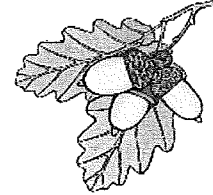


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**ARDELLA E. REUST ESTATE TIMBER APPRAISAL**  
**and**  
**MANAGEMENT RECOMMENDATIONS**  
**168.42 Acres**

The following report will describe the woodland on the Bernard and Ardella Reust Property located at 5436 West Maple Grove Road totaling some 168.42 acres on 6 Parcels in the Reserve of Ten Sections at the Forks of the Wabash in Huntington Township in Huntington County, Indiana. We assume the multiple parcels were created when the parcels were enrolled in the classified forest program and the classified wildlife program. On the "Bangs Parcels" or the western portion of the property; the north 45.80 acres were enrolled in the classified forest program and the southwest 15.0 acres were enrolled in the classified wildlife program due to the wetland area west of the bend in Clear Creek. The Bangs parcels were acquired by the Reust's in 2002. On the "Reust Parcels" or the eastern portion of the property the north 95.09 acres and the south east 10.2 acres were enrolled in the classified forest program while the two small parcels were excluded due to the wetland (1.56 acres to the west) and either the orchard or a small junk pile (0.77 acres north of Clear Creek to the east).

**Classified Forest Program:** With the exception of the two small exclusions (1.56 and 0.77 acres) the entire property is enrolled in Indiana's Classified Forest Program. This is an excellent program that provides technical assistance and property tax abatement (taxes reduced to pennies an acre) to forest landowners. The two area that were excluded likely could be added to the existing acreage if desired as the rules have changed allowing wetlands to be included and the old orchard has is no longer managed and has reverted to woodland.

## **SITE DESCRIPTION**

**Location and Access:** The only road access to this property is from Maple Grove Road east of the intersection with Norwood Road east to Clear Creek. A lane crossing Clear Creek north of the Reust Home provides the only legal access to the woods. West of the intersection of Norwood Road the steep slopes limit access. The east property line is bordered by the Mason property and the Horseshoe Bend Farm, LLC (Scheiber Farm) and the Moore property along access is very difficult from all three due to moderately steep slopes and creeks. The north property line is bordered by Horseshoe Bend Farm, LLC (across Clear Creek), Acres Land Trust (the old Doermann property), and the Kennedy property. The west property line is bordered by the Norwood Golf Course. Other than crossing Clear Creek, the best logging access is likely from the driving range at Norwood Golf Course or from the Mason property to

the east as an open landing area will be needed to stage the logs. It also may be possible to access the property from the lane leading to the Kennedy Home and Norwood Regional Water and Sewer District water tower to the northwest, however the trees would need to be staged within the woods and the slopes may cause this to be expensive.

It may be possible to construct temporary bridges across Clear Creek using 2 flatbed trailers for each crossing. Care must be taken to ensure the trailers are removed from the creek when heavy rain threatens. A limited number of crossing would likely be possible to harvest some of the higher value walnuts (see Timber Harvest Recommendations)

**Soils:** According to the Huntington County Soil Survey, the main soil types in this woodland are Eel silt loam (approximately 58 acres), Shoals silt loam (approximately 29 acres), Hennepin loam – 30 to 70 percent slopes (approximately 28 acres), Genesee silt loam (approximately 22 acres), Martinsville silt loam – 2 to 8 percent slopes (approximately 15 acres), Morley silt loam – 18 to 30 percent slope (approximately 5 acres), Morley clay loam – 6 to 12 percent slopes (approximately 5 acres), and Glynwood silt loam – 3 to 7 percent slopes (approximately 3 acres).

**Soil Description:** The Hennepin soil is a deep, well drained, strongly sloping soil that although productive is limited due to the slopes making access extremely difficult. The Morley, Glynwood, and Martinsville soils are deep, moderately well drained, moderately gently to moderately sloping, productive, upland soils. These are productive forest soils that are capable of growing most hardwood species.

