

# Otsego County Forest #8

## Taylor Hill

### Forest Management Plan



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## **Introduction**

Forest Management is a comprehensive science that allows for the maintenance of ecosystem health, sustainable growth and harvest of forest products, administration, aesthetics, and resource protection. Otsego County is dedicated to applying the principles of Silviculture to balance timber harvesting and forest growth to ensure the future viability of our forests. Otsego County forests are a public resource that is managed for timber production, outdoor recreation, wildlife, water, and natural resource conservation. By taking this multipurpose management approach we will be able to benefit the natural resources on county land and give residents the opportunity to enjoy their public land.

## **Forester Biography**

Dan Zimmerman's experience revolves around procurement and consulting Forestry having worked extensively with landowners, timber harvesters, Foresters both public and private, trucking and construction firms, and the forest industry with over 35 years of experience. Presently, chapter chair of The New York Forest Owners Association's Central New York Chapter and past chapter chair of the Society of American Foresters Iroquois Chapter. Dan's education: Graduate of Morrisville State College, SUNY Polytechnic Institute, and the University of Phoenix.

## **Property Attributes**

Otsego County Forest #8 is essentially a 390 acre+- hard and softwood forest located on Taylor Hill Road in the Town of Edmeston, Otsego County, New York. There are no improvements to the property with access primarily located in the southern midpoint directly across from Cemetery Road. Access is a dirt road that leads to an old log landing with limited parking. From this point the dirt road continues north ending at another old log landing just north of a small pond. Most of this road is of good condition and relatively hard with a few exceptions crossing several wet areas. This road has multiple old skid trails from previous logging largely emanating in an east- west direction that facilitate access to the majority acreage of Otsego #8. Two ponds exist on the property, one large and one small.



## **Desired Future Conditions**

The overall future condition of this property should focus on the continuous production of high quality forest products from commercially important hardwood species. Substantial amount of merchantable White Ash is present in this parcel in varying degrees of density in many of the forest stands. It is envisioned that a harvesting program be instituted for the whole parcel. Additionally, control of interfering vegetation to be instituted at the same time. Future end state would be: completed harvesting for the parcel as a whole, on a twenty year rotation before any additional substantial forest management activities. Encouraging and promoting biodiversity helps overall forest and ecosystem health. Resiliency of the forest through diversity is another future benefit in the face of possible threats from invasive species, native pathogens, and possible climate change. It is envisioned a future forest with three or more succession stages of forest stands.

## **Ethical Dilemma**

The looming threat posed by the emerald ash Borer to the White Ash timber found on this parcel is substantial and there is a high probability of near future infection causing high mortality (nearing 100%). Doing nothing will cause substantial loss of value of the White Ash timber resource. Harvesting the merchantable Ash within many of the forest stands necessitates harvesting before the stand is fully ready with good density and henceforth basal area.

## **Goals and Objectives**

### **Forest Inventory**

Complete a comprehensive inventory of the twenty six forest stands found in this parcel. Inventory was completed March 2020 that included assessment of commercially important timber species and also low grade or pulpwood that also includes interfering vegetation

**Problem identification**

Results of the inventory, together with observations of the Forester on any threats or impediments that would mitigate the overall effort to achieve the desired future condition of the parcel or stand. The “Keep Forests Healthy” scorecard by The Nature Conservancy, Cornell Cooperative Extension of Onondaga County will be implemented also.

**Trail Maintenance**

There is a good set of skid roads on the property that are in excellent condition. A goal would be to continue the present condition and maybe mark Possible hiking trails. Overall access is attained through a good dirt road on the southern boundary across from cemetery road. It is further recommended that the parking area be developed further to accommodate more vehicles and facilitate recreation. A snowmobile trail exists on the property.

**Ponds**

Two ponds are found on the property and together with the trail system, can offer good recreational possibilities. Promotion could encompass canoeing, fishing, waterfowl hunting, wildlife photography, hiking, and other activities.

**Recommendations**

Prescriptions on individual forest stands to be outlined and aligned with future desired conditions. Recommendations to include implementation and alignment with the desired future forest condition. Prescriptions will include considerations for basal area and trees per acre but also for species, vigor, invasive species, wildlife, ecology, and Forester experience.

## Inventory Methodology

Forest inventory was conducted on the twenty six forest stands that compromise Otsego County Forest #8. Forest Stands were constructed based on species composition, basal area, forest cover type, geological considerations, and past cutting history. See Page 56. Stands T27, T28 are actually streams.

Each stand was inventoried by using variable plot radius data points with a 10 Basal Area Factor (**BAF**) wedge prism. Trees that fall into each data plot was measured for Diameter at Breast Height (**DBH**) with a Biltmore stick and their height will be determined by the judgment of the Forester. Species of every tree in the data plot will also be recorded. Recorded data will be averaged throughout the stand to determine the stand's basal area, trees per acre, species composition and overall health. Each stand will have a different number of data plots based on their area measured in acres. The chart used to determine the number of data plots for each stand can be seen in **Table 1**.

**Table 1** Ratio chart of plots in a stand

| Acres   | # of Plots |
|---------|------------|
| 0 - 4   | 3          |
| 5 - 7   | 4          |
| 7 - 10  | 5          |
| 10 - 15 | 7          |
| 15 -25  | 10         |
| 26 - 30 | 14         |
| 40      | 15         |



## **Forest Stand T1**

This stand occupies the south western corner of Otsego #8, comprised of approximately 20 acres. Soil type is Lordstown-Chadakoin complex and is well drained. Stand history appears to be 1) a very old Red Pine clear cut and 2) hardwood timber harvest approximately 3 to 5 years ago. This stand does contain scattered merchantable White Ash saw timber.

## **Forest Diversity and Composition**

Species diversity within this stand is average for the location and typical after a timber harvest. Species suitability is good with this stand being primarily a hardwood site. General tree health is good with the stand showing positive signs of acceptable response post harvest and little to no mortality present. No Insect and disease pathogens were observed.

## **Forest Structure**

Structural diversity within the 20 acres of this stand is good with acceptable post harvest basal area in the residual stand. Varying tree size and present and developing vertical layers are present throughout this stand. There is plenty of down dead wood due to logging and standing dead trees were noted to be low. Tree crowns exhibit healthy characteristics, responsiveness to commercial thinning and resulting increased light and growing space.

## **Regeneration**

Regeneration can be judged to be average with average reproduction in commercial species though it is still early after logging to adequately assess. Deer browsing is present within this stand and is exerting an impact. Species suitability to the growing site is good with typical characteristics displayed. One interfering plant species was noted: Eastern Hophornbeam (*Ostrya virginiana*) also commonly called iron wood. The population was judged to be occasional but future logging or thinning should strive to remove as many as possible to prevent this species from becoming more dominant.

## Site Level Risks

Stand T1 moisture or average drought would not present concern for management of this stand nor would excessive rainfall due to hillside location. Southerly exposure tempers concerns for ice and wind damage. Shorter and milder winters would not exert too much of a negative impact due to the close proximity to Taylor Hill and existing logging roads.

## Stand T1 Prescription

Due to the relatively recent timber harvest in this stand it is recommended that this stand be allowed to recover and to grow. The residual stand contains good commercial species in good health. It is recommended that in ten years a re inventory take place and the merits of either a commercial thinning or timber harvest be explored with discrimination towards iron wood. There is White Ash present but it is scattered. If merchantable Ash can be found in a manner that is feasible to harvest, these should be harvested.

## Stand T1 Data

| Species                        | Trees per Acre (TPA) | Basal Area per acre (sq.ft.) | Volume per acre (Bd Ft. Int. ¼") |
|--------------------------------|----------------------|------------------------------|----------------------------------|
| White Ash (Fraxinus Americana) | 13.04                | 17.37                        | 1783                             |
| Red Maple (Acer rubrum)        | 8.12                 | 4.88                         | 515                              |
| Black Cherry (Prunus serotina) | 2.16                 | .66                          | 102                              |
| Sugar Maple (Acer saccharum)   | 11.2                 | 15.87                        | 1313                             |
| Total                          | 34.52                | 38.78                        | 3713                             |

| Species       | TPA   | Basal Area/acre | Cords/acre |
|---------------|-------|-----------------|------------|
| Hardwood pulp | 32.71 | 25.88           | 2.98       |

## **Forest Stand T2**

Forest stand T2 is found in the south western quadrant of parcel Otsego County #8 and consists of 42 acres more or less. The dominant soils found here are Lordstown-Chadakoin complex, Lordstown-Chadakoin complex; both types are well drained making this stand more accessible to forest management equipment. Essentially an old hardwood timber harvest (20+ years ago) that features differentiating densities from relatively high density with substantial pulp and saw timber to low density component exhibiting berry bushes.

### **Forest Diversity and Composition**

Species diversity on stand T2 is good. Many species of trees with no clear dominate plant. Species suitability to the present microclimate is good with at least six observed. General tree health is variable with one section exhibiting poor growth and another section showing dieback on Sugar Maple tops where past logging was heavy and sun scalding is taking place.

### **Forest Stand Structure**

There is significant forest stand structure with in T2 both resulting in some good aspects and also bad aspects. Complexity ranges from overstocked, high density component to low stocked, low density. Stand structure is further hampered by a lack of standing and dead trees and wood thus limiting certain wildlife appeal. One component shows crowding and high density with poorer developed crowns while the other component exhibits inadequate stocking with crowns too widely spaced and over development.

### **Regeneration**

Desirable commercial tree reproduction is very poor with a preponderance of American Beech (*Fagus grandifolia*), both seedling and sapling throughout a significant portion of the stand. Interfering plants present include not just beech but Eastern Hophornbeam and berry bushes (black berry) that are impeding natural reproduction. Deer browsing was noted to be high in this stand.

