trails.

These strata will be described briefly below and in more detail in the Management section.

Stratum 1

Oak-Hickory comprises 80% of the acreage and 90% of the sawtimber volume. This covertype is found on the upland portions of the tract that are too steep to farm but not exceedingly steep. All aspects are included in this stratum. It is the most diverse stratum but is dominated by white and black oak, over 50% between the two. Timber quality is medium and size varies from small to large sawtimber.

Stratum 2

Old Field comprises 10% of the acres and is found on the ridgetop and the toe slopes on the east of the tract. These areas have experienced erosion in the past and are less productive than the sloped areas of the tract. This stratum is dominated by poplar, black oak, and cedar. The timber quality is mostly poor but good quality oak is developing in the pole class.

Stratum 3

Rocky South Slope comprises 7% of the area and is found on the steep south facing slope near the southern property boundary. Poorly formed, short-boled oaks and maples with a strong cedar component dominate this area. This stratum has little commercial value.

Stratum 4

Mesic Hardwoods occupy an area on the ridgetop south of the old field area and a small area on the banks of the intermittent. This stratum is dominated by poplar with a lesser component of oaks and maples. The oak is of medium quality and the poplar is being affected by drought.

About ½ mile of a rural electric r-o-w roughly parallels the county road along the western border of the tract. A meter pole for use of the Wyandotte Cave facility is located within the tract near where the former log yard is.

History

This tract was acquired in three separate purchases. The eastern portion was purchased in 1939 from the Sharp and Davis families (Deed 131.88). The majority of the tract was acquired in 1966 with the large "Wyandotte Cave" acquisition (Deed 131.206). The remainder was purchased from the Arrowhead company in 1976 (Deed 131.242). The arrowhead purchase is mostly the Rocky south slope and some old field. The initial purchase from the Davis's and the Sharps includes the old-field area in the toe slopes. The 1940 aerial

photos show the old field and mesic hardwood strata to be cleared fields with scattered shade trees, likely pasture areas.
This tract likely received periodic harvests during private ownership. The first management records for the state are salvage log removals in 1992. 300 bd.ft of cedar logs were removed from this tract. The tract was inventoried in 1993 and found to have 5,711 bdft/acre and 106 sqft/ac of basal area. This tract was marked for a thinning in 1995 with the adjacent tract to the north, 1307. The sale concentrated on the ridge top and north-facing slope totaling 80 acres. 58,932 bdft were removed from 1308. This was an improvement cut with a visual buffer along the road. No regeneration openings were installed at his time.

In May 2006, a strong wind event caused widespread damage in this and adjacent tracts. Salable timber was marked for recovery in a salvage operation that combined parts of this tract with 1307 and 1301. 250 trees were marked in 1308 totaling 65,566 bd.ft including 10 culls. This sale was purchased by Scott Sanders and cut in the spring of 2007. The log yard and skid trails from this operation are still visible and usable.

Landscape Context

The dominant land use within a 5-mile radius is a combination of farmland and mature forests. The tract is near recreation areas and a private horse campground. No special areas are adjacent but the Wyandotte Cave recreation area is nearby. This area is closed and will remain so for the near future. This tract contains habitat and species composition typical for the area and does not represent unique or inordinately valuable forest type.

Geology, Soils, and Hydrology

The major landform of this tract is a Y-shaped ridge opening to the south. Aspect is variable with slopes ranging from level to very steep.

Soils

This tract has a variety of soil types present. Series and characteristic changes are gradual and vary with slope position. The series listed below describe >93% of the area of the tract.

TblG- Tipsaw-Adyeville complex, 25 to 75 percent slopes
This steep to very steep, moderately deep, somewhat excessively drained soil is found on side slopes in the uplands. It is suited to trees. Erosion hazards and equipment limitations are management concerns that should be considered when planning sale layout and implementing Best Management Practices for Water Quality. Tipsaw has a site index of 70 for northern red and black oak and Adyeville has a site index of 64 for northern red oak.
WhfD3- Wellston silt loam, 12 to 18 percent slopes, severely eroded
This strongly sloping, well drained soil is on narrow ridgetops and on side slopes of the uplands. It is well suited to trees. This soil has a site index of 71 for northern red oak and 90 for yellow poplar.
AgrC2- Apalona silt loam, 6 to 12 percent slopes, eroded
This moderately sloping, deep, moderately well drained soil is found on sideslopes in the uplands. It is well suited to trees. A fragipan is present at 20 to 40 inches below soil surface that restricts drainage. Erosion hazards are main management concern that should be considered during implementation of Best Management Practices for Water Quality. This soil has a site index of 60 for white and black oak.

