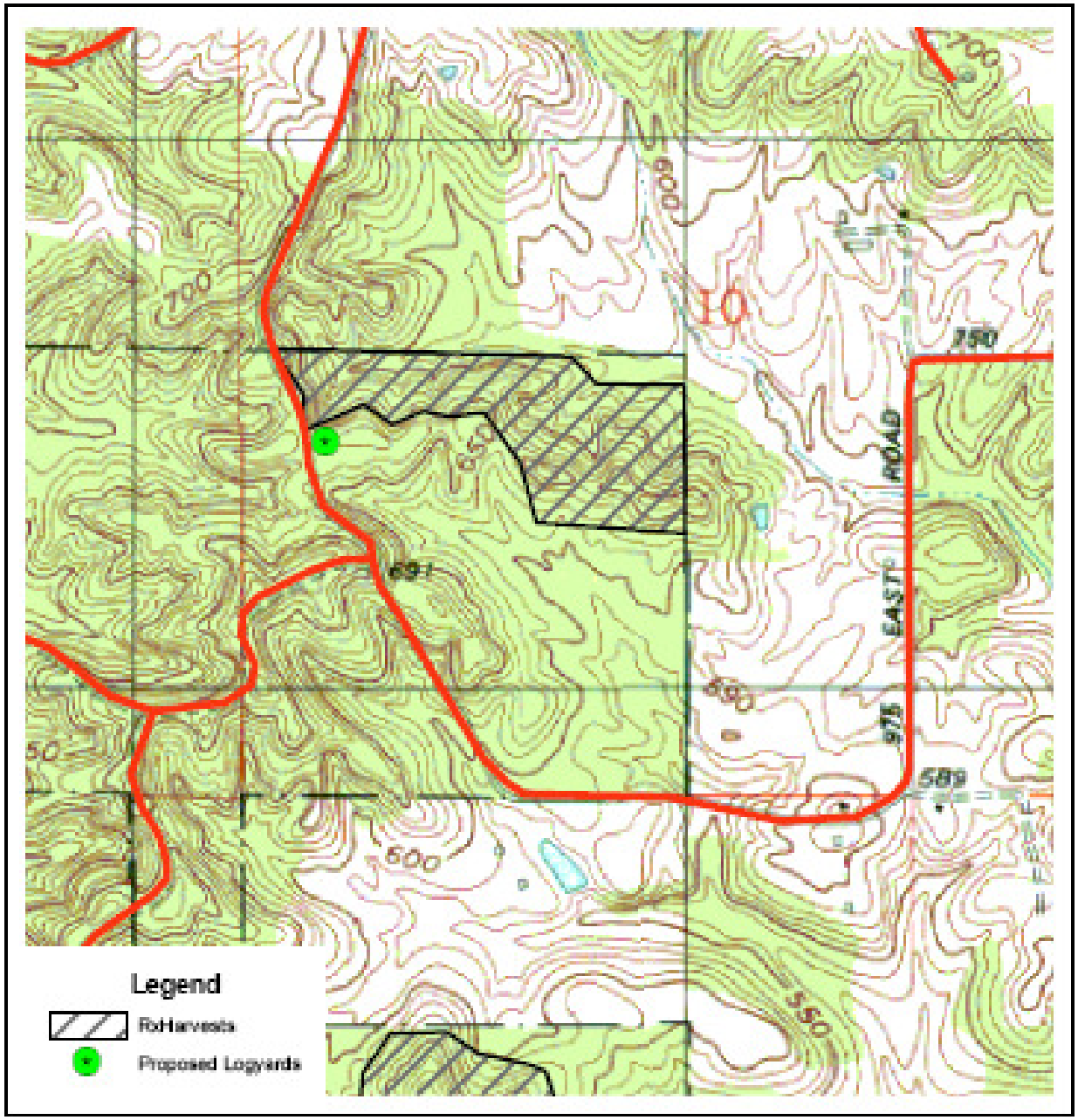
Ferdinand State Forest
Comp. 3, Tract 7
Section 10, T3S, R3W
Proposed Harvest Map



FORESTER'S NARRATIVE
Ferdinand C3, T7
December 20, 2005

Location – This tract is located in Section 10, T3S, R3W in Dubois County. It is located about 3 miles southwest of Birdseye and 2 miles north of Siberia.