The Genesee, Eel, and Shoals soils are deep, well drained, moderately well drained, and somewhat poorly drained, respectively soils located in the floodplain that may be periodically flooded for short periods of time. These soils are located in the flat areas adjacent to Clear Creek. These are very productive forest soils that are capable of growing most hardwood species. We anticipate the extremely wet areas located to the west, north, and south of the western most bend in Clear Creek are Sloan silt loam, a poorly drained soil. The Sloan soil is too wet for most hardwood species.

**Soil Productivity:** The site index for the Eel and Genesee soils are 100 for tulip poplar. The site index for the Shoals soil is 90 for tulip poplar. The site index for the Hennepin soil is 85 for red oak. The site index for the Martinsville soil is 98 for tulip poplar and 80 for white oak. The site index for the Morley soil is 90 for tulip poplar and 80 for white and red oak. The site index for the Glynwood soil is 80 for white and red oak. Site index is a measure of the height of the dominant stand of trees at 50 years. In general, the greater the site index, the taller the trees, and the more volume produced therefore the side is more productive.

### **WOODLAND HISTORY**

**Grazing:** This woodland like most woods in Indiana was likely grazed by livestock. The livestock generally was removed over 50 years ago, prior to any of the tree planting done on either the Bangs or the Reust properties. Damage that typically occurred was a change in the species composition with an increase in distasteful hickory and walnut.

In addition the compaction from the animal's hooves often damages the root systems of the trees, especially shallow rooted species such as sugar maple, basswood, and soft maple. We anticipate that the grazing was light on both properties as the damage is minimal with few trees exhibiting hollow trunks. The majority of the damage was on the more mature red oak (which may be as much a result as these trees being past their biological maturity) and some of the sugar maple.

**Harvesting:** There was no evidence of recent harvesting on either the "Bangs Parcel" or the "Reust Parcel".

**Tree Plantings:** There are multiple old agricultural fields on this property that were planted to trees in from the 1970's (Bangs parcel) thru 1981 (Reust parcel). The trees on the Bangs parcel were planted by Stan Hensler and the trees on the Reust parcel were planted by Wakeland Forestry Consultants. I looked at both parcels in the early 1990's.

In 1981 approximately 12000 trees were planted on some 28 acres of the "Reust Parcel". The plantings in the two main fields (approximately 16 acres and 6 acres) north of Clear Creek were primarily a mixture of pine and hardwoods in alternating rows with the plantings in the small fields (approximately 6 acres) between the creek and Maple Grove Road on the Shoals soil being primarily hardwoods. The records indicated 4800 white pine, 2100 tulip, 2000 ash (dead – Emerald ash borers), 1100 black walnut, 1000 red oak, 500 white oak, 400 soft maple, and 100 sycamore. The trees were planted 10 feet apart within and between the rows.

In 1992, I pruned the walnut trees in the "Reust Planting" while working for Wakeland Forestry Consultants.

**Bangs Plantings:** Three small fields in the northern part of the "Bangs Parcel" were planted to trees by Stan Hensler during the 1970's measuring approximately 14.4 acres. The northwestern planting appears to have been planted primarily to red oak with some white oak. The central planting was primarily black walnut and the eastern planting was primarily tulip. Plantings at that time tended to be single species. There is also a small area to the south that appeared to be planted to soft maple.

**Forest Stand Improvement (Pre-commercial Weeding):** Forest stand improvement was completed in 1980 in the northern 31 acres of natural woods on the "Reust Parcel". The southern 21 acres were completed in 1981. Based on the records I have this work was primarily crop tree release concentrating on release of the pole sized (8 to 12 inches, DBH – diameter at breast height) walnut and oaks from surrounding competition.

I recall discussions that forest stand improvement was done on the "Bangs Parcel" around the same time, however I could not find any records confirming the completion of the work under the name Charles Bangs or Nellie Bangs.

### **WOODLAND DESCRIPTION – TREE PLANTINGS**

Based on aerial photos of the property from 1951 and from the Huntington County Soil Survey, we have divided the property into four distinct covers. Clear Creek meanders throughout the property for nearly 10,000 linear feet with a width ranging from around 30 to 50 feet wide for a total of approximately 10 acres in addition there are a few open wetlands particularly near the western most bend of Clear Creek that measure approximately 5 acres thus reducing the wooded acreage from 168.42 acres to approximately 153 acres. Approximately 45 of these acre were old fields that were planted to trees during the 1970's on the Bangs parcel and in 1981 on the Reust parcel. The remaining 108 acres are natural woods with the larger most mature trees visible in the 1951 photo located on the steeper slopes and adjacent to Clear Creek.