## Site Level Risks

Moisture and extreme rainfall can affect the viability and overall health of this upland ecosystem that is populated with tree species that tolerate wet conditions to a lesser degree. Shorter and milder winters will affect accessibility of this stand.

## Stand Prescription

Of concern are the polarized sections of this stand. It is proposed that each be treated as a separate stand. The high density component will need a commercial thinning or logging in conjunction with neighboring stand harvesting. Recommendation: removal of pulpwood to a level of 30+ or - square feet together with harvesting the large Ash and some of the other hardwood timber species down to a basal area of 60 to 70 square feet. On the poorly stocked stand removal of any Ash together with sun scalded Sugar Maple is prescribed with as much forest floor disturbance as possible.

## Stand T2 Data

| Specie         | TPA   | Basal area/acre | Volume (Bd ft, int 1/4) FC 78 |
|----------------|-------|-----------------|-------------------------------|
| Black Cherry   | 11.76 | 31.42           | 1534                          |
| Sugar Maple    | 9.72  | 39.76           | 1490                          |
| White Ash      | 3.6   | 10.01           | 658                           |
| Red Maple      | 1.1   | 2.47            | 134                           |
| American Beech | .71   | 4.29            | 144                           |
| Total          | 26.89 | 87.95           | 3960                          |

| Species       | TPA   | Basal area/acre | Cords/acre |
|---------------|-------|-----------------|------------|
| Hardwood pulp | 53.54 | 52.62           | 3.01       |

### **Forest Stand T3**

10.5 acres + or – make up stand T3 found at the midpoint of the most westerly property line. The dominate soil types are: Mardin channery silt loam – moderately well drained, and Mardin channery silt loam- well drained. Despite what the soils map depicts, it is the Forester’s opinion that stand T3 is wet, not well drained and has a presence of species that would support that opinion.

### **Forest Diversity and Composition**

Many tree species occupy the growing space of this stand lending credibility of good species diversity and suitability to local more wet conditions and also climate. General tree health is good with a plethora of tree species present and growth characteristics. No insect or disease vectors were noted.

### **Forest Structure**

The stand exhibits good structural diversity with trees of different size categories and at the same time shows multiple vertical layers. Occasional standing dead trees are found within this stand with some down dead wood present as well providing average wildlife habitat. Tree crowns and their spacing are adequate generating average tree crown size and shape.

### **Regeneration**

Regeneration can best be described as mono specie: Red Maple. Lack of specie mix is a concern. Red Maple however, is highly suitable to wetter growing sites. There is a lack of interfering plants in stand T3. Deer browse is negligible.

### **Site Level Risks**

Most of the risk can be found in the moisture stress and extreme rainfall to forest stand T3. Wet to begin with and occupying a slight depression in sections, this stand lends itself to water concerns. Mild winters are a concern for the ability to operate machinery.

## Stand Prescription

There is significant White Ash (merchantable) present and due to the Emerald Ash Borer; it is recommended that all the ash in this stand be harvested along with any trees that would make this feasible. Otherwise, let this stand grow and revisit in ten years.

| Species                                    | TPA   | Basal area/acre | Volume /acre<br>(int1/4) BdFt F.C.<br>78 |
|--|-------|-----------------|--|
| White Ash                                  | 13.58 | 20.27           | 3101                                     |
| Yellow Birch<br>(Betula<br>Alleghaniensis) | 19.87 | 11.35           | 1455                                     |
| Red Maple                                  | 16.26 | 5.39            | 845                                      |
| Eastern Hemlock                            | 6.74  | 4.97            | 592                                      |
| Sugar Maple                                | 2.56  | 3.16            | 306                                      |
| American<br>Basswood (Tilia<br>Americana)  | 1.13  | 1.77            | 355                                      |
| Total                                      | 60.14 | 46.91           | 6654                                     |

| Species        | TPA   | Basal area/acre | Cords/acre |
|----------------|-------|-----------------|------------|
| Hard wood Pulp | 37.26 | 9.49            | 3.15       |

## **Forest Stand T4**

16.5 acres more or less make up this stand. Dominant soil types appear to be: Bath channery silt loam 15 to 25% slopes –well drained and Bath channery silt loam 8 to 15% slopes-well drained.

## **Forest Diversity and Composition**

Primarily a hardwood stand, T4 contains a good mix of different tree species with none dominating the canopy or the forest as a whole. Species suitability to changing climatic conditions is good. Tree growth characteristics are good to excellent indicating favorable health. Disease pathogens noted was Beech Bark disease. There is a significant amount of merchantable White Ash in this stand and as such presents a substantial risk as to the emerald ash borer.

## **Forest Structure**

Structural diversity is varied which includes trees of varying size and age with a significant amount of mature timber. Average amounts of down wood and standing dead trees are found within this stand providing good wildlife habitat. Most of the mature trees have good growth characteristics and adequate though diminishing spacing due to maturity. Ash and Red Maple quality is good.

## **Regeneration**

Though mature in nature, this stand has significant reproduction in Sugar Maple, Red Maple, Yellow Birch and some American Beech. There is some beech interfering with regeneration but is judged to be minimal. Eastern Hop hornbeam is also present in the pole size classification. Deer browse is judged significant.

## **Site Level Risks**

Because this site is well drained it is felt that moisture and extreme rainfall are not much of a risk. Topography helps also. Parts of this stand which faces westerly would have higher risk factors associated with wind and ice storm occurrences. Winter change could affect accessibility.

## Stand T4 Prescription

Timber harvest to concentrate on 1) White Ash. Significant amounts and good quality were observed. 2) Mature tree removal where silvical and economic concerns dictate, basal area removal down to 60 to 70 square feet per acre including cull removal with wildlife considerations. Since regeneration is good, single tree selection methodology silvical system is recommended. Discrimination of Iron Wood and beech for removal as firewood is recommended also.

## Stand T4 Data

| Species              | TPA   | Basal area/acre | Volume/acre<br>(int.1/4) BdFt F.C.<br>78 |
|----------------------|-------|-----------------|--|
| Red Maple            | 29.92 | 46.36           | 3911                                     |
| White Ash            | 10.51 | 32.67           | 2363                                     |
| Eastern Hemlock      | 6.62  | 4.54            | 294                                      |
| Black Cherry         | 1.65  | 3.43            | 139                                      |
| Yellow Birch         | 2.78  | 3.62            | 167                                      |
| Sugar Maple          | 1.13  | 3.53            | 126                                      |
| American<br>Basswood | 1.27  | .79             | 57                                       |

|       |       |       |      |
|-------|-------|-------|------|
| Total | 53.88 | 94.94 | 7135 |
|-------|-------|-------|------|

| Species        | TPA   | Basal area/acre | Cords/acre |
|----------------|-------|-----------------|------------|
| Hard wood Pulp | 49.22 | 19.72           | 2.42       |



## **Forest Stand T5**

T5 soil type is Bath channery silt loam 8 to 15% slopes and is well drained. The “workability” of this stand is excellent with good topography (relatively flat), good drainage, and a good access road. 8.7 acres more or less make up this forest stand. Stand location within Otsego #8 is slightly in north and west quadrant. This stand is essentially a very old Red Pine (*Pinus resinosa*) clear cut with an interpreted purpose of stand conversion. Additional cutting was done in this stand with scattered commercial residual trees left for seed sourcing.

## **Forest Diversity and Composition**

This forest stand has low species diversity; largely Red Maple and some White Ash are dominant almost exclusively in the commercial value tree category. Species suitability is questionable with residual Red Maple being very dominant and growing on well drained soils (does best in moist, wetter sites). The scattered White Ash though more suited to this site, is highly susceptible to attack by the emerald ash borer. General tree health is average with most of the residual individuals scattered and not growing in good stocking environments. No insect or disease current issues were noted.

## **Forest Structure**

Stand structure is high risk due to heavy cutting and seed tree residual trees that are scattered and also similar in size and age. Little to no standing dead trees or down dead wood were found thus limiting some wildlife habitat. Tree crowns and spacing are poor with low stocking and wide spacing resulting in some sun scalding and more prevalent: wolf tree appearances and branching.

## **Regeneration**

Average to poor regeneration of important tree species was noted throughout this stand. Mostly comprised of Red Maple and Beech saplings and scattered, in competition with black berry bushes. Deer browsing has a substantial impact on this stands regeneration.

## Site Level Risks

It is felt that the most prominent risk to this stand would be wind throw followed by ice storm damage due to the scattered and low/average stocking found in stand T5. Soil type that is well drained, limits risks associated with moisture and extreme rainfall. Milder winter impact would have negligible impact due to soils and good accessibility.

## Stand Prescription

Due to the heavy impact of deer browsing and the lower/average stocking of this stand, it is felt the best course of action is to remove some of the cull/pulpwood found in this stand at the time of harvesting of adjacent stands if logging feasible. Herbicidal application to American Beech would be beneficial for stand development but economic factors suggest otherwise. If none of the above is applicable, letting this stand to develop on its own would be the alternative.

## Stand T5 Data

| Species   | TPA   | Basal area/acre | Volume/acre<br>(int.1/4) BdFt F.C.<br>78 |
|-----------|-------|-----------------|--|
| Red Maple | 45.4  | 37.18           | 4159                                     |
| White Ash | 1.6   | 11.07           | 794                                      |
| Total     | 44.01 | 48.25           | 4953                                     |

| Species       | TPA   | Basal area/acre | Cords/acre |
|---------------|-------|-----------------|------------|
| Hardwood pulp | 42.92 | 11.22           | 3.32       |

## **Forest Stand T6**

Forest Stand T6 has 18.6 acres +or- and is located in the North West corner of Otsego County parcel #8. Primary soil types are: Bath channery silt loam 8 to 15% slopes (well drained) and Bath channery silt loam 15 to 25% slopes (well drained) thus indicating “good ground” for forest management machinery. T6 is unique in that it is an old Norway Spruce plantation clear cut that reseeded itself and now the hardwood species are overtopping and killing most of the Norway saplings/poles. Significant stocking and commercial timber exist here also

## **Forest Diversity and Composition**

The stand has average to slightly lower species diversity. Heavy to Red Maple and White Ash mature timber this stand has risks associated with the threat of the emerald ash borer. General tree health is good with good growth characteristics in the hardwoods. Norway Spruce (naturally seeded) poles are dying out due to competition with hardwood species and are in poor health.