General Description – This tract covers an estimated 111 acres. It is a tract with a legacy of abuse prior to State ownership. At one time, the vast majority of the tract, even the slopes, was cleared for agriculture. As a result, nearly ¾ of the tract is in soils classified as eroded to severely eroded. At least some of the open areas were planted to pine upon State acquisition. This amounted to at least 72 acres, if not more. Many of the areas that were left in hardwood forest are found on high ridgetops or slopes, some being fairly dry sites. Over the last 15 to 20 years the tract has seen a lot of mortality to the pine from harvesting, storms, senescence and TSI. These areas are returning to hardwoods but the abundance of exotics, particularly vine honeysuckle and multiflora rose, are also proliferating. Despite these negatives, some of the sites are productive and capable of growing good hardwoods. Some existing stands of hardwoods are good as well. The pine acreage is down to about 19 acres and continuing to decline. The potential for a tract with quality hardwood production is possible if the effort and time is put into it.

History – This property was purchased from Samuel and Mary Newton in 1941. This was for a total of 160 acres which included all of this tract and about 50 acres of 0501 across the county road. The deed said that the couple had a life estate to use the buildings and six adjacent acres for a garden. There is not any record of how long they stayed on the property or what happened to the buildings when they left.

Planting records for Ferdinand State Forest are not complete but there are three records for this tract. The first was dated 1948 and covered 8 acres. It said 1500 seedlings each of red, white, Virginia and Scotch pine were planted on "wasteland". In 1950 another 10 acres of "wasteland" was planted to 1500 white, 1500 red and 400 jack pine with a tree planter. The last record is dated June 4, 1951. It says that another 20 acres was planted to 5000 Scotch pine, 3000 Virginia pine, 4500 shortleaf pine, 4000 pitch pine, 1100 jack pine and 600 ash. The Scotch was planted by a planter and the rest planted with shovels. This was on former "orchards and wasteland". A remark was added "This tract of ground was partly planted 5 years ago. We completed planting all but 2 acres this year". The 38 acres recorded here still barely meets half of the 72 acres recorded as pine in 1978.

The next record of activity on this tract is when the Division of Fish and Wildlife came to Ferdinand State Forest to construct wildlife ponds in the mid 60's. The pond on this tract was built on the ridgetop in May of 1965.

The first inventory on record was completed by Russ Dotzauer in 1978. He found about 38 acres of commercial forest and 72 acres of pine. He inventoried about 1266 board

feet/acre of hardwoods on the commercial acres. This was mostly white oak (704), chestnut oak (158), pignut hickory (122) and black oak (121). He said the only area of hardwoods in commercial sizes was in the north portion but that only about 4 acres was ready for a harvest. This he felt was not economically justified to harvest.

In 1986 there was a 1.28 acre trespass on the north boundary involving an estimated 226 trees of all sizes, with an estimated volume of 3360 board feet were assessed a value of $336.00. In 1988, 200 red oak seedlings were planted on the trespass area. The area had been bulldozed and grasses established. At the time of this inventory, none of the seedlings were located and no volunteer tree seedlings had colonized the area.

In 1990, the area south of the drainage had a vine TSI completed using the Branchville Labor Line.

In late 1989, Doug Brown started a chain of events dealing with the pine located along the main drainage using the Branchville Labor Line. This included the completion of TSI on about 25 acres of pine located in a strip running west to east along this drainage from boundary to boundary. The Virginia pine was thinned with every third tree deadened to open up the stand to hardwood regeneration. The white pine was pruned. The red pines were left alone but the entire area had grape vine control. By 1993 it was evident the Virginia pine thinning had opened up the stand but it only benefited the already existing dogwood. A burn was planned on 9 acres of this area. Nine plots were established first and conditions measured before the burn, the following fall and in the fall of 1995 and the spring of 1997. The burn was conducted in April 1994. Though not real pleased with the completeness of the burn, it did have some of the intended success. In May 1994, about 2.6 acres of this area was planted to 300 each of black oak, red oak and white oak. In October, 76 pounds of white oak, 56 pounds of red oak and 58 pounds of black oak acorns were disbursed over another 2.1 acres. The rest of the area was left as a control. A follow up burn was conducted in 1998. No activity has happened in this area since then.

