ALLEGANY COUNTY

FOREST MANAGEMENT PLAN

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Table of Contents

Overview	1
Emerald Ash Borer	4
Overview Map	7
Bennett Lot	8
C. Horner Lot	13
Coleman Lot	22
Dixon Lot	31
Engle Lot – East Side	42
Engle Lot – West Side	51
Griffin Lot	60
Helmer Lot	67
Hooker Lot	76
Metz Lot	88
Neetz Lot	95
Phippen Lot	102
Pine Lot	109
Sanitarium Lot	120
Silsby Lot	127
Snyder Lot	134
Tavis Lot	143
Weir Lot	154
Recommended Timber Sales	167
Recommended Maintenance	168
Glossary	171

Overview

The Allegany County Forest has it's origin in New York State Conservation Law. The State provided funding to the County to acquire parcels of land to establish a County Forest. In the beginning, the County received yearly funding for management and woodland improvement practices on this land. The yearly funding has since been discontinued by the State.

The majority of the parcels acquired had been used for subsistence farming. The houses, barns, and all other buildings were demolished. Only the stone foundations remain to this day.

The open land previously used for crops, was planted to conifers. Some of the pasture land was also planted to conifers. The species predominately used for this reforestation were red pine, Scotch pine, larch, and Norway spruce. There were also a few white spruce, white pine, Douglas fir, and Austrian pine planted. These were the same species the State used in its reforestation. The County also planted shrubs to provide food and cover for wildlife. The shrubs they planted were honeysuckle and multiflora rose.

There was concern about forest fires in the new plantations as they matured. Ponds were constructed as a source of water to fight fire. These ponds are also used for recreation and wildlife. Fire lanes and forest roads were constructed for general access and access in case of fire.

Converting agricultural land to forest land in the northeast had never been done before. Therefore, the early work amounted to a big experiment. Enough time has passed to evaluate what was done in the early days of the County Forest. We are now able to see that some things should have been done differently.

We now know that a high percentage of the conifer trees were planted "off site". Most of the soil types found on the County Forest land have poor internal drainage. This is due to a layer of highly compacted silts and clays formed by the last glacier. This layer is most commonly found 12 to 24 inches below the surface of the ground. This fragipan or hardpan, does not allow water to percolate through it very fast, if at all. Consequently there is water sitting on top of this fragipan for long periods of time. This was the major reason why the lots were abandoned from farming in the first place. Lots with well drained soil would have remained farms or would have been consolidated into larger farms.

The conifer species red pine, Scotch pine, larch and Austrian pine need to develop a deep root system in well drained soil, in order to grow well as they get older. They are unable to do this on the hardpan soils. They will start slowing down in their height growth around 30 years of age, depending on how deep the hardpan is, and how much water is on top of it. In extreme cases, mortality will result early in life. Having a poorly developed root system, these species are also susceptible to windthrow. Planting these species on hardpan soils turned out to be a major mistake.

Norway and white spruce have a shallow, wide spreading root system that stays near the tip of the ground. The spruces are not adversely affected by the fragipan and the water sitting on top of it. Spruce planted on hardpan soils are "on site" and will grow well.

White pine and Douglas fir have a root system that is deeper than the spruces, but shallower than the other pines and larch. They do best on well drained soil, but they can tolerate the hardpan soils and will grow reasonably well.

Most of the conifer plantations were never thinned. The average diameter of the trees in the unthinned plantations is small for their age, due to slow diameter growth. The diameter of the trees would be a lot larger, if they had been thinned.

An acre of ground produces a given cubic volume of wood per acre, per year. A better growing site will have a greater yearly cubic volume produced. This cubic volume is distributed among all the individual living trees growing on the site. The more trees there are the less cubic volume each individual tree gets. The fewer trees there are the more cubic volume each individual tree gets. This holds true until there are too few trees to utilize the growing space. The number of trees per acre greatly affects the diameter growth is a reflection of the quality of the growing site. The better the growing site, the more the tree will grow in height in a given year, regardless of how many trees there are per acre. As the trees grow larger, they need more of the yearly cubic volume produced by the site, the trees need at least ½ of its total height in live branches (live crown), in order to have good vigor and to grow well. When a tree loses it vigor, it is unable to respond to a thinning. It will always have a slow diameter growth rate until it dies, no matter now many trees around it are removed.