## **Forest Structure**

Forest stand T6 contains average structure with mainly two vertical layers 1) mature timber class and 2) Red Maple pole class hardwood and spruce. Some standing dead trees and some down dead wood typically found in old clear cut stands but not frequently noted. These two categories of dead wood offer only marginal habitat prospects for respected wildlife species. Tree crowns and spacing are narrowing due to crowding and mature timber increasing occupation of growing space.

## **Stand Regeneration**

Tree seedlings and saplings are largely not present in this stand due to canopy closure and lack of sunlight reaching the forest floor. There is also a lack of interfering plants and since there are few seedlings, a lack of deer browsing.

## Site Level Risks

With well drained soils and a gentle hillside, it is felt stand T6 risk exposure to excess moisture and extreme rainfall is minimal while more pronounced risk of ice damage is present due to stand aspect. Shorter and milder winters could impact accessibility and the amount of viable winter logging conditions.

## Stand Prescription

Harvest all merchantable White Ash present in this stand because of the emerald ash borer threat when good stumpage pricing occurs. Individual tree selection silvical system is to be implemented on Red Maple merchantable timber and hardwood pulp class (removal of poor form trees) to the extent not to exceed 30 to 35 percent of stand basal area. Additional sunlight penetration of this stand should result in establishment of acceptable regeneration. A reinventory in ten years is suggested to gauge overall health and success of reproduction.

## Stand T6 Data

| Species      | TPA   | Basal Area/acre<br>Sq. Ft. | Volume/acre<br>(int.1/4) BdFt F.C.<br>78 |
|--------------|-------|----------------------------|--|
| Red Maple    | 39.43 | 39.74                      | 3313                                     |
| White Ash    | 25.20 | 48.84                      | 2507                                     |
| Black Cherry | 2.65  | 10.61                      | 723                                      |
| Sugar Maple  | 5.30  | 10.58                      | 639                                      |
| Total        | 72.58 | 109.77                     | 7182                                     |

| Species       | TPA   | Basal area/acre | Cords/acre |
|---------------|-------|-----------------|------------|
| Hardwood Pulp | 37.52 | 11.19           | 2.18       |
| Softwood Pulp | 27.02 | 9.75            | 2.06       |

## **Forest Stand T7**

30 acres more or less are found within this stand. Located in the most southerly and central part of Otsego parcel #8 this stand borders Taylor Hill Road on the south and the pond (P2) to the north. Dominant soil types and their drainage attributes: Lordstown-Chadakoin complex-well drained, Volusia silt loam- somewhat poorly drained, and Mardin channery silt loam –moderately well drained. The soils within this stand make forest management activity challenging with some sections (south western, SW) wet and others (central and northeastern NE) fairly well drained and workable. Half of this stand has been clear cut many years ago- a stand conversion from Red Pine to brush and central and north eastern portion not cut.

## **Forest Diversity and Composition**

SW section has low tree species diversity due to old clear cut. Primary species found here are some Red Pine remnants, Popple (Trembling Aspen), brush, and few pioneer tree regeneration. NE section has good species diversification though mature in nature and is evidentially showing good tree health through growth characteristics. NE section contains a relatively high concentration of White Ash saw timber which will be threatened by the Emerald Ash Borer but lies in relative close proximity to environmentally sensitive pond.

## **Forest Structure**

SW section structural diversity is poor with few trees and tree sizes. Some standing dead trees but down dead wood is most prominent providing good wildlife habitat together with the prevalent brush. Tree stocking is very sparse resulting in fairly large crowns on the few trees growing. NE section has average structural diversity with less regeneration classification than should be. Average occurrence of standing dead trees and also down dead wood is found in this section. NE has crown closure due to maturity of the stand and no discernible prior cutting/logging.

## **Regeneration**

In both sections of this stand regeneration is poor to nonexistent. SW section of stand T7 has a lack of tree reproduction due to brush, wet soils, and high sunlight conditions, NE due to crown closure. Deer browse not a factor.

### Site Level Risks

High level risk exists throughout this stand for moisture stress and extreme rainfall conditions. Environmental sensitivity due to proximity to pond is also a concern in the NE section of this stand. Milder winters can have a substantial impact on the workability of this stand.

### Stand T7 Prescription

Of prime concern is the White Ash timber susceptibility to the Emerald Ash borer in the NE section at the same time close proximity to the pond. It is proposed that an Ash harvest individual tree selection occur with care to consider tree location and water and aesthetic considerations. To coincide with possible harvests in stands T10 and T8 with extreme care in the location of skid roads and their construction. It is further prescribed in the SW section to allow the present succession forces to continue to prevail for primarily wildlife considerations.

### Stand T7 Data

| Species         | TPA   | Basal area/acre<br>(sq.ft.) | Volume/acre<br>(int.1/4) BdFt F.C.<br>78 |
|-----------------|-------|-----------------------------|--|
| White Ash       | 25.11 | 53.61                       | 3171                                     |
| Trembling Aspen | 3.12  | 16.19                       | 841                                      |
| Black Cherry    | 3.74  | 6.27                        | 297                                      |
| Sugar Maple     | 4.02  | 11.51                       | 476                                      |
| Red Pine        | 3.80  | 3.18                        | 303                                      |
| Red Maple       | 1.31  | 2.55                        | 105                                      |
| Yellow Birch    | .40   | 1.77                        | 54                                       |
| Total           | 41.50 | 95.08                       | 5247                                     |

|               |      |       |          |
|---------------|------|-------|----------|
| Hardwood Pulp | 6.66 | 12.88 | .61cords |
|---------------|------|-------|----------|

## **Forest Stand T8**

T8 contains approximately 32 acres more or less and is found in the south eastern most portion of Otsego #8 Taylor Hill. Soil types and drainage class found within stand T8 are as follows: Mardin channery silt loam – Moderately Well Drained, Mardin channery silt loam – Moderately Well Drained, and Bath channery silt loam 15 to 25% slopes – Well Drained. The ability to work this stand with forest management equipment is good to excellent. This stand is actually comprised of two stands: A) old Red Pine clear cut 20 plus years ago with a residual heavy to merchantable White Ash, though not heavily stocked overall. B) located in the most northerly section approximately 5 acres more or less and bordering the large pond (P2, P3) densely stocked with merchantable hardwood timber and park like in appearance. It is surmised that B serves as a protective border for the pond.

## **Forest Diversity and Composition**

Species diversity within stand T8 A is very poor with one species heavily dominating – White Ash. Sub stand B species diversity is good with five commercial species present. General tree health in A is poor with some of the Ash showing top dieback. Good general tree health in B though the canopy is closed and the stand is well stocked and dense. Significant threat exists from the Emerald Ash Borer to both sub stands.

## **Forest Structure**

Sub stand A has high risk structural diversity because it contains a majority of trees in one size or product grouping and age (white Ash) forming a simple canopy. B includes good structure with significant numbers of trees in different sizes and ages that form good vertical layering. Tree crowns and spacing in A are showing poor growth form and some top die back due to extensive wide spacing. B is showing good growth characteristics and resulting crown development but it should be noted that crowding in the canopy will start to affect overall tree health. Some down dead wood and dead standing trees are found in stand T8.

## Regeneration

Sub stand A exhibits fairly good seedling and saplings stage reproduction in Sugar Maple, Red Maple, Ash, Cherry, and some beech. No pole class. B shows little to no regeneration in the seedling and sapling stages due to lack of sunlight and crown closure. B does have a good pole stand. Species suitability to the growing site is good; T8 is basically a hardwood site throughout. Interfering plants were noted in sub stand A and consist of ironwood and multiflora rose.

## Site Level Risks

Due to the topography and soil types it is felt this stand is not at risk for damage from extreme weather events. Possible risk would be wind throw in A due to lower stocking. Shorter and milder winters would affect B access.

## Prescription

Due to the threat from Emerald Ash Borer and the poor response (prior logging) of the Ash it is recommended that all the merchantable Ash in both A and B be harvested. Additionally, herbicidal treatment is applied after harvesting to the multiflora rose and cutting of the ironwood take place. Careful harvesting techniques to be employed in sub stand B with some harvesting of other merchantable species where silvically feasible.

## Stand Data

| Species         | TPA   | Basal Area/acre<br>(sq. Ft.) | Volume/acre<br>(int.1/4) BdFt F.C.<br>78 |
|-----------------|-------|------------------------------|--|
| White Ash       | 21.44 | 63.15                        | 3433                                     |
| Black Cherry    | 8.56  | 27.21                        | 1622                                     |
| Sugar Maple     | 8.85  | 22.39                        | 1056                                     |
| Red Maple       | .73   | 3.95                         | 152                                      |
| Trembling Aspen | .19   | 3.69                         | 138                                      |
| Total           | 39.77 | 120.39                       | 6401                                     |
| Hardwood Pulp   | 30.56 | 18.20                        | .87 cords                                |



## **Forest Stand T9**

Stand location is south central of parcel Otsego #8 and contains 12 acres more or less. Primary soil type is Lordstown-Arnot complex and is well drained. T9 is basically a sapling stage stand in that the vast majority of trees growing here are in stand development stage. This stand contains some excellent wildlife cover and habitat.

