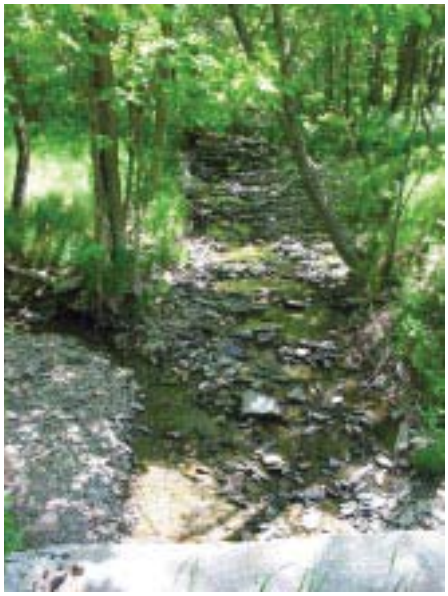
Tompkins County Forest Management Plan



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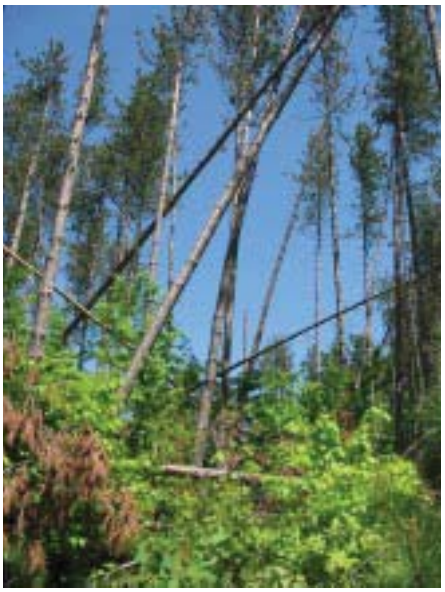

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Forest Management
FCS Certification
GIS and GPS Mapping for Forestry

Table Contents

Introduction 1
Forest Stewardship Council 1
Management Plan Layout and Description 1
County Forest Management Plan Summary Information 2
Landowner Information 2
Property Location Information 3
General Property Information 3
History of Ownership 3
Restrictions on Ownership 4
Landowner Goals 4
Forest Inventory Timing and Method 5
Map of Newfield Forest Stands 6
Map of Caroline Forest Stands 7
Management Considerations 8
Best Management Practices 8
Forest Structure and Old-growth Stands 8
Water Quality Protection 9
Steep Slopes 10
Access Constraints 11
Cultural Resource Areas 11
Recreation and Liability Issues 12
Deer Population 12
Monitoring and Control of Invasive Plants 13
Monitoring and Control of Pests 14
Non-Timber Forest Products 14
Special Habitat Considerations 15
Guide to Forest Stand Data 15
Invasive Plants of Tompkins County, New York 18
Town of Newfield Forest Stands (Stands 1 – 29) 19
Summary of Management Recommendations 20
Stand Data Sheets 26
Soil Conditions 64
Map N1: Newfield Riparian and Steep Areas 65
Map N2: Newfield Cultural Resource Areas 66
Map N3: Newfield Forest Stands 67
Map N4: Newfield Aerial Photograph 68
Map N5: Newfield Soils 69
Map N6: Newfield Topography 70
Town of Caroline Forest Stands (Stands 30 – 34) 71
Summary of Management Recommendations 72
Stand Data Sheets 73
Soil Conditions 80
Map C1: Caroline Riparian and Steep Slope Areas 81
Map C2: Caroline Forest Stands 82
Map C3: Caroline Aerial Photograph 83
Map C4: Caroline Soils 84
Map C5: Caroline Topography 85
Work Schedule 86

Appendices: Tompkins County Forest Management Plan (Separate Document)
Appendix 1: Planning Worksheets
Appendix 2: Soils Data
Appendix 3: Forest Pests and Diseases
Appendix 4: FSC Principles
Appendix 5: Glossary

Introduction

In 2004, the Tompkins County Comprehensive Plan identified a need to sustainably manage forest lands owned by Tompkins County. It was also thought that a high-quality sustainable forest management plan could serve as a model for other forest owners in Tompkins County looking to obtain income generation over the long-term through sustainable harvesting practices. Tompkins County intends to make this management plan available for public review, track the economics of the plan over time, and conduct periodic outreach to forest owners about the plan's performance and content. The overarching purpose of this plan is to provide for the sustainable management of Tompkins County's forest lands. A secondary purpose is to use the plan to achieve Forest Certification through the Forest Stewardship Council.

Forest Stewardship Council

The Forest Stewardship Council (FSC) is an international, not-for-profit, membership-based organization that brings people together to find solutions which promote stewardship of the world's forests. The organization has created a respected system that develops internationally recognized standards for responsible forest management and an international accreditation program for independent third party Certification Bodies which certify forest managers and forest product producers to FSC standards. To close the responsible circle of production, FSC has a logo and product label that helps consumers worldwide recognize organizations and products that support responsible forest management.[1]

Following FSC guidelines helps ensure that all aspects of sustainability and long-term income generation for the forests will be achieved. The FSC program reviews local, regional, state, national and international concerns and interests of forestry and forest management, which helps to insure that plans developed to meet FSC standards actually contribute to a bigger picture of forest conservation worldwide. FSC has a set list of principles and criteria for forest management. Those include:

- Harvesting trees only at a rate that can be sustained indefinitely, with growth of new trees adequate to replace felled trees;
- Sparing of forests of special conservation value, such as old-growth forests and unique ecosystems;
- Long-term preservation of biodiversity, nutrient recycling, soil integrity, and other forest ecosystem functions;
- Protection of watersheds, and maintenance of adequately wide riparian zones along streams;
- A long-term management plan;
- Compliance with prevailing laws;
- Acknowledgement of the rights of local communities and forest workers.[2]

More detailed information on the FSC Certification program may be found in Appendix 4: FSC Principles.

Management Plan Layout and Description

This plan is laid out in five major sections: 1) Management Considerations; 2) Guide to Forest Data Sheets; 3) Newfield Forest Stands; 4) Caroline Forest Stands; and 4) Work Schedule.

The Management Considerations are various constraints or concerns that were noted at the time of the forest survey. They range from the presence of historic items (grave yards, old foundations) to site-specific concerns such as soil conditions. These factors were incorporated in the recommended management prescriptions for each forest stand. The Guide to Forest Data Sheets is a short description of how to read the stand level data and what each section means. These data are very specific to the science of forestry, and, although efforts have been made to write for the layperson, some sections may be difficult for non-foresters to understand.

[1] FSC's General Web Publications www.fsc.org

[2] Jared Diamond, Collapse: How Societies Choose to Fail or Succeed (Viking Books, 2005), 474.

The sections on Newfield Forest Stands and Caroline Forest Stands consist of a summary of proposed management for each area and a detailed Stand Data Sheets for each stand that make up the area. The Stand Data Sheets are comprised of technical and non-technical descriptions of each forest stand. Within each Stand Data Sheet, the composition of the stand is described, as well as any riparian areas within the stand. Also, any known or assumed stand history, any observed health issues, site quality (indexed from 1 to 3, 1 being the best and three being the worst quality sites), timber quality (indexed from 1 to 3, 1 being the best quality and 3 being the poorest quality timber), estimated growth rate as a percentage, disturbance regime (nature, man, etc), operability (restricted or unrestricted), general stocking data, notes on wildlife habitat, known occurrences of threatened, endangered and rare species (provided by NYS DEC), items of cultural importance (foundations, wells, graves, etc.), potential uses for the stand, potential or current recreational uses, noted water quality issues, and finally the prescription for timber management of the stand.

The Stand Data Sheets contain detailed information needed by the forest manager. Each stand is located on a forest stand map and can be referenced by the stand number. In this case, all stands in both Caroline and Newfield have unique stand numbers. Each forest block is grouped by township, so Caroline is on one set of maps and Newfield is on another set of maps. A forest stand is considered to be an area unique in the forest from other areas in that forest. In defining one forest stand from another, all of the following may be used: species composition, age, density of trees, topography and management considerations. In some instances, special considerations were used to define some stands apart from other stands (wet soils, limited access issues, etc). In most cases, a stand is unique enough that the general feel of the forest will change when you walk from one stand to another, but will depend upon the observer's ability to notice change in the forest. In many cases, each stand has slightly varying management objectives. These objects might relate to the tree species found within the stand, a special or unique condition found in the stand or a goal that has been expressed by the landowner for that individual stand.

The Work Schedule is the timeline by year for the completion of the various prescriptions for each stand. In compiling the work schedule, the forester reviewed each prescription, stocking data, inventory data and projected growth or stocking levels, and developed a schedule to thin the stands to maintain stand health, growth, sustainability and stand goals. In making the decisions of timing for the thinning of the various stands within each forest, some overstocked stands many not receive treatment as soon as others; this is normal, and is based on the quality of the stocking found in the stand or the distribution of the stocking relative to the merchantable diameter of the stand.

The appendices of the report contain useful data on stand inventory, soils, forest pests and disease and FSC Principals.

County Forest Management Plan Summary Information

Landowner Information

Name:	County of Tompkins
Address of Residence:	125 East Court Street
City of Residence:	Ithaca
State of Residence:	New York
County of Residence:	Tompkins
Zip of Residence:	14850-0000
Phone at Residence:	(607)274-5560
Email:	planning@tompkins-co.org
Landowner Info:	The landowner is a county government with high interests in sustainable management, moderate ability to invest in forests management and limited to moderate energy to invest in management activities.

Property Location Information

Address of Property:	Van Kirk & Chaffee Creek Rds, Newfield; Level Green Rd, Caroline
City of Property:	Town of New Field and Town of Caroline
State of Property:	New York
County of Property:	Tompkins
Directions to Property:	This ownership is composed of two grouping of properties; one in the Town of Newfield and one in the Town of Caroline. The Newfield properties located just off of NYS Route 13; from NYS Rte 13 follow Bull Hill east to Chaffee Creek Road. The properties are about 1 mile from the intersection of Bull Hill and Chaffee Creek. The properties in the Town of Caroline located off of NYS Route 79. From NYS route 79 follow Level Green Road for 5 miles. The property will be on the west side of the road and 1/10 of a mile further down road the property is on both sides of the road.

General Property Information:

Tax Map ID:	Newfield; 24-1-15, 25-1-14, 28-1-1, 28-1-10, 29-1-9. Caroline 36-1-9
Total Acreage:	556.5
Managed Acreage:	549.0
Access to forest area:	All access to forests are made from town roads. All of the landings identified to date are directly along township roads. No buffers have been used to date for these landings.
General Description:	This property is generally composed of northern hardwoods and pine plantations. This area is a portion of the Central Allegheny Plateau, Northern Glaciated Allegheny Plateau. In general the land is open high hills, ground moraine-valley fill
Ecoregion:	334

Interaction with Surrounding Properties:
Neighboring properties use portions of the forest for ATV riding, hunting and camping. The neighboring properties are of similar type and use and blend to compose a large forested or mixed open land- forest landscape.

General Condition of Bounds:
The bounds of the various forest blocks range from well marked to poorly marked, requiring marking. There are a few portions of boundary line that have been moved or are incorrect on existing maps. See boundary line map.

Description of Roads: Where there are roads or trails they are in poor to good shape. The poorer trails are generally due to blow down making them impassable. The trails that are in good shape are good because neighboring properties have been managing them. In general, a good trail system is lacking on most of the properties. The old skid trails can still be found, but have not been maintained, so they are not accessible to the general public for use and have blended into the forest landscape.

History of Ownership:

All of the parcels that make up the County forest lands were acquired between 1930 – 1937, with the exception of tax parcel no. 28-1-1 in the Town of Newfield, which was acquired in 1976. These depression-era acquisitions are directly tied to reforestation efforts in New York State during that time period. As the railroad and canal systems developed, farmers were offered easier ways to travel from the

hilltop farms of central New York to the vast prairie lands in the Midwest. As the word of the opportunity spread, a mass exodus began from the worn out, hardscrabble farms that could barely produce a living. As tenants left, they usually cleared all the removable forest products before leaving. The Great Depression forced the rest of these farmers off their land, and in search of some way to survive.

As more and more farms were abandoned, it was obvious that there was a serious deforestation problem in New York. Starting in the late-1920's, laws were passed to retire farmland from agricultural use permanently, and reforest these lands. The State Reforestation Law of 1929 and the Hewitt Amendment of 1931 set forth the legislation which authorized the Conservation Department to acquire land by gift or purchase for reforestation areas. These Reforestation areas were to be forever devoted to "reforestation and the establishment and maintenance thereon of forests for watershed protection, the production of timber, and for recreation and kindred purposes". These Reforestation areas became the nucleus of the present day State Forest systems. Presently, this broad program is authorized under Article 9, Title 5 of the Environmental Conservation Law.

In 1933, the Civilian Conservation Corps (CCC) was begun in response to the economic distress of the Great Depression. Thousands of young men were assigned to plant millions of trees on the newly acquired State Forests. In addition to tree planting, these men were engaged in road and trail building, campground and park construction, erosion control, watershed restoration, forest protection and other projects.[3]

Restrictions on Ownership:

County Law, Article 5, Section 219, entitled "Reforested Lands", states that lands acquired for purposes of reforestation shall be forever devoted to the purposes of watershed protection, development of oil and gas retrieval, the production of timber and forest products, and recreation and kindred purposes. However, if it wishes, the County may convey the land to the State of New York without charge.

Landowner Goals:

1. Obtain FSC Certification of County-owned forest land in the Towns of Newfield and Caroline
2. Maintain large forested riparian corridors (>330 feet buffer on either side of stream), that effectively protects the water quality of nearby creeks, provides important habitat and a connecting link between forested areas.
3. Promote the regeneration, success and growth of native, northern hardwoods
4. Maintain large forested riparian corridors that effectively protect the water.
5. Conserve and enhance viable habitat and populations of native plant and animal species, especially those of greatest conservation need, in the area.
6. Maintain or enhance the overall quality of the timber resources.
7. Maintain large forested riparian corridors that effectively protect the water.
8. Manage for the production of high-quality forest products.
9. Control the spread and regeneration of invasive species.
10. Control deer pressure.
11. Provide passive recreational opportunities such as bird watching and hiking
12. Protect and maintain soil quality and productivity.
13. Conserve or enhance the water quality of other water bodies, wetlands and riparian zones.
14. Aide in producing a large, green swath of forest land in the County and beyond

[3] History of State Forest Program, NYS Dept. of Environmental Conservation, http://www.dec.ny.gov/lands/4982.html

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Date Plan Was Prepared: October 10, 2007

Forest Inventory Timing and Method

The forest inventory was conducted during the time period of April through June of 2006. A total of 198 sample points were recorded for the entire sample on all forest blocks. The Bitterlich Method (variable-plot sampling) of sampling was used for the inventory process, employing a 20 factor prism. Data were collected on trees of 2 inches at DBH and larger.

Point location was done on a grid of approximately 120 meters. Grids were generated in Solofield on a stand by stand basis. Location of point centers was done in combination with the use of Solofield and a Garmin 16 GPS receiver or a Trimble Explorer 3C.

Point level data were collected either in PocketDog field inventory software or on paper. All inventory data were then uploaded to TwoDogs inventory software or manually entered in TwoDogs.

All calculations, including relative density, were conducted in TwoDogs and either printed out for review or exported to Microsoft Access for further management plan development.

Forest and resource mapping was done in ESRI's ArcMap software. Initial paper maps were scanned for use and placement over current photos. Corrections were made to the initial maps (corrections due to better photos, not poor mapping). Data collected for use on the maps were located with professional quality GPS units (1 to 3 meter units) and exported to shape files for use in ArcMap. All final map products have been produced for use in Adobe.

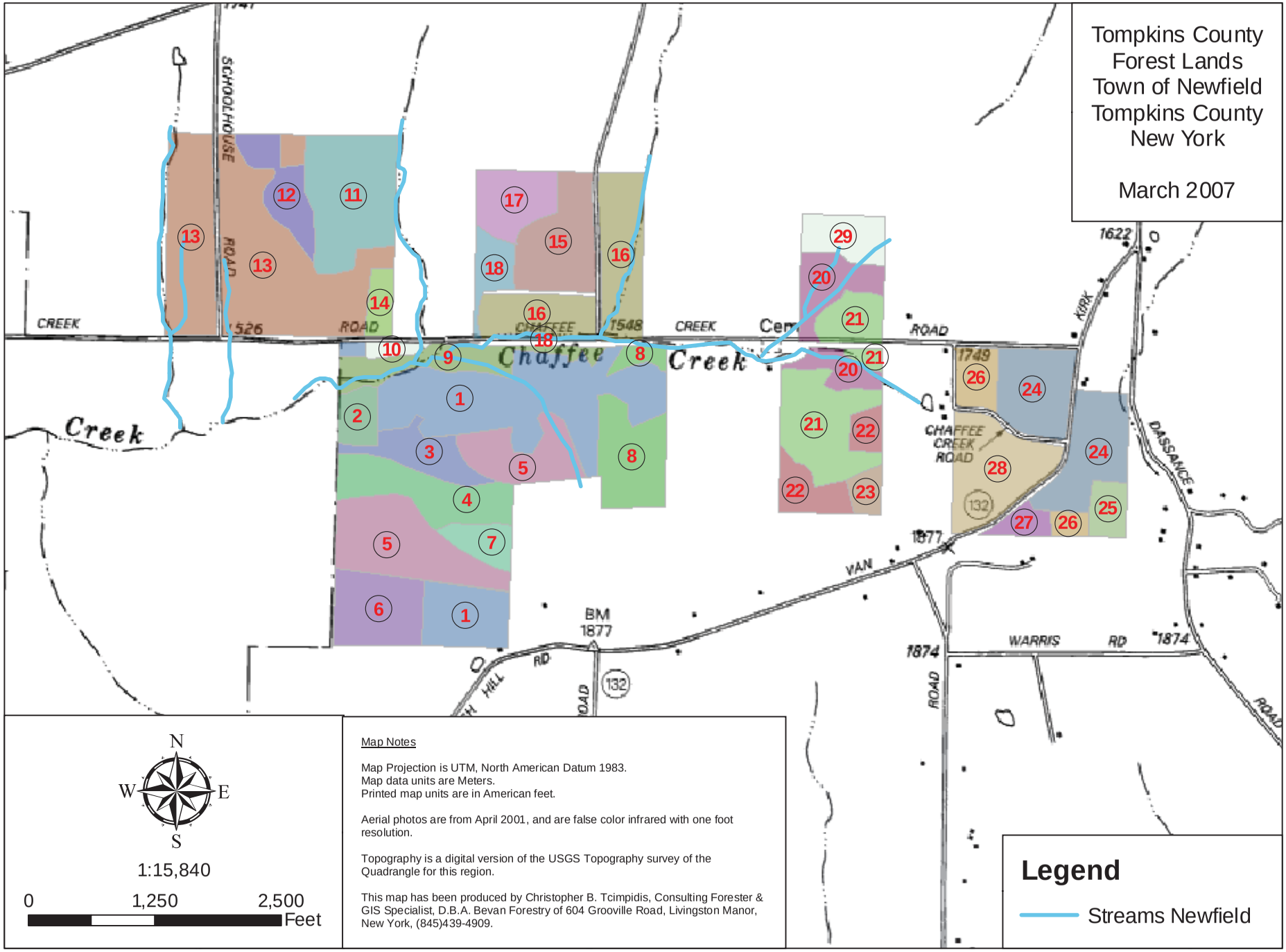
Signature Clause:

As the owners, we have reviewed this management plan with our forester and we understand the contents and agree that it reflects our goals and intentions for the management of this property.