HarD2- Haggatt silt loam, 12 to 18 percent slopes, eroded
This moderately to strongly sloping, deep, well drained soil is found on sideslopes in the uplands. It is well suited to trees. Erosion hazards are main concern that should be considered during implementation of Best Management Practices for Water Quality. This soil has a site index of 68 for white oak and 86 for yellow poplar.
CqyG- Corydon stony silt loam, 20 to 60 percent slopes
This steep to very steep, somewhat shallow, well drained soil is found on side slopes in the uplands. It is suited to trees. Equipment limitations and erosion hazards are concerns that should be considered during sale layout and implementation of Best Management Practices for Water Quality. This soil has a site index of 64 for white oak and 90 for yellow poplar.
AbqE2- Adyeville silt loam, 18 to 25 percent slopes, eroded
This strongly sloping to steep, somewhat deep, somewhat excessively drained soil is on side slopes of upland hills and benches. It is suited to trees. Erosion hazards are main management concern that should be considered during implementation of Best Management Practices for Water Quality. This soil has a site index of 64 for white oak.
HafD3- Haggatt silty clay loam, 12 to 18 percent slopes, severely eroded
This moderately to strongly sloping, deep, well drained soil is found on sideslopes in the uplands. It is well suited to trees. Erosion hazards are main concern that should be considered during implementation of Best Management Practices for Water Quality. This soil has a site index of 68 for white oak and 86 for yellow poplar.

Soil concerns

Concerns associated with these soils are dominantly Erodability due to slope. These concerns will be mitigated by the proper implementation of BMP's. These soils are mostly already eroded due to past agricultural practices. They are all well suited to trees and the lower site indices are indicative of oak-hickory sites as opposed to high quality mixed hardwood sites

Hydrology

This area is characterized by both karst and surface flows. This area has several known caves and sinkholes. These likely drain to underground aquifers or the nearby Blue River. The surface features drain to the east to a mapped "perennial" stream. The Karst features are of particular concern as they potentially harbor unique and sensitive wildlife and associated habitats. These features should be buffered following Indiana's BMP's to maintain the integrity of these ecotypes.

Access

Access for this tract is good. A short spur trail leads from Wyandotte Cave Rd. to a wildlife opening that has been used as a yard in the past. From this yard, several skid trails lead down both ridges and to the north-facing slope. This spur trail already has access control in the form of a gate. If seasonal harvesting restrictions are in place at the time of management, the trail will need to be reinforced.

Boundaries

Most tract boundaries are internal with parts of the southern boundary being a private parcel boundary. The western boundary is Wyandotte Cave Rd. The southern boundary is an east-west line that is monumented by a Bernstein monument on the east end. There is a pipe farther east on this line that monuments the old property line prior to the Wyandotte acquisition. The northern and eastern boundaries are distinct drainages.

Wildlife

This tract represents typical upland forest 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 oak hickory stratum, but another habitat component would come from the old field cedar stratum. This stratum provides denser cover for bedding areas, especially during the winter months. The cedar especially might provide cover from snow or ice, as well as roosting areas for turkeys and other birds.

Snags were tallied in this inventory for potential uses by wildlife. The following tables summarize guidelines and actual data with regard to the new strategy for consideration of the Indiana bat. **Numbers below include only the 12 species noted "as having relatively high value as potential Indiana bat maternity roost trees" by the USFWS. There are many other trees of various species present on the tract.**

Guidelines for preferred density of live and dead trees for use by Indiana bat:

# of live trees	Guidelines Maintenance	Tract 1308 actual present
11"+ DBH class	1359	4045
20" DBH and greater	453	686

# snags	Guidelines Maintenance	Guidelines optimal	Tract 1308 actual
5" + DBH class	604	1057	2479
9"+ DBH class	453	906	870
19" DBH and greater	75.5	151	73

These numbers show that both live tree densities as well as snag densities meet maintenance guidelines on this tract except in the 20"+ DBH snag class. However, it is likely that additional snags in the medium and large size class will be created by post harvest TSI activities, particularly in the old field stratum.