### **Forest Diversity and Composition**

This developing stand contains good biodiversity with Sugar and Red Maples, Striped Maple, Black Cherry, Yellow Birch, American Beech, brush, and black berry bush. General sapling tree health is good with good growth characteristics. Many tree species are present with no one expressing population dominance. No insect or disease vectors were observed in this stand.

### **Forest Structure**

Forest complexity is simplified due to the stand development phase. Uniformity is present also in tree size. There is some variance in density of tree occupation of growing space. Down dead wood and standing dead trees are nonexistent in this stand. Tree crowns and spacing varies with density but most common are narrower crowns and more dense spacing due to the nature of a evolving hardwood stand.

### **Regeneration**

Regeneration is most pronounced in the hardwood sapling stage with little to no seedlings present with one exception – beech which is “clumpy” throughout this stand. Species suitability to the site is good. Interfering beech is present but in densities that are judged to be not significant. Deer browse is judged to be significant.

### **Site Level Risks**

Even though the soil type is well drained, it is of opinion that higher risks to this stand can be found in moisture stress and excessive rainfall. Stand would be affected negatively for workability with shorter and milder winters.

### Forest Stand T9 Prescription

Allow succession factors to prevail, essentially let the stand develop as is.

### Stand T9 Data

| Species      | TPA   | Basal area/acre | Volume/acre<br>(int.1/4) BdFt F.C.<br>78 |
|--------------|-------|-----------------|--|
| Sugar Maple  | 9.87  | 2.75            | 349                                      |
| Black Cherry | 3.28  | 2.73            | 247                                      |
| Red Maple    | 1.88  | 3.71            | 200                                      |
| Total        | 15.03 | 9.19            | 796                                      |

|           |       |       |           |
|-----------|-------|-------|-----------|
| Pulpwood* | 30.52 | 15.78 | .80 cords |
|-----------|-------|-------|-----------|

\*Mostly poor/dying beech

## **Forest Stand T 10**

This stand consists of 16 acres +or- and is located in the south central portion of Otsego #8. Essentially hardwoods stand featuring a small northerly section that has not been logged due to its closeness to the pond. The majority of this stand has had several commercial thinning occur within its boundaries. The dominant soil types appear to be: Lordstown, Chadakoin, and Manlius soils – well drained, and Lordstown-Chadakoin complex- well drained.

### **Forest Diversity and Composition**

Average tree diversity in this stand was observed with White Ash being most prevalent in the timber and pole classification. 5 to six commercial species were noted in the timber class and in the pole class: Ash, Sugar Maple and Black Cherry among those being noted. General tree health was very good with trees exhibiting good growth characteristics with the exception of some very mature to over mature White Ash that is showing top dieback. Insect threat to this stand: Emerald Ash Borer.

### **Forest Structure**

This stand includes trees of different sizes and age grouping from over mature to optimum timber size to a substantial pole size class. Vertical layering easy to identify and the stand exhibits different tree density. Standing dead trees and down dead wood are present and present good wildlife habitat and cover. Trees have good crowns and spacing due to previous forest management activity. There appears to be very good tree growth characteristics throughout the mature and pole timber stands. One exception is the large, over mature White Ash that is experiencing top die back. It is perceived that this is a harbinger of tree decline and death in the future.

### **Regeneration**

Saplings and seedlings population levels are low in this stand, especially

seedlings. There appears to be little interfering vegetation and the main cause seems to be deer browse followed by increasing density by the pole timber classification thus limiting sunlight penetration of the stand canopy.

### Site Level Risks

The main risk associated with this stand appears to be extreme rainfall and ice damage. Flat topography and located in the center of the parcel raise the risk slightly for the prementioned risk factors. Shorter and milder winters will affect the accessibility of this stand.

### Stand T10 Prescription

Substantial White Ash inventory in the timber class and pole timber class together with mature Ash top dieback requires harvesting of all merchantable Ash before Emerald Ash Borer infestation. This stand is growing well with the correct basal area – density for quality hardwood growth and it is a decision to log the Ash that is made with regret. Hopefully increased sunlight will encourage seedling regeneration.

### Stand T10 Data

| Species         | TPA   | Basal area/acre<br>(Sq. Ft.) | Volume/acre<br>(int.1/4) BdFt F.C.<br>78 |
|-----------------|-------|------------------------------|--|
| White Ash       | 19.37 | 43.01                        | 2228                                     |
| Black Cherry    | 9.78  | 5.10                         | 481                                      |
| Sugar Maple     | 2.16  | 3.69                         | 207                                      |
| Eastern Hemlock | .3    | 3.14                         | 141                                      |
| Norway Spruce   | .6    | 1.77                         | 179                                      |
| Total           | 32.21 | 56.71                        | 3236                                     |

|               |       |      |            |
|---------------|-------|------|------------|
| Hardwood pulp | 24.06 | 9.40 | 1.83 cords |
|---------------|-------|------|------------|

## **Forest Stand T11**

15 acres more or less are found in this stand. Located in the center of parcel #8 Otsego, this is a mixed wood stand with both deciduous and coniferous species in the dominant specie mix. A highlight of this stand is the naturally seeded Norway Spruce that is doing exceedingly well. Predominant soil types and their drainage classification are: Mardin channery silt loam - Moderately Well Drained and Lordstown, Chadakoin, and Manlius soils-Well drained.

## **Forest Diversity and Composition**

Due to the Norway Spruce and the co growing hardwoods in the over story, this stand has good biodiversity with no single species dominating. General tree health is good with good growing density and well formed crowns. No insect or disease vectors were observed. There is a merchantable White Ash presence that is threatened by the Emerald Ash Borer.

## **Forest Structure**

This stand contains multiple vertical layers that include mature timber, pole timber, and saplings which translate to good structural diversity. Standing dead trees and down dead wood are found here also in average quantity. Excellent growing space and crown development make this forest stand growing at optimum rates.

## **Regeneration**

Seedlings are not abundant, but an adequate or average sapling population does exist. Sapling species mix is Sugar Maple, Red Maple, and White ash. Species suitability to the growing site is good with growing characteristics typical of a well suited stand to site relationship. Interfering plants were not noted but White Tailed Deer browsing was.

## **Site Level Risks**

Moisture and extreme rainfall present some risk to this stand but ice storm damage risk is higher. Shorter and milder winters will affect accessibility and to an extent workability of this stand.

### Stand T11 Prescription

Harvesting the White Ash where logging efficient is recommended.  
Otherwise it is recommended that this stand continue to grow unimpeded as it is growing at most favorable and efficient manner.

### Forest Stand T11 Data

| Species       | TPA   | Basal Area/Acre | Volume/acre<br>(int.1/4) BdFt F.C.<br>78 |
|---------------|-------|-----------------|--|
| Norway Spruce | 10.41 | 13.20           | 1954                                     |
| Black Cherry  | 10.39 | 20.87           | 1719                                     |
| White Ash     | 19.18 | 20.10           | 1708                                     |
| Total         | 39.98 | 54.17           | 5381                                     |

|               |       |      |            |
|---------------|-------|------|------------|
| Hardwood Pulp | 50.75 | 3.96 | 2.72 cords |
|---------------|-------|------|------------|

## **Forest Stand T12**

This stand of Otsego #8 has approximately 4 acres. Located in the center of the parcel near the pond (P2) and is an old Norway Spruce stand that has had a blow down many years ago eliminating much of the Spruce. Volusia silt loam soil type makes up the majority of the soils for this stand. Volusia silt loam is somewhat poorly drained and the ability to work this site is compromised. Proximity to the pond is also a forest management consideration.

### **Forest Diversity and Composition**

Commercial tree species diversity is poor with only two occupying the growing space: Swamp/White Ash and Norway Spruce. The Norway spruce is exhibiting poorer growth and health characteristics while the Ash average tree health. These trees are in poorer health due to a poor match to the wet growing site. There were no insect or disease issues observed in this stand.

### **Forest Structure**

Structural diversity was poor with much of the stand acreage open with brush and other plants dominating. The areas containing Spruce and Ash produced a simplistic canopy of same species, size, and age. The stand contains some down deadwood (old blow down) and few standing dead trees. The stand is inadequately stocked of commercial tree species having larger areas devoid of merchantable trees altogether and one small area of remnant Spruce that is overstocked and stagnant.

### **Regeneration**

Commercial tree species regeneration does not exist within this stand to any significant degree. Species suitability to the growing site: Norway poor, Ash: marginal. Interfering plants noted: Honey Suckle, brush, and thorn Apple.

### **Site Level Risks**

This stand growing site is very sensitive to moisture stress and extreme rainfall with very wet conditions evident. Shorter and milder winters contribute to the overall no workability of this stand.

### Forest Stand T12 Prescription

This stand and its corresponding growing site lend itself to wildlife concerns and not commercial forest management. Working with most forest equipment in this stand given the wetness and proximity to the pond would be prohibitive and could cause damage to this ecosystem. Any wildlife efforts should be directed to Apple propagation and discouragement of Honeysuckle.

### Forest Stand T12 Data

| Species       | TPA   | Basal Area/Acre | Volume/acre<br>(int.1/4) BdFt F.C.<br>78 |
|---------------|-------|-----------------|--|
| Norway Spruce | 9.81  | 9.20            | 2586                                     |
| Ash           | 3.61  | .92             | 62                                       |
| Total         | 13.42 | 10.12           | 2648                                     |

|               |      |      |           |
|---------------|------|------|-----------|
| Hardwood Pulp | 4.58 | 2.18 | .38 cords |
|---------------|------|------|-----------|



### **Forest Stand T13**

This stand is located in the central portion of Otsego County #8, Taylor Hill. Comprised of 13 acres more or less and is basically a hardwood stand and growing site. Major soil types and drainage classifications: Mardin channery silt loam - Moderately Well Drained and Lordstown-Chadakoin complex - Well Drained. It is observed by vegetative indicators this stand tends more toward wet.