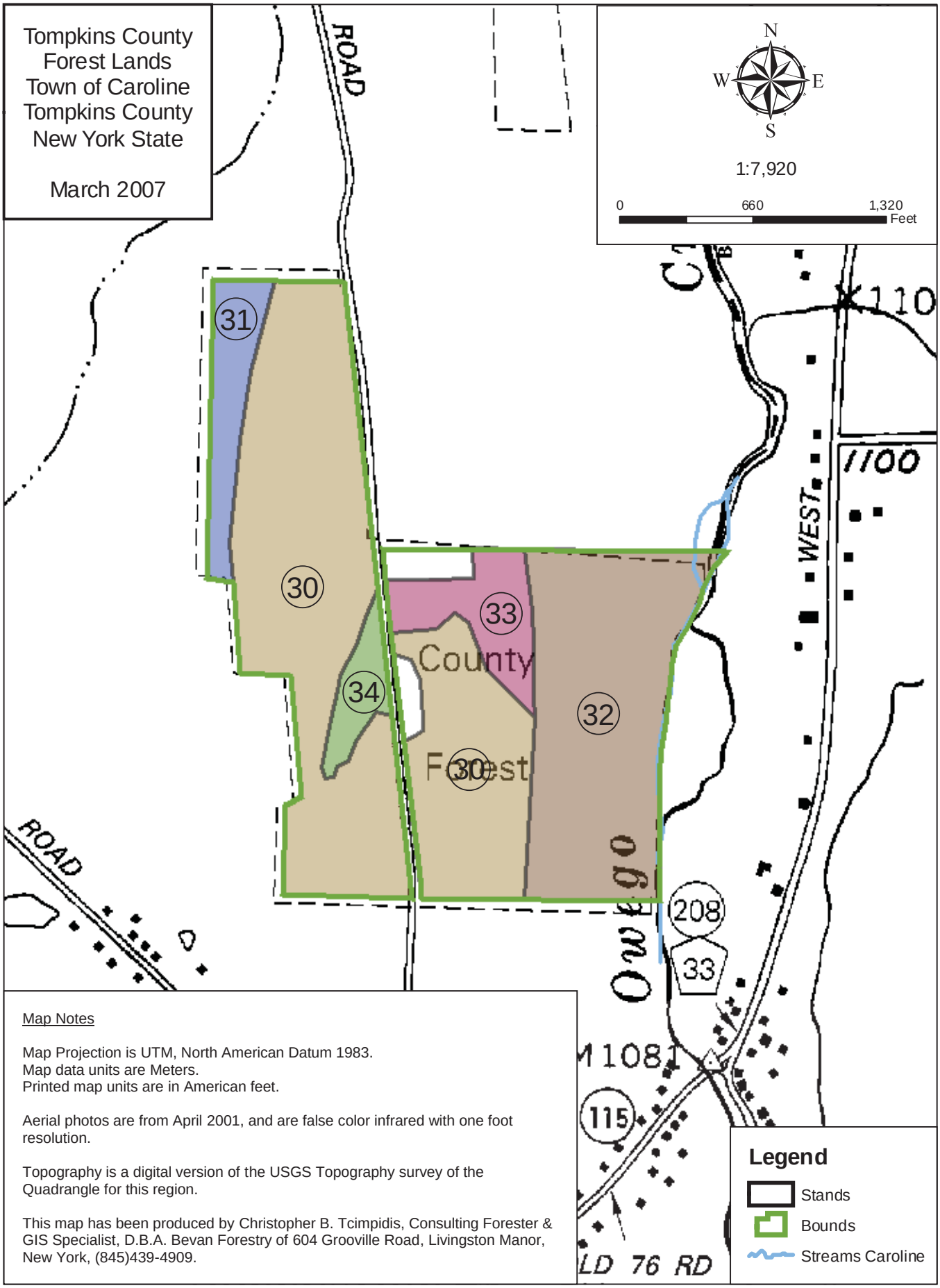
Signature of Landowner:_____Date:_____

Stephen Whicher, Tompkins County Administrator

Map of Newfield Forest Stands



Map of Caroline Forest Stands



Map Notes

Map Projection is UTM, North American Datum 1983.
Map data units are Meters.
Printed map units are in American feet.

Aerial photos are from April 2001, and are false color infrared with one foot resolution.

Topography is a digital version of the USGS Topography survey of the Quadrangle for this region.

This map has been produced by Christopher B. Tcimpidis, Consulting Forester & GIS Specialist, D.B.A. Bevan Forestry of 604 Grooville Road, Livingston Manor, New York, (845)439-4909.

Management Considerations

Best Management Practices

Best Management Practices (BMP's) are practices that are recognized and accepted that limit exposure to risk(s), while favoring improving conditions or maintaining present conditions. Today most of the BMP's that are promoted relate to soil and water quality. These BMP's for soil and water are "often low-cost practices and techniques you can incorporate in timber harvests." Good examples of these are proper planning; laying out of forest trails and roads before construction; proper drainage of roads, trails and landings; use of portable skidder bridges and truck bridges; seeding of landings after use; and use of water bars and broad-based dips on roads.

Most of the BMP's that will be applied throughout the forest will be used on skid trails and roads. Skid trails, roads and landings have the highest potential to be sources of pollution to stream and other water bodies. This pollution is often in the form of fine soil particles that have eroded from the surface (tread) of the trail or road. Once these soil particles become water bound they can travel long distances, destroy fish habitat and make water unsuitable for use down stream. Another management practice that will be employed throughout the forest is to maintain and protect superior individual trees for high-quality seed production for future forest regeneration.

The best way to think of BMP's is preventive maintenance. The cost of preventing soil and water issues is much less than the cost and attempts to fix a soil and water issue after it occurs. In addition, many times poorly managed soil and water resources can result in violations of the New York State Environmental Conservation Law (ECL). The cost of a few BMP's tends to be less than the cost of fines and repairs for inadequately planned timer harvesting or road construction.

Forest Structure and Old-growth Stands

The structure of a forest can be described as being even-aged, uneven-aged or all-aged. The decision to embrace even-aged or uneven-aged forest management is a complex one. The two systems create different types of light environments in the forest, and are essentially a continuum of the amount of forest canopy opened over the course of the forest's management. Many factors are considered when determining which management philosophy to employ, including existing tree species, desired tree species, soils, slopes, impact of deer browse, water quality and quantity, susceptibility to insect and pest invasion, desired wildlife habitat, importance of income from saw timber harvests, and aesthetic considerations.

The Tompkins County Forest Management Plan is based on an even-aged approach to forest management. Given the flora and fauna found in the northeastern United States, even-aged management creates opportunities for a greater diversity of species. Because the extent of the openings is greater in the even-aged management approach, there is a better chance that a variety of species will regenerate, given the deer pressures present in the region and the number of slower growing, shade intolerant tree and shrub species found in these forests. Even-aged management typically gives slower growing, shade intolerant species a chance to grow without being out-competed by fast growing, shade tolerant species. Uneven-aged systems create smaller canopy disturbances and select for a limited number of species that can survive in the shade, which results in fewer species represented overall in the forest.

While well designed forest harvesting provides a variety of ecosystem and social benefits, such as early successional habitat, carbon sequestration, recreational access, and forest products, some forest stands lend themselves to the more limited management to allow the development of old-growth characteristics . Forests with old-growth characteristics can be ecologically significant, in that they may become home to rare species which are dependent on this now rare old-growth type of habitat. Analysis of the 34 forest stands identified in the plan (looking at tree species composition, degree of shade tolerance, percent slopes, and acreage) resulted in the identification of five stands, totaling 75 acres, that have potential to become healthy forest stands that exhibit old-growth characteristics.

In an attempt to create a broader range of habitat and diversity, and to develop and maintain an example of native forests with old-growth characteristics of this region, the County has decided to manage stands

11, 17, 27, 29 and 32 to allow for the development of old-growth characteristics. Unless specific treatments are necessary to develop old-growth characteristics, these stands will receive no silvicultural treatments for timber production, wildlife management or investment forestry. Therefore, timber harvesting for commercial timber, non-commercial thinnings and most normal forestry activities will most likely not be allowed on these stands. In the event that natural causes result in wide-spread mortality or windthrow, or such natural agents cause a threat to nearby stands or neighboring property, these stands may be commercially salvaged or thinned to reduce such threats. Furthermore, while no active management is currently being planned within these stands, invasive species should be monitored periodically within these stands. Failure to control certain invasive species may alter these stands and prevent them from developing into the desired forest stands with old-growth characteristics. In addition, control of invasive species within these stands may be necessary to maintain forestry options on neighboring forest stands.

Water Quality Protection

The riparian areas in the County Forests have unique ecosystem functions and need special consideration when planning forest thinning or cultural activities. These areas reflect a three dimensional interaction between the terrestrial and aquatic ecosystems that extends down into the groundwater and up above the tree crowns, or forest canopy. It also extends outward across the floodplain and up the slopes that drain to the water as well as laterally into the terrestrial ecosystem along the watercourse.

The riparian areas contribute to the overall environmental health of both the forest and stream ecosystems in several important ways. These areas:

- Contribute organic energy to aquatic insects, fish, and the entire aquatic ecosystem in the form of organic carbon in leaf litter and dissolved organic carbon in runoff water from the forested uplands.
- Provide shade and changes the wavelength of light reaching the water, thus minimizing increases in water temperature and the production of undesirable filamentous algae. Temperature has a major effect on the amount of dissolved oxygen within water - the higher the temperature the less likely the body of water will support the native fish populations in this region. To maintain a positive living environment for the macroinvertebrates and fish populations within streams, it is best to maintain a lower water temperature by limiting the amount of timber harvested.
- Contributes large woody debris, creating deep pools that protect fish from predators and providing a substrate on which fish and beneficial, single celled algae can grow.
- Enhance bank stability and trap sediment. They also take up excess nutrients such as nitrogen and phosphorus preventing excess algal growth.
- Sustain hydrologic integrity by absorbing precipitation, replenishing groundwater and releasing it over time thus maintaining flow and preventing flooding.
- Provide a moderately cool moist corridor meeting one or more of the habitat needs for the majority of wildlife species.

Areas that provide important water quality benefits were identified and mapped to ensure the protection of these resources (see maps C1 and N1). Many of the stands in the County Forests have streams running through them along with wetlands and seepages. Chaffee Creek (Class C – not protected) and its tributaries, the West Branch of the Owego Creek (Class C(t) - protected), and a United States Fish and Wildlife Service classified wetland are all associated with these forest stands.

The riparian areas in the County Forests are divided into two zones with different management approaches as outline below. These zones should be delineated and marked in the field prior to initiating commercial logging operations.

<u>Buffer Zone 1</u>

The first riparian zone includes:

- Wetlands and land within 100 feet of a wetland;
- 100-foot stream buffers measured from high water mark of a perennial or intermittent streams;
- Hydrologically Sensitive Areas.

Research shows that 100 feet is the minimum forested buffer needed to adequately protect water quality. Harvesting restrictions will apply to protect water quality and habitat as follows:

- Within this buffer zone the quality of the forest will be enhanced and/or maintained through periodic management activities, which may include limited commercial harvesting. The express purpose of these maintenance activities will be to preserve or enhance water quality and habitat conditions. Any timber harvested as part of these periodic management activities will be removed using tow lines or skids lines– no equipment will be permitted in this zone except when necessary for access to other stands.
- All operations, including access through this zone, will be restricted to when the ground is completely frozen.
- Roads or permanent skid trails are prohibited.
- Construction of appropriate stream crossings structures will be mandatory and proper permits will be obtained when needed (stream crossing locations have been identified on the maps located in the appendix 4). The stream crossing structures will be inspected to ensure appropriate placement, proper use, and adequate maintenance.

Buffer Zone 2

The second riparian zone extends out to 330' feet from the high water mark of perennial streams, excluding the Buffer Zone 1 discussed above. Research shows that a 330-foot riparian buffer provides habitat for a wide variety of species, helps stabilize stream banks, and reduces erosion. This area is designated as a working forest and will be managed for commercial timber harvesting and silviculture; however, harvesting restrictions will apply to protect water quality and habitat as follows:

- Best management practices will be used to sustain the water quality.
- The amount of timber harvested will be limited to ensure adequate shading for habitat.
- Roads or permanent skid trails are prohibited.
- Harvesting is permitted only when the ground is completely frozen.
- The use of low-impact equipment is required to reduce soil disturbance, pressure on the ground, and associated rutting. Examples of low impact equipment recommended for these areas are tracked equipment, equipment with wide tire spacing, and horses or mules.

Steep Slopes

In addition to Riparian areas, areas with slopes of 30% or greater will be considered non-commercial forest land. These areas will be restricted from regular commercial harvesting operations, but may be thinned or subject to other forestry activities such as invasive species control, monitoring for forest pests or non-commercial forestry activities.

Areas with slopes of 30% or greater are at increased risk for soil erosion or loss of soil stability from commercial harvesting equipment, tree removal or a loss of root mass. Restricting these areas from commercial tree harvesting reduces the risk of soil problems. However, there is still a need to traverse through some of these areas to access other stands that do not have such restrictions. The creation and maintenance of skid roads or truck roads will be allowed, as long as 10% slopes (15% maximum slopes for short distances, if necessary) are used during the design, layout and construction of new roads or trails. Proper BMP placement is necessary to insure the stability of the soils along the road surface. In addition; annual monitoring of these roads or trails is necessary to insure that all BMP's are properly working.

The following is a list of steep slops by stand.

Stand	Township	Block	Stand Acres	Steep Slope Acres	Percent Steep
1	Newfield	D	11.8	1.1	10%
1	Newfield	D	43.0	2.9	7%
2	Newfield	D	5.0	0.5	10%
3	Newfield	D	9.3	1.0	11%
4	Newfield	D	16.1	2.7	17%
5	Newfield	D	34.3	8.5	25%

Continued Stand	Township	Block	Stand Acres	Steep Acres	Slope	Percent Steep
6	Newfield	D	14.3	0.3		2%
8	Newfield	D	17.3	1.1		7%
9	Newfield	D	12.0	0.2		2%
11	Newfield	A	24.3	1.9		8%
13	Newfield	A	63.4	0.4		1%
16	Newfield	B	27.0	0.2		1%
18	Newfield	B	6.8	0.1		1%
20	Newfield	C	13.3	1.7		12%
21	Newfield	C	26.4	3.1		12%
22	Newfield	C	9.6	0.4		4%
24	Newfield	E	29.5	0.6		2%
25	Newfield	E	4.6	0.2		5%
26	Newfield	E	7.9	0.5		7%
27	Newfield	E	3.2	1.7		53%
30	Caroline	A	53.6	0.6		1%
31	Caroline	A	5.9	0.0		1%
32	Caroline	A	28.2	16.2		57%
33	Caroline	A	6.7	2.1		32%
Totals			473.6	48.3		10%

Access Constraints

There are a significant number of county and town roads that provide access to and throughout the Newfield and Caroline properties; however access constraint problems occur in the accessibility to the individual stands during harvesting operations.

These access constraints are due to the high moisture content associated with the soils and low strength of the soils found throughout a majority of the stands. The high moisture content within the soils of these stands creates a problem when determining a proper harvesting schedule for these stands. (Some of the stands have moderate moisture contents; however to access these stands the harvester would need to travel through the high moisture content stands.)

Along with the high moisture content, the soils of this property are weak. The weakness of the soils increases the ability of the soil to rut and erode. A majority of the stands have poor soil strength and those with better quality soil strength can only be accessed by moving through the stands with lesser soil quality. The location of the stands with the soil issues were mapped and located in the appendices of this management plan.

To reduce and/or prevent rutting and erosion within these stands of lesser soil strength and high moisture content, it is recommended that the stands be harvested in the winter season. Allowing the harvest to occur only in the winter season means that the ground should be completely frozen; frozen ground will reduce and/or eliminate soil damage such as rutting and erosion.

Another preventative recommendation for reducing the impact of harvesting on the soils within the stands on the Tompkins County property is to use low impact equipment. Examples of equipment that provides low ground pressure are tracked equipment, equipment with wide tire spacing, and horses or mules, if and when they are available.

Cultural Resource Areas

There are only a few areas with cultural resources on the Tompkins County property; however they are still significant and should be taken into consideration when harvesting occurs.

- The foundation is located in stand 9 next to an old log landing; the use of this landing is to be discontinued to reduce the chances of any further damage to the foundation. The utmost care

should be taken when harvesting timber in the stand to ensure the protection of this sensitive area from any further destruction.

- The cemetery near stand 20 is a sensitive site. No harvesting is planned next to this site. The portion of forest land located adjacent to the cemetery is small and does not need to be managed for forestry. However, it may be necessary at some time to remove trees from this area to help preserve the cemetery.
- There are stonewalls located on this property that indicate agricultural history in the area. Most of the stonewalls are closely associated with boundary lines, but they are not limited to boundary lines. These sites should be protected from damage that could occur during harvesting by requiring trees to be felled away from the stone wall and only allowing the crossing of stone walls as agreed to and laid out in the field by the forestry staff. Inspection of stonewalls during the harvesting process will be required.