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 this 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, was found in scattered pockets in the areas of previous disturbance. These likely seeded in from the powerline ROW to the west of the tract. These should be treated as soon as possible to allow other vegetation to take over that growing

space prior to harvest operations. When marking the harvest, the pockets should be mapped in greater detail and treated prior to the harvest.

Recreation

This tract has portions of the "Wyandotte Cave" horse trail. This trail runs the length of the ridge on the west end of the tract as well as portions of the south line. Much of this trail is on private land that is owned by the TNC. Local residents likely use the area for hunting, however, no deer stands were found during the inventory.

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

Management Prescription

Stratum 1: Oak-Hickory

Current condition:
This stratum is found on the slopes of the tract and comprises 80% of the area and 90% of the volume of the tract. This stratum is dominated by medium to large sawtimber white, black, and red oak with yellow poplar. There several scattered gaps from the previous salvage operation. Many of the larger residuals are showing signs of decline such as crown dieback and insect damage. The inventory is summarized in Table 2 with species composition detailed in Table 3. Currently the stratum is fully stocked just above the 85% stocked condition.

Table 2. Oak-Hickory Inventory Summary

STRATUM: Oak-Hickory		**ACREAGE: 121**	
	CUT (bd ft)	**LEAVE** (bd ft)	**TOTAL** (bd ft)
Volume/acre	1,907	5,633	7,540
Volume total	230,747	681,593	912,340
Basal area/acre	36	65	101
Trees/acre	50	97	147

Table 3. Oak-Hickory Volume by Species

Species	CUT (bd ft/ac)	LEAVE (bd ft/ac)	TOTAL (Bd ft/ac)
Basswood	0	35	35
Bitternut hickory	0	21	21
Black cherry	28	33	61
Black gum	49	0	49
Black oak	295	1,674	1,969
Chestnut oak	73	181	254
Chinkapin oak	0	46	46
Eastern redcedar	173	0	173
Mockernut hickory	0	31	31
Northern red oak	145	877	1,022
Pignut hickory	121	253	374
Scarlet oak	73	47	120
Shagbark hickory	0	75	75
Shumard oak	0	59	59
Sugar maple	37	190	227
White ash	124	43	167
White oak	302	1,648	1,950
Yellow poplar	487	417	904
Total	**1,907**	**5,630**	**7,537**

Desired future condition:
The objective of this stratum 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 and providing a natural filter for local groundwater. By the end of this management cycle,

2033, this stratum should be maintained entirely as Oak-Hickory and have at least 12 acres of midtolerant regeneration that is ready for release through regeneration openings in the next management cycle.

Silvicultural Prescription:
In order to meet the desired future condition, a harvest is recommended. 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 covertype. The inventory data, approximates a harvest of 1,907 bd ft/ac.. Most of this would be removed under a single tree selection routine with larger regeneration openings targeting groups of low-grade trees or multiple large trees growing together. When possible, selection should also favor releasing future crop trees. The residual stand will remain compositionally similar to the current tract. This provides a stand of long-lived high-quality white oak that allows a variety of management options into the future. Openings created by group selection areas will be used to ensure the supply of 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. Stocking in this covertype would be reduced from 85% to approximately 62%, still a fully stocked stand.

Uneven aged management requires that trees in all size classes be removed during harvesting to ensure regeneration. Given that many of these will be un-merchantable, post harvest TSI will be needed to ensure that poorly-formed, low-quality trees are removed and treat the understory to eliminate shade tolerant species in favor of oaks and other more desirable species. The girdling of large cull trees will also help to replace any large snags that are accidentally felled during harvest operations as well as increase the downed woody material present and provide invertebrate and small vertebrate habitat. TSI will also be needed to control ailanthus that has been found.

Stratum 2: Old Field

Current Condition:
This stratum is found on the previously open ridgetop and on the previously open area on the toeslopes of the east end and comprises 10% of the area and 3% of the volume. This stratum is dominated by a combination of open grown red maple, poplar and oaks with many small sassafras and red maple and oak poles. The inventory is summarized in Table 4 with species composition detailed in Table 5. This covertype has transitioned past early successional habitat and the canopy is beginning to close. This stratum is approximately 85% stocked.