### **Forest Diversity and Composition**

Species diversity is average to above average as the number of commercial tree species is good at 5 with almost equal basal area among Red Maple, White Ash, and Black Cherry. Norway Spruce is found here also, giving more diversity of coniferous species. General tree health is judged to be good with good growth characteristics. No insect or disease vectors were noted.

### **Forest Structure**

Average structure present with primarily timber class size with some vertical components with some saplings exhibited. There were some large White Ash trees present also. Down dead wood and standing dead trees were found throughout the stand but were not numerous. Tree crowns were developing well with adequate spacing lending to optimum growing density in some sections.

### **Regeneration**

Regeneration within stand T13 is lower than average with tree seedlings and saplings present but not in the numbers that would be desired for adequate formation of the future forest stand. Species appear to be well suited to the growing site they are on. In sections, interfering plants Honey Suckle and Multi Flora Rose are present and may present a future problem. Deer browsing was noted and has a relationship to the presence of the interfering plants previously noted.

## Site Level Risks

Sensitivity to moisture stress and extreme rainfall are this stands most prominent risk factors. Shorter and milder winters will impact the available time to work this stand with equipment and also the stands accessibility.

## Stand T13 Prescription

There is some very large White Ash trees in certain areas that could be harvested if logging is being executed close by. Otherwise it is recommended that this stand continue to grow and be revisited again in ten years time. If Ash is cut, it recommended that herbicidal treatment occur of Honey Suckle and Multi Floral Rose.

## Stand T13 Data

| Species       | TPA   | Basal Area/Acre | Volume/acre<br>(int.1/4) BdFt F.C.<br>78 |
|---------------|-------|-----------------|--|
| Red Maple     | 7.11  | 13.86           | 1118                                     |
| White Ash     | 7.91  | 13.95           | 949                                      |
| Black Cherry  | 5.83  | 13.42           | 1167                                     |
| Norway Spruce | 2.60  | 6.18            | 644                                      |
| Sugar Maple   | 2.63  | 2.55            | 252                                      |
| Total         | 26.08 | 49.96           | 4130                                     |

|               |       |      |           |
|---------------|-------|------|-----------|
| Hardwood Pulp | 14.57 | 2.60 | .78 cords |
|---------------|-------|------|-----------|

## **Forest Stand T14**

T14 is located in the north central region of Otsego County parcel #8 Taylor Hill and has 11 acres + or -. Predominant soil type is Mardin channery silt loam and is Moderately Well Drained. This stand features basically a hardwood stand, logged years ago, and has some naturally seeded Norway spruce.

## **Forest Diversity and Composition**

Good species diversity with five commercial tree species found in timber class. No single species dominates growing space. General tree health is rated as good with no insect or disease issues noted.

## **Forest Structure**

The stand contains varying tree size especially in the timber classification, some pole timber, and sparse sapling and seedlings thus producing mainly a two layered structure. Significant logging has occurred years ago promoting uneven aged structure mainly in the timber class and some in the pole size. Sufficient growing space exists for good crown development and growth. Little down wood and standing dead trees were observed thus limiting some wildlife habitat.

## **Regeneration**

Sparse regeneration was noted throughout this stand, mostly Red and Sugar Maple where it occurs. Species are well suited to this hardwood site. Naturally seeded Norway Spruce regeneration is found here in varying degrees. Deer browsing was noted to be prevalent.

## **Site Level Risks**

Highest stand level risks appear to be with moisture stress and extreme rainfall. Accessibility and workability of this stand would be negatively impacted by shorter and milder winters.

### Stand T14 Prescription

Allow this stand to continue to grow without disruption as the timber class is well spaced and growing well. Revisit again in ten years to gauge health and growth.

### Stand T 14 Data

| Species       | TPA   | Basal Area/Acre | Volume/acre<br>(int.1/4) BdFt F.C.<br>78 |
|---------------|-------|-----------------|--|
| Sugar Maple   | 11.09 | 15.53           | 1157                                     |
| Red Maple     | 8.16  | 11.85           | 1093                                     |
| White Ash     | 3.55  | 7.29            | 530                                      |
| Norway Spruce | 6.83  | 3.63            | 412                                      |
| Black Cherry  | 3.37  | 4.33            | 324                                      |
| Total         | 33    | 42.63           | 3516                                     |

|               |       |      |            |
|---------------|-------|------|------------|
| Hardwood pulp | 11.50 | 8.66 | 1.17 cords |
|---------------|-------|------|------------|

## **Forest Stand T15**

5 acres more or less are found within stand T15 located in the north central part of Otsego #8 Taylor Hill. Bordering the main access road to the entire parcel, this stand is a typical hardwood growing site with hill side attributes. Logged in the past, this stand has good growth spacing for the residual stand. Main soil type and drainage classification: Mardin channery silt loam and is Moderately Well Drained. The ability to work this stand is judged to be very good with forest equipment.

## **Forest Diversity and Composition**

Species diversity of this stand is judged to be average in comparison to other hardwood stands. General tree health is good with good growing characteristics. There were no insect or disease problems noted.

## **Forest structure**

Structural diversity was average with several vertical layers present but lacking saplings and in some areas poles. Tree crowns and spacing a direct result of previous logging were appraised to be good. Very little to no standing dead trees or dead down wood were observed in this stand. Park like appearance for stand T15.

## **Regeneration**

As in many stands in parcel #8, regeneration is a problem here also with seedlings and saplings numbers sparse. Most of the regeneration that exists consists mainly of Sugar Maple that is well suited to this stands topography and site characteristics. Deer browsing is heavy.

## **Site Level Risks**

Wind and ice damage would be the most risk exposure. Due to the hillside nature and also elevation prominence, this stand would qualify for the foregoing risk factors. Shorter and milder winters would affect this stand mostly through accessibility.

### **Forest Stand T15 Prescription**

Allow this stand to grow as is with minimal disruption as basal area/stocking suggests good projected optimal growth. Reappraisal in ten years or so and if growth slows it is recommended that a harvest occur to promote regeneration at that time.

### **Stand T15 Data**

| Species      | TPA   | Basal Area/Acre | Volume/acre<br>(int.1/4) BdFt F.C.<br>78 |
|--------------|-------|-----------------|--|
| Sugar Maple  | 6.84  | 25.15           | 3246                                     |
| Black Cherry | 2.66  | 6.25            | 998                                      |
| Red Maple    | .78   | 4.28            | 271                                      |
| White Ash    | 1.06  | 3.14            | 367                                      |
| Total        | 11.34 | 38.82           | 4882                                     |

|               |      |      |            |
|---------------|------|------|------------|
| Hardwood Pulp | 9.89 | 4.91 | 1.13 cords |
|---------------|------|------|------------|

## **Forest Stand T16**

29 forest acres more or less are found within the confines of stand T16. Lordstown-Arnot complex, Lordstown-Chadakoin complex, and Mardin channery silt loam are three soil types that are present within this stand. Drainage classifications are well drained for the first two types and moderately well drained for the third thus indicating good soil support for forest management. The stand in actuality can be divided into two subsets with the first comprised of about 60 to 70% of acreage devoted to plantation Norway Spruce that is stagnating and being overtopped by Red Maple. The second subset is primarily a hardwood stand found in the easterly portion of T16.

### **Forest diversity and Composition**

Species diversity is excellent with many species present especially in the hardwood subset. Species suitability is excellent in the hardwood section but in the plantation portion poor, the Spruce just is not suited to this site – exhibiting no growth, stagnation, and poor crown development. The Spruce general tree health is poor. In the hardwood section, extensive infection of American Beech by Beech Bark disease was noted.

### **Forest Structure**

#### **Structural diversity**

Good structural diversity in the hardwoods, poor in the Spruce plantation. Hardwoods: trees of different sizes and good examples of vertical and horizontal layering of the forest. Spruce: Contains a heavy presence of same age and size trees being overtopped by mostly one hardwood specie. Down dead wood and dead standing trees were prevalent throughout the stand. Tree crowns and spacing was good in the hardwoods and poor in the softwoods.

## **Regeneration**

Desirable regeneration of commercial forest species is not existent in the plantation due to crown closure and stocking density and below average in the hardwood subcomponent. Regeneration in hardwood is best described as clumpy, and dispersed throughout the subset with an increasing presence of American Beech regeneration, sprouting – a result of dying parental trees heavily infected by beech bark disease. Heavy deer browsing was noted. Spruce not suitable to site.

## **Site Level Risks**

Mainly well drained soils that offer the ability to withstand moisture stress and extreme rainfall, the main climatic or weather threat to this stand would be ice storm damage. Shorter and milder winters would affect the accessibility more than the workability of stand T16.

## **Stand T16 Prescription**

Allowance for gradual Spruce plantation conversion through succession process is recommended because of a lack of markets and financial return for small Norway Spruce. If markets can be found, harvesting of all of the residual spruce would be recommended. Due to high basal area, it is proposed that a timber harvest of 30 to 40 percent of total basal area be undertaken with an eye for biodiversity of tree species – significant harvesting of Red Maple, Norway Spruce crop trees, and beech pulpwood followed by herbicidal treatment of beech sprouting.