Recreation and Liability Issues

One of the management goals of this plan is to "provide passive recreational opportunities such as bird watching and hiking." Opportunities to create or enhance those passive recreation experiences are identified in the stand descriptions and management sections. During the course of developing this plan, however, several unauthorized active recreation uses of the land were noted. These include: 4-wheelers using and maintaining trail network on county land in Newfield; a driveway serving the new horse farm on Chaffee Creek Road in Newfield that crosses county land; and a fire pit and party spot on county land along Chaffee Creek Road. It is recommended that the County Attorney be consulted regarding best handling of these unauthorized uses and the liability issues they create.

It will also be important to ensure that logging roads are made inaccessible to motorized vehicles after harvesting activities occur, perhaps requiring logging companies to block the logging road entrances near public roads as a part of their contractual obligations. Use of existing logging roads by motorized vehicles should also be monitored over time to determine if the roads are being heavily used by motorized vehicles. As the roads are improved with proper management to improve existing rutting problems, they may become more attractive to motorized vehicle use. If logging roads and trails are heavily used, they may create liability issues for the County, as well as create a variety of environmental problems such as compacting soil along the trails and opening up sensitive portions of the forest lands to inappropriate uses.

Deer Population

The current deer population is not at the high level that might be expected. The population has been declining for several years, due to harder winters. However, with the winter of 2005 into 2006 and 2006 into 2007 the population could rebound and become a problem again. There is successful regeneration of native hardwood species in many areas of these forests. Any areas with large openings in the canopy tend to have native hardwood species present. The presence of sugar maple regeneration and black cherry regeneration is a great sign that the population of deer may have hit a sustainable level.

If the deer population rebounds to the former levels that were known through the 1990's and into the first few years of the twenty-first century, we will need to evaluate and use a deer management (hunting) program to maintain the deer population at sustainable levels. Such a program will require the harvesting of doe before the harvesting of bucks. By harvesting does, the population is more effectively controlled. At this time, such a program is not warranted, however deer populations should be evaluated whenever harvests are conducted, to determine whether such a program is needed in the future. However, encouraging the use of the County's forest land for hunting would be an acceptable practice to help maintain the present deer population.

The County may even consider adopting a Quality Deer Management Program (QDM) for these forested tracts. This would help to ensure a better deer herd and maintain a better ratio of doe to buck deer. Many QDM programs also evaluate food source and look to improve food quality, however this is not necessarily the main component of QDM. QDM often looks to balance the ratio of bucks to does and limit the take of smaller buck. By conducting a QDM program on the County's forest lands the deer population could be controlled, the herd would benefit from proper thinning and the County might be able to develop

a program that would have a market value. This concept of QDM may not work if neighboring properties practice hunting techniques that are in direct conflict to a QDM program.

Monitoring and Control of Invasive Plants

The issue of invasive species has become of high concern in and around Tompkins County. Due to increased levels of cultural activity (construction, landscaping, transportation, timber harvesting, etc.) the spread of invasive species has become a problem in and around our native forest lands. In many cases invasive species can reduce or limit the ability of native species to regenerate or perpetuate their own species. Most often these invasive species out-compete native, non-invasive species for sunlight. The shading of forest tree species that are shade intolerant can effectively remove them from the forest composition. Unfortunately, many of these shade intolerant tree species are of high commercial value and are very important to the success of the forest industry in New York State.

Control of Invasive Plants in the Forest

Once a species is well established, controlling it is not always easy. However, many invasive plant species can be partially or wholly controlled with herbicides. The use of a non-selective herbicide such as glyphosate applied during the active growing season or when the plant is not dormant can control most of the listed invasive plants. Some plants like Japanese knotweed and multiflora rose may require multiple treatments. The largest problem associated with this approach is the cost. This application of herbicide to individual plants or groups of plants in the forest may be costly. In addition, once treated an area will need to be monitored for success of the treatment and monitored for the regeneration of seeds deposited at the site. A successful treatment for some of these invasive plants might require multiple treatments in one year, followed by treatment of regeneration of the target species the following year(s).

Recommendations for Monitoring and Control

The monitoring and control of these invasive plant species will be conducted as follows: *identification and location* of plant population; *inspection of plant population to determine need or approach to treatment*; *monitoring* of treatment and population; and *re-treatment* if necessary.

Identification, mapping, treatment and monitoring of invasive species will be primarily the responsibility of the forest manager. Reports from any individuals or County employees regarding the presence of an invasive plant species will be collected by the Tompkins County Planning Department and forwarded to the forest manager for the manager's identification, mapping and control. Forest stands will be reviewed for the presence of invasive species by the forest manager prior to each identified stand treatment (found in the Work Schedule) and during the monitoring of stands after treatments have been completed. Additionally, every 5-year update of this Plan will include provisions for the forest manager to search for an identify invasive species in the forest stands. After it has been determined that an invasive plant or population of invasive plants is present, the site will be flagged and located on the County's maps and the forest manager's maps (GIS) for the purpose of inventory and control of the species. The site or plant's location will be identified with the use of a professional quality GPS (preferably a 1 to 3 meter unit, or better).

Inspection of the invasive plant (or population of plants) will be conducted by the forest manager to determine the best method of control. In most cases herbicide control will be required, but timing might vary for different species or site considerations. Other site factors, such as water, wetlands, or neighboring parcels may affect the means of controlling an invasive species.

After treatment of an invasive species, or population of invasive species, a schedule of monitoring the site for control effectiveness will need to be established. The monitoring schedule will consist of short term monitoring (within 1 to 2 months of treatment) and long term monitoring. Short term monitoring will be done to determine effectiveness of the herbicide on plants and should be done during the first few months after treatment, and during the active growing season. Long term monitoring will be done to determine the need for additional treatments, the effectiveness on the population of the target population and to determine the need to treat regeneration of the target population.

Re-treatment will be done if monitoring activities identify a need for further treatment. Re-treatment may be done until full control is achieved on the target population. It is possible, and probable, that monitoring may call for re-treatment, but that re-treatment is not feasible due to the influence of seed or regeneration

sources from outside the bounds of the County-owned property. If this occurs, it is recommended that an agreement is made with such neighboring properties to control any such invasive species.

Monitoring and Control of Pests

The species *Sirex noctilio* is an exotic woodwasp that has recently been detected in New York State. This woodwasp is most often found in 2 or 3 needle pines, but has been found in 5 needle pines. It is currently believed that all Pinus species are susceptible to *Sirex noctilio* and that species of Abies, Picea, Larix and Pseudotsuga act as hosts. Being as much of the county owned forest land is currently covered in red pine (a 2 needle pine) plantation, monitoring for *Sirex noctilio* is important. The introduction of this woodwasp into the forest MAY have large and wide scale impact on the Town of Newfield parcels. However, it is more likely that *Sirex noctilio* will cause a low thinning, resulting in a thinning of suppressed and over topped trees. This type of thinning tends to be good for forest management and should not have a large negative effect on the forest. Monitoring of this species may be helpful, but may not be a necessity. Conducting stand inspections in the spring should be enough to determine if a problem is developing. To date, this species has not been studied well enough to fully understand what effects it has in this region. This recommendation is based on a series of discussions between Bevan Forestry, DEC foresters and Cornell Cooperative Extension Educators.

New York State Department of Agriculture and Markets, Cornell University and Bevan Forestry have worked together to determine that there is not a presence of *Sirex noctilio* on the county's forest lands at this time. NYS Ag and Markets and Cornell University have expressed an interest in aiding in further monitoring for *Sirex noctilio.* If the County wishes to pursue monitoring beyond spring stand inspections, NYS Agriculture and Markets feels that they can supply traps for the monitoring efforts and Cornell University has said that staff will identify insects collected in the traps. The labor of setting the traps, monitoring the traps and collecting the contents of the traps will be responsibility of the county. The process of monitoring for *Sirex noctilio* will need to continue until there is presence of it on-site or until control of *Sirex noctilio* is achieved.

Another potential future concern is infestation by the emerald ash borer. This pest has not yet been found in Tompkins County, but is likely to be found in the future. Analysis of the 34 forest stands under this management plan, showed that of the 21 stands containing white ash, the only stands with saw log volume in white ash will be thinned in the near future, so forest thinning should be ahead of future infestation, though, as described below, this pest will need to be closely monitored and the plan adjusted if the emerald ash borer becomes a problem before the significant white ash is removed from the stands.

This Monitoring and Control of Pests section of the plan is expected to change over time, and be modified to address future pest concerns, both native and exotic. From time to time, this region may be affected by Forest Tent Caterpillar *(malacosoma disstria)*, Eastern Tent Caterpillar *(malacosoma americanum)*, Fall Webworm *(Huphantria cunea)*, Saddle Prominent *(Heterocampa guttivitta)*, Elm Spanworm *(Ennomos subsignarius)* and other forest pests that prove to be nuisances and can negatively impact forest health. When such pests are found in the stands or in the region, it may be necessary to examine the forests' needs and asses if actions are required to control a specific pest to maintain forest health.

Non-Timber Forest Products

Non-timber forest products refer to items other than timber that may be managed for, harvested or extracted from the forest. Such items as American Ginseng (*Panax quinquefolius*), May-apple (*Podophyllum peltatum*), Bloodroot (*Sanguinaria canadensis*), Black Cohosh (*Cimidifuga racemosa*), Blue Cohosh (*Caulophyllum sp*.), False Unicorn Root (*Chamaelirium luteum*) and a variety of mushrooms are examples of non-timber forest products. To date none of these plants have been identified as potential forest crops for the County of Tompkins. Some native plants that have been commonly harvested are also protected and/or the sale of such plants is regulated.

Currently no management strategies have been developed for non-timber forest products. However, restricting the harvesting of any crop, except for mushrooms, by the public on the forest land is recommended. It is best to restrict the harvesting of such resources, if they have not been identified, as this helps to eliminate the over harvesting or extraction of such species from the forest setting. During the 5-year initial implementation period, the forest manager shall explore the possibility of managing for and

developing non-timber forest products such as Ginseng or other plants and report back to the County as to the benefits and costs of such a program, so that it can be considered as part of the 5-year plan update.

Natural gas and oil extraction activities may be appropriate if conducted in an minimally-invasive and minimally-destructive method, however, drilling sites and pipeline corridors that permanently alter the character of the land would not be compatible with the goals outlined in this Plan.

Special Habitat Considerations

Two unique habitats of interest have been identified on the county's forest land: the presence of Jefferson salamander and the Connecticut Hill Important Bird Area. Jefferson salamander is found in the Town of Newfield and suitable habitat conditions are likely present in the County forests. These same properties are within the Connecticut Hill Area, a unique, large, high elevation, forested area that supports many bird species.

The Jefferson salamander (*Ambystoma jerrersonianum*) is a long, thin, mole salamander. It inhabits deciduous forest in close proximity to fishless breeding ponds. Its habitat includes burrows of small mammals, under sides of stones or logs, and leaf letter

It appears that conservation of Jefferson salamander will consist of the following: restrict harvesting activities during the spring breeding season, protect vernal pools and protect fishless ponds. Timber harvesting activities have already been restricted to winter harvesting on the property, so there should not be any conflict with harvesting activities. Vernal pools and fishless ponds need to be protected from harvesting activities, herbicide application and trail construction. A flagged buffer should be established around any such breeding habitat before beginning any forestry activities that could negatively affect this salamander. As downed woody debris provides habitat for the Jefferson salamander, the buffer need not be extensive. A 100 foot buffer from the edge of the feature should be sufficient. Trees should be allowed to be felled into this buffer area (provides for downed woody debris), but no equipment operation will be allowed within this buffer zone. If herbicide application is a necessity within the buffer zone (for control of invasive plant species), caution must be taken to prevent the introduction of herbicides into the water bodies. In addition, the use of herbicides such as the glyphosate products are recommended. Glyphosate has shown to have no toxicity to fish, but can result in a temporary decrease Dissolved Oxygen levels in water bodies that have had glyphosate applied to them. Most concerns with the application of glyphosate herbicides within Jefferson salamander breeding habitat may be dealt with by timing the application so that it occurs after the breeding season is over.

The second area of special habitat concern is the Connecticut Hill Important Bird Area, which includes the Newfield forest parcels. This area supports significant bird species that require large, high elevation forested areas. Important bird species that thrive on this habitat include: Sharp-shinned Hawk, Black-billed Cuckoo, Northern Flicker, Eastern Wood-Pewee, Least Flycatcher, Blue-gray Gnatcatcher, and Wood Thrush. It appears that best conservation practices are being met, and will continue to be met, through sustainable forestry. Maintaining these large areas in forest cover is a critical element of conservation. Practicing sustainable forestry is identified as a means of conservation for this special habitat area.

Guide to Forest Stand Data

The following sections contain much data needed to describe the forest and the stands within the forest. Each stand is a unique portion of the forest; it is unique in species composition, age, tree density, size distribution of the trees, past management, topography, soil conditions, tree volume, special constraints or any combination of the above. Forest management is most often done at the stand level, being as these are semi-homogeneous areas where planning can occur.

The following data are broken down by township; there are two groupings of forest management areas that are located in the Town of Caroline and the Town of Newfield. The Town of Newfield forest block is the large forested area and is listed first in the management plan.

Within the descriptive section of the stand data you will find first the maps of each section being described; the maps for the forests in the Town of Newfield appear first in this section. Next you will find a summary of the stand prescriptions called, “Description and Rational for Silvicultural Prescription and the Relationship to Desired Future Conditions”. This section is a brief description of what type of forest occurs in each stand, the goal assigned to the stand and the treatment and the rational behind this treatment.

Following this section are the actual stand descriptions. Within these descriptions are paragraphs describing the forest, its history, presence of riparian areas and data that are mostly meaningful to the forestry professional. Below is a brief description of most of this information:

Data Label	**Meaning**
Forest Type	The classification of this forest based on the presence or mixture of tree species. Most forests of this ownership are classified as Northern Hardwoods, some are classified as Pine Plantations.
Acreage	The area of the stand in acres.
Size Class	The average size of the trees within the forest. Normally one of the following: seedling/sapling, pole timber or saw timber.
Structure	Structure refers to the age structure of the stand or the number of age classes within the stand. Normally, one of the following: even-aged forests, all-aged forests or uneven-aged forests.
Origin	This refers to how the forest came into being. This differentiates naturally occurring forests from those that were planted.
Stand Health	In this section, any noted health problems are listed. This might include such things as beech-bark-decline, forest tent caterpillar or sirex woodwasp.
Site Quality	This is a qualitative index from 1 to 3, 1 being the best quality site and 3 being the worst. Site quality is determined by tree height in most cases. Stands where merchantable trees have 11/2 logs or more logs in average height are normally indexed as a 1.
Timber Quality	This is a qualitative index from 1 to 3. Where 1 is the best quality and 3 is the worst quality. A stand where most merchantable trees have a nice saw log or better in the first log will normally have an index of 1. A stand where most of the merchantable trees have good saw log volume, but there is a repeated grade problem (limbs on the first log or other defect) will receive an index of 2. Stands where most of the saw log volume is of poor quality with a consistent grade of 3 or less may be given an index of 3.
Estimated Growth Rate	This is the estimated rate of growth expressed as a percentage of the total volume (saw log volume). This is normally derived from field calculations of cord trees.
Disturbance	This section indicates the forces that have caused disturbance in the stand. Often wind, fire and logging are listed. Natural indicates that there is evidence of natural forces (wind) but no major disturbances have been noted.
Operability	Operability relates to the ability to use equipment within the stand as noted in the field. Unrestricted means that no field observations were noted that would restrict the use of equipment in the stand. This statement may later be modified from findings in the soils report. Restricted operability could be caused by rocks, wetness observed in the field, or slopes.

Stocking Data	This section contains data that describe the stocking level of the forest. This section includes whether the stand is overstocked, at acceptable stocking levels or understocked; the Basal Area (BA) of the stand; the average number of trees per acre, the mean stand diameter; and a chart of the species distribution.
Wildlife, Cultural and Natural Features	This section references wildlife that were observed or had a noted presence during the forest survey, notes of any cultural features (foundations, maple arches, graves, etc) that were found during the forest survey; and any unique natural features found during the forest survey.
Habitat and Wildlife Uses	This section notes wildlife use of the stand or limitations on wildlife use of the stand.
Threatened and Endangered Species	This section lists known occurrences of threatened, endangered or rare species that have been identified in or near this stand. These data are provided by NYS DEC.
Cultural Importance	This section lists items of cultural or historic importance in or near the stand. Only items found during the survey, or that staff has been made aware of, are listed here.
Important Natural Features	This section lists any unique or important natural features that were found during the field survey.
Potential Uses	This section lists potential uses of the stand as noted by forestry staff. They may include forest management, recreational or unique habitat uses.
Recreational Uses	This section lists both current (if any) recreational uses of the stand and potential recreational uses.
Water Quality Issues	In this section, water quality issues are noted that were discovered during the forest survey. Problems with trails or erosion may be listed here.
Prescription for Stand	This section describes how the stand is to be managed, species to favor in both long-term and short-term management activities, the rotational age for the stand and current prescription for the stand.

Notes on the maps

Sets of maps showing various attributes of the forest stands in the Town of Newfield and the Town of Caroline are located at the end of the each Forest Stand Data section. Each map includes delineation of each forest stand, stand number, roads and creeks. Additional data include location of riparian zones 1 and 2, steep slopes (over 30%), historic points shown with “H”, existing landing areas used in past harvesting activities shown with “L”, stream crossings shown with “SC”, and seepage areas shown with “S”. In addition to the soil types and extent, the soils maps indicate the Soils Rutting Index, which ranges from 5 indicating limited potential for soil rutting, to 10 indicating significant potential for soil rutting in that area.