Genetics play a role in the amount of time needed between planting, and when a stand should be thinned. The genetic factor involved is the variation in height growth between individual trees of the same species and the same age.

Norway spruce, White Spruce, White Pine, and Douglas fir have a lot of genetic variation in height growth among individual trees. When one of these species is planted as a single species, with same aged seedlings, there will be tall trees and short trees. As the trees get older, the taller trees will dominate the shorter trees. The shorter trees wind up growing under the taller trees. They will either die from lack of sunlight or be severely stunted. Therefore, these species thin themselves naturally, in the earlier stages of development. Eventually, the taller trees start completing with each other. It will then be time to thin them.

Red Pine, Scotch pine, Larch, and Austrian Pine have almost no genetic variation in height growth. When one of these species is planted as a single species, with same aged seedlings, all of the trees in the plantation will be practically the same height. Since one individual can not dominate another, these species do not thin themselves in the earlier stages of development. This means that they need to be thinned earlier in life than the other conifer species, if they are to keep good vigor and maintain good diameter growth. Timely thinning is crucial when these species are planted.

The more trees there are per acre, the sooner the live branches (crowns) on the trees occupy less than 1/3 of the tree's total height. The closer the spacing between trees, the earlier they need thinning. Back in time when seedlings and labor were cheap, the recommended spacing for the species with little or no genetic variation in height growth was 8 x 8 (8 feet between rows and 8 feet between the trees in a row). Many of the conifer plantations on the County Land were planted at a 4 x 4 spacing. There are 2,722 trees per acre with a 4 x 4 spacing. In hindsight, this close spacing turned out to be a waste of seedlings. It also would have required a lot more manpower, if the plantations had been properly maintained. Tall, spindly, small diameter trees were the result of not thinning the plantations with close spacing.

The conifer plantations on the County Forest can be divided into three groups. The first group is made up of the plantations with Red Pine, Scotch pine, Larch and Austrian Pine. The trees were planted off site, often planted too close together, and most of them never thinned. These plantations have a high percentage of pulpwood size trees, and a low percentage of sawtimber trees (12 inches DBH and larger).

Pulpwood is a low value product. Sawtimber is a product with higher value. If the plantations had been thinned in a timely manner, there would be mostly sawtimber size trees.

Plantations in the first group have small crowns, due to lack of thinning. They have low vigor, and a slow diameter growth rate. It is too late to thin them to increase diameter growth rate. Thinning them now would also increase the probability of windthrow. Their vigor is decreasing yearly by being planted off site. These plantations are in a rapid state of decline. Some of these plantations are already experiencing mortality.

The plantations in this first group should be harvested now, by clear cutting the conifers. Hardwood trees of desirable timber species should be left as a seed source. The longer harvesting is put off, the less there will be to salvage. It will also be harder to reproduce the stands as time goes on due to the rapid advance of the invasive species in the understory.

The second group of plantations is made up of Norway spruce. These plantations have been thinning themselves due to genetic variation in height growth. The taller trees still have good crowns and good vigor, but they are not competing with one another. It is time to thin them. This can be done commercially by thinning out some of the rows of trees. Whole rows need to be taken out in the first thinning in order to give access to the harvesting equipment.

The third group of plantations is made up of white pine, white spruce, and Douglas fir. These species were planted on site, and have a lot of genetic variation in height growth between individual trees. Some of the plantations were planted at proper spacing. Other plantations have the trees planted too close together. Other plantations have been partially taken over by hardwoods. Some of the plantations in this group need thinning, and some need clear cutting of the conifers. The decision on what to do with a plantation in this group needs to be done on a case by case basis.

The shrubs that were planted for food and cover for wildlife were multiflora rose and honeysuckle. They are classified as invasive species, because they are not native to this area. They spread rapidly and upset the balance of nature. The wildlife that eat their seeds, are spreading the seeds to places where these shrubs never occurred before. Every year these shrubs become more numerous, and are spreading rapidly. The amount of invasive species in the different stands of trees varies considerable. Some stands have none of these species yet. Other stands have them to varying degrees, with their numbers increasing every year. In extreme cases, they have taken over the understory completely.