### Stand T16 Data

| Species              | TPA   | Basal area/ acre<br>(sq. Ft.) | Volume/acre<br>(int.1/4) BdFt F.C.<br>78 |
|----------------------|-------|-------------------------------|--|
| Red Maple            | 38.09 | 81.63                         | 5497                                     |
| Black Cherry         | 4.12  | 13.74                         | 820                                      |
| Norway Spruce        | 7.38  | 6.9                           | 473                                      |
| American<br>Basswood | .81   | 3.53                          | 352                                      |
| White Ash            | 1.09  | 6.49                          | 277                                      |
| Sugar Maple          | .67   | 1.07                          | 88                                       |
| American Beech       | .40   | 1.77                          | 74                                       |

|              |       |        |      |
|--------------|-------|--------|------|
| Yellow Birch | .67   | 1.07   | 70   |
| Total        | 53.23 | 113.36 | 7651 |

| Species       | TPA   | Basal Area/acre | Cords/acre |
|---------------|-------|-----------------|------------|
| Hardwood Pulp | 41.35 | 30.47           | 1.70       |
| Softwood Pulp | 19.12 | 3.35            | .73        |

## **Forest Stand T17**

T17 is located in the most northern section of Otsego #8 Taylor Hill. Predominant soil type is Mardin channery silt loam, moderately well drained and to a lesser extent Volusia silt loam, Somewhat Poorly Drained. It is the Foresters opinion that most of this stand can have forest management activities during average to good logging weather. Approximately 14 acres make up this northerly stand. Of interest in this stand is the appearance of invasive Honey Suckle (family Caprifoliacea, many species) located in the most southwestern subsection of this stand.

### **Forest Diversity and Composition**

This stand has average to good species diversity with a good representation of commercial tree species. Species suitability to the growing site is judged to be excellent. Excellent growth characteristics together with good height attainment by both dominant and co dominant canopy classifications lend credence to good suitability and general tree health. Insect and disease complications were not observed.

### **Forest Structure**

This stand contains trees of varying sizes throughout the 14 acres and also differencing trees per acre. Largely a two vertical layered stand made up of pole and merchantable timber classifications. Little to no standing dead trees or down dead wood was observed. Tree crowns have closed and lack adequate space to develop further.

### **Regeneration**

Desirable regeneration of commercially important tree species is very low due to lack of sunlight on the forest floor and heavy deer browsing. Invasive Honey Suckle is present in the south western subsection of stand T17 where basically no trees are growing – open conditions. Care to be undertaken to limit spread of this plant that interferes with native tree regeneration.

## Site Level Risks

Extreme rainfall can affect this stand with too much too fast, leading to high moisture soil content for periods of time thus limiting the workability of this stand. Other risks are ice damage and to a much lesser degree wind throw. Shorter and milder winters affect accessibility and length of available harvesting time.

## Stand T17 Prescription

A light commercial thinning is recommended for this stand not to exceed 20 square feet of basal area evenly split between poor formed trees and commercial timber. An herbicidal application is prescribed for the Honey Suckle at or after harvesting. It is important that care be exercised for the residual stand during harvesting operations.

## Forest Stand T17 Data

| Species       | TPA   | Basal Area/acre | Volume/acre<br>(int.1/4) BdFt F.C.<br>78 |
|---------------|-------|-----------------|--|
| Red Maple     | 34.29 | 36.37           | 4036                                     |
| White Ash     | 7.49  | 7.32            | 997                                      |
| Black Cherry  | 4.11  | 13.27           | 1311                                     |
| Sugar Maple   | 3.98  | 1.45            | 267                                      |
| Norway Spruce | 1.34  | 1.1             | 177                                      |
| Total         | 51.21 | 59.51           | 6788                                     |

| Species       | TPA   | Basal Area/acre | Cords/acre |
|---------------|-------|-----------------|------------|
| Hardwood Pulp | 28.48 | 20.62           | 2.65       |

## **Forest Stand T18**

10.6 acres more or less are contained within this stand located just north of the large pond (P2) found in this parcel of Otsego #8 Taylor Hill. Main soil types and drainage classification found at this stand are: Volusia silt loam - Somewhat Poorly Drained, and Mardin channery silt loam - Moderately Well Drained making this stand relatively sensitive to forest equipment deployment and time of year/moisture content of soils. This stand could be dissected into two sub stands with one located in the southwestern portion and the second sub stand in the remainder. This stand contains substantial Ash timber in densities that facilitate harvesting with both sub stands exhibiting different soil types, drainage, and vegetation. The Northeastern section contains the better growing site for commercial timber species.

### **Forest Diversity and Composition**

This stand has a good mix of northern hardwood species and one naturally seeded conifer – Norway Spruce. General tree health was observed to be excellent with good growth characteristics especially in northeastern sub stand. No insect or disease infestations were observed, however the emerald ash borer threat is substantial due to the Ash in this stand.

### **Forest structure**

Excellent structural diversity within stand T18 was noted due to varied tree size and canopy dominance. Three vertical stands exist: Mature timber class, pole timber class, and sapling class. Down dead wood and standing dead trees were in evidence throughout the stand lending a diverse habitat for many species of wildlife. Adequate growing space has helped to form good spacing, density, and tree crowns. However, it is noted that crown closure is ongoing forming higher densities that will require commercial thinning soon.

### **Regeneration**

Desirable reproduction has occurred mainly in the sapling stage with good species representation- Red Maple, Sugar Maple, Ash, and Cherry. Naturally seeded in Norway Spruce is evident also. Few seedlings were noted due to heavy deer browsing and crown closure. One interfering species: Eastern Hop Hornbeam (Iron wood) was found and is marginal in its impact. Species suitability is good to the growing site.

### Site Level Risks

The south western sub stand shows a higher sensitivity to higher moisture stress and extreme rainfall. Shorter and milder winters would affect this stands workability timeline and access.

### Stand Prescription

Due to the looming threat of the Ash borer, the harvest ability of the Ash, and the basal area and tree count per acre it is prescribed that a timber harvest be initiated with goal of Ash recoverability before infection. Another goal would be to continue the excellent growth of the stand and also release as much of the poles and saplings as feasible, and to promote seedling establishment. Harvest to target 35 to 40 square feet of basal area removal by individual tree selection methodology (silvical system) from this stand.

### Forest Stand T18 Data

| Species       | TPA   | Basal Area/Acre | Volume/acre<br>(int.1/4) BdFt F.C.<br>78 |
|---------------|-------|-----------------|--|
| White Ash     | 18.28 | 29.57           | 2538                                     |
| Red Maple     | 10.99 | 29.68           | 1439                                     |
| Norway Spruce | 15.02 | 13.80           | 1278                                     |
| Sugar Maple   | 7.01  | 17.42           | 836                                      |
| Black Cherry  | 4.99  | 10.70           | 774                                      |
| Total         | 56.29 | 101.70          | 6865                                     |

|               |       |       |           |
|---------------|-------|-------|-----------|
| Hardwood pulp | 61.18 | 20.70 | 2.37cords |
|---------------|-------|-------|-----------|

## **Forest Stand T19**

Stand location is in the north central portion of Otsego #8 Taylor Hill tract. T19 has approximately 17.8 acres more or less. The main soil types and their drainage classifications are: Mardin channery silt loam - Moderately Well Drained and secondly Lordstown-Chadakoin complex- Well Drained. These two soil types indicate good soil conditions for forestry equipment. This stand is basically a hardwood growing site and exhibits a park like appearance with naturally seeded Norway Spruce. Ash timber is scattered throughout this stand.

## **Forest Diversity and Composition**

Variance of tree species is high with 8 commercial tree species cruised. General tree health is good with good growth characteristics. No insect or disease issues were observed. High tree variance lends credibility of bio diversity that strengthens area ecosystem and also enables resiliency to various stressors.

## **Forest Structure**

Structural diversity is average with two basic vertical layers - Timber class and pole class. Missing is the sapling and seedling classes, making for a less complex forest structure. Standing dead trees and down dead wood are found within the confines of this stand leading to adequate wildlife habitat for corresponding wildlife species. Tree crown canopy and tree spacing are becoming crowded with less amounts of sunlight reaching the forest floor.

## **Regeneration**

Desirable regeneration is distinctly missing within this stand due to two main factors – canopy closure and deer browsing with less sunlight reaching the forest floor being the most prominent factor. Little to no interfering plants was noted within this stand.

## **Site Level Risks**

Main risks to this stand would be ice storm damage. Moisture stress and extreme rainfall risks would be lower in comparison. Shorter and milder winters would affect accessibility to this stand and to a lesser extent, workability.

### Forest Stand T19 Prescription

Due to the lack of regeneration present in this stand and the scattered nature of the white Ash it is recommended that in conjuncture with Forest Stand T18 harvesting, this stand harvest timber reducing overall stand Basal area to the range of 60 to 70 square feet. Obvious removal of merchantable Ash together with Red Maple to enhance logging feasibility and at the same time encourage select dominant tree removal of larger crowns to infuse greater sunlight penetration to the forest floor thus encouragement of more shade tolerant specie regeneration. In addition to the foregoing, care to be taken in tree selection removal to enhance tree species diversity.

### Forest Stand T19 Data

| Species         | TPA   | Basal Area/Acre | Volume/acre<br>(int.1/4) BdFt F.C.<br>78 |
|-----------------|-------|-----------------|--|
| Red Maple       | 10.56 | 35.20           | 1695                                     |
| White Ash       | 10.82 | 15.00           | 1117                                     |
| Eastern Hemlock | 1.51  | 6.12            | 548                                      |
| Norway spruce   | 4.2   | 6.64            | 496                                      |
| Sugar Maple     | 8.52  | 12.83           | 800                                      |
| Black Cherry    | 2.97  | 6.92            | 375                                      |
| Trembling Aspen | 3.71  | 2.66            | 222                                      |

|              |       |       |      |
|--------------|-------|-------|------|
| Yellow Birch | 1.27  | .79   | 71   |
| Total        | 43.56 | 86.16 | 5324 |

|               |       |       |           |
|---------------|-------|-------|-----------|
| Hardwood Pulp | 10.62 | 10.30 | .96 cords |
|---------------|-------|-------|-----------|

## **Forest Stand T20**

Forest stand T2 is located in the north eastern section of Otsego parcel #8 and consists of 9.2 acres more or less. Mostly a hardwood stand bordering on a stream, certain areas are important as functioning borders to protect the stream habitat and ecosystem. This stand has some very large White Ash that stand out prominently along with a substantial Eastern Hemlock presence chiefly in close proximity to the stream. Soils found in this stand are chiefly Chippewa and Norwich soils and are poorly drained necessitating careful planning for forest management work.