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ENVIRONMENTAL MANAGEMENT COUNCIL
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Invasive Plants of Tompkins County, New York

Common Name	Species Name	Family
ailanthus, tree-of-heaven	*Ailanthus altissima*	Simaoubaceae
alder buckthorn	*Rhamnus frangula*	Rhamnaceae
Amur River privet	*Ligustrum obtusifolium*	Oleaceae
Asian bittersweet	*Celastrus orbiculata*	Celastraceae
autumn olive	*Elaeagnus umbellata*	Elaeagnaceae
black locust	*Robinia pseudo-acacia*	Fabaceae
black swallowwort	*Vincetoxicum nigrum (Cynanchum nigrum)*	Asclepiadaceae
buckthorn	*Rhamnus cathartica*	Rhamnaceae
burning-bush, winged euonymus	*Euonymus alata*	Celastraceae
common privet	*Ligustrum vulgare*	Oleaceae
crownvetch	*Coronilla varia*	Fabaceae
European barberry	*Berbis vulgaris*	Berberideaceae
garlic mustard	*Alliaria petiolata**	Brassicaceae
giant hogweed	*Heracleum mantegazzianum*	Apiaceae
giant reed	*Phragmites australis*	Poaceae
goutweed, bishops' weed	*Aegopodium podagraria*	Apiaceae
honeysuckle	*Lonicera morrowii**	Caprifoliaceae
honeysuckle	*Loniceraz xylosteum*	Caprifoliaceae
Japanese barberry	*Berberis thunbergii**	Berberidaceae
Japanese honeysuckle	*Lonicera japonica*	Caprifoliaceae
Japanese knotweed	*Polygonum cuspidatum (Fallopia japonica)*	Polygonaceae
leafy spurge	*Euphorbia esula*	Euphorbiaceae
Maack's honeysuckle	*Lonicera maackii*	Caprifoliaceae
multiflora rose	*Rosa multiflora**	Rosaceae
Norway maple	*Acer platanoides**	Aceraceae
Norway spruce	*Picea abies*	Pinaceae
periwinkle	*Vinca minor*	Apocynaceae
purple loosestrife	*Lythrum salicaria*	Lythraceae
rocket	*Hesperis matronalis*	Brassicaceae
Sakhalin knotweed	*Polygonum sachalinensis (Fallopia sachalinensis)*	Polygonaceae
Siberian crabapple	*Malus baccata and hybrids*	Rosaceae
Tartarian honeysuckle	*Lonicera tatarica**	Caprifoliaceae

* The most invasive species in this area

F. Robert Wesley April 1998

The EMC is a citizen board that advises the County Legislature on matters relating to the environment
and does not necessarily express the views of the Tompkins County Legislature.

Town of Newfield Forest Stands (Stand 1 – Stand 29)

Summary of Management Recommendations for Newfield Forest Stands

Stand 1 – 54.8 acres

- Prescription
  a. Even-aged management
  b. Goal
     i. Even-aged management of hardwoods, regenerate stand to hardwoods
  c. Treatment
     i. No treatment
  d. Reason
     i. Stand is currently understocked because of large areas of blow down.
     ii. Stand has much advanced regeneration and sapling class in areas of blow down. These areas do not need treatment.
     iii. Areas that have not blown down tend to be only 3 to 8 rows wide and do not contain enough volume for harvest at this time.

Stand 2 – 5 acres

- Prescription
  a. Even-aged management
  b. Goal
     i. Even-aged management of hardwoods and native softwoods. Regenerate the hardwoods and white pine.
  c. Treatment
     i. No treatment
  d. Reason
     i. Stand is understocked.
     ii. Thinning will not increase stand productivity

Stand 3 – 9.3 acres

- Prescription
  a. Even-aged management
  b. Goal
     i. Manage for northern hardwoods, regenerate to same
  c. Treatment
     i. No treatment until 2017.
  d. Reason
     i. The stand is understocked

Stand 4 – 16.1 acres

- Prescription
  a. Even-aged management
  b. Goal
     i. Manage for northern hardwoods, regenerate to same.
  c. Treatment
     i. Commercial thinning, crown thinning.
     ii. Reduce the percentage of red maple, encourage sugar maple, hickory and birch.
  d. Reason
     i. This stand is overstocked and has enough volume to make a commercial thinning possible.

Stand 5 – 34.3 acres

- Prescription
  a. Even-aged management
  b. Goal
     i. Manage for sugar maple and associated hardwoods. Regenerate to the same.
  c. Treatment
     i. Commercial thinning, crown thinning.
     ii. Reduce the percentage of red maple, encourage sugar maple, white ash, northern red oak and birch.
  d. Reason

i. This stand is overstocked and has enough volume to justify a commercial thinning.

Stand 6 – 14.3 acres

- Prescription
  a. Even-aged management
  b. Goal
     i. Manage for northern hardwoods, favor red oak, black cherry, white oak, and sugar maple. Regenerate for the same.
  c. Treatment
     i. Commercial thinning, crown thinning.
     ii. Concentrate on cutting red maple.
  d. Reason
     i. This stand is overstocked and has enough volume to justify a commercial thinning.

Stand 7 – 5.3 acres

- Prescription
  a. Even-aged management
  b. Goal
     i. Manage for northern hardwoods, favor sugar maple. Regenerate for a mix of northern hardwoods.
  c. Treatment
     i. Commercial thinning, crown thinning.
  d. Reason
     i. This stand is overstocked and has enough volume to justify a commercial thinning.

Stand 8 – 17.3 acres

- Prescription
  a. Even-aged management
  b. Goal
     i. Manage for a mixture of northern hardwoods and pine. Regenerate for the same.
  c. Treatment
     i. Non-commercial TSI or wait.
  d. Reason
     i. This stand is slightly overstocked, so a prescription of thin or wait is appropriate. There is not enough volume for a commercial harvest and the stand is only slightly overstock so this stand will be evaluated for a commercial sale in 2013.

Stand 9 – 12.0 acres

- Prescription
  a. Even-aged management
  b. Goal
     i. Manage for northern hardwoods, prefer sugar maple, white ash, black cherry, white pine and red oak.
  c. Treatment
     i. Non-commercial TSI.
  d. Reason
     i. This stand is overstocked, but lacks enough volume for a commercial thinning. A non-commercial thinning will reduce the amount of UGS and concentrate growth on more desirable trees.

Stand 10 – 1.9 acres

- Prescription
  a. Even-aged management
  b. Goal
     i. Manage for northern hardwoods.
  c. Treatment
     i. No Treatment.
  d. Reason
     i. This stand is understocked.

Stand 11 – 24.3 acres

- Prescription
    a. Retain stand for development of old-growth characteristics.
    b. Goal
        i. Let nature take its course, with the intention of having large trees and old-growth structure.
    c. Treatment
        i. No treatment

Stand 12 – 9.5 acres

- Prescription
    a. Even-aged management
    b. Goal
        i. Manage for oaks and a mix of northern hardwoods. Regenerate to oaks.
    c. Treatment
        i. No treatment until 2014 when the stand is projected to be overstocked.
    d. Reason
        i. The stand is currently at acceptable stocking level and does not need thinning. In 2014 the stand should reach a Relative Density (RD) of 80% and need to be thinned at that time.

Stand 13 – 63.4 acres

- Prescription
    a. Even-aged management
    b. Goal
        i. Manage for a mixture of white pine and northern hardwoods. Regenerate for the same mixture.
    c. Treatment
        i. No treatment until 2010, when the stand should reach a RD of 80%.
    d. Reason
        i. This stand is currently at acceptable stocking levels and should not need to be thinned until 2010.

Stand 14 – 3.9 acres

- Prescription
    a. Even-aged management
    b. Goal
        i. Manage for northern hardwoods, regenerate to northern hardwoods and control black locust.
    c. Treatment
        i. Non-commercial TSI in 2009 to control Black Locust.
    d. Reason
        i. Black Locust is a native, invasive species and will need to be controlled for northern hardwood to successfully regenerate in this stand.

Stand 15 – 16.6 acres

- Prescription
    a. Even-aged management
    b. Goal
        i. This stand is currently a red pine plantation. Forestry activities should concentrate on the conversion of this stand to native hardwoods. Regeneration of this stand should be for northern hardwoods.
    c. Treatment
        i. Commercial thinning in 2012. This stand is currently overstocked, but just by about 4 points. There is not enough volume currently to justify a commercial thinning. This stand should be evaluated in 5 years for potential of commercial thinning.
    d. Reason
        i. The landowner desires to manage for native hardwood species. Red pine is native to North America, but not to the local region. This site is a northern hardwood site and will naturally develop into a northern hardwood cover type.

Stand 16 – 27.0 acres

- Prescription
    a. Even-aged management
    b. Goal
        i. This stand is currently a red pine plantation. Forestry activities should concentrate on the conversion of this stand to native hardwoods. Regeneration of this stand should be for northern hardwoods.
    c. Treatment
        i. Commercial thinning in 2012. This stand is currently overstocked, but just by about 4 points. There is not enough volume currently to justify a commercial thinning. This stand should be evaluated in 5 years for potential of commercial thinning.
    d. Reason
        i. The landowner desires to manage for native hardwood species. Red pine is native to North America, but not to the local region. This site is a northern hardwood site and will naturally develop into a northern hardwood cover type.

Stand 17 – 10.7 acres

- Prescription
    a. Retain stand for development of old-growth characteristics.
    b. Goal
        i. Let nature take its course, with the intention of having large trees and old-growth structure.
    c. Treatment
        i. No treatment

Stand 18 – 6.8 acres

- Prescription
    a. Even-aged management
    b. Goals
        i. Manage for sugar maple and a mixture of red maple, white ash and beech. Control beech so that it does not become a management problem, favor only trees that show resistance to beech-bark-decline. Regenerate for same mixture.
    c. Treatment
        i. Commercial thinning, crown thinning in 2017 in or when there is enough volume to justify commercial thinning.
    d. Reason
        i. This stand is currently overstocked, but there is not enough volume to justify a commercial thinning. By waiting until 2017 the stand should be able to develop enough volume for a commercial thinning.

Stand 19

- Although Stand 19 was initially identified as a separate unit in the field, it was later determined that it did not meet the thresholds for a unique stand and was incorporated into other stands, as appropriate.

Stand 20 – 13.3 acres

- Prescription
    a. Even-aged management
    b. Goal
        i. This stand is currently a red pine plantation. Forestry activities should concentrate on the conversion of this stand to native hardwoods. Regeneration of this stand should be for northern hardwoods.
    c. Treatment
        i. This stand is currently at acceptable levels and will not need to be thinned until 2012. At that time a commercial thinning is recommended. Thinning efforts should look towards converting this stand to native hardwood species.
    d. Reason

i. The landowner desires to manage for native hardwood species. Red pine is native to North America, but not to the local region. This site is a northern hardwood site and will naturally develop into a northern hardwood cover type.

Stand 21 – 26.4 acres

- Prescription
  a. Even-aged management
  b. Goals
     i. This stand is currently a red pine plantation. Forestry activities should concentrate on the conversion of this stand to native hardwoods. Regeneration of this stand should be for northern hardwoods.
  c. Treatment
     i. This stand is currently overstocked, but has a marginal volume of timber in consideration of a commercial harvest. I recommend scheduling a commercial thinning for this stand in 2012, giving the stand 5 more years to develop volume and planning this thinning in coordination with other red pine thinnings.
  d. Reason
     i. The landowner desires to manage for native hardwood species. Red pine is native to North America, but not to the local region. This site is a northern hardwood site and will naturally develop into a northern hardwood cover type.

Stand 22 – 9.6 acres

- Prescription
  a. Even-aged management
  b. Goals
     i. This stand should be managed for a mixture of northern hardwoods. White oak and sugar maple should be favored in silvicultural activities. Regenerate for the same mixture of species.
  c. Treatment
     i. Commercial Thinning, crown thinning removing about 1/3 of stand density.
  d. Reason
     i. This stand is currently overstocked and needs about 1/3 of its density removed to promote growth of the best trees and stand health.

Stand 23 – 3.1 acres

- Prescription
  a. Even-aged management
  b. Goals
     i. Manage for a mixture of northern hardwoods and softwoods.
  c. Treatment
     i. No treatment. This stand is currently understocked and is not projected to become overstocked until 2026.
  d. Reason
     i. Understocked stands do not need thinning.

Stand 24 – 29.5 acres

- Prescription
  a. Even-aged management
  b. Goal
     i. This stand is currently a red pine plantation. Forestry activities should concentrate on the conversion of this stand to native hardwoods. Regeneration of this stand should be for northern hardwoods.
  c. Treatment
     i. Commercial thinning, crown-thinning in 2012.
  d. Reason
     i. The landowner desires to manage for native hardwood species. Red pine is native to North America, but not to the local region. This site is a northern hardwood site and will naturally develop into a northern hardwood cover type.

Stand 25 – 4.6 acres

- Prescription
  a. Even-aged management

b. Goals
    i. This stand is currently a red pine and tamarack plantation. Forestry activities should concentrate on the conversion of this stand to native hardwoods. Regeneration of this stand should be for northern hardwoods.
c. Treatment
    i. Commercial thinning, crown-thinning
d. Reason
    i. The landowner desires to manage for native hardwood species. Red pine is native to North America, but not to the local region. This site is a northern hardwood site and will naturally develop into a northern hardwood cover type.

Stand 26 – 7.9 acres

- Prescription
    a. Even-aged management
    b. Goal
        i. This stand is currently a red pine plantation with hardwood pockets interspersed throughout it. Forestry activities should concentrate on the conversion of this stand to native hardwoods. Regeneration of this stand should be for northern hardwoods.
    c. Treatment
        i. Commercial thinning, crown-thinning in 2012.
    d. Reason
        i. The landowner desires to manage for native hardwood species. Red pine is native to North America, but not to the local region. This site is a northern hardwood site and will naturally develop into a northern hardwood cover type.

Stand 27 – 3.2 acres

- Prescription
    a. Retain this stand for development of old-growth characteristics.
    b. Goal
        i. Let nature take its course, with the intention of having large trees and old-growth structure.
    c. Treatment
        i. No treatment

Stand 28 – 19.3 acres

- Prescription
    a. Even-aged management
    b. Goal
        i. This stand is currently a Norway spruce plantation with hardwood pockets interspersed throughout it. Forestry activities should concentrate on the conversion of this stand to native hardwoods. Regeneration of this stand should be for northern hardwoods.
    c. Treatment
        i. Commercial thinning, crown-thinning
    d. Reason
        i. The landowner desires to manage for native hardwood species. Red pine is native to North America, but not to the local region. This site is a northern hardwood site and will naturally develop into a northern hardwood cover type.

Stand 29 – 8.2 acres

- Prescription
    a. Retain this stand for development of old-growth characteristics.
    b. Goal
        i. Let nature take its course, with the intention of having large trees and old-growth structure.
    c. Treatment
        i. No treatment

Stand Description and Management for Stand: 1

Stand Description for Stand 1

Description of Dominant Vegetation and Successional Trends:	This red pine plantation has suffered from much windthrow. The stand density is low due to the wind damage and it is currently converting to a northern hardwoods cover type. The density is highly variable in this stand; there are areas that are fully stocked and areas where there is no overstory remaining. The stand has regenerated to northern hardwoods in many areas. This regeneration causes the stand to be two-aged.
Riparian Area:	8.8 acres – The riparian areas of this stand are small in proportion to the stand. They tend to be either short areas with medium to steep banks sloping to Chaffee Creek, or flat floodplains with limited banks. Management in this riparian area is to be very restricted. Management will be allowed, but commercial tree cutting will only be conducted as needed, and in association with harvests in neighboring stands. Heavy equipment is not allowed in the stand.
Stand History:	This stand was associated with a nearby homestead or farm. Its post settlement use was agriculture, but was abandoned in early 1900's. Red pine was planted to reforest the site, most likely in the 1930's.
Logging History:	This stand was thinned using a row thinning technique. This is a very common way to thin plantations. This thinning was contracted in 1990, no dates are available on when it was finished.
Forest Type:	Red Pine
Acreage:	54.8
Size Class:	Saw Timber
Structure:	Two-Aged
Origin:	Planted
Stand Health:	The stand suffered from much windthrow. Apparently, the soils of this stand do not support red pine after thinning activities. The soils tend to have much clay and retain water.
Site quality:	2
Timber Quality:	2
Estimated Growth Rate (%):	2
Disturbance:	Wind
Operability:	Unrestricted

Stocking Data for Stand 1

Stocking Level:	Acceptable stocking level
Basal Area:	96
Trees per Acre:	242
Mean Stand Diameter:	7.119

Species Distribution for Stand 1

Species Name	**% of Species in Stand**
Red Pine	79%
Red Maple	7%
Sugar Maple	6%
White Ash	6%
Black Cherry	1%
Northern Red Oak	1%

Wildlife, Cultural and Natural Features for Stand 1

Habitat and Wildlife Uses:	The carrying capacity of this stand is relatively low. There are few oaks, beech and other nut producing trees to support wildlife. Most wildlife use this stand in passing. The areas of blow-down may support grouse and other ground dwelling birds.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	Hardwood forest production, hiking, camping, hunting and nature observation.
Recreational Uses:	Hiking, camping, hunting and nature observation. Currently the trails are used for ATV's and the old home stead site is used for bonfires.
Water Quality Issues:	There is one stream that bisects this stand. This stream is crossed by the logging trail and is partly diverted by this trail.

Prescription for Stand 1

Recommended Priority Objectives for the Stand:	Manage for timber production and revert to high quality hardwoods.
Favored Species:	Sugar maple, black cherry and red oak
Silvicultural System:	Even-aged
Rotation Age:	82
Prescription and Reasoning for Prescription:	This stand varies from understocked to overstocked and has suffered much windthrow. There is not enough volume ready to harvest to support a commercial thinning. Wait 5 years and evaluate for commercial thinning or regeneration cut to convert to hardwoods.

Stand Description and Management for Stand: 2

Stand Description for Stand 2

Description of Dominant Vegetation and Successional Trends:	This stand is dominated by white pine and hardwoods. White pine will continue to dominate this stand for many decades, while the some of the hardwoods will fall out of the stand due to shading and maturing of other species. This stand is dominated by white pine and hardwoods. It is mostly understocked and needs not to be treated for some year yet.
Riparian Area:	0.3 acres – The riparian area of this stand is a small area along the terrace slope of Chaffee Creek. This area is down slope of the main stand. The area is a very small portion of the stand, and linear in shape. Management in this riparian area is to be very restricted. Management will be allowed, but commercial tree cutting will only be conducted as needed and in association with harvests in neighboring stands. Heavy equipment is not allowed in the stand.
Stand History:	This stand was associated with a nearby homestead or farm. Its post settlement use was agriculture, but was abandoned in early 1900's. It appears that Red Pine was not planted in this stand, perhaps it had already naturally reforested.
Logging History:	This stand was cut using group selection in 1990. No previous thinnings are known of.
Forest Type:	Northern Hardwoods
Acreage:	5.0
Size Class:	Saw Timber
Structure:	Even Aged

Origin:	Natural Seed
Stand Health:	This stand is currently understocked. The White Pine has been affected by White Pine Weevil in the past. No other health concerns were noted.
Site quality:	2
Timber Quality:	3
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 2

Stocking Level:	Understocked
Basal Area:	36.7
Trees per Acre:	35.1
Mean Stand Diameter:	13.35

Species Distribution for Stand 2

Species Name	% of Species in Stand
White Pine	36%
Quaking Aspen	27%
Red Maple	27%
Northern Red Oak	9%

Wildlife, Cultural and Natural Features for Stand 2

Habitat and Wildlife Uses:	The carrying capacity of this stand is relatively low. There are few oaks, beech and other nut producing trees to support wildlife. Most wildlife use this stand in passing.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	Hardwood forest production, hiking, camping, hunting and nature observation.
Recreational Uses:	Hiking, camping, hunting and nature observation. Currently this stand lacks a developed trail system for recreation.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 2

Recommended Priority Objectives for the Stand:	Manage for high quality Northern Hardwoods and Softwoods.
Favored Species:	White pine and red oak
Silvicultural System:	Even-aged
Rotation Age:	80
Prescription and Reasoning for Prescription:	This stand is currently understocked and does not need thinning. No treatment is required.