**Tree Planting Areas:** There are three distinct areas of tree planting that we inventoried separately; the Reust Walnut Planting south of Clear Creek, the Reust Pine-Hardwood Plantings north of Clear Creek, and the Bangs Hardwood Plantings. The inventory over the estimated 45 acres of tree planting indicates around 213 trees per acre (59 merchantable – over 11 inches, DBH – diameter at breast height) with an estimated volume of around 5400 board feet per acre. Black walnut is the main species representing around 30 percent of all the trees and nearly 30 percent of the volume followed by tulip with around 13 percent of the trees and 30 percent of the volume and oak species with 6.5 percent of the trees and around

9 percent of the volume. Cottonwood only represents around 2.5 percent of the trees but because of their large size represent nearly 20 percent of the volume. Undesirable or non-merchantable species such as box elder, catalpa, elm, honey locust, ironwood, and red bud represent nearly one-quarter of all the trees.

**The Reust Walnut Plantings:** There are several small old fields located between Maple Grove Road and Clear Creek that measure approximately 9 acres that were planted in 1981. The acreages in these small fields were extremely difficult to estimate due to so many volunteer (naturally regenerated) hardwoods. These areas are generally well stocked to over stocked with basal areas ranging from 90 to 190 square feet per acre with an average basal area of 128. The majority of these areas (Shoals soil) were planted to black walnut and probably ash (killed by emerald ash borers around 10 years ago) along with a few tulip and red oak and possibly some sycamore based on the 1981 tree order although most likely regenerated naturally. The black walnuts generally range between 6 and 16 inches, DBH and represent around 40 percent of all the trees and around 20 percent of the volume per acre. Cottonwood and sycamore represents only around 15 percent of the trees but nearly 75 percent (63 % cottonwood and 10 % sycamore) of the volume although some of the larger inventoried trees were likely from the adjacent natural woods. Undesirable box elder and catalpa represent approximately 15 percent of the trees. This area has around 320 trees per acre (43 merchantable – over 11 inches, DBH) with an estimated volume of 5459 board feet, Doyle/ per acre.

**The Reust Pine-Hardwood Plantings:** There are two fields located across Clear Creek totaling approximately 21.5 acres (North - 15 acres and South - 6.5 acres) that were planted in 1981. Both planting have done well and are currently well stocked to overstocked with generally good quality trees. The basal area is ranges from 60 to 220 square feet per acre with an average of nearly 120 in the north planting and 130 in the south planting. The white pine have served their purpose as a nurse tree, forcing up and naturally pruning the more valuable hardwoods. The trees appear to have done slightly better in the larger planting to the north likely due to the larger size of the field resulting in less edge competition and less influx of less desirable natural regeneration from the surrounding mature woods. In the south planting the tulip in the south planting generally ranged from 10 to 18 inches, DBH, the walnut and red oak ranged from 6 to 14 inches, DBH, and the white oak ranged from 4 to 8 inches, DBH. The volunteer hardwoods included 4 to 10 inch, DBH black cherry, and 8 to 16 inch, DBH sycamore and cottonwood. In the north planting the tulip ranged from 8 to 20 inches, DBH and the black walnut and red oak ranged from 8 to 16 inches, DBH. The volunteer hardwoods included desirable black cherry and a few shade tolerant sugar maple and only a few cottonwood and sycamore. Throughout both plantings the tulip represent around 25 percent of the trees and 50 percent of the volume with the black walnut and red oak averaging approximately 15 percent of the trees and 15 percent of the volume, each. The inventory indicated these areas have around 170 trees per acre (74 merchantable) with an estimated 5666 board feet, Doyle/ per acre.