In 1996 and 1997, Kenny Jackson cut some white pine and red pine in this tract and 0306. An opening of about 2 acres was created in this tract and about 4.5 acres thinned to favor yellow-poplar. This was followed up with TSI in 1998.

Landscape Context - This corner of Dubois County (and northern Perry County about 1 mile south) is primarily rugged, forested hill country. Most of the farms and residences are small and scattered. The Anderson River is about 1.5 miles east and there are larger agricultural fields in those bottoms. Most of the property is private but Ferdinand State Forest owns large blocks to the west, north and south. To the east are smaller blocks of State land. The Hoosier owns large blocks of property about 3 miles to the east. Immediately adjacent to this tract are some relatively large fields, most owned by Lueken Dairy Farm. This is a large dairy operation with a lot of fields for feed and waste disposal. The only areas with urban development at all is Siberia, 1.5 miles south and Birdseye, about 3 miles northeast.

Topography, Geology and Hydrology – This tract is located in the Crawford Upland natural region. This is unglaciated hill country characterized by short, steep slopes often broken by relatively flat benches and rocky bluffs. The geology consists of underlying sandstone with often a loess cap on the ridgetops. This tract is typical of the area though maybe not typical of State land. There are two ridge lines penetrating the tract from a ridge on the west boundary. These are both high and relatively narrow. Their slopes are generally too steep for modern agriculture except the southeast corner of the tract. Here, the drainage flattens out and widens. This type of area could be in agriculture on private land and is not real common on Ferdinand State Forest. The drainage from this tract flows east via two unnamed intermittent streams that eventually flow into the Anderson River 1.5 miles to the east.

Soils – The most common soil on this tract is a Gilpin silt loam. They cover about 78 acres of the slopes, including all the slopes over 12%. Gilpin soils are moderately deep, well drained and moderately permeable upland soils. Available water capacity is low and organic matter content is low to moderate, depending on degree of erosion. 50 of the 78 acres are classified as eroded. The site index for Gilpin soils for upland oak is 80.

The second most common soil is a Zanesville silt loam. These soils cover about 22 acres of ridge tops with slopes between 6-12%. Zanesville soils are deep, moderately well drained and slowly permeable soils. Zanesville soils have a fragipan between 24 and 32 inches deep that can cause a seasonally high water table in the winter and spring and restrict root growth. Available water capacity is moderate and organic matter content is moderately low. All 22 acres are classed as being eroded soils. Site index for upland oaks is 68.

The next most common soil is a Wellston silt loam covering about 9 acres. These are also found on the ridges with slopes between 6-12%. These soils are deep, well drained and moderately permeable. The organic matter content is low and available water capacity is medium to high. All 9 acres are classed as eroded and the site index for upland oak is 71.

The last two soils are found in the very northeast corner. Steff silt loam is found in the drainage and covers only about 1 acre. Steff soils are deep, alluvial soils. They are moderately well drained, moderately permeable, have a high available water capacity and the organic matter content is moderate. The site index for upland oaks on Steff soils is 80.

The last soil found on this tract is a Tilsit silt loam. This soil is found in the very northeast corner above the Steff soils. Tilsit soils are deep, moderately well drained and slowly permeable upland soils. They consist of a loess cap over weathered underlying stone. Tilsit soils also have a fragipan at a depth of between 20 to 28 inches. The site index for upland oaks on Tilsit soils is 70.

In total, roughly 81 acres are classed as being eroded soils. All of these soils are currently stabilized and protected.

Access – Access to this tract is very good with county roads forming the west and south boundaries. However, access within the tract is lacking with the exception of Firelane 13. This firelane is very short and only goes to the pond. In addition, most of the slopes on this ridge are steep so the utility of this lane is very limited. The ridge running east and west in the northern half of the tract would be much more beneficial for access to the tract's interior. If any management takes place in this tract, consideration should be given to creating some type of access lane.