Stand Description and Management for Stand: 3

Stand Description for Stand 3

Description of Dominant Vegetation and Successional Trends:	This is a northern hardwoods, Red Maple cover type. Red Maple and red pine dominate this stand. The red maple will continue to dominate the stand for many decades.
Riparian Area:	2.4 acres – This riparian area follows a seasonal drainage. Drainage patterns are not always well defined within this riparian area.

	Management in this riparian area is to be very restricted. Management will be allowed, but commercial tree cutting will only be conducted as needed and in association with harvests in neighboring stands. Heavy equipment is not allowed in the stand.
Stand History:	This stand was used for agriculture. Stone walls and old farm roads provide evidence of the stand's history. It was abandoned in the early 1900's and was planted to red pine. The red pine was over-topped by native hardwoods.
Logging History:	There is no known history of logging in this stand within the last rotation.
Forest Type:	Northern Hardwoods
Acreage:	9.3
Size Class:	Pole Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	The stand is reasonably healthy. Some of the birch has sterol conk, but this is common.
Site quality:	2
Timber Quality:	2
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 3

Stocking Level:	Overstocked
Basal Area:	100
Trees per Acre:	69.0
Mean Stand Diameter:	11.21

Species Distribution for Stand 3

Species Name	% of Species in Stand
Red Maple	43%
Red Pine	20%
Quaking Aspen	13%
Black Birch	13%
Beech	7%
Northern Red Oak	3%

Wildlife, Cultural and Natural Features for Stand 3

Habitat and Wildlife Uses:	The carrying capacity of this stand is relatively low. There are few oaks, beech and other nut producing trees to support wildlife. Most wildlife use this stand in passing.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	Hardwood forest production, hiking, camping, hunting and nature observation.
Recreational Uses:	Hiking, camping, hunting and nature observation. Currently this stand lacks a developed trail system for recreation.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 3

Recommended Priority Objectives for the Stand:	Manage for high quality northern hardwoods.

Favored Species:	Red oak
Silvicultural System:	Even-aged
Rotation Age:	84
Prescription and Reasoning for Prescription:	This stand is overstocked, but does not have significant volume for a commercial saw log sale. A pulpwood thinning or non-commercial thinning is appropriate. A prescription to wait 10 years before any thinning is also appropriate.

Stand Description and Management for Stand: 4

Stand Description for Stand 4

Description of Dominant Vegetation and Successional Trends:	This stand is dominated by Northern hardwoods and hemlock. While hemlock is only a small portion of the population now, but over time will increase and should dominate this stand over the next few hundred years.
Riparian Area:	1.3 acres – This riparian area follows a seasonal drainage. Drainage patterns are not always well defined within this riparian area. Management in this riparian area is to be very restricted. Management will be allowed, but commercial tree cutting will only be conducted as needed and in association with harvests in neighboring stands. Heavy equipment is not allowed in the stand.
Stand History:	This stand most likely has an agricultural history and most likely was cleared for agricultural use in the mid- to late-1800's.
Logging History:	This stand was logged 1990. A selection thinning was recommended and implemented at that time.
Forest Type:	Hemlock-Hardwoods
Acreage:	16.1
Size Class:	Saw Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	The stand is currently healthy. The species distribution should be modified to reduce the amount of red maple within the stand. Beech is currently a small portion of the stand, but is diseased and will need to be monitored. The propagation of beech saplings is a concern. Beech can inhibit the regeneration of more valuable timber species.
Site quality:	2
Timber Quality:	2
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 4

Stocking Level:	Overstocked
Basal Area:	130
Trees per Acre:	206
Mean Stand Diameter:	9.955

Species Distribution for Stand 4

Species Name	**% of Species in Stand**
Red Maple	73%
Sugar Maple	8%
Hickory	8%
Beech	8%
Black Birch	4%

Wildlife, Cultural and Natural Features for Stand 4

Habitat and Wildlife Uses:	The carrying capacity of this stand is relatively low. There are few oaks, beech and other nut producing trees to support wildlife. Most wildlife use this stand in passing.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	Hardwood forest production, hiking, camping, hunting and nature observation.
Recreational Uses:	Hiking, camping, hunting and nature observation. Currently this stand lacks a developed trail system for recreation.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 4

Recommended Priority Objectives for the Stand:	Manage for high quality northern hardwoods. Alternately, this stand can be managed to maintain biodiversity and ecological diversity by maintaining the hemlock component.
Favored Species:	Sugar maple and hemlock
Silvicultural System:	Even-aged
Rotation Age:	86
Prescription and Reasoning for Prescription:	This stand is overstocked and has significant volume of saw log to justify a commercial thinning. Commercial thinning and improvement cutting. Reduce the percentage of red maple while encouraging the development of sugar maple, hickory and birch. Cull out poor quality hemlock.

Stand Description and Management for Stand: 5

Stand Description for Stand 5

Description of Dominant Vegetation and Successional Trends:	This is a Northern Hardwoods cover that is dominated by sugar maple. Sugar maple is a very shade tolerant, slow growing tree that has a long life expectancy. It is suspected that this stand will continue a 100 years in a similar state. Sugar maple accounts for just over 50% of this stands basal area. With over 3,000 board feet per acre in sugar maple this is a high value stand. The remaining stocking is a mix of northern hardwoods.
Riparian Area:	3.0 acres – This riparian area follows a seasonal creek. This is well defined creek with a short distance to the terrace slope on the east and much longer distance to the terrace slope on the west side of the creek. Management in this riparian area is to be very restricted. Management will be allowed, but commercial tree cutting will only be conducted as needed and in association with harvests in neighboring stands. Heavy equipment is not allowed in the stand.
Stand History:	This stand most likely has an agricultural history and was most likely cleared for agricultural use in the mid- to late-1800's.
Logging History:	This stand was thinned in 1990. It was thinned using a shelter wood thinning cut.
Forest Type:	Northern Hardwoods
Acreage:	34.3
Size Class:	Saw Timber
Structure:	Even-Aged
Origin:	Natural

Stand Health:	The stand is currently healthy. No major pest problems were noted during the forest survey.
Site quality:	2
Timber Quality:	2
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 5

Stocking Level:	Acceptable stocking level
Basal Area:	102
Trees per Acre:	133
Mean Stand Diameter:	11.31

Species Distribution for Stand 5

Species Name	**% of Species in Stand**
Sugar Maple	53%
Red Maple	14%
White Ash	14%
Quaking Aspen	8%
Black Birch	6%
Basswood	4%
Northern Red Oak	2%

Wildlife, Cultural and Natural Features for Stand 5

Habitat and Wildlife Uses:	The carrying capacity of this stand is relatively low. There are few oaks, beech and other nut producing trees to support wildlife. Most wildlife use this stand in passing.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	Hardwood forest production, hiking, camping, hunting and nature observation.
Recreational Uses:	This stand has good access from a developed trail system. It is most likely to be used for hiking, ATV use, hunting and nature observation.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 5

Recommended Priority Objectives for the Stand:	This stand should be managed for high quality hardwoods.
Favored Species:	Sugar maple and red oak
Silvicultural System:	Even-aged
Rotation Age:	101
Prescription and Reasoning for Prescription:	This stand is overstocked and in need of a commercial thinning to reduce overstocking. Reduce stocking of red maple and poor quality hardwoods. Encourage the growth of sugar maple and quality white ash, birch, and red oak.

Stand Description and Management for Stand: 6

Stand Description for Stand 6

Description of Dominant Vegetation and	This is a northern hardwoods cover type. It is a naturally occurring type and will continue to develop much as it has for many decades.

Successional Trends:	This stand is a mixture of many species. Red maple is the most dominate species of the stand. White ash and sugar maple also occur more frequently than other species.
Riparian Area:	0 acres
Stand History:	This stand was cleared for agricultural use in the 1800's. It was abandoned and left to revert to native hardwoods. The agricultural history is evidenced by the stone walls bordering the stand.
Logging History:	This stand was commercially thinned in 1990. A selection thinning was recommended and was used to thin this stand. It appears that crop-trees were left and favored in the last thinning.
Forest Type:	Northern Hardwoods
Acreage:	14.3
Size Class:	Pole Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	The stand is currently healthy. No pest problems were noted during the forest inventory.
Site quality:	2
Timber Quality:	2
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 6

Stocking Level:	Overstocked
Basal Area:	137
Trees per Acre:	242
Mean Stand Diameter:	9.449

Species Distribution for Stand 6

Species Name	% of Species in Stand
Red Maple	34%
White Ash	17%
Sugar Maple	15%
Black Cherry	7%
Northern Red Oak	5%
Beech	5%
Quaking Aspen	5%
White Oak	5%
Basswood	2%
Black Birch	2%
Hemlock	2%

Wildlife, Cultural and Natural Features for Stand 6

Habitat and Wildlife Uses:	The carrying capacity of this stand is relatively low. There are few oaks, beech and other nut producing trees to support wildlife. Most wildlife use this stand in passing.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	Hardwood forest production, hiking, camping, hunting and nature observation.

Recreational Uses:	This stand has good access from the trail that travels through stand 5. It could be used for camping, hiking, hunting and limited ATV usage.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 6

Recommended Priority Objectives for the Stand:	This stand should be managed for high quality hardwoods.
Favored Species:	Black cherry, red oak, sugar maple, white oak
Silvicultural System:	Even-aged
Rotation Age:	88
Prescription and Reasoning for Prescription:	This stand is overstocked and in need of a commercial thinning to reduce overstocking. Reduce the percentage of red maple and encourage sugar maple, black cherry, red oak and white oak.

Stand Description and Management for Stand: 7

Stand Description for Stand 7

Description of Dominant Vegetation and Successional Trends:	This is a northern hardwoods, Red Maple cover type. Red Maple is the dominant species in this stand. This stand will continue to develop as it already had for many decades. Other more shade tolerant trees will eventually dominate the stand. This stand is dominated by red maple. The remaining associated species are a mixture of northern hardwoods. Beech is the second most dominant species in this stand.
Riparian Area:	0.1 acres – This riparian area is a poorly defined area that drains into the seasonal drainage found in stands 1 and 2. Management in this riparian area is to be very restricted. Management will be allowed, but commercial tree cutting will only be conducted as needed and in association with harvests in neighboring stands. Heavy equipment is not allowed in the stand.
Stand History:	This stand was most likely cleared for agricultural use during the 1800's. It was abandoned from agricultural use to revert to native hardwood cover. Logging has created the current distribution of species.
Logging History:	This stand was not scheduled for any thinning in the last plan. However, it was marked and thinned. I believe this thinning might have created the conditions for the propagation of beech whips.
Forest Type:	Northern Hardwoods
Acreage:	5.3
Size Class:	Saw Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	Most of the beech within this stand are suffering from beech bard disease. There is a large component of beech saplings within the stand. These beech saplings map become a problem in future treatments.
Site quality:	2
Timber Quality:	2
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 7

Stocking Level:	Overstocked
Basal Area:	160

Trees per Acre:	339
Mean Stand Diameter:	8.686

Species Distribution for Stand 7

Species Name	% of Species in Stand
Red Maple	42%
Beech	17%
Hemlock	13%
Sugar Maple	8%
White Ash	8%
Quaking Aspen	8%
Basswood	4%

Wildlife, Cultural and Natural Features for Stand 7

Habitat and Wildlife Uses:	The carrying capacity of this stand is relatively low. Even thought there are plenty of beech trees, few are healthy and production of beech nuts is most likely low. Most wildlife use this stand in passing.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand should be managed for high quality hardwoods.
Recreational Uses:	This stand has good access from the trail that runs through stand 4 and that also runs through this stand. Hiking, camping, hunting and ATV use and are all options for recreation within this stand.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 7

Recommended Priority Objectives for the Stand:	This stand should be managed for high quality hardwoods.
Favored Species:	Sugar maple
Silvicultural System:	Even-aged
Rotation Age:	90
Prescription and Reasoning for Prescription:	This stand is overstocked and in need of a thinning to improve growth of better trees and reduce overcrowding. Mark a commercial thinning and cull removal, removing about 1/3 of density. Concentrate cutting on red maple and low quality hardwoods.

Stand Description and Management for Stand: 8

Stand Description for Stand 8

Description of Dominant Vegetation and Successional Trends:	This is a Northern Hardwoods cover type. It is composed of a mix of maples, white ash, black cherry, oaks, birches, basswood, pine and hemlock. It is suspected that this stand will continue to develop much as it already has for many decades. Red maple and white pine compose the majority of this stand, hemlock composes about 20% of the stand, but less than red maple or white pine. This stand should naturally drift to a conifer cover, if left to natural means.
Riparian Area:	1.0 acres – The riparian area of this stand are those areas of the stand that are adjacent to Chaffee Creek. This area is composed mostly of the buffer from the terrace slope of the riparian area. Management in this riparian area is to be very restricted. Management will

	be allowed, but commercial tree cutting will only be conducted as needed and in association with harvests in neighboring stands. Heavy equipment is not allowed in the stand..
Stand History:	This stand most likely has an agricultural history and most likely was cleared for agricultural use in the mid- to late-1800's.
Logging History:	This stand has had a history of commercial logging. This stand was scheduled for a firewood harvest in 1992, but it is unknown if this sale ever happened.
Forest Type:	Northern Hardwoods
Acreage:	17.3
Size Class:	Pole Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	This stand is currently healthy. No pest problems were noted during the forest survey.
Site quality:	2
Timber Quality:	2
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 8

Stocking Level:	Overstocked
Basal Area:	128
Trees per Acre:	181
Mean Stand Diameter:	10.35

Species Distribution for Stand 8

Species Name	% of Species in Stand
Red Maple	38%
White Pine	34%
Hemlock	19%
Beech	3%
Northern Red Oak	3%
Pitch Pine	3%

Wildlife, Cultural and Natural Features for Stand 8

Habitat and Wildlife Uses:	The carrying capacity of this stand is relatively low. Even thought there are plenty of beech trees, few are healthy and production of beech nuts is most likely low. Most wildlife use this stand in passing.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	Hardwood forest production, hiking, camping, hunting, and nature observation.
Recreational Uses:	This stand does not have good access for recreation. Access could be developed from the trail that runs through the east side of stand 1. Hunting, hiking and nature observation are potential recreational uses of this stand.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 8

Recommended Priority Objectives for the Stand:	This stand should be managed for high quality hardwoods.
Favored Species:	White pine and red oak
Silvicultural System:	Even-aged
Rotation Age:	81
Prescription and Reasoning for Prescription:	This stand is slightly overstocked, but only has limited saw log volume available for harvest. Conduct a firewood, low-grade thinning, or non-commercial thinning, or wait 5 years before any harvesting.

Stand Description and Management for Stand: 9

Stand Description for Stand 9

Description of Dominant Vegetation and Successional Trends:	This is a Northern Hardwoods cover type. It is composed of a mix of maples, white ash, black cherry, oaks, birches, basswood, pine and hemlock. It is suspected that this stand will continue to develop much as it already has for many decades. This stand is a riparian stand that runs along a intermittent stream that roughly follows the road. Its main function is to cool and filter water that flows through the stand. Timber harvesting will be allowed in this stand, with riparian modifications.
Riparian Area:	11.0 acres – More than half of this stand is riparian. The riparian area along Chaffee Creek is characterized by a narrow to wide flood plain and a defined terrace slope. Areas within the flood plain are subject to stream movement and flooding. Management in this riparian area is to be very restricted. Management will be allowed, but commercial tree cutting will only be conducted as needed and in association with harvests in neighboring stands. Heavy equipment is not allowed in the stand.
Stand History:	This stand was used for agriculture or limited agricultural activity associated with a nearby homestead. The farm was abandoned and the land regenerated to native hardwood cover.
Logging History:	No known logging has occurred in this stand.
Forest Type:	Northern Hardwoods
Acreage:	12.0
Size Class:	Pole Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	This stand is currently healthy. No pest problems were noted during the forest survey.
Site quality:	2
Timber Quality:	4
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 9

Stocking Level:	Overstocked
Basal Area:	96
Trees per Acre:	89.6
Mean Stand Diameter:	10.63

Species Distribution for Stand 9

Species Name	% of Species in Stand
Sugar Maple	27%
White Ash	19%
Quaking Aspen	19%
Black Cherry	10%
Black Locust	8%
Red Pine	6%
White Pine	2%
Red Maple	2%
Northern Red Oak	2%
Other Non-commercial	2%
Scotch Pine	2%
Serviceberry	0%

Wildlife, Cultural and Natural Features for Stand 9

Habitat and Wildlife Uses:	The carrying capacity of this stand is relatively low. There are few mass producing trees within this stand. However, this stand does have a good water source. It is expected that wildlife use this stand mostly in passing.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	This stand, within the landing area, hosts the site of an old foundation. I expect that this foundation is related to old homestead activities.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	The best use of this stand is as a riparian buffer. There is much evidence that the stream leaves its banks regularly in this stand. Recreational development should be limed due to this fact.
Recreational Uses:	No developed recreational uses are recommended for this stand.
Water Quality Issues:	This stand has a stream that passes through it. Caution needs to be taken to protect this stream from pollution or soil erosion that could be caused by logging activities.

Prescription for Stand 9

Recommended Priority Objectives for the Stand:	This stand should be managed for high quality hardwoods.
Favored Species:	Sugar maple, black cherry and red oak
Silvicultural System:	Even-aged
Rotation Age:	86
Prescription and Reasoning for Prescription:	This stand is slightly overstocked and does not have enough available volume for a commercial saw log sale. Wait 10 years and let natural mortality thin out pioneer species. .