Table 4. Old Field Inventory Summary

STRATUM: Old Field		**ACREAGE: 15**	
	CUT (bd ft)	**LEAVE** (bd ft)	**TOTAL** (bd ft)
Volume/acre	354	1,925	2,279
Volume total	5,310	28,875	34,185
Basal area/acre	37	59	96
Trees/acre	70	181	251

Table 5. Old Field Volume by Species

Species	CUT (bd ft/ac)	LEAVE (bd ft/ac)	TOTAL (bd ft/ac)
Black oak	0	754	754
Eastern red cedar	0	369	369
Pignut hickory	136	0	136
Yellow poplar	218	802	1020
TOTAL	**354**	**1925**	**2279**

Desired Future Condition:
The objective of this stratum is to provide visual appeal for the interior horsetrail and to continue development of a quality hardwood stand. The end of the management cycle, 2033, should see this stratum having a fully stocked stand of hardwood trees in the pole to small sawtimber size class. The portion of the stratum visible from the horsetrail should remain aesthetically appealing.

Silvicultural Prescription:
In order to meet the desired future condition, a light improvement harvest is recommended. Marking in the upland pocket should be limited to removing open grown individuals that are competing with quality pole and small sawtimber stems as well as those trees that will be damaged by felling or skidding of said trees. An appropriate buffer should be left within sight of the horsetrail where possible. The low level of removals in this covertype will limit extractions and release to those trees near the east edge of the stratum. The toeslope stand should be thinned to release established oak regeneration and encourage the establishment of more in areas without quality stems.

Stratum 3: Rocky South Slope

Current Condition:
This stratum is found on the steep south-facing slope in the southeast corner of the tract. It comprises 7% of the area and 2% of the volume. This stratum is dominated by poorly formed and short boled cedar and oaks. The inventory is summarized in Table 6 with species composition detailed in Table 7. This poor quality site provides rock outcrops and other habitat that is not found in the remainder of the tract. There is also a few ailanthus stems in an opening.

Table 6. Rocky South Slope Inventory Summary

STRATUM: Rocky South Slope		**ACREAGE: 10**	
	CUT (bd ft)	**LEAVE** (bd ft)	**TOTAL** (bd ft)
Volume/acre	311	1,274	1,585
Volume total	3,110	12,740	15,850
Basal area/acre	7	107	114
Trees/acre	4	252	256

Table 7. Rocky South Slope Volume by Species

Species	CUT (bd ft/ac)	LEAVE (bd ft/ac)	TOTAL (bd ft/ac)

Chinkapin oak	0	139	139
Eastern red cedar	0	593	593
Northern red oak	0	390	390
Sugar maple	0	152	152
White oak	311	0	311
TOTAL	**311**	**1274**	**1585**

Desired Future Condition:
The objective of this stratum is to provide for ecological services specifically outcrop habitat for a variety of locally important species.

Silvicultural Prescription:
In order to meet the desired future condition, continued development is recommended. The few ailanthus stems should be controlled when the rest of the tract is treated.

Stratum 4: Mixed Mesic Hardwoods

Current Condition:
This stratum is found on the toe-slopes in the southeast corner and on the ridgetop south f the old field area and comprises 3% of the area and 4% of the volume. The patch found on the toeslopes is good quality trees while the upland area is part of the powerline ROW and a small stand of developing poplars. This stratum is dominated by medium to large sawtimber Yellow poplar, red and white oak, and American beech. The inventory is summarized in Table 8 with species composition detailed in Table 9. Currently the stratum is just above the 70% stocked condition, see 17. This site is certainly a more productive stratum than the oak-hickory.

Table 8. Mixed Mesic Hardwoods Inventory Summary

STRATUM: Mixed Mesic-Hardwoods		**ACREAGE: 5**	
	CUT (bd ft)	**LEAVE** (bd ft)	**TOTAL** (bd ft)
Volume/acre	626	6,556	7,182
Volume total	3,130	32,780	35,910
Basal area/acre	17	71	88
Trees/acre	14	90	104

Table 9. Mixed Mesic Hardwoods Volume by Species

Species	CUT (bd ft/ac)	LEAVE (bd ft/ac)	TOTAL (bd ft/ac)
American beech	225	487	712
Bitternut hickory	128	0	128
Chinkapin oak	0	453	453
Northern red oak	0	1180	1180
Pignut hickory	0	263	263
Sugar maple	128	0	128
White oak	0	950	950

Yellow poplar	146	3224	3370
Total	627	6557	7184

Desired Future Condition:

The objective of this stratum is to provide for multiple economic and ecological services specifically a quality hardwood timber stand both uphill and downhill, dominated by mid- and late-seral species, while providing visual buffers for the upland horsetrail and the trail on the toeslope.