Boundary – This tract is bounded on the west and south by Taylor Hollow Road. This is currently a county rock road but is scheduled to be paved this coming year. The east and north boundaries are bounded by private property. At the time of this writing the boundaries have not been ran and marked. However, part of the north line is marked by T posts along Jack Nelson's property. The rest of the north line is largely a field and some fencing. Much of the east line is also fencing along the Lueken and Jackson properties. Part of this line is bounded with woods and some by fields. No trespasses were noted during the inventory except the one from 1986.

Wildlife – There were no ETR species or communities that showed up on the Natural Heritage database for this tract or nearby. However, this tract does have a lot of wildlife values. It should support all of the common wildlife species found in the area at one time or another. Species noted during the inventory included deer (tracks, beds, droppings and deer stand), chipmunks, squirrels, raccoons (tracks), rabbits and numerous birds including crows, bluejays, woodpeckers, white throated sparrows, red bellied woodpecker and songbirds.

The tract provides a variety of habitats for the area. The mix of pines and hardwoods provide the diversity some species seek out, particularly birds. There is a good supply of mast, particularly hard mast, in the hardwood areas. The most used areas seem to be the open, early successional habitat areas provided by both management and natural forces. These areas were being utilized by birds at a time (November and December) when the woods was pretty quiet. This is where the rabbits were sighted and some of the deer sign. These areas probably provide most of the soft mast offered in the tract through blackberries, pokeweed and other early successional species. Water should rarely be a problem in the tract. Some of the creeks should hold water most of the year, at least in puddles. The water hole is very shallow and during the inventory (not necessarily a dry time) did not even cover the whole bottom. However, I would think it would hold water all year except possibly during extended droughty periods.

Current policy on managing for the Indiana bat requires a certain component of snag and live trees of specific species and sizes. This tract meets the requirements for live trees but not for snags. Snag guidelines call for a minimum of 6 snags/acre over 9" DBH with at least 1 being over 19" DBH. This tract currently has a total of 10.4 snags/acre over 9" and only .3/acre over 19" DBH. Of these, only 1.7 and .2 respectively were of species preferred by the Indiana bat. Excluding the pine areas improve the numbers slightly but even the hardwood areas are short of snags. Live tree requirements are a minimum of 9

trees/acre over 11" DBH with at least 3 being over 20" DBH. This tract currently has a total of 48.3 trees/acre over 11" and 8.8 trees/acre over 20". Of these, 21.3 and 4.7 are of species preferred by the Indiana bat. Even excluding potential harvest trees leaves the preferred totals meeting the targets with 14.0 trees/acre over 11" DBH and 3.1 trees/acre over 20" DBH.

Communities – As mentioned earlier, there were no ETR species or communities noted in this tract. In fact, the vast majority of the species identified during the inventory are quite common. However, due to the time of the inventory (November and December) there were very few herbaceous species present. The native species most commonly noted, Christmas fern, usually indicates mesic sites. Spicebush was also common and can indicate mesic to wet sites. Greenbriar was common throughout most of the tract, often mixed with the mesic species but more on its own on the drier sites. It was rarely heavy however. Other species noted on the drier sites included blueberry and grasses. The open areas, even very small areas almost always had briers and sometimes pokeweed. The briars ranged from light to nearly impenetrable. Also common almost everywhere, but especially the open areas was vine honeysuckle. This has become a problem in some of the openings and will continue to be a problem in future openings, both natural and those created by management. The 9 acre burn area is the worst and some of that area is very heavy to the matting vines. The harvest opening fared much better and most of the area has trees that are getting above the vines. The natural openings are a mixed bag. Another common exotic species noted is multiflora rose. They are not as heavy as the honeysuckle and in their present numbers are not likely to compete with tree growth. However, they probably do compete with native herbaceous species and are not at all pleasant to run in to, either by managing foresters or a recreating public. Continuing to ignore them will only make the problem worse until it does interfere with tree reproduction. The pond area was the site of yet another apparent exotic. It appears that a large portion of the area is covered with wisteria vine. Though there are wisteria native to the southeast U.S., the success of this vine almost assures it is exotic. It is climbing trees and may cover over 1/3 an acre around the pond. It is continuing to spread throughout the site and adjacent woods but at its core it is almost the only vegetation growing.