Stand Description and Management for Stand: 10

Stand Description for Stand 10

Description of Dominant Vegetation and Successional Trends:	This is a former locust stand, now dominated by red maple. Locust was widely planted for reforestation, shelter and fence posts. This stand will most likely be succeeded by northern hardwoods. This is an old apple orchard that was most likely planted to locust. Locust is a common species that was used for reforestation projects in the past. It currently is not used as much because it tends to be an invasive species.
Riparian Area:	0.3 acres – This riparian area is on the northern side of Chaffee Creek. It is composed mostly of the terrace slope of the riparian area of this area.

	Management in this riparian area is to be very restricted. Management will be allowed, but commercial tree cutting will only be conducted as needed and in association with harvests in neighboring stands. Heavy equipment is not allowed in the stand.
Stand History:	This stand was the orchard for the homestead associated with this property in the past.
Logging History:	There is no known logging history in this stand.
Forest Type:	Locust
Acreage:	1.9
Size Class:	Pole Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	This stand is currently healthy. No pest problems were noted during the forest survey.
Site quality:	2
Timber Quality:	4
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 10

Stocking Level:	Understocked
Basal Area:	50
Trees per Acre:	206
Mean Stand Diameter:	6.263

Species Distribution for Stand 10

Species Name	% of Species in Stand
Red Maple	80%
Locust	20%

Wildlife, Cultural and Natural Features for Stand 10

Habitat and Wildlife Uses:	The carrying capacity of this stand is relatively low. It is expected that wildlife use this stand mostly in passing.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand should be managed for high quality hardwoods.
Recreational Uses:	This stand could be used for day use as a picnic area, camping or for nature observation.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 10

Recommended Priority Objectives for the Stand:	This stand should be managed for high quality hardwoods.
Favored Species:	Red maple
Silvicultural System:	Even-aged
Rotation Age:	86
Prescription and Reasoning for Prescription:	This stand is currently understocked, no treatment is needed. If the opportunity occurs to sell the locust, this species could be culled from the stand. Locust tends to be invasive and may need to be controlled.

Stand Description and Management for Stand: 11

Stand Description for Stand 11

Description of Dominant Vegetation and Successional Trends:	This is a Hemlock-Hardwoods cover type. It is dominated by eastern hemlock. If left to naturally develop, the stand will continue to be dominated by hemlock for centuries, with small pocket of hardwoods. This stand is dominated by hemlock and red maple. It was previously classified as an oak cover type, but oak only comprises 12% of the basal area. Currently hemlock and red maple comprise 73% of the basal area.
Riparian Area:	0.9 acres – The riparian area of this stand is located on its east side, along a tributary to Chaffee Creek. This riparian stand is composed of stream, riparian area and buffer areas.
Stand History:	I am unsure of the origin of this stand. There is much hemlock in the stand and some of it is of large size, indicating that the trees have been there a long time. I suspect that most of this stand was not completely cleared or it was never cleared.
Logging History:	This stand has had a history of being logged. This stand was scheduled for a commercial thinning in 1990. It was marked and cut under shelter wood thinning.
Forest Type:	Northern Hardwoods
Acreage:	24.3
Size Class:	Saw Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	This stand is currently healthy. No pest issues were noted during the forest survey.
Site quality:	2
Timber Quality:	2
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 11

Stocking Level:	Overstocked
Basal Area:	123
Trees per Acre:	254
Mean Stand Diameter:	8.778

Species Distribution for Stand 11

Species Name	% of Species in Stand
Hemlock	47%
Red Maple	26%
Northern Red Oak	12%
Quaking Aspen	5%
Sugar Maple	2%
Hickory	2%
White Oak	2%
Chestnut Oak	2%
White Pine	2%

Wildlife, Cultural and Natural Features for Stand 11

Habitat and Wildlife Uses:	This stand has a better carrying capacity than most of the stands in the Newfield parcels. There are many overstory red oaks present, white oaks and hickory that produce acorns for wildlife consumption.
Threatened and	No threatened, endangered or rare species are known to exist within this

Endangered Species:	stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand has been chosen to be managed to create a natural forest with old-growth characteristics. Over time, this stand should support large trees, old-growth ecosystems and undisturbed native forests.
Recreational Uses:	Access to this stand currently limits the recreational use of this stand. There are old logging trails that travel the stand, but they are overgrown and in poor shape, in general. With some improvements to the access system, this stand could be used for hiking, camping and nature observation. It is currently being used for hunting, as evidenced by the occasional hunting stand.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 11

Recommended Priority Objectives for the Stand:	This stand is being managed for old-growth characteristics. There will be no timber production in this stand. It is accepted that over time certain species will fall out of the stand stocking, while others will become more dominant, as would naturally happen within this stand over several centuries.
Favored Species:	White pine, hemlock, sugar maple, white oak and large red oak, chestnut oak and hickory.
Silvicultural System:	Even-aged
Rotation Age:	Several hundred years.
Prescription and Reasoning for Prescription:	No prescription is recommended, being as this stand is be left to naturally develop into a forest with old-growth characteristics.

Stand Description and Management for Stand: 12

Stand Description for Stand 12

Description of Dominant Vegetation and Successional Trends:	This is a Northern Hardwoods cover type. It is composed of a mix of maples, white ash, black cherry, oaks, birches, basswood, pine and hemlock. It is suspected that this stand will continue to develop much as it already has for many decades. This stand is dominated by red maple, red oak and white oak.
Riparian Area:	0 acres
Stand History:	This stand most likely has an agricultural history and was most likely cleared for agricultural use in the mid- to late-1800's.
Logging History:	This stand has had a history of logging. This stand was scheduled for a selective thinning as an improvement cut in 1989. It appears that some areas of this stand were thinned in one of the scheduled thinnings.
Forest Type:	Northern Hardwoods
Acreage:	9.5
Size Class:	Saw Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	This stand is currently healthy. No pest problems were noted during the forest survey.
Site quality:	2
Timber Quality:	2
Estimated Growth Rate (%):	2
Disturbance:	Natural

Operability:	Unrestricted

Stocking Data for Stand 12

Stocking Level:	Acceptable stocking level
Basal Area:	107
Trees per Acre:	231
Mean Stand Diameter:	8.198

Species Distribution for Stand 12

Species Name	% of Species in Stand
Red Maple	25%
Northern Red Oak	25%
White Oak	19%
Chestnut Oak	12%
Yellow Birch	6%
Quaking Aspen	6%
Beech	6%

Wildlife, Cultural and Natural Features for Stand 12

Habitat and Wildlife Uses:	This stand has much better than average carrying capacity for wildlife. I expect to see more large game in this stand in the fall due to the number of nut producing trees within the stand. This mixture of nut producing trees is favorable and should be maintained for wildlife management.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand should be managed for high quality hardwoods.
Recreational Uses:	Access to this stand currently limits the recreational use of this stand. There are old logging trails that travels the stand, but they are overgrown and in poor shape in general. This stand could be used for hiking, camping and nature observation.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 12

Recommended Priority Objectives for the Stand:	This stand should be managed for high quality hardwoods.
Favored Species:	Red oak, white oak and yellow birch
Silvicultural System:	Even-aged
Rotation Age:	83
Prescription and Reasoning for Prescription:	This stand is currently at acceptable stocking levels and does not need thinning. This stand is about 20 years from regeneration. This stand should become overstocked in 2014 and need a commercial thinning at that time. Species selection will be critical at that time in order to ensure the proper species are on the site for regeneration of the stand.

Stand Description and Management for Stand: 13

Stand Description for Stand 13

Description of Dominant Vegetation and Successional Trends:	This is a Northern Hardwoods cover type. It is composed of a mix of maples, white ash, black cherry, oaks, birches, basswood, pine and hemlock. It is suspected that this stand will continue to develop much as it already has for many decades.

	This stand is a mixture of white pine, aspen, red oak, red maple and a variety of other hardwoods. It is a somewhat younger stand than stands 11 and 12. This stand is has riparian functions for two intermittent streams.
Riparian Area:	17.2 acres – This riparian area follows two tributaries of the Chaffee Creek. The eastern of the tributaries is a seasonal flow. Management in this riparian area is to be very restricted. Management will be allowed, but commercial tree cutting will only be conducted as needed and in association with harvests in neighboring stands. Heavy equipment is not allowed in the stand.
Stand History:	This stand most likely has an agricultural history and was most likely cleared for agricultural use in the mid- to late-1800's.
Logging History:	This stand most likely has an agricultural history and was most likely cleared for agricultural use in the mid- to late-1800's. It was most likely abandoned during the early- to mid-1900's.
Forest Type:	Pioneer Hardwoods
Acreage:	63.4
Size Class:	Saw Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	This stand is currently healthy. No pest problems were noted during the forest survey.
Site quality:	2
Timber Quality:	2
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 13

Stocking Level:	Acceptable stocking level
Basal Area:	113
Trees per Acre:	228
Mean Stand Diameter:	8.922

Species Distribution for Stand 13

Species Name	**% of Species in Stand**
White Pine	31%
Quaking Aspen	25%
Northern Red Oak	19%
Red Maple	18%
White Ash	4%
Chestnut Oak	1%
Beech	1%
Hickory	1%
Black Birch	1%
Serviceberry	1%

Wildlife, Cultural and Natural Features for Stand 13

Habitat and Wildlife Uses:	The carrying capacity for large game in this stand is moderate. There are large mast producing trees like red oak and chestnut oak. But, I suspect this stand is mostly used in passing by most large game species.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.

Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand should be managed for high quality hardwoods.
Recreational Uses:	Access to this stand currently limits the recreational use of this stand. However, being as this stand bisected by a town road it does have partial access and is more usable than other stands. This stand could be used for hiking, camping and nature observation.
Water Quality Issues:	There are two tributaries that run through or along side of this stand. This stand service to filter the waters that passes through it and maintain the temperature of the water.

Prescription for Stand 13

Recommended Priority Objectives for the Stand:	This stand should be managed for high quality hardwoods.
Favored Species:	Red oak, white ash
Silvicultural System:	Even-aged
Rotation Age:	80
Prescription and Reasoning for Prescription:	This stand is currently at acceptable stocking levels, but is projected to be overstocked in 2010. At that time, the stand should be commercially thinned. This thinning will not be a high value sale, due to the limited amount of volume that is available. Mark a commercial thinning and cull removal, removing about 1/3 of density. Favor the development of white pine, red oak, white ash and chestnut oak (for wildlife).

Stand Description and Management for Stand: 14

Stand Description for Stand 14

Description of Dominant Vegetation and Successional Trends:	This is a black locust cover type. The stand is dominated by black locust with other hardwoods. If left to naturally develop the northern hardwoods will eventually claim this stand and dominate it. This stand is a locust stand that is converting to northern hardwoods. Black locust still accounts for over 50% of the stand, but red maple, sugar maple, black cherry and white ash account for the other 50% of the stand.
Riparian Area:	0 acres
Stand History:	This stand was most likely cleared for agriculture and may have been planted with black locust as a supply of fence posts for the homestead or a local farm.
Logging History:	It appears that this stand has not been cut during this rotation. It was recommended in the last management plan that this stand should be clear-cut, but this was never done.
Forest Type:	Locust
Acreage:	3.9
Size Class:	Pole Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	This stand is currently healthy. No pest problems were noted during the forest survey.
Site quality:	2
Timber Quality:	4
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 14

Stocking Level:	Overstocked
Basal Area:	115
Trees per Acre:	322
Mean Stand Diameter:	7.713

Species Distribution for Stand 14

Species Name	% of Species in Stand
Black Locust	52%
Red Maple	17%
Sugar Maple	13%
Black Cherry	13%
White Ash	4%

Wildlife, Cultural and Natural Features for Stand 14

Habitat and Wildlife Uses:	Wildlife use and habitat is limited within this stand. Most game species only use this stand in passing, being that the stand is very small and does not produce enough mass to support many animals.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	Timber production, fence post production, camping and nature observation.
Recreational Uses:	Camping and nature observation.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 14

Recommended Priority Objectives for the Stand:	This stand should be managed for production of northern hardwoods. Black locust can be removed from the stand, if it is possible.
Favored Species:	Red maple and black cherry
Silvicultural System:	Even-aged
Rotation Age:	85
Prescription and Reasoning for Prescription:	This stand is currently overstocked. Most of the stocking of this stand is black locust, which currently does not have a good market. Culling the locust to make room for commercial species is recommended. Cull out locust by use of girdle, mechanical felling or herbicide injection. Any of the these techniques may be used, but herbicide injection tends to be the most effective for the cost of the application. Favor the development of sugar maple, red maple, black cherry and white ash.

Stand Description and Management for Stand: 15

Stand Description for Stand 15

Description of Dominant Vegetation and Successional Trends:	This red pine plantation has suffered from excessive windthrow. The stand density varies much and ranges from poorly stocked to well stocked. Areas of low stocking are regenerating to northern hardwoods, while areas of higher stocking are still in red pine. This stand is of even-age and is represented by 97% red pine. The other species that is represented by this stand is red maple.
Riparian Area:	0 acres
Stand History:	This stand was used for agricultural purposes in the 1800's, then abandoned and left to regenerate naturally. The stand was converted into

	a red pine plantation. After establishing some size a chemical treatment was applied and then a row thinning.
Logging History:	This stand was logged before the planting of the red pine and was thinned after the plantation was established; the row thinning involved removal of every third row to reduce stand stocking levels by 1/3.
Forest Type:	Red Pine
Acreage:	16.6
Size Class:	Pole Timber
Structure:	Even-Aged
Origin:	Plantation
Stand Health:	Due to the windthrow damage this stand is not in the best of health; with so much damaged pine infestation by insects is possible.
Site quality:	2
Timber Quality:	4
Estimated Growth Rate (%):	2
Disturbance:	Wind
Operability:	Unrestricted

Stocking Data for Stand 15

Stocking Level:	Overstocked
Basal Area:	117
Trees per Acre:	222
Mean Stand Diameter:	9.674

Species Distribution for Stand 15

Species Name	% of Species in Stand
Red Pine	97%
Red Maple	3%

Wildlife, Cultural and Natural Features for Stand 15

Habitat and Wildlife Uses:	Because this stand is not too dense, sunlight reaches the ground and stimulates growth of cover and food for wildlife. The trees knocked down by the wind also provide foraging habitat for birds, mammals, salamanders, and other wildlife.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand should be managed to revert into a northern hardwoods stand. This stand could provide sites for recreation such as camping, hiking, and more; as well as habitat for wildlife.
Recreational Uses:	This stand could provide sites for camping, hiking, as well as other recreational possibilities such as nature observations and bird watching.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 15

Recommended Priority Objectives for the Stand:	To revert this stand into a northern hardwood stand.
Favored Species:	Northern hardwoods
Silvicultural System:	Even-aged
Rotation Age:	90
Prescription and Reasoning for Prescription:	This stand is overstocked, but only by 4 points. A recommendation of cut or wait can be recommended. Due to the small average diameter of the

	stems I recommend waiting for 5 years and evaluating the stand at that time. Evaluate for commercial thinning in 2012.

Stand Description and Management for Stand: 16

Stand Description for Stand 16

Description of Dominant Vegetation and Successional Trends:	This red pine plantation has suffered from excessive windthrow. The stand density varies much and ranges from poorly stocked to well stocked. Areas of low stocking are regenerating to northern hardwoods, while areas of higher stocking are still in red pine.
Riparian Area:	9.8 acres – This riparian area follows a tributary to Chaffee Creek that originates from a beaver pond and a classified wetland. The slopes of this riparian area are gentle and not defined as some of the other riparian areas. Management in this riparian area is to be very restricted. Management will be allowed, but commercial tree cutting will only be conducted as needed and in association with harvests in neighboring stands. Heavy equipment is not allowed in the stand.
Stand History:	This is a plantation so it is not naturally occurring and has suffered damage from wind due to the shallow root depth of the red pine.
Logging History:	This stand was logged prior to the planting of the red pine and was used for agricultural purposes in the 1800's. After the plantation had established some volume, a row thinning occurred in the stand to remove the third row of pines in order to create openings in the canopy for tree crown growth for the remaining red pine trees.
Forest Type:	Red Pine
Acreage:	27
Size Class:	Pole Timber
Structure:	Even-Aged
Origin:	Plantation
Stand Health:	Due to the windthrow damage, this stand is not in the best of health. With so much damaged pine, infestation by insects is possible.
Site quality:	2
Timber Quality:	4
Estimated Growth Rate (%):	2
Disturbance:	Wind
Operability:	Unrestricted

Stocking Data for Stand 16

Stocking Level:	Acceptable stocking level
Basal Area:	97.1
Trees per Acre:	266
Mean Stand Diameter:	7.618

Species Distribution for Stand 16

Species Name	**% of Species in Stand**
Red Pine	71%
Sugar Maple	9%
White Ash	6%
Red Maple	6%
Serviceberry	3%
Black Cherry	3%
Hickory	3%

Wildlife, Cultural and Natural Features for Stand 16

Habitat and Wildlife Uses:	Because this stand is not too dense, sunlight reaches the ground and stimulates growth of cover and food for wildlife. The trees knocked down by the wind also provide foraging habitat for birds, mammals, salamanders, and other wildlife.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand should be managed to revert into a northern hardwoods stand. This stand could provide sites for recreation, such as camping, hiking and more; as well as habitat for wildlife.
Recreational Uses:	This stand could provide sites for camping, hiking, as well as other recreational possibilities such as nature observation, like birding.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 16

Recommended Priority Objectives for the Stand:	To revert this stand into a northern hardwood stand.
Favored Species:	Sugar maple
Silvicultural System:	Even-aged
Rotation Age:	84
Prescription and Reasoning for Prescription:	This stand is currently at acceptable stocking levels. This stand needs to be monitored for windthrow. It appears that annual windthrow is a problem for this stand. Monitor yearly for windthrow and salvage potential.