Silvicultural Prescription:

In order to meet the desired future condition, no action is required at this time. The area at the toeslope provides watershed protection for the nearby intermittent waterway that feed the Blue River. The area at the top of the ridge is already providing a visual buffer between the horsetrail and the road and will continue to do so.

Tract summary

Summary of silviculture throughout the tract:

Due to the current condition of the tract, a medium level improvement harvest could be undertaken in this tract at anytime. Overall stocking should be reduced from the current 90% to approximately 60%. This is accomplished by a combination of crop tree release, cull removal, and expanding forming canopy gaps into larger regeneration openings. This would result in approximately 130 acres harvest area and the remaining 21 acres, 14%, would be untreated and fulfill various wildlife goals and provide ecological services. This will produce a sale volume of approximately 238MBF or about 1,800 board feet per acre and leave about 3771 MBF or 5100 board feet per acre residual. Ailanthus should be mapped in detail during marking and then treated prior t harvest. 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 assure control of ailanthus. Opening acres should be between 5 and 12 acres.

Effect of Prescription on Tract properties:

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.

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 stand and should continue to provide habitat for the Indiana bat. No action in this tract would result in the reduction of a hard mast source for small mammals and birds. 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.

Wildlife Discussion from Ecological Resource Review: 1.1 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.

1.2 The habitat on this tract in the context of the surrounding landscape does not represent a special component that would be used more preferentially or exclusively by wildlife for traveling or dispersion, as riparian habitat might be, or as forest in a non-forested landscape might be. This travel may be disrupted in the short-term but long-term, the area will remain forested and provide dispersal and travel corridors into the future. The non-harvesting areas near the stream and the rocky south slope will provide continued protection for sensitive species in the area.

Indiana Bat

Guidelines for preferred density of live trees for use by Indiana bat:

# of live trees per acre	Guidelines Maintenance	Tract 1308 present	Planned Harvest	Planned Residual
11" + DBH class	1359	4045	1275	2770
20" + DBH class	453	686	140	546

As noted above, snag counts for most size classes are above the maintenance levels with only the middle size class not meeting optimal guidelines. Management activities will not intentionally remove snags, with a few exceptions of large recently dead trees or storm damage when possible, so the timber sale will not negatively affect that component significantly. Some snags may be felled during harvest operations if they present a physical hazard to field personnel. The table above shows that live tree densities will also not be below the recommended levels. **Numbers above include only the 12 species noted "as having relatively high value as potential Indiana bat maternity roost trees" by the USFWS. There are many other trees of various species present on the tract.**

Recreation: Given the amount and type of recreation that is carried out on this tract, this resource will be temporarily affected. The horsetrail should be adequately protected and the hunting opportunities will remain stable. Hunting opportunities should be improved be 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.

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

Proposed Activities Listing:

Proposed Activity	**Proposed date:**
Mark sale and map ailanthus	2014-15
Treat ailanthus	2015-16
Sell timber	2016
Post harvest tsi	2017-18
Monitor regeneration openings	2018 and 2028
Re-inventory	2033
Write new management plan	2033

To submit a comment on this document, click on the following link:
http://www.in.gov/surveytool/public/survey.php?name=dnr_forestry