**Bangs Hardwood Plantings:** There are three or four areas in the northern part of the Bangs property that that were planted sometime in the mid 1970's that total approximately 14.5 acres. The acreages of each block are difficult to estimate based on old fencerows and the natural regeneration that has developed since the plantings were done. The inventory combined all of the Bangs tree plantings into a single stand with an estimated 185 trees per acre (55 merchantable) with an estimated 5078 board feet, Doyle per acre. Black walnut represents around 33 percent of the trees and 45 percent of the volume in these plantings, with tulip representing around 15 percent of the trees and 30 percent of the volume, and red oak and white oak species representing around 8 percent of the trees and volume.

**The oak planting** in the higher area (approximately 3 to 4 acres) to the northwest (Glynwood soil) appears to have been mostly red oak with some white oak and has a very high number of naturally regenerating sugar maple with some black cherry, hickory, elm, basswood, and black walnut so that it is difficult to determine the boundaries of the planting. The oaks are generally 8 to 16 inches, DBH –

diameter at breast height. This area is moderately well stocked with basal areas generally between 70 and 110 square feet per acre.

*The tulip planting* in the higher area to the northeast includes mostly tulip with a few black walnut. This is the easiest area (approximately 4 to 5 acres) to identify as the tulips have done very well resulting in very tall, straight trees and an overstocked stand with basal areas ranging from 110 to 190 square feet per acre. The tulips range from 8 to 20 inches, DBH.

*The walnut planting* is in the lower area between the two red oak planting and the tulip planting and the small field south of the tulip planting. This area appears to have been mostly black walnut with possibly planted or naturally regenerated ash. The ash have since been killed by emerald ash borers. The stocking level in this area is more variable due to variations in the soil and the mortality from the ash ranging from 50 to 140 basal area. The walnuts range from 8 to 20 inches, DBH with the quality dependant on the stocking level and the suitability of the soils. This is the largest area totaling 7 to 8 acres. Other naturally occurring species within this area are cottonwood, box elder, American and red elm, hackberry, black cherry, sugar maple, and red maple.

The *red maple planting* is a small, well stocked, lower area (around 1 acre) south of the tulip planting that appears to have been planted (versus naturally regenerated) to red maple. The trees generally range between 8 and 16 inches, DBH. Cottonwood, elm, and sycamore are also present in this area.

### **WOODLAND DESCRIPTION - NATURAL WOODS**

The natural woods measures approximately 108 acres mostly on the steeper slopes, ravines, depressional areas, and floodplains adjacent to Clear Creek. These areas were difficult to clear and farm and were reverting back to woods in the 1951 aerial photo. There are several timber types on the property including mixed hardwoods and oak-hickory in the upland areas (Martinsville, Morley, and Glynwood soils) and missed hardwoods and bottomland hardwoods in the lower areas (Eel, Genesee, and Shoals soils). The upland areas include more oaks, hickories, sugar maple, tulip, and black cherry while the lower areas include more cottonwood and sycamore although these soils do include some of the upland species as they are generally moderately well to well drained. The black walnut is scattered throughout. The woods is generally well stocked to overstocked with basal areas ranging from 10 to 220 square feet per acre with an average basal area of approximately 115. Fifteen of the inventory plots had a basal area under 60 (understocked), 24 plots had a basal area between 70 and 100 (well stocked), 41 plots had a basal area between 110 and 150 (overstocked), and 15 plots had a basal area over 160 (very overstocked)

Merchantable cottonwood, sycamore, red oak, and white oak trees in these areas range up to 40 inches, DBH with a few scattered cottonwood ranging up to 60 inches, DBH. The average diameter of all the merchantable trees is 17.7 inches, DBH with the fast growing cottonwood and sycamore having an average diameter of 21.6 inches and 22.2 inches, DBH, respectively. The durable, long lived red oak and white oak species that are on the steeper slopes or in the more difficult areas to access have an average diameter of around 20 inches, DBH. The high value black walnut have an average diameter of 17.3 inches, DBH and the slower growing, long lived hickory, the early successional black cherry and the shade tolerant sugar maple have an average diameter around 15 inches, DBH or less. With the exception of the fast growing cottonwood and sycamore, and the long lived, relatively durable red oak and durable white oak species the majority of the trees are under 28 inches, DBH and most are under 24 inches, DBH. The slope on the graph showing the distribution of size classes is very typical of a natural woods with little to no history of harvesting or natural disturbance. The trees are generally in good to good condition although some of the larger trees are approaching their biological maturity, with some red oaks and black cherry showing signs of decline. The white oak species and tulip are generally more durable. There are some high quality black walnut scattered throughout the woods with numerous nice younger black walnuts that should yield high value veneer timber in the future.