Stand Description and Management for Stand: 17

Stand Description for Stand 17

Description of Dominant Vegetation and Successional Trends:	This is a Hemlock-Hardwoods cover type. It is dominated by eastern hemlock. If left to naturally develop, the stand will continue to be dominated by hemlock for centuries, with small pocket of hardwoods.
Riparian Area:	0.5 acres – This riparian area is a poorly defined drainage. This riparian area is the up-most portion of an unnamed drainage to Chaffee Creek.
Stand History:	This stand is currently dominated by hemlock and a mix of hardwoods. If left to natural means, the stand will become a hemlock cover type.
Logging History:	This stand was logged long ago to clear the land for agricultural purposes. It also received a shelter wood cut not long ago. The shelter wood cut emphasized the removal of the undesirable species such as red maple and beech, as well as the defective oaks, ashes, and sugar maples. This was to stimulate the growth in the residual stand and desirable regeneration on the forest floor.
Forest Type:	Northern Hardwoods
Acreage:	10.7
Size Class:	Pole Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	The stand is in good health and will remain that way for a long time to come.
Site quality:	2
Timber Quality:	3
Estimated Growth Rate (%):	2
Disturbance:	Natural

Operability:	Unrestricted

Stocking Data for Stand 17

Stocking Level:	Overstocked
Basal Area:	233
Trees per Acre:	460
Mean Stand Diameter:	9

Species Distribution for Stand 17

Species Name	% of Species in Stand
Hemlock	49%
Beech	20%
White Ash	11%
Red Maple	6%
Black Cherry	6%
White Oak	6%
Sugar Maple	3%

Wildlife, Cultural and Natural Features for Stand 17

Habitat and Wildlife Uses:	Considering this stand is made up of a large portion of hemlock, it provides thermal cover for wildlife from winter weather and the small pockets of hardwoods provide some browse. However, due to the small size of this stand, wildlife use it to pass through.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand has been chosen to be managed to create a natural forest with old-growth characteristics. Over time, this stand should support large trees, old-growth ecosystems and undisturbed native forests.
Recreational Uses:	Although access is limited in this area, camping and hiking are two probable recreational activities that could work with this stand. Nature observation, such as birding, could also be a recreational use for this stand.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 17

Recommended Priority Objectives for the Stand:	This stand is being managed for old-growth characteristics. There will be no timber production in this stand. It is accepted that over time certain species will fall out of the stand stocking, while others will become more dominant, as would naturally happen within this stand over several centuries.
Favored Species:	Hemlock, Beech and White Oak
Silvicultural System:	Even-aged
Rotation Age:	Several hundred years.
Prescription and Reasoning for Prescription:	No prescription is recommended, being as this stand is be left to naturally develop into a forest with old-growth characteristics.

Stand Description and Management for Stand: 18

Stand Description for Stand 18

Description of Dominant Vegetation and Successional Trends:	This is a Northern Hardwoods cover that is dominated by sugar maple. Sugar maple is a very shade tolerant, slow growing tree that has a long life expectancy. It is suspected that this stand will continue a 100 years in a

	similar state.
Riparian Area:	1.9 acres – This riparian area is a continuation of the riparian area found in stand 17. The riparian area better defined within this stand and has seasonally high water levels. Management in this riparian area is to be very restricted. Management will be allowed, but commercial tree cutting will only be conducted as needed and in association with harvests in neighboring stands. Heavy equipment is not allowed in the stand.
Stand History:	This stand was once used for agricultural purposes and is naturally occurring.
Logging History:	This stand was once logged and used for agricultural purposes; however when the stand was logged the current trees were left to create the quality trees found on the stand today.
Forest Type:	Northern Hardwoods
Acreage:	6.8
Size Class:	Pole Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	This stand is currently in good health.
Site quality:	2
Timber Quality:	2
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 18

Stocking Level:	Overstocked
Basal Area:	140
Trees per Acre:	324
Mean Stand Diameter:	8.542

Species Distribution for Stand 18

Species Name	**% of Species in Stand**
Sugar Maple	50%
Red Maple	21%
Beech	14%
White Ash	14%

Wildlife, Cultural and Natural Features for Stand 18

Habitat and Wildlife Uses:	This stand could be a browsing ground for wildlife; however due to its size the wildlife probably just pass through.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	The stand should continue to produce desirable species, such as sugar maple and oak. It should be left to act as a buffer and filter for a riparian zone in the stand for two intermittent streams that flow through it. Recreation and wildlife habitat are two probable uses for this stand.
Recreational Uses:	Although access to this stand is limited, camping and hiking are two possible recreational activities for this stand as well as nature observation, such as birding.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 18

Recommended Priority Objectives for the Stand:	Keep the sugar maple the favored species in the stand and continue to let it grow and become a profitable timber resource.
Favored Species:	Sugar Maple
Silvicultural System:	Even-aged
Rotation Age:	106
Prescription and Reasoning for Prescription:	This stand is currently overstocked. The stand lacks significant saw log volume to make a commercial thinning possible, but should have enough volume in 10 years for commercial thinning. A non-commercial thinning or firewood/pulpwood cut would greatly increase the growth of the more valuable trees within this stand. Most likely this thinning would be an investment cut. Management should favor the development of sugar maple, white ash and red maple.

Stand Description and Management for Stand: 19

Although Stand 19 was initially identified as a separate unit in the field, it was later determined that it did not meet the thresholds for a unique stand and was incorporated into other stands, as appropriate.

Stand Description and Management for Stand: 20

Stand Description for Stand 20

Description of Dominant Vegetation and Successional Trends:	This stand is a Red Pine Plantation that had limited success. Northern hardwoods now dominate as much of this stand as does red pine. This stand is naturally shifting to a northern hardwoods cover type. This stand has wet areas on it with existing intermittent streams flowing though it. Therefore, there are sections of the stand where harvesting equipment should be restricted.
Riparian Area:	5 acres – The riparian area of this stand tends to be flat or slightly sloping ground that carries water from drainages located to the north. The soil within the riparian area has very poor strength and is not capable of holding heavy equipment. Management in this riparian area is to be very restricted. Management will be allowed, but commercial tree cutting will only be conducted as needed and in association with harvests in neighboring stands. Heavy equipment is not allowed in the stand.
Stand History:	The stand was cleared in the past for agricultural purposes and then planted with red pine.
Logging History:	The stand was cleared in the past for agricultural purposes.
Forest Type:	Red Pine - Hardwoods
Acreage:	13.3
Size Class:	Pole Timber
Structure:	Even-Aged
Origin:	Plantation and Natural
Stand Health:	The plantation of red pine has not been successful, so the naturally occurring hardwoods will eventually take over control of the stand.
Site quality:	2
Timber Quality:	3
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 20

Stocking Level:	Acceptable stocking level
Basal Area:	120
Trees per Acre:	208
Mean Stand Diameter:	9.645

Species Distribution for Stand 20

Species Name	% of Species in Stand
Red Pine	56%
White Pine	17%
White Ash	17%
Red Maple	6%
Sugar Maple	6%

Wildlife, Cultural and Natural Features for Stand 20

Habitat and Wildlife Uses:	Because this stand is not too dense, sunlight reaches the ground and stimulates growth of cover and food for wildlife. The trees knocked down by the wind also provide foraging habitat for birds, mammals, salamanders, and other wildlife.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	Just west of the bounds of this stand is located a historic cemetery. No harvesting activates are planned close enough to this stand to affect the grave sites.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand should be reverted into a pioneer hardwood stand. Recreation and wildlife habitat are two probable uses for this stand.
Recreational Uses:	Although access to this stand is limited, camping and hiking are two possible recreational activities for this stand, as well as nature observation such as birding.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 20

Recommended Priority Objectives for the Stand:	Convert the stand from a red pine plantation to a naturally occurring northern hardwood stand.
Favored Species:	Pioneer Hardwoods
Silvicultural System:	Even-aged
Rotation Age:	82
Prescription and Reasoning for Prescription:	This stand is currently at acceptable stocking levels. No thinning is needed for 5 years. In 2012, a commercial thinning that favors the development of the hardwood component of the stand should be conducted. Thin and favor good quality hardwoods and promote regeneration of hardwoods in areas of dense red pine.

Stand Description and Management for Stand: 21

Stand Description for Stand 21

Description of Dominant Vegetation and Successional Trends:	This red pine plantation has suffered from excessive windthrow. The stand density varies a lot and ranges from poorly stocked to well stocked. Areas of low stocking are regenerating to northern hardwoods, while areas of higher stocking are still in red pine. With the proper timber stand improvements this stand could turn into a productive red pine stand.
Riparian Area:	1.2 acres – The northern riparian area of this stand is mostly a buffer strip for the riparian area in stand 20. Limiting equipment use within this riparian area and use of BMP's will be required. Harvesting when the

	ground is frozen is preferred. Management in this riparian area is to be very restricted. Management will be allowed, but commercial tree cutting will only be conducted as needed and in association with harvests in neighboring stands. Heavy equipment is not allowed in the stand.
Stand History:	This stand was cleared for agricultural purposes and then turned into a plantation. After the plantation was established, it received chemical treatment with the hypo-hatchet.
Logging History:	In the past this stand was logged for agricultural purposes. This plantation was then thinned using the row thinning method which removes every third row of red pine to create access for future harvests and to create openings in the canopy for tree crown growth in the remaining trees.
Forest Type:	Red Pine
Acreage:	26.4
Size Class:	Pole Timber
Structure:	Even-Aged
Origin:	Plantation
Stand Health:	The stand has a variety of densities. Therefore, the stand has a moderate bill of health.
Site quality:	2
Timber Quality:	2
Estimated Growth Rate (%):	2
Disturbance:	Wind
Operability:	Unrestricted

Stocking Data for Stand 21

Stocking Level:	Overstocked
Basal Area:	182
Trees per Acre:	1210
Mean Stand Diameter:	4.156

Species Distribution for Stand 21

Species Name	**% of Species in Stand**
Red Pine	74%
White Ash	14%
Red Maple	4%
Beech	4%
White Oak	1%
Black Cherry	1%
Sugar Maple	1%

Wildlife, Cultural and Natural Features for Stand 21

Habitat and Wildlife Uses:	Because this stand is not too dense, sunlight reaches the ground and stimulates growth of cover and food for wildlife. The trees knocked down by the wind also provide foraging habitat for birds, mammals, salamanders, and other wildlife.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand's current health condition is good. Recreation and wildlife habitat are two probable uses for this stand.
Recreational Uses:	Although access to this stand is limited, camping and hiking are two possible recreational activities for this stand as well as nature observation,

	such as birding.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 21

Recommended Priority Objectives for the Stand:	This stand should remain a red pine plantation due to its current success.
Favored Species:	Red Pine
Silvicultural System:	Even-aged
Rotation Age:	80
Prescription and Reasoning for Prescription:	This stand is overstocked and has almost enough volume to justify a commercial thinning. I recommend conducting this commercial thinning in 2012 with the other thinnings planned in red pine stands.

Stand Description and Management for Stand: 22

Stand Description for Stand 22

Description of Dominant Vegetation and Successional Trends:	This stand is a Red Pine Plantation that had limited success. Northern hardwoods dominates as much of this stand as does red pine. This stand is naturally shifting to a northern hardwoods cover type.
Riparian Area:	0 acres
Stand History:	This stand was used for agricultural purposes in the past and then converted into a plantation.
Logging History:	Before reverting to a red pine plantation, this stand was logged for agricultural purposes. It was recommended in the last plan that this stand have the firewood removed, however this management technique was not utilized.
Forest Type:	Northern Hardwoods
Acreage:	9.6
Size Class:	Pole Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	The trees on this stand are in decent health.
Site quality:	2
Timber Quality:	3
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 22

Stocking Level:	Overstocked
Basal Area:	127
Trees per Acre:	225
Mean Stand Diameter:	9.831

Species Distribution for Stand 22

Species Name	% of Species in Stand
Red Maple	47%
Red Pine	37%
White Oak	11%
Sugar Maple	5%

Wildlife, Cultural and Natural Features for Stand 22

Habitat and Wildlife Uses:	The tree species that are available on this stand allow for cover and foraging ground for wildlife; however the stand is probably just a passing ground for them.

Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand should remain a red pine stand as long as the quality of the timber remains healthy. Recreation and wildlife habitat are two probable uses for this stand.
Recreational Uses:	Although access to this stand is limited, camping and hiking are two possible recreational activities for this stand as well as nature observation, such as birding.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 22

Recommended Priority Objectives for the Stand:	Revert this stand into a northern hardwoods stand.
Favored Species:	Red maple
Silvicultural System:	Even-aged
Rotation Age:	82
Prescription and Reasoning for Prescription:	This stand is overstocked and needs a commercial thinning to reduce crown crowding. A marked thinning should be prepared that removes about 1/3 of the stand density. Management activities should favor the development of sugar maple, white oak, and red maple. Plantation species should be thinned out when possible.

Stand Description and Management for Stand: 23

Stand Description for Stand 23

Description of Dominant Vegetation and Successional Trends:	This is a Northern Hardwoods, Red Maple cover type. Red Maple is the dominate species of this stand. This stand will continue to develop as it already has for many decades. Other more shade tolerant trees will eventually dominate the stand.
Riparian Area:	0 acres
Stand History:	This stand was one used for agricultural purposes.
Logging History:	This stand was once logged and cleared for agricultural purposes. There was a plan to cut firewood from the stand, however this management objective was not implemented.
Forest Type:	Northern Hardwoods
Acreage:	3.1
Size Class:	Pole Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	The trees on this stand are in decent health.
Site quality:	2
Timber Quality:	3
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 23

Stocking Level:	Understocked
Basal Area:	60
Trees per Acre:	98.8
Mean Stand Diameter:	10.52

Species Distribution for Stand 23

Species Name	% of Species in Stand
Red Maple	67%
White Pine	33%

Wildlife, Cultural and Natural Features for Stand 23

Habitat and Wildlife Uses:	The carrying capacity of this stand is relatively low. There are few oaks, beech and other nut producing trees to support wildlife. Most wildlife use this stand in passing.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand should be left as a northern hardwood stand. Recreation and wildlife habitat are two probable uses for this stand.
Recreational Uses:	Although access to this stand is limited, camping and hiking are two possible recreational activities for this stand, as well as nature observation, such as birding.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 23

Recommended Priority Objectives for the Stand:	The stand should be managed for high quality hardwoods.
Favored Species:	Red maple
Silvicultural System:	Even-age
Rotation Age:	80
Prescription and Reasoning for Prescription:	This stand is currently understocked and does not need to be thinned for many years.

Stand Description and Management for Stand: 24

Stand Description for Stand 24

Description of Dominant Vegetation and Successional Trends:	This is a Red Pine Plantation. This stand was planted as a reforestation practice and has done well on this site. Some areas of the stand have suffered windthrow, but less so than other red pine stands in the area.
Riparian Area:	1.3 acres – There are two types of riparian areas in this stand. One riparian area is related to a drainage that starts on the northeast side of the stand, and the other riparian areas are caused by pockets of wet soils. Management in these riparian areas are to be very restricted. Management will be allowed, but commercial tree cutting will only be conducted as needed and in association with harvests in neighboring stands. Heavy equipment is not allowed in the stand.
Stand History:	This stand was once cleared for agricultural purposes and received a chemical treatment before a row thinning.
Logging History:	This stand received a row thinning, which removed every third row, to allow for better future access to the stand and create an opening in the canopy to improve crown growth of the remaining red pine.
Forest Type:	Red Pine
Acreage:	29.5
Size Class:	Pole Timber
Structure:	Even-Aged
Origin:	Plantation
Stand Health:	This stand is currently in good health.

Site quality:	2
Timber Quality:	2
Estimated Growth Rate (%):	2
Disturbance:	Wind
Operability:	Unrestricted

Stocking Data for Stand 24

Stocking Level:	Overstocked
Basal Area:	122
Trees per Acre:	289
Mean Stand Diameter:	7.646

Species Distribution for Stand 24

Species Name	% of Species in Stand
Red Pine	86%
Red Maple	5%
Black Cherry	3%
Northern Red Oak	1%
Fire Cherry	1%
White Ash	1%
Black Birch	1%
Sugar Maple	1%
Quaking Aspen	1%

Wildlife, Cultural and Natural Features for Stand 24

Habitat and Wildlife Uses:	Because this stand is not too dense, sunlight reaches the ground and stimulates growth of cover and food for wildlife. The trees knocked down by the wind also provide foraging habitat for birds, mammals, salamanders, and other wildlife.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand should continue to be managed as a red pine stand as long as the quality of timber remains healthy. Recreation and wildlife habitat are two probable uses for this stand.
Recreational Uses:	Access to this stand is better than most of the other stands on the property and would allow for excellent access for the following recreational activities: camping, hiking and nature observing, such as birding.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 24

Recommended Priority Objectives for the Stand:	While the health of the stand is good, the stand should remain a red pine plantation.
Favored Species:	Northern Hardwoods
Silvicultural System:	Even-aged
Rotation Age:	80
Prescription and Reasoning for Prescription:	This stand is overstocked and has almost enough volume to justify a commercial thinning. I recommend conducting this commercial thinning in 2012 with the other thinnings planed in red pine stands.

Stand Description and Management for Stand: 25

Stand Description for Stand 25

Description of Dominant Vegetation and Successional Trends:	This plantation has a mix of Larch and Red Pine. Both of these species are commonly used in reforestation projects. It is suspected that this stand will shift to a northern hardwoods stand as time progresses.
Riparian Area:	0 acres
Stand History:	This stand was cleared for agricultural use prior to the planting of the red pine and tamarack.
Logging History:	The stand was cleared for agricultural purposes in the 1800's.
Forest Type:	Red Pine/Larch
Acreage:	4.6
Size Class:	Pole Timber
Structure:	Even-Aged
Origin:	Plantation
Stand Health:	This stand is currently in good health.
Site quality:	2
Timber Quality:	3
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 25

Stocking Level:	Acceptable stocking level
Basal Area:	103
Trees per Acre:	185
Mean Stand Diameter:	9.125

Species Distribution for Stand 25

Species Name	**% of Species in Stand**
Tamarack	45%
Red Pine	35%
Black Cherry	10%
Red Maple	3%
Sugar Maple	3%
Yellow Birch	3%

Wildlife, Cultural and Natural Features for Stand 25

Habitat and Wildlife Uses:	Because this stand is not too dense, sunlight reaches the ground and stimulates growth of cover and food for wildlife. The trees knocked down by the wind also provide foraging habitat for birds, mammals, salamanders, and other wildlife.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand should remain a red pine-tamarack plantation as long as the health of the stand remains good. Recreation and wildlife habitat are two probable uses for this stand.
Recreational Uses:	Access to this stand would provide good opportunities for camping and hiking, as well as nature observation, like birding.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 25

Recommended Priority Objectives for the Stand:	While the health of the stand is good, the stand should remain a red pine-tamarack plantation.
Favored Species:	Northern Hardwoods
Silvicultural System:	Even-aged
Rotation Age:	81
Prescription and Reasoning for Prescription:	This is currently at an acceptable stocking level, and no treatment is needed for about 10 years. In 2017 this stand should be ready for a commercial thinning. Any thinning efforts should favor the development of native hardwood species.