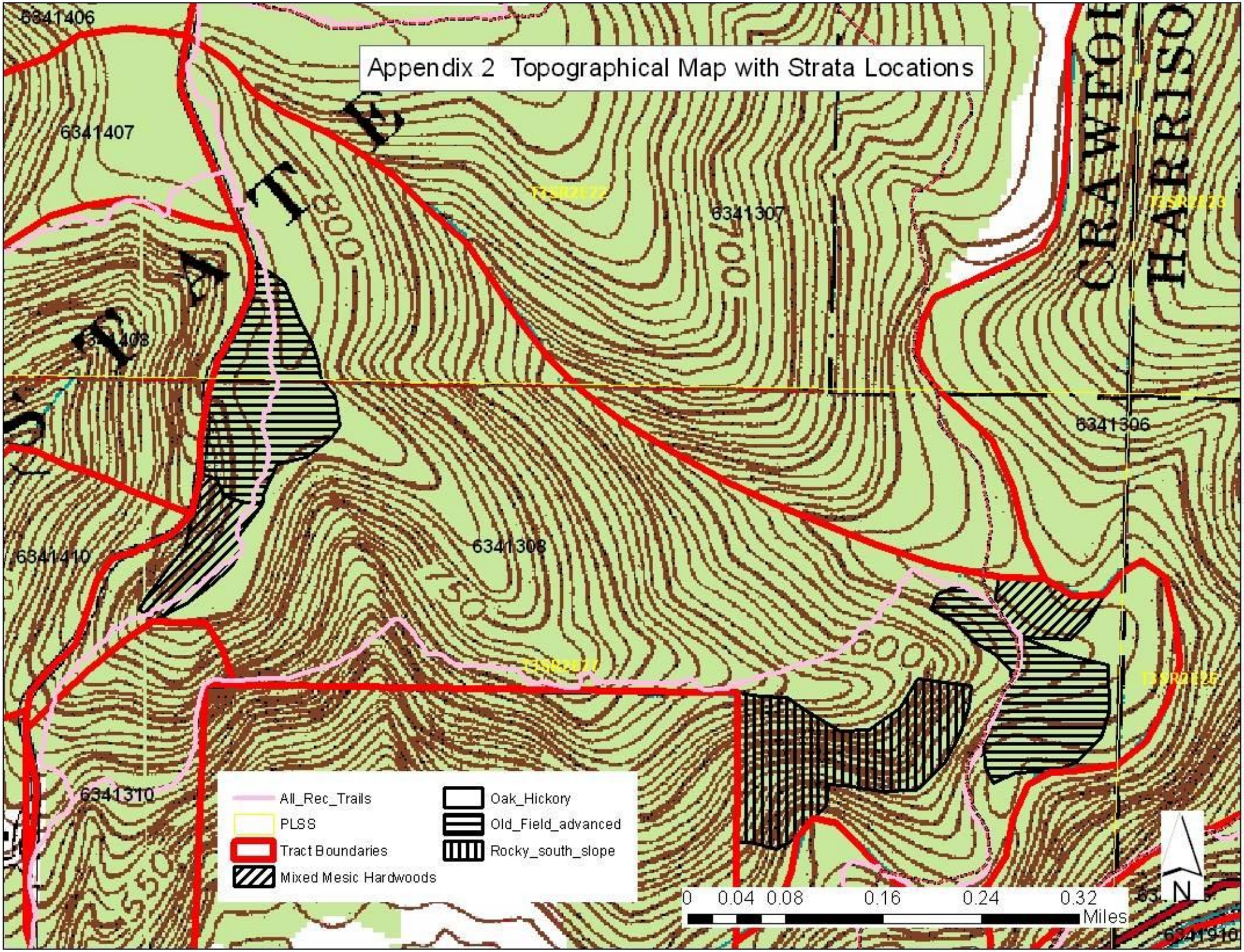
You must indicate the State Forest Name, Compartment Number and Tract Number in the "Subject or file reference" line to ensure that your comment receives appropriate consideration. Comments received within 30 days of posting will be considered. Note: Some graphics may distort due to compression.