For simplicity we have combined all the inventory plots into one table, although we can separate out some of the stands if needed, especially the area east of Clear Creek, the area south of Clear Creek, and the area across Clear Creek near the Horseshoe Bend Farm. The inventory indicated approximately 47 merchantable trees per acre with an estimated volume of 8880 board feet per acre, Doyle. The main species in the 108 acre natural stand are shade tolerant, generally smaller sugar maple (approximately 23 percent of the merchantable trees, but only 10 percent of the volume and 15 percent of the basal area), fast growing and therefore generally large cottonwood (approximately 14 percent of the trees, but 26 percent of the volume, and 21 percent of the basal area), desirable and very high value black walnut (approximately 11 percent of the trees and 10 percent of the volume and basal area), fast growing and larger sycamore (approximately 9 percent of the trees, 18 percent of the volume, and 14 percent of the basal area), and red oak (approximately 9 percent of the trees and 12 percent of the volume and basal area). Bitternut, shagbark, and pignut hickory, white, chinquapin, and burr oak, black cherry, and tulip are also significant species. Other species include basswood, hackberry, beech, American and red elm, honey locust, red and silver maple, and generally undesirable box elder, buckeye, and catalpa. In addition we found 1 butternut (white walnut) that was still alive. Understory trees include ironwood, blue beech, redbud, flowering dogwood, and crabapple along with numerous species of shrubs.

### **MANAGEMENT RECOMMENDATIONS**

**Timber Harvest:** A timber harvest is recommended at this time. The estimated harvest is based on the inventory where mature to over mature trees and less desirable trees (primarily cottonwood and sycamore) competing with more desirable future crop trees were tallied as potential harvest trees to obtain a rough estimate of a recommended harvest. The trees were selected based on their problems and we could not fully account for damage to residual trees and the accessibility of the trees which would influence our decisions. This method tends to overestimate the number of lower value harvest trees.

The selection of harvest trees is also very subjective and we tended to be very conservative in our selection criteria with the primary objective to improve the long-term health and productivity of the woods. Not knowing the landowners, it is impossible to evaluate the importance of the aesthetics. We try not to make our decisions based on the value of the tree, for example, many of the higher value trees, especially the black walnut are in good condition and are still increasing in value at 10 percent or more.

Therefore the criteria we used did not consider the value of the tree but the potential or lack of potential the tree possessed. If the tree has problems it was selected, if the tree has reached its economic and biological potential the tree was selected, if the tree was adversely affecting better future crop trees it was selected, if the tree was in good condition and increasing in value at a good rate of return (10 percent or better) or provided other benefits to wildlife or protection to a very high value tree the tree was not selected for harvest.

**Tree Selection:** Although this may seem redundant this is one of the most important aspects to the long term management of the forest and where many decisions negatively impact the woods. The selection of the harvest trees should be based on the owner's management objectives. As a general rule, trees should be selected for harvest based on their problems or risks or because they are adversely affecting better, future crop trees. Trees that have reached their peak should be selected and trees that have good potential or are providing a good return on their investment should be left to be harvested in the future. High quality, high valued species or trees are the most valuable and they also provide the best return on investment (often over 10 % annually), therefore the decision to harvest these trees should take this into account. For example a walnut tree can easily have a current value greater than \$500, but it is likely increasing in value at over 10 % annually depending on the tree quality and growth rate. There are numerous walnut trees in the woods, including a numerous trees worth over \$1000 that should not be harvested at this time. There are a few trees that may be worth over \$5000 that may be ready for harvest

should you decide to harvest them, but a discussion should take place to ensure it is an informed decision. In general, when selecting trees to be harvested it should be based on their potential or lack of potential (percent return on investment and compared to an alternative rate of return from another investment) instead of current value.