### **Forest Diversity and Composition**

Six commercially important tree species were found in varying density within this stand's borders. Species diversity is judged to be good with Hemlock, Ash, Red Maple, and Sugar Maple exhibiting dominance in frequency and distribution. General tree health is also good with good growing characteristics with some exceptions with the Hemlock that shows age as one get closer to the stream. No current insect or disease manifestations were observed.

### **Forest Structure**

Forest structure is judged to be average to good with a pronounced though dispersed timber class, lighter density of pole timber, and average sapling/seedling class lending to recognizable vertical layering. Some dead standing trees with more dead down wood make for average wildlife habitat especially when viewed in light of close proximity to the stream. With exception of border with the stream (100 to 300 feet) there is adequate growing space leading to larger, healthy tree crowns.

### **Regeneration**

Tree regeneration as found in the seedling and sapling stages highly favors Red Maple and Hemlock and forebears the future species makeup of this stand. Due to the wet nature of most of the soil in this stand, regeneration is highly



suitable to the growing site, especially with the Red Maple. Interfering plants noted were chiefly Iron wood (eastern Hop hornbeam) though not found in abundance. Deer browsing was judged to be light with little effect on reproduction.

### Site Level Risks

Site risk is judged to be found mainly on extreme rainfall due to the nature of the soils being poorly drained and the stand being close to the stream. Shorter and milder winters would complicate forest management activities through workability and access.

### Stand Prescription

Harvest the large White Ash and carefully cut over mature Hemlock where no damage would occur to the stream protective border. Maintenance of stream border integrity important during any harvesting operations. Remove Iron wood where ever possible.

### Stand Data T20

| Species              | TPA   | Basal Area/Acre<br>(Sq. Ft.) | Volume/acre<br>(int.1/4) BdFt F.C.<br>78 |
|----------------------|-------|------------------------------|--|
| Eastern Hemlock      | 45.17 | 28.87                        | 2490                                     |
| White Ash            | 4.6   | 19.70                        | 2179                                     |
| Red Maple            | 8.90  | 11.35                        | 1252                                     |
| Sugar Maple          | 8.79  | 6.50                         | 1001                                     |
| Trembling Aspen      | 5.49  | 6.73                         | 940                                      |
| American<br>Basswood | 1.43  | 1.40                         | 152                                      |
| Total                | 74.46 | 74.62                        | 8014                                     |

|               |       |      |            |
|---------------|-------|------|------------|
| Hardwood Pulp | 53.73 | 6.81 | 2.98 cords |
|---------------|-------|------|------------|

## **Forest Stand T21**

Stand T21 is located in the extreme north eastern section of Otsego parcel #8, Taylor Hill and borders on the east the stream that cuts diagonally across the north eastern section. This stand is the most remote with access impeded by the stream and surrounding wetlands from the rest of the county parcel. 6.7 acres + or – are found within stand T21. Roughly four different soil types are found here: Sapristis and Aquents, inundated: very poorly drained; Mardin channery silt loam: Moderately Well Drained; Chippewa and Norwich soils: Poorly drained; and Volusia silt loam: Somewhat Poorly Drained. This stand was logged approximately 7 to 10 years ago heavily leaving a beech over story in the pulp class.

## **Forest Diversity and Composition**

Good species diversity with about six commercial species found, but Hemlock and Sugar maple dominate the stand in trees per acre and Basel area. General tree health is judged to be average with more growing or responding time needed to more accurately appraise. Beech bark disease was noted on many of the beech growing in this stand.

## **Forest Structure**

The stand due to heavy logging, exhibits high variability of tree density, varying tree sizes, and open areas. Tree crowns are still in the process of responding to the increase in light due to the logging. Tree spacing varies throughout the stand but appears to be large due to heavy removal. Extensive standing dead trees and also down dead wood are found throughout the stand often impeding mobility.

## **Regeneration**

Seedling and saplings within this stand are heavy to beech as the prior logging did not remove any of the beech over story, hence leaving them as a seed source. Sugar Maple and Hemlock seeding are found here also but to a lesser degree. Ironwood is significantly present also. It is surmised that beech and

Ironwood will need to be controlled in order to establish an acceptable regeneration base for a future forest stand. Species suitability to the growing site is average given the wet conditions of the underlying soils. Deer browsing is a prominent factor also.

### Site Level Risks

Extreme rainfall and moisture stress are seen as the highest risk factors to this stand. Shorter and milder winters will affect accessibility and workability of this stand significantly.

### Stand Prescription

Due to the heavy logging of this stand, low basal area it is recommended that attention be directed to beech over story removal and beech and ironwood regeneration be controlled if possible. Economics and financial considerations due to accessibility may not favor action on this stand; in which case stand development will be impeded.

### Stand Data

| Species           | TPA   | Basal Area/acre<br>(sq.ft) | Volume/acre<br>(int.1/4) BdFt F.C.<br>78 |
|-------------------|-------|----------------------------|--|
| Eastern Hemlock   | 24.95 | 11.37                      | 2532                                     |
| Sugar Maple       | 26.5  | 10.71                      | 2513                                     |
| Red Maple         | 5.75  | 4.73                       | 970                                      |
| Yellow Birch      | 3.38  | 2.97                       | 451                                      |
| American Beech    | .80   | 3.14                       | 201                                      |
| American Basswood | 1.42  | 1.77                       | 331                                      |
| Total             | 62.80 | 34.69                      | 6998                                     |

|               |       |      |            |
|---------------|-------|------|------------|
| Hardwood Pulp | 85.71 | 6.69 | 2.05 cords |
|---------------|-------|------|------------|

## **Forest Stands 22, 23, 24**

These stands occupy approximately 12.2 acres in aggregation. Since these three stands were heavily logged about ten years or so ago, their individual attributes have effectively disappeared and have in practicality merged into one forest stand. The three stands will be referenced within this prescription as one stand. Located in the central north eastern quadrant, these stands are essentially a hardwood growing site. Soils and drainage classifications found on this stands site: Volusia silt loam: Somewhat Poorly Drained and Mardin channery silt loam: Moderately Well Drained.

### **Forest Diversity and Composition**

This stand contains good species diversity (six species) with species basal area and trees per acre (TPA) well balanced and spread throughout the stand acreage. General tree health appears to be of average quality with better judgment in five to ten years because the stand is still reacting to the heavy logging that has occurred. No insect or disease issues were observed.

### **Forest Structure**

Due to the past heavy logging throughout this stand, forest complexity is significantly reduced. Occupation of growing space (basal area) is low leading to high penetration of sun light to the forest floor. Tree crowns are slowly responding to the increased light levels but it is still early to adequately qualify crown health. Tree spacing is high. Pronounced standing dead trees and especially down dead wood are evident throughout the stand acreage.

### **Regeneration**

Chief concern in this stand is the high concentration of interfering vegetation, chiefly beech, ironwood, and striped maple. Beech is heaviest in the seedling stage and ironwood and striped maple more in the sapling stage. Some

Sugar and red maple saplings were found but not in abundance. Species suitability to the growing site is adequate for those found within this stand. Deer browsing is judged to be significant.

### Site Level Risks

Moisture stress and extreme rainfall are judged to be the highest risk factors for this stand in light of soil composition. Milder and shorter winters will affect the workability and access of this stand.

### Prescription

Main concern for this stand is the future forest species composition. Control of interfering vegetation within this stand through herbicidal applications is prescribed, if feasible. Otherwise it is recommended to allow the stand to continue to grow and evolve in response to the heavy logging.

### Stand Data

| Species         | TPA   | Basal Area/acre<br>(Sq. Ft.) | Volume/acre<br>(int.1/4) BdFt F.C.<br>78 |
|-----------------|-------|------------------------------|--|
| Sugar Maple     | 12.73 | 15.05                        | 2058                                     |
| White Ash       | 8.88  | 7.94                         | 1255                                     |
| Eastern Hemlock | 8.76  | 9.13                         | 1302                                     |
| American Beech  | 4.84  | 6.55                         | 567                                      |
| Red Maple       | 2.32  | 3.25                         | 431                                      |
| Yellow Birch    | 3.32  | 2.18                         | 409                                      |
| Total           | 40.85 | 44.10                        | 6022                                     |

|               |       |       |            |
|---------------|-------|-------|------------|
| Hardwood Pulp | 39.23 | 14.75 | 3.16 cords |
|---------------|-------|-------|------------|

## **Forest Stand T25**

16.5 acres more or less make up this stand located in the most southeastern section of Otsego #8 Taylor Hill. Soils and drainage class found in this stand are: Mardin channery silt loam: Moderately Well Drained, Lordstown-Arnot complex: Well Drained, and Lordstown, Chadakoin, and Manlius soils: Well Drained. This stand is actually comprised of two distinct sub stands: A) logged long ago and comprised of Sugar Maple timber and Poles and B) Logged about 10 years ago. Both have substantial beech in all classes from timber to poles to saplings and seedlings.

### **Forest Diversity and Composition**

There is species diversity with seven species inventoried but the majority found was in the Sugar Maple, Beech, and Hemlock. These species dominate both sub stands with a more pronounced beech presence in B. General tree health is of concern with respect to the sugar Maple which is exhibiting some Top dieback from sun scalding and Beech timber exhibiting substantial beech bark disease. Most of the pulp wood is beech.