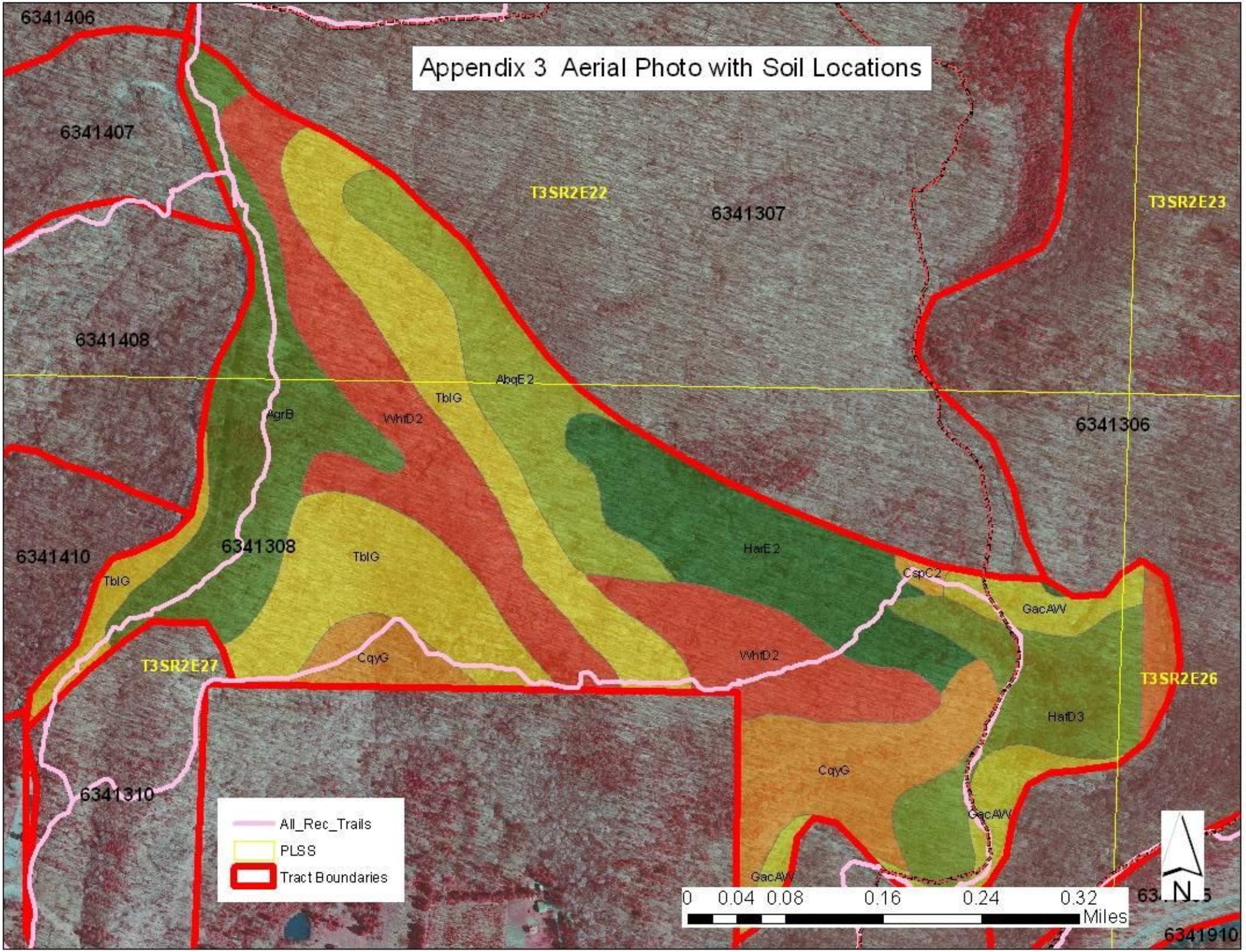
Appendix 1
Growth and Yield calculations

Growth is calculated as the amount of merchantable saw log volume that the tract generates between two reference dates. This tract was inventories in 1993, had a reduction volume through a harvest in 1995, further reduction in volume through salvage in 2006, and was inventoried again in 2013.