Recreation – There are no recreation facilities on this tract. There are at least a couple of places that people park but even these are not maintained as parking areas. The main recreational use for the tract is surely for hunting. Deer stands were noted in the tract and it also probably gets used some for turkey and maybe even squirrels. I doubt the neighbors hunt the area and given the amount of downfall and undergrowth, most other people would find easier places to hunt. Though not known as a good spot, the area may also get used some by mushroom hunters. Other possible uses include bird watching and hiking.

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.

Tract Subdivision Description and Prescription – This tract was broken down into five separate stands for management and description purposes. They are commercial hardwoods, white pine, regeneration areas, noncommercial and red pine.

Commercial hardwoods – This stand encompasses about 69 acres of the tract. Most of this area is found in the north and northeast portions of the tract. Other points were along the east line, southeast corner and a few points around the pond area. This stand is about 102% stocked with 108.8 square feet of basal area/acre and 335.4 trees/acre. The average tree diameter is about 8.0 inches DBH. The volume averages 4,957 board feet/acre with white oak being by far the most common (40%). This is followed by black oak (13%), pignut hickory (13%), yellow-poplar (8%), white pine (5%) and black cherry (4%). The vast majority of the area (50 acres) was classified as oak-hickory timber type. This was followed by mixed hardwoods (17 acres) and beech-maple (2 acres). Quality is average or less throughout most of the stand. There are some nice stems in the northeast corner of the tract, north of the ridge. I was surprised at the size and quality of some of those trees. The quality decreases on the west end of the slope and on the south side of the ridge, where post oak and white oak were in an almost pure stand. South of the pond was another post oak area, some very large and overmature. However, there is very little to work with in this area. White pine has seeded in some of these places and forms much of the understory. Most of the rest of the commercial hardwood acreage is hardwoods that have come in after the pine has dropped out. Many are small sawlog sized or less and of lesser desired species. However, yellow-poplar and in some places black cherry, have also taken over some of these areas. There are about 38 acres of this stand, north of the main drainage that could sustain a timber harvest. This area averages about 6244 board feet/acre and a basal area of 104.5 square feet/acre (94% stocked). A thinning in this area to remove the overmature and defective stems from the higher quality oak could result in about 2550 board feet/acre (97,000 total) being harvested.

White Pine – The white pine stand covers about 15 acres. It is mostly concentrated in the valley of the main drainage. However, there are a few points in remnants of stands in the south third. There is also a stand on the main ridge in the north part but no points fell into that area. This stand is not doing real well for white pine. While management has reduced or removed some acreage, most of the losses have been to storm damage. Some of these areas are still dominated by pine but are giving way to hardwoods as storms have knocked out tops or created blowdowns. Some areas have virtually had all the pine removed and now fall into either hardwood or regeneration stands. This stand has an average basal area of 128.5 square feet/acre. The volume averages 11,998 board feet/acre and is mostly white pine (89%) followed by yellow-poplar (3%) and sycamore (3%). The white pine ranges from 8 to 28" DBH but most of them are between 16 – 20". While the pine could be harvested to accelerate conversion to hardwoods, my recommendation at this time is probably not to. The exceptions could be the small stand on the south line and the stand on the north ridge that didn't even have an inventory point fall in it. The only other concentration of white pine that could even merit a sale is in the main valley. The lay of this stand is such that harvesting would probably require skidding through other areas, particularly the regeneration openings. Harvesting would also damage the

hardwoods intermixed and regenerating in the white pine and finally, harvesting would allow vine honeysuckle to take off, requiring extra effort to ensure regeneration.