We recommend selecting the harvest trees using a combination of single tree and group selections. Single trees that have problems or are competing with more valuable future crop trees should be marked to improve the overall health and productivity of the woods. In group selection, several trees or clusters of trees are marked to create openings in the forest canopy that favor more desirable natural regeneration, primarily oak, walnut, tulip, and cherry in this woodland. Failure to create these conditions favor shade tolerant regeneration such as sugar maple, beech, and elm. Although sugar maple is desirable, oaks and walnut are more valuable and more desirable for wildlife.

**Harvest Recommendations:** Because of the difficult access and the large difference in the value of the trees, I recommend conducting at least two and possibly three separate timber harvests. The first harvest would be a walnut sale that would include between 10 and 30 very high value trees (the exact number of trees would be determined when marked based on the landowner's directions) that could be accessed using the existing crossings. Because the trees are scattered we recommend GPSing the locations of the harvest trees to ensure the buyers find the trees and to facilitate and minimize any complications harvesting these trees. This timber harvest could be arranged as early as this fall when the export orders come in. We anticipate there being more than enough trees to entice direct interest from the veneer buyers. Depending on the number of trees this harvest would exceed **\$30,000** and possibly much more.

A second sale could include the higher value species that are ready for harvest and a few of the lower value sycamore and cottonwood that need to be taken to facilitate the harvest of those trees and minimize the damage to desirable residual (non-harvest) trees. This harvest would likely include 200 to 250 trees. It is likely some type of portable bridge would need to be brought in to cross Clear Creek. This sale also depends on the number of trees marked for harvest but should generate **\$50,000** or more. It may also be advantageous to include more of the lower grade cottonwood and sycamore in with this sale to attract a buyer for this component. If we try to sell the low grade without some enticement of higher value, more desirable trees, the low grade may not attract any interest, especially considering the difficult access and the difficult logging conditions (steep slopes and long skids). This portion of the harvest could include up to 500 trees with an estimated income of **\$30,000** or more depending on the exact number of trees marked. This harvest will require much more planning to minimize the problems with the access. We anticipate the ideal time being during the summer of 2020.

In summary, we recommend three possible harvests generating over \$110,000 of income. The harvest include a high value walnut sale including 10 to 20 trees with an income of \$30,000 or more, a high quality saw timber sale including 200 to 250 trees with an income of around \$50,000 or more, and a third low grade sale (possibly combined with the second sale) with as many as 500 additional trees (mostly cottonwood and sycamore) with an estimated income of around \$30,000. The aesthetic impact of the second and third sale would be much more but it would be important to conduct both of those sales versus just the high quality saw timber sale to avoid degrading the future condition of the stand. The small high value walnut sale would not have a significant impact on the future stand condition due to the abundance of walnut in the stand.

**Selling Timber:** The marketing of the trees can significantly impact the price obtained for these trees. The timber should be sold using a sealed competitive bid sale open to reputable timber companies from this region (the walnut sale would attract from a much larger area including mills from the surrounding state). It is important to understand that each species of tree has a different value, (often significantly different) and the quality of the tree also significantly impacts the trees value. Often the top ten percent of the trees bring half the total value associated with a timber sale and a single walnut tree could bring

\$1000's or tens of thousands, but the only way to get that value is to have left those \$1,000 trees or those \$5,000 trees in the woods in previous harvests. The key is to let the condition of the trees and the potential returns, dictate the tree selection. The first step in conducting the harvest is the tree selection and the marking of the trees. When this is done a 100 percent inventory of the marked trees is created, summarized and provided to the landowner before it is advertised to the timber companies. We provide the marking service and the marketing service, along with the contract and the over site of the logging operation to ensure compliance with the contract.

**Additional information regarding the how to sell timber** can be found in Purdue FNR –138 publication – “Tips On How To Get The Most From Your Timber Harvest” by William Hoover and Jack Siefert.