Multiflora rose and honeysuckle shrubs cost heavy shade. Tree seedlings that get started underneath them can not get enough sunlight to survive. The more shrubs there are, the fewer the number of hardwood seedlings and saplings. Eventually, there are only the shrubs in the understory.

There are two ways to reproduce a stand of conifers, so there will be another timber crop in the future. The first is to do it naturally, with hardwood seedling and saplings of desirable species, found in the understory. This is called natural hardwood succession. These seedlings and saplings can come from seed bearing trees that are already in the stand. These hardwood trees came into some of the stands shortly after the conifers were planted. The hardwood seedlings and saplings can also come from seed carried by wind, birds, and animals from nearby trees.

The second way is to plant new conifer seedlings. Site preparation would be necessary to get rid of the invasive species. This method involves expenditure of funds and man power for a long term investment.

The rapidly spreading shrubs in the understory are another reason to harvest the conifers in group number one now. There are hardwood seedlings and saplings to varying degrees in the understory of these stands. Some of the stand does not have the desired number of hardwood seedlings and saplings yet. Under ideal conditions, harvesting the conifers would be postponed, until there are enough hardwood seedlings and saplings to insure success. However, the conditions in these stands are far from ideal. The conifer trees are deteriorating rapidly and the shrubs are seeding in much faster than the hardwood seedlings. The sooner the conifers are harvested, the more hardwood seedlings and saplings will make it through the shrubs.

If the shrubs in Group I are not controlled the conversion of the stand to hardwoods will have mixed results. The best case scenario is where there is sufficient numbers of hardwood seedlings and saplings of desirable timber species, and few or no shrubs. The end results will be an even aged stand of high quality hardwood timber with high value. The worst case scenario is where they are few hardwood seedlings and saplings, and heavy shrub in the understory. In this case, after the conifers are cut, the stand will become dense shrubs, whose only value is good and cover for wildlife. Between these extremes, there are stands where some hardwoods will make it through the shrubs, but not enough of them to fully occupy the overstory. There will be open space between some of the trees in the new stand. The understory will become all shrubs.

There is a need for the County to make a decision on what to do with the invasive species. This decision will have a profound effect on what the County Forest Land will become in the future. The land will either be used to grow a crop of timber, be used for food and cover for wildlife, or a combination of both. There are three options:

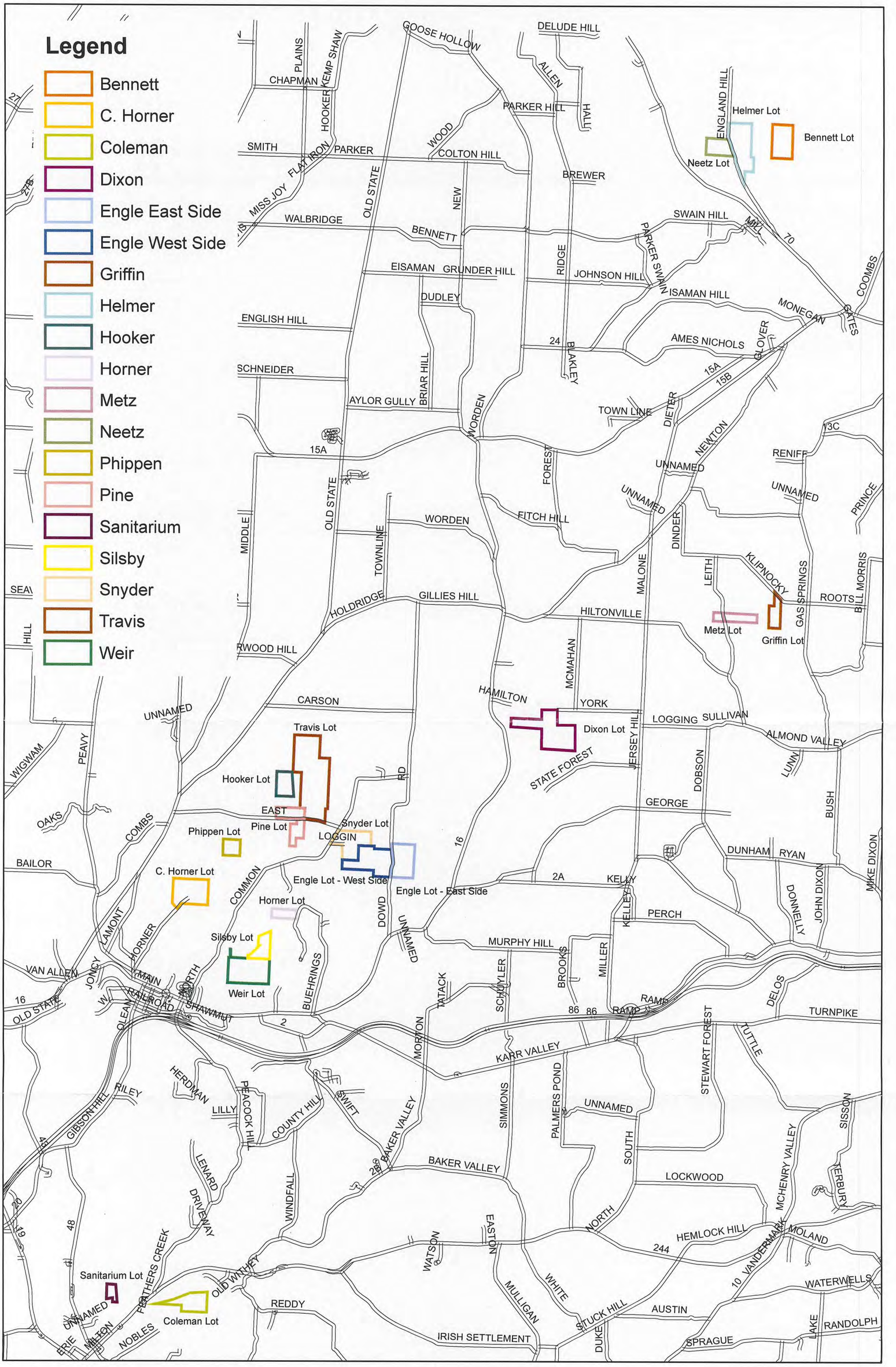
- Option 1 is to do no invasive species control. If this option is chosen, shrubs will replace both conifer and hardwood trees, when they are cut or die. A higher percentage of the land will become shrubs instead of trees as time goes on. In the long run, this will continue until almost all of the land will be in shrubs.
- Option 2 is to eradicate all the shrubs. This is necessary if the County Forest Land is going to produce the maximum amount of forest products and revenue it is capable of producing, for generations to come. This option would require a long term investment in manpower and money. It will be a project that would be done over many years.
- Option 3 would be to eradicate the shrubs on a limited number of stands. The other stands would be taken over by the shrubs. The stands chosen for shrub control would be the highest value stands, and the stands with the most potential. Other stands, where the shrubs are just getting started, might be included, since they wouldn't require much work. The stands would have to be treated periodically; since the untreated stands nearby would be an ever present seed source for the shrubs.

Emerald Ash Borer

The Emerald Ash Borer is an invasive insect species that was first in Michigan in 2002. It is a small golden-green iridescent wood boring beetle, with large compound eyes. It kills white ash trees of all sizes during the larval stage. The larvae feed in the cambium layer and eventually girdle the tree.

The Borer has not been detected yet in Allegany County. It has been found in Cattaraugus, Livingston, and Steuben Counties. The natural rate of spread is only about one mile per year. It spreads rapidly by humans transporting infected wood products. This haphazard method of spread, make it impossible to accurately predict when it will show up on County Land. Not all lots will be infected at the same time.

The Emerald Ash Borer will kill all the white ash trees down to 1 inch in diameter. The ash trees will die within three years after the borer gets to a lot. This needs to be taken into consideration when determining which hardwood stands will be cut, when they will be cut, and how much of the ash will be cut.



Allegany County Forest
Overview Map

Map Updated: 2/7/2012

1 inch equals 7,001 feet

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Allegany County Soil & Water Conservation District
Established 1941