The third designated stand is the regeneration areas. This stand consists of three main types of areas. The first and largest is the burn area. This is about 9 to 10 acres. This was burned in 1994 and 1998. The second area is the pine opening created in 1997. This is roughly 2 acres. The other areas are small areas of pine that have blown down and are regenerating to hardwoods. These probably originate from the last 2 years or so. In total, this stand amounts to about 19 acres. The inventory numbers for this stand are not real indicative of the status of these areas. There is a considerable diversity between each of the areas and sampling randomness included things like edge trees and attributes confined to one area (such as planted trees). These areas are probably best described separately. The burn area is in need of some immediate work. A number of the planted oak trees in the west end are doing pretty well but need some release from woody and honeysuckle competition. There are also some yellow-poplar and other stems doing well enough to be released. Other areas are having a tougher time escaping the honeysuckle. However, through most of the area there is probably something that can be released to form a future stand. Part of this area along the drainage is still in a pine stand, usually white pine, but was included since it was burned and regeneration has started. Whether to release this regeneration from the pines will need to be determined on a case by case basis. Other areas, mostly in the interior of the east end, may be lost to the honeysuckle until the surrounding trees close it in. The second area, the harvest area is doing OK for now. There are some pockets of honeysuckle, but most areas at least have regeneration competing if not getting ahead of the honeysuckle. This area will need TSI as well but should wait for a few more years for the stand to differentiate and develop. Good yellow-poplar regeneration but also black cherry, some oak and some white ash. The other areas are kind of a mixed bag. They are much smaller and scattered about. They are more recent and the regeneration, while usually good, may still suffer from the honeysuckle. They should be evaluated on a case by case basis as well when the entire tract is TSIed.

The fourth stand is the noncommercial stand. This is the acreage in and immediately surrounding the pond and totals roughly 4 acres. This area will probably not be managed for timber in the foreseeable future but it still has wildlife habitat, ecological and other values. If this is an invasive exotic, control should be attempted. Stopping the spread of this vine before adjacent woods are opened up is a top priority. Second, other exotics that may be present should be addressed. It is a good chance that at least some of the exotics spread throughout the tract got a start here. Third, the firelane should be abandoned. While maintenance has been minimal in the past, there is really no benefit to any maintenance. And fourth, when doing TSI in the area, priority should be placed on improving the wildlife values. There are a good mix of food trees in this area, including mulberry, oak and sassafras. This diversity should be favored.

The fifth stand, also at 4 acres is the red pine stand. This is really just a collection of mixed stands that didn't fall into another stand. The two points put in this stand were south of the pond along the county road and a small patch near the main drainage. This second patch was once part of a larger strip of red pine but the rest has blown down. This

corner was more protected but their demise is sure to follow. The first patch is actually a mix of red pine, Virginia pine and hardwoods. The largest block of red pine is actually north of the pond but the one point that landed in there picked up more hardwoods than pine. The red pine ranges from 6 – 12" DBH and is associated with pole sized yellow-poplar, Virginia pine and sassafras and sawlog sized white pine, black oak, Virginia pine, white ash and black cherry. When the tract gets TSIed this stand can be thinned to favor the hardwoods and restrict the honeysuckle growth.

SILVICULTURAL PRESCRIPTION
Ferdinand C3, T7

The first thing this tract needs is a vine TSI. This will reduce the problem before any management activities take place and before any more natural mortality open up the understory.

Something else that can occur at any time is to TSI the burn area. This should focus on the desirable regeneration that has demonstrated it can compete. The effort should also be to establish future crop trees over as much of the area as possible giving preference to oaks, yellow-poplar, black cherry and other hardwoods. The TSI should remove as little competing pine, dogwood, sumac and other trees as possible to accomplish release yet maintain some shade to restrict the honeysuckle growth. Grape vines should also be treated as well as any honeysuckle threatening crop trees.

The wisteria may be treated any time as well. Some research may be needed to determine the best time and type of treatment. Other obvious exotics could also be treated at this time though going through the whole tract would not be practical.

A harvest can be conducted on the hardwood areas north of the main drainage. At the very least some kind of access point probably should be developed. This should be in the white pine on the north ridge. A yard could be constructed here and possibly an access road back on the ridge.

After this, the harvest could be made. It will be a thinning to remove the overmature, defective and undesirable trees to favor the better oaks and possibly yellow-poplar. This sale area will be about 38 acres and total about 97,000 board feet.

Following the harvest, TSI should be conducted on the whole tract except the burn area. This would be about the time to follow up with the 1997 harvest opening so that could be done at the same time. The objective should be to encourage the hardwoods as much as possible without opening things up too much for the honeysuckle. If things are opened up, treatment of the honeysuckle should be considered.

The next inventory can be planned for 2020.

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