**Income Tax:** Because timber is considered real estate, **it would be possible to avoid much of the income tax on a timber sale by depleting the value of the property.** The cost basis of the property including timber likely had a new cost basis established thru the estate. A forester or tax accountant familiar with timber taxation can advise you on how this is accomplished. Further information may be obtained at: [www.timbertax.org](http://www.timbertax.org)

**Forest Stand Improvement and Invasive Species Control (Brush Management):** This woods would also benefit from forest stand improvement which is essentially the weeding of less desirable trees to improve the growth and quality of the residual stand and to improve the regeneration of desirable species. This is similar to the management that was done by Bernard and Ardella in the early 1980's in some 52 acres of the natural woods. The work would primarily be crop tree release to ensure the higher value walnuts and oaks flourish along with understory treatment of undesirable species and completing the harvest openings to ensure desirable natural regeneration develops. In addition the inventory indicated that several exotic invasive species are present, especially in the woods and plantings along Maple Grove Road. These exotic species tend to prevent natural species from regenerating but also suppress the growth of the trees. Work is already being done several adjacent properties (Mason, Gernand, Acres – Doermann, and Moore) with cost share assistance from the USDA to eliminate these plants.

Cost share assistance should be available thru the USDA – Natural Resource Conservation Service office in Huntington (260-356-5620 extension 3). The cost share should cover most of the cost of this work.

### **APPRAISAL PROCESS**

**Timber Inventory:** A 100 percent inventory of the high quality black walnut veneer was conducted in this woodland due to its extremely high value compared to the other trees. The remaining timber was inventoried using the Horizontal Point or Variable Plot Radius Sampling Method. Sample plots were systematically selected in order to obtain a random yet evenly distributed sampling of the woods. Trees were measured in two-inch DBH increments, considering all merchantable trees within the sample with a diameter at breast height of 11 inches or greater. Efforts were made to adjust the volume of the timber to allow for defects in the trees. These adjustments are based on observable defects and holes, sounding the trunk of the trees, and evaluating the trees for excessive taper often due to hidden defects.

A total of 41 plots were inventoried in the 45 acres of Tree Plantings and 95 plots were inventoried in the 108 acres of Natural Woods to determine the merchantable timber in the Reust woods. The acreage was determined using old management plans and aerial photos from 1951 and 1972 and the Huntington County Soil Survey along with newer aerial photos from the Huntington County GIS – <http://www.beacon.schneidercorp.com>

This inventory yields per acre board foot volumes and number of trees per acre by species and DBH class. To expand these per acre totals into tract totals we used acreage figures that we obtained from aerial photo measurements and on-site inspection. The tables are provided at the end of the report.

**Valuation Process:** To determine the 2019 fair market stumpage value for the merchantable timber in these woods I used a combination of two different methods. A board foot value for individual species was used to convert the volume to value. These values were based on numerous discussions with buyers in the timber industry located in northeast Indiana. In addition the results from 11 comparable timber sales that I have conducted for private landowners in this marketing area were used to evaluate the values obtained using the direct pricing. Tree species, quality, and size, woodland size, location, and accessibility where factors considered when selecting comparable sales and determining a value per thousand board feet.

**Appraisal Summary:** Based on my knowledge of the recent timber sales and the timber inventory, I estimate that the 2019 stumpage value of the timber in the estimated 153 ± acre woodland located to be as follows:

**Sawtimber – Natural Woods – 108 acres**

2019 Estimated Sawtimber Board Foot Volume, Doyle	959,022 board feet
2019 Estimated Sawtimber Value per Thousand Board Feet	\$ 430/MBF
2019 Estimated Value of the Timber – 108 acres	\$ 412,542

**Sawtimber – Tree Plantings – 45 acres**

2019 Estimated Sawtimber Board Foot Volume, Doyle	243,239 board feet
2019 Estimated Sawtimber Value per Thousand Board Feet	\$ 580/MBF
2019 Estimated Value of the Timber – 45 acres	\$ 141,032

**Black Walnut Veneer Estimated – 153 acres** (15 acres – creek and wetland contain no timber)

2019 Estimated Black Walnut Veneer Board Foot Volume, Doyle	9,763 board feet
2019 Estimated Black Walnut Veneer Value per Board Foot	\$ 8.00/BF
2019 Estimated Value of Black Walnut Veneer	\$ 78,104

2019 Estimated Value of the Timber – 108 acres	\$ 412,542	
2019 Estimated Value of the Timber – 45 acres	\$ 141,032	\$ 3285/a
Total Estimated Value of the Timber – 153 acres	\$ 553,574 (85% + 470,538)	