### **Forest Structure**

Sub stand A exhibits better structural diversity with a greater presence of Sugar Maple Poles than is found in B. Tree crowns and spacing are of concern due to past logging regimen employed resulting in too much spacing between crop trees resulting in some top die back in Sugar Maple and less vitality in Beech. Both lots have substantial amounts of standing dead trees and down dead wood for wildlife habitat.

### **Regeneration**

Tree seedlings and saplings within both sub stands are beech and no other. Obviously, the beech has negated regeneration of commercially desirable species such as Sugar Maple. Deer browsing is a major factor here also with deer browsing the beech seedlings – a starvation food of last resort. This stand shows

Good hardwood site growing conditions.

### Site Level Risks

Main risk factors for stand T25 is wind throw and ice storm damage. Due to good soil characteristics it is felt that moisture stress and extreme rainfall are of lesser concern. Shorter and milder winters would affect the accessibility of this stand.

### Stand Prescription

With some top dieback and substantial beech presence it is felt a individual tree selection timber harvest be instituted. Careful removal of less healthy Sugar Maple and removal of as much beech as possible in all classes be employed. Disruption of the forest floor be instituted wherever possible to initiate better species regeneration together with herbicidal applications and any deer mitigation strategies be employed. Residual Basal area of this stand to be targeted to be around 50 to 60 square feet.

### Stand Data

| Species         | TPA   | Basal Area per acre | Volume Int. 1/4 F.C. 78 BdFt./acre |
|-----------------|-------|---------------------|------------------------------------|
| Sugar Maple     | 30.36 | 29.71               | 2439                               |
| American Beech  | 14.59 | 11.11               | 841                                |
| Eastern Hemlock | 3.2   | 6.94                | 475                                |
| White Ash       | 1.98  | 4.81                | 443                                |
| Yellow Birch    | 2.39  | 3.87                | 213                                |
| Black Cherry    | .38   | 2.64                | 190                                |
| Red Maple       | .57   | 1.76                | 133                                |
| Total           | 53.47 | 60.84               | 4734                               |

|               |       |       |            |
|---------------|-------|-------|------------|
| Hardwood pulp | 19.76 | 18.88 | 1.37 cords |
|---------------|-------|-------|------------|

## **Forest Stand T26**

T26 is located alongside the eastern shore of the large pond P2, P3 and is comprised of 9.2 acres more or less within Otsego #8, Taylor Hill. Soil type found here is Volusia silt loam and is Somewhat Poorly Drained. Primarily a hardwood growing site, Hemlock found here usually forms a buffer for the pond affording protection and shade for the hydrophilic ecosystem.

### **Forest Diversity and Composition**

Five commercial tree species are found here with Sugar Maple having the greatest trees per acre and also basal area per acre. Species diversity is judged to be average. General tree health is noted to be good with good growth characteristics. Logging long ago did not remove beech to any degree. Beech bark disease was noted on about 50% of timber, poles, and pulp classes.

### **Forest Structure**

Structural diversity was judged to be average at best with trees of varying size and some vertical layering spaced throughout the stand. Sugar maple pole sized timber found alongside the maple timber class. This stand was logged years ago producing fair tree spacing and density. Crowns have shown good health, size, and growth characteristics especially on the Sugar Maple. This stand is considered lightly stocked. Standing dead trees and dead down wood is found on average throughout most of this stand.

### **Regeneration**

Desirable regeneration is found very lightly in Sugar Maple seedlings and saplings dispersed throughout this stand. Substantial beech reproduction is found within this stand and constitutes a barrier to full utilization of this growing site by Sugar Maple. Species regeneration is found to be suitable for the site conditions. Deer browsing is judged to be average.



## Site Level Risks

Extreme rainfall and moisture stress are judged to be the largest risks to this stand due to soil type and drainage classification. Shorter and milder winters limit accessibility and the ability to work this stand with forest management equipment. Care with work should be realized because of proximity to the pond.

## Stand Prescription

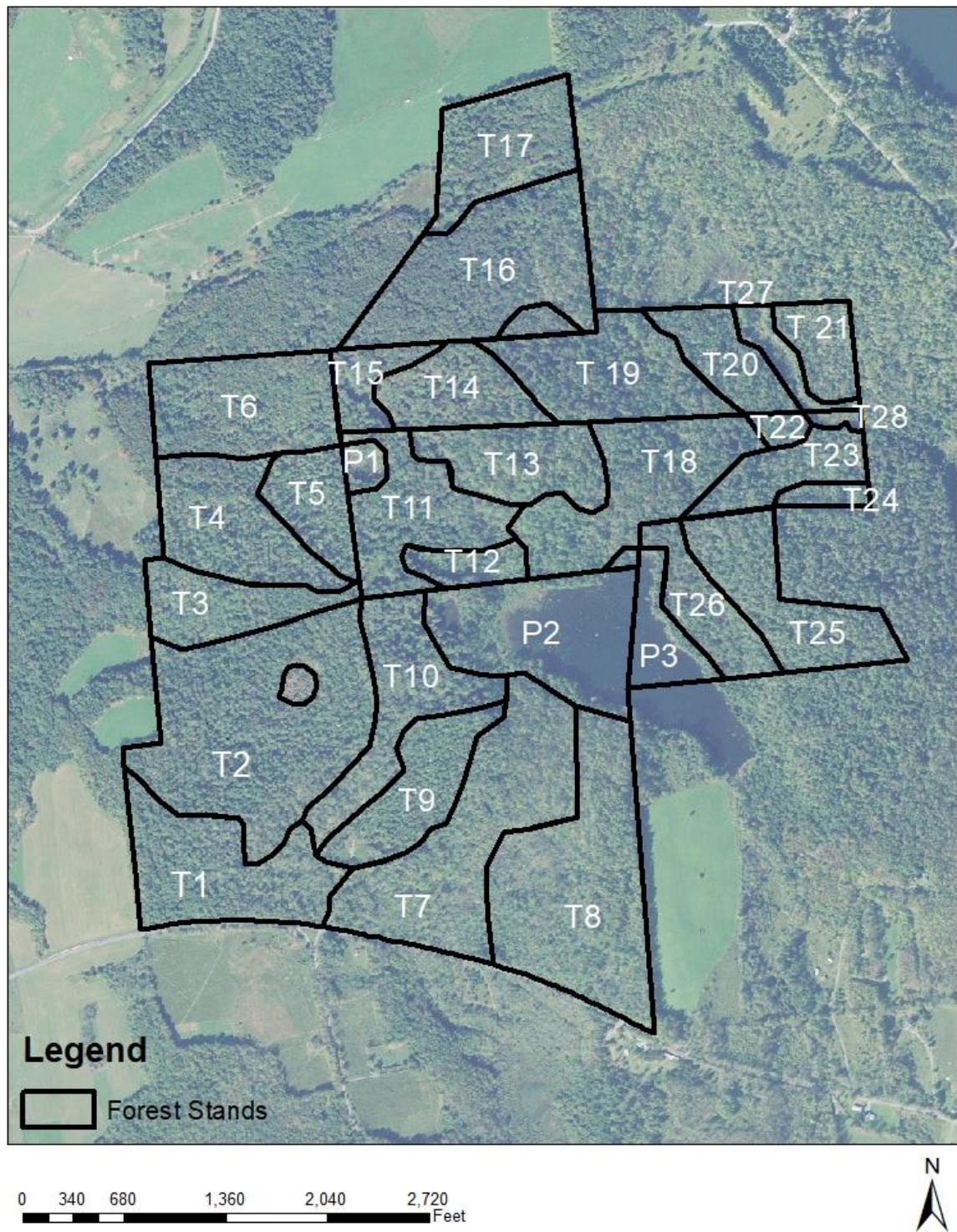
Due to the basal area and trees per acre it is recommended that work if any be limited to beech removal and beech seeding control through herbicidal applications.

## Stand Data

| Species         | TPA   | Basal Area/acre<br>(sq.Ft.) | Volume Int. !/4<br>F.C. 78 Bd Ft./acre |
|-----------------|-------|-----------------------------|--|
| Sugar Maple     | 32.69 | 19.16                       | 3640                                   |
| Eastern Hemlock | 5.62  | 11.39                       | 1553                                   |
| White Ash       | 4.95  | 4.13                        | 668                                    |
| American Beech  | 4.30  | 6.94                        | 575                                    |
| Red Maple       | 4.37  | 3.44                        | 411                                    |
| Total           | 51.93 | 45.06                       | 6847                                   |

|               |       |       |            |
|---------------|-------|-------|------------|
| Hardwood Pulp | 69.93 | 10.97 | 4.08 cords |
|---------------|-------|-------|------------|

#8



## USDA Web Soil Unit Legend

| <b>Map unit symbol</b> | <b>Map unit name</b>                     | <b>Drainage</b> |
|------------------------|--|-----------------|
| BfC                    | Bath channery silt loam 8 to 15% slopes  | Well drained    |
| BfD                    | Bath channery silt loam 15 to 25% slopes | Well drained    |
| Cp                     | Chippewa and Norwich soils               | Poorly Drained  |
| LoB                    | Lordstown-Arnot complex                  | Well Drained    |
| LpC                    | Lordstown-Chadakoin complex              | Well Drained    |
| LpD                    | Lordstown-Chadakoin complex              | Well Drained    |
| LrE                    | Lordstown, Chadakoin, and Manlius soils  | Well Drained    |

|     |                                  |                         |
|-----|----------------------------------|-------------------------|
| MeB | Mardin channery silt loam        | Moderately Well Drained |
| MeC | Mardin channery silt loam        | Moderately Well Drained |
| Sa  | Sapristis and Aquents, inundated | Very Poorly Drained     |
| VoB | Volusia silt loam                | Somewhat Poorly Drained |
| VoC | Volusia silt loam                | Somewhat Poorly Drained |



## USDA Soils Map