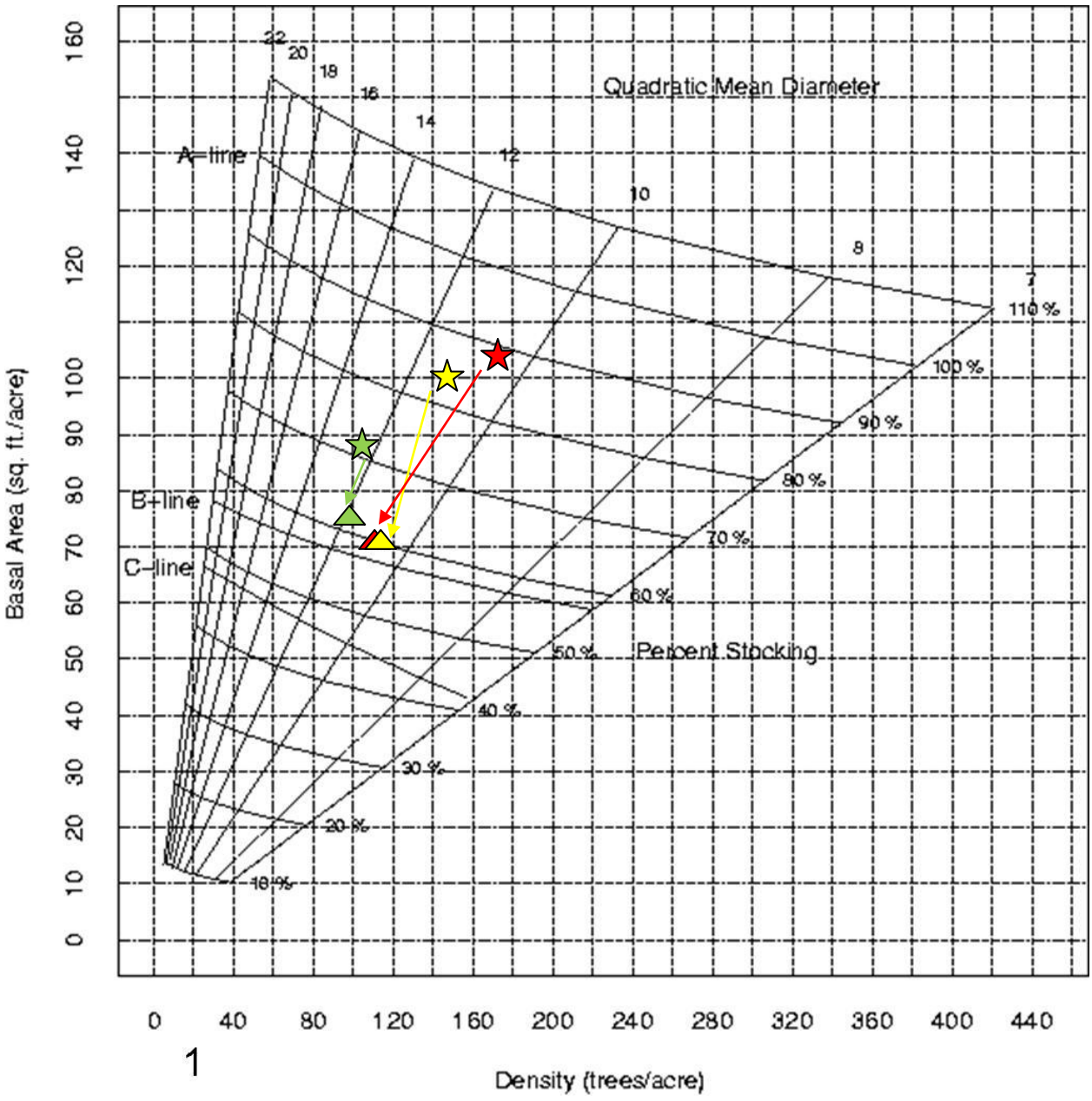
1993 inventory	576,838 bdft
1995 harvest	58,933 bdft
2006 salvage	65,566 bdft
2013 inventory	1,010,570 bdft

Annual growth is ((2013 volume – 1993 volume) + (1995 harvest volume+2007 removals)) / (2013-1993)/ 151 acres
Growth = 185 bd ft/acre/year


Appendix 2 Topographical Map with Strata Locations
6341406
6341407
6341307
6341306
6341308
6341410
6341310
6341910
All_Rec_Trails
PLSS
Tract Boundaries
Mixed Mesic Hardwoods
Oak_Hickory
Old_Field_advanced
Rocky_south_slope
0 0.04 0.08 0.16 0.24 0.32
Miles
N


Appendix 3 Aerial Photo with Soil Locations
6341406
6341407
6341408
6341410
6341308
6341307
6341306
6341310
6341910
T3SR2E22
T3SR2E23
T3SR2E27
T3SR2E26
AbqE2
TblG
AgrB
WhfD2
HarE2
CspC2
GacAW
CqyG
HafD3
All_Rec_Trails
PLSS
Tract Boundaries
0 0.04 0.08 0.16 0.24 0.32
Miles
N

Appendix 4
Tract 1308 Stocking Chart



☆ **Indicates the current stocking condition**

△ **Indicates the proposed (post harvest) condition**

Indicates the Tract Total

Indicates the Mixed Mesic Hardwood covertype

Indicates the Oak-Hickory covertype