Total Estimated Current Stumpage Value (reduced 15 % due to accessibility) \$ 470,538

Total Estimated Black Walnut Veneer - 85 trees \* \$ 78,104

Total Estimated Timber Value - 153 acres (15 acres contain no timber) \$ 548,642 \$ 3256/a

**Recommended Timber Harvests** (These value are very subjective and are based on our selection of the trees)

Walnut Veneer Sale	\$ 30,000 +	
High Quality Sawtimber	\$ 50,000 +	
Low Quality Sawtimber	\$ 30,000 +	
Income from Recommended Timber Harvests	\$110,000 +	653/a

- Because of the difficult access we have reduced the sawtimber value by 15 percent based on discussion with a couple timber companies. No reduction was made for the walnut veneer component due to the limited number of trees.
- We inventoried 85 black walnut veneer trees, based on the difficult terrain and the large acreage we anticipate there were some that were missed. We also measured four sided or high quality veneer and

determining a value for the largest and best trees is very difficult due to specialty markets. *The 17 largest trees represent approximately half of the veneer value.*

**Timber Markets:** Timber prices are being impacted by the tariffs that began in 2018 and have escalated recently although the impacts vary considerably by species. Red oak species have been impacted the most as nearly 75 percent of the exported red oak goes to China although some has been picked up by an increase in the amount of exports to Vietnam the price of red oak has dropped significantly. Black cherry has also been affected significantly. Black walnut markets have also been affected somewhat, more in terms of their volatility. White oak species, especially for quarter sawn material and staves, is a domestic market therefore it has been very strong. Sugar maple is also a domestic market due to the high risk that the wood would be discolored if shipped as logs. The high sugar content causes the wood to stain when exposed to heat. Also the pallet markets with include the lower grade logs and the less desirable species such as cottonwood and sycamore (dominant species in this woods) tend to stay on the domestic market to fulfill manufacturing demands for shipping material.

Historically timber prices have increased at 1 to 2 percent over the rate of inflation and follow the general economy although with less turbulence. The better quality timber tends to be affected the least due to limited supply.

Although the tree condition is the most important factor when selecting harvest trees, the market conditions should be considered when trees are border line. Historically the markets for black walnut tend to be strong due to a limited supply. The fairly high component of walnut and the generally high quality of the timber in this woodland should provide a good long-term return.

**Additional information regarding timber prices** and trends in Indiana can be found in Purdue FNR – 177 W – publication which is available on the internet through the Purdue extension website or the Woodland Steward Website: [www.inwoodland.org](http://www.inwoodland.org)

If you have any questions regarding the information or recommendations in this report or how to proceed with any management recommendations provided in this report don't hesitate to contact us at any time. The best way to reach us is at 260-704-1655 (Tom) or 765-426-8954 (Jacob) or via email at [toms.trees@hotmail.com](mailto:toms.trees@hotmail.com)

Respectfully submitted,

*Tom Crowe*

Crowe Forest Management, LLC

Tables: Natural Stand Totals and Tree Planting Totals  
Additional "Statement of Assumptions and Limited Conditions"

**Statement of Assumptions and Limited Conditions:**

No responsibility has been assumed for legal matters, nor title opinion rendered on this property or its timber in the appraisal. Liens and encumbrances have been disregarded in the appraisal. The sawtimber has been appraised as though free of indebtedness.

Location of property lines and acreage were established from the best available information. No land surveying was contemplated or conducted during the appraisal project. Therefore, no responsibility is assumed for correct location of parcels or land area.

It is assumed that legal rights-of-way are in existence or can be obtained to all parcels included in this appraisal.

Although all information contained in this report is believed to be correct, no guarantee or assumption of liability regarding the information is intended.

Delivery of this report concludes this specific work assignment from the client requesting the appraisal.

Possession of this report does not include the right of publication. Its use is not intended for any other purpose than those of the client requesting the appraisal without written consent of the appraiser, and in any event, only in its entirety. If values in this report are used in making appraisals by a combination of values produced by other persons, then this appraisal becomes invalid.