Stand Description and Management for Stand: 26

Stand Description for Stand 26

Description of Dominant Vegetation and Successional Trends:	This is a Northern Hardwoods cover type. It is a naturally occurring type and will continue to develop much as it has for many decades.
Riparian Area:	0 acres
Stand History:	This stand was used for agricultural purposes before it was turned into a plantation. The plantation was treated chemically before it deteriorated and it also received a row thinning.
Logging History:	This stand was cleared in the 1800's for agricultural purposes and then turned into a red pine plantation in the 1940's.
Forest Type:	Red Pine
Acreage:	7.9
Size Class:	Pole Timber
Structure:	Even-Aged
Origin:	Plantation
Stand Health:	The stand is young and seems to be in good health.
Site quality:	2
Timber Quality:	2
Estimated Growth Rate (%):	2
Disturbance:	Wind
Operability:	Unrestricted

Stocking Data for Stand 26

Stocking Level:	Overstocked
Basal Area:	117
Trees per Acre:	1150
Mean Stand Diameter:	2.785

Species Distribution for Stand 26

Species Name	% of Species in Stand
Red Pine	29%
Sugar Maple	26%
White Ash	17%
Northern Red Oak	11%
Tamarack	6%
Red Maple	3%
Black Cherry	3%
Ironwood	3%
Basswood	3%

Wildlife, Cultural and Natural Features for Stand 26

Habitat and Wildlife Uses:	This stand could be a browsing ground for wildlife, however due to the stand's size the wildlife probably just pass through.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand should continue being managed for hardwoods for years to come. Recreation and wildlife habitat are two probable uses for this stand.
Recreational Uses:	Access to this stand is good. It could be used for camping and hiking, as well as nature observation, such as birding.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 26

Recommended Priority Objectives for the Stand:	Let this stand develop into a productive northern hardwoods stand.
Favored Species:	Sugar maple
Silvicultural System:	Even-aged
Rotation Age:	88
Prescription and Reasoning for Prescription:	This stand is overstocked and has almost enough volume to justify a commercial thinning. I recommend conducting a commercial thinning in 2012 with the other thinnings planed in red pine stands.

Stand Description and Management for Stand: 27

Stand Description for Stand 27

Description of Dominant Vegetation and Successional Trends:	This is a Northern Hardwoods cover type. It is composed of a mix of maples, white ash, black cherry, oaks, birches, basswood, pine and hemlock. It is anticipated that this stand will continue to develop much as it already has for many decades.
Riparian Area:	0 acres
Stand History:	This stand was once used for agricultural purposes in the 1800's.
Logging History:	This stand was cleared in the 1800's for agricultural purposes. There was a shelter wood cut recommended for this stand in the previous management plan, but it was never implemented. This cut would have removed over-mature, mature, and defective trees to satisfy the needs of this stand.
Forest Type:	Northern Hardwoods
Acreage:	3.2
Size Class:	Saw Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	This stand is in good health and should continue to develop well for many years.
Site quality:	2
Timber Quality:	2
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 27

Stocking Level:	Overstocked
Basal Area:	113
Trees per Acre:	227

Mean Stand Diameter:	8.644

Species Distribution for Stand 27

Species Name	% of Species in Stand
Sugar Maple	44%
White Ash	21%
Northern Red Oak	21
Hemlock	9%
Red Maple	3%
Black Cherry	3%

Wildlife, Cultural and Natural Features for Stand 27

Habitat and Wildlife Uses:	This stand could be a browsing ground for wildlife, however due to its size the wildlife probably just pass through.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand has been chosen to be managed to create a natural forest with old-growth characteristics. Over time, this stand should support large trees, old-growth ecosystems and undisturbed native forests.
Recreational Uses:	Access to this stand is better than to most of the stands on this property. Therefore, it would good for camping and hiking, as well as nature observation, such as birding.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 27

Recommended Priority Objectives for the Stand:	This stand is being managed for old-growth characteristics. There will be no timber production in this stand. It is accepted that over time certain species will fall out of the stand stocking, while others will become more dominant, as would naturally happen within this stand over several centuries.
Favored Species:	Hemlock, sugar maple, white ash, red oak
Silvicultural System:	Even-aged
Rotation Age:	Several hundred years.
Prescription and Reasoning for Prescription:	No prescription is recommended, being as this stand is be left to naturally develop into a forest with old-growth characteristics.

Stand Description and Management for Stand: 28

Stand Description for Stand 28

Description of Dominant Vegetation and Successional Trends:	This stand is a Norway Spruce Plantation. Norway spruce is a common species for forest plantation in the northeast. It is a good commercial species and grows quickly into a large tree. This stand will continue as a Norway spruce plantation for many years.
Riparian Area:	3.5 acres – This riparian area is the headwater of Chaffee Creek. It is defined by a very shallow drainage and wet soil conditions within the riparian area. This area tends to have slow moving water in the drainage. Management in this riparian area is to be very restricted. Management will be allowed, but commercial tree cutting will only be conducted as needed and in association with harvests in neighboring stands. Heavy equipment is not allowed in the stand.
Stand History:	This stand was cleared in the 1800's for agricultural purposes.

Logging History:	This stand was cleared in the 1800's for agricultural purposes and then turned into a Norway Spruce plantation. This stand also received a row thinning.
Forest Type:	Norway Spruce
Acreage:	19.3
Size Class:	Pole Timber
Structure:	Even-Aged
Origin:	Plantation
Stand Health:	This stand is in good health.
Site quality:	2
Timber Quality:	2
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 28

Stocking Level:	Overstocked
Basal Area:	227
Trees per Acre:	480
Mean Stand Diameter:	8.914

Species Distribution for Stand 28

Species Name	% of Species in Stand
Red Spruce	79%
Quaking Spruce	12%
Red Maple	6%
White Ash	1%
Northern Red Oak	1%

Wildlife, Cultural and Natural Features for Stand 28

Habitat and Wildlife Uses:	This stand provides good thermal cover for wildlife.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand should continue being managed as a Norway spruce stand until it matures. At the end of rotation, the stand should be allowed to convert to native hardwoods and softwoods. Recreation and wildlife habitat are two probable uses for this stand.
Recreational Uses:	Access to this stand provides good places for camping and hiking, as well as nature observation, such as birding.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 28

Recommended Priority Objectives for the Stand:	The landowner wishes to convert to native hardwoods as much as possible. This stand should be thinned and allowed to mature, then converted to native hardwood species.
Favored Species:	Northern Hardwoods
Silvicultural System:	Even-aged
Rotation Age:	80
Prescription and Reasoning for Prescription:	This stand is very overstocked and needs a series of thinnings to reduces its stocking to acceptable levels. Prepare a marked sale removing about 1/3 of the stand density. Favor red oak, red maple and white ash.

Stand Description and Management for Stand: 29

Stand Description for Stand 29

Description of Dominant Vegetation and Successional Trends:	This stand is dominated by a mix of eastern hemlock and northern hardwoods. Over time, the eastern hemlock and sugar maple should become more dominant in the stand, as other species give away due to competition.
Riparian Area:	0.5 acres – This riparian area is composed of two drainages. The eastern drainage starts as a well defined drainage and pours into a flat area, creating a marsh/forested swamp. The second drainage is less defined and pours into the same swamp.
Stand History:	This stand was once used for agricultural purposes.
Logging History:	This stand was cleared in the 1800's for agricultural purposes. This stand was scheduled for a selective cut under the previous management plan; however this stand did not receive the intended timber stand improvement.
Forest Type:	Hemlock-Hardwoods
Acreage:	8.2
Size Class:	Saw Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	This stand is in good health.
Site quality:	2
Timber Quality:	2
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 29

Stocking Level:	Overstocked
Basal Area:	260
Trees per Acre:	450
Mean Stand Diameter:	9.573

Species Distribution for Stand 29

Species Name	% of Species in Stand
White Ash	28%
Hemlock	23%
Sugar Maple	21%
Basswood	18%
Quaking Aspen	8%
Chestnut Oak	3%

Wildlife, Cultural and Natural Features for Stand 29

Habitat and Wildlife Uses:	The hemlock provide thermal cover for wildlife while the other hardwood species in the stand provide browse for the wildlife.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand has been chosen to be managed to create a natural forest with old-growth characteristics. Over time, this stand should support large trees, old-growth ecosystems and undisturbed native forests.
Recreational Uses:	Although access to this stand is limited, camping and hiking are two possible recreational activities for this stand, as well as nature observation,

	such as birding.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 29

Recommended Priority Objectives for the Stand:	This stand is being managed for old-growth characteristics. There will be no timber production in this stand. It is accepted that over time certain species will fall out of the stand stocking, while others will become more dominant, as would naturally happen within this stand over several centuries.
Favored Species:	Hemlock and sugar maple
Silvicultural System:	Even-aged
Rotation Age:	Several hundred years
Prescription and Reasoning for Prescription:	No prescription is recommended, being as this stand is be left to naturally develop into a forest with old-growth characteristics.

Soils of the Town of Newfield Land Holdings

The soils found within these parcels tend to create restrictions for harvesting. Most of the soils experience a medium to high degree of *rutting*, have a high degree of *on-trail erosion* or are not well suited for *natural surface roads*. Most of the soils have a medium degree of restriction for harvest equipment; either due to poor strength of the soil, slope or wetness. It appears that where proper BMP's have been installed on natural surface roads in the past, that there was little to no erosion. Thus, proving that use of BMP's to control or limit water quality issues works.

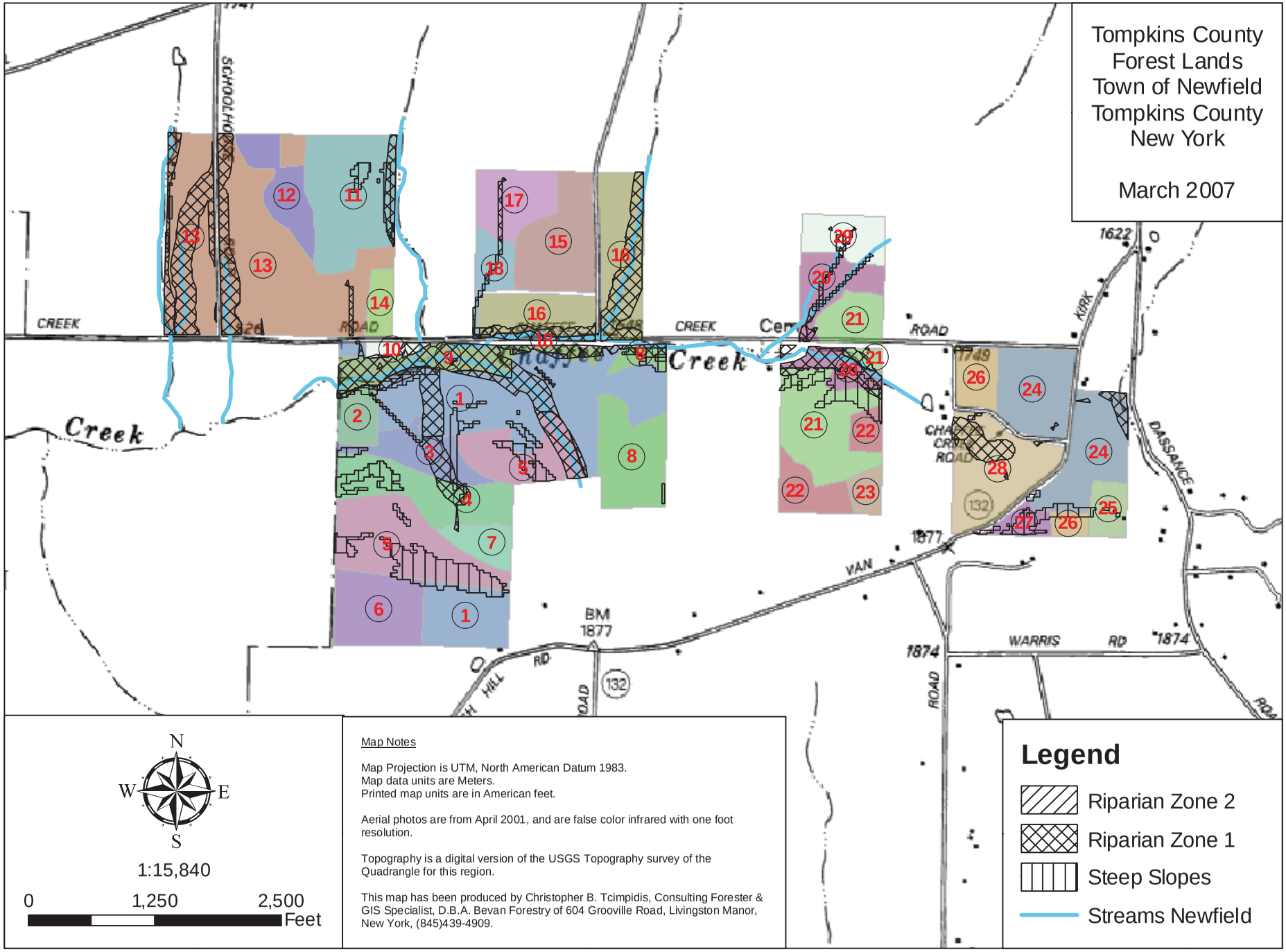
Rutting:
Many stands had obvious rutting from past forest operations. The better drained and upland sites seemed not to have as much rutting. Rutting can change drainage patterns and create new opportunities for erosion within the forest. I did notice that some old farm roads within Newfield tax parcel no. 29-1-9 were eroded and lacked proper BMP's. The issue of excessive rutting within the forest can be addressed by timing the forest operations with seasonal weather conditions. No spring operations should be allowed, due to the amount of available water within the soils. Within some of the stands with a lower index for rutting, summer operations may be possible, but access to most of these stands is through stands with a high index for soil rutting. I believe it best to limit the use of heavy equipment to winter operations, when the ground is firmly frozen. The least, if any, damage will occur to soils when the ground is frozen. The only exception to the rule would be the creation of new natural surface roads or skid trails that require side hill cuts. It appears that all such road work has been completed on these parcels, so there should be little need for such work. Salvage operations (such as operations done in response to disease, windthrow or natural disaster) may require summertime operations instead of winter.

Trail Erosion:
Most, if not all, erosion that occurs on the trails and roads can be eliminated with proper water bar placement and use of BMP's.

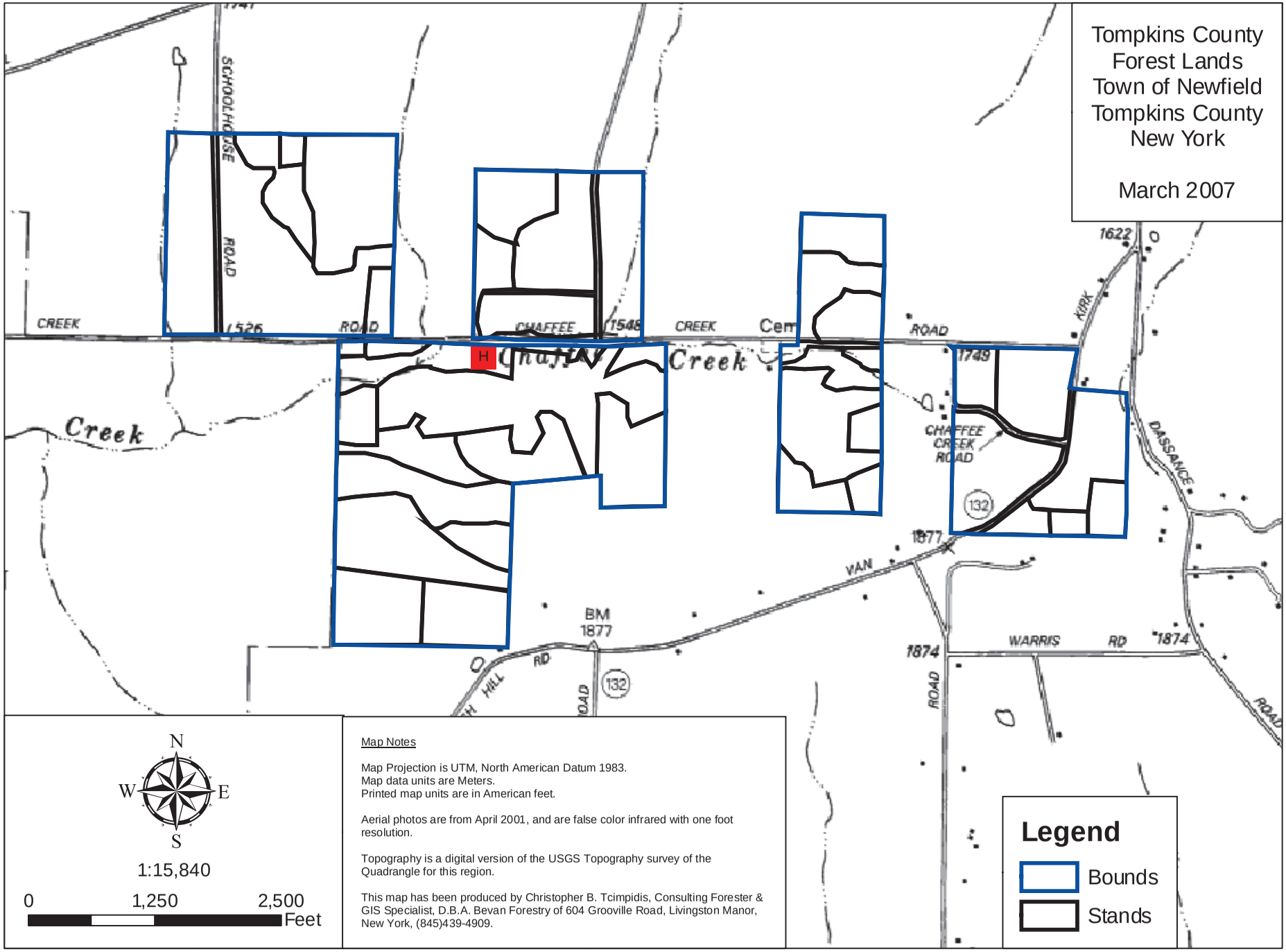
Natural Surface Roads:
All of the parcels within this forest block have frontage on town roads. There is little need to construct roads for trucks or pickup trucks. The existing roads should be maintained to aid in accessing stands and monitoring the forest.

Review of findings:
Most of the soils found on this forest block are susceptible to damage from forest activities. Proper planning of forest activities will reduce or eliminate the damage to soils from forest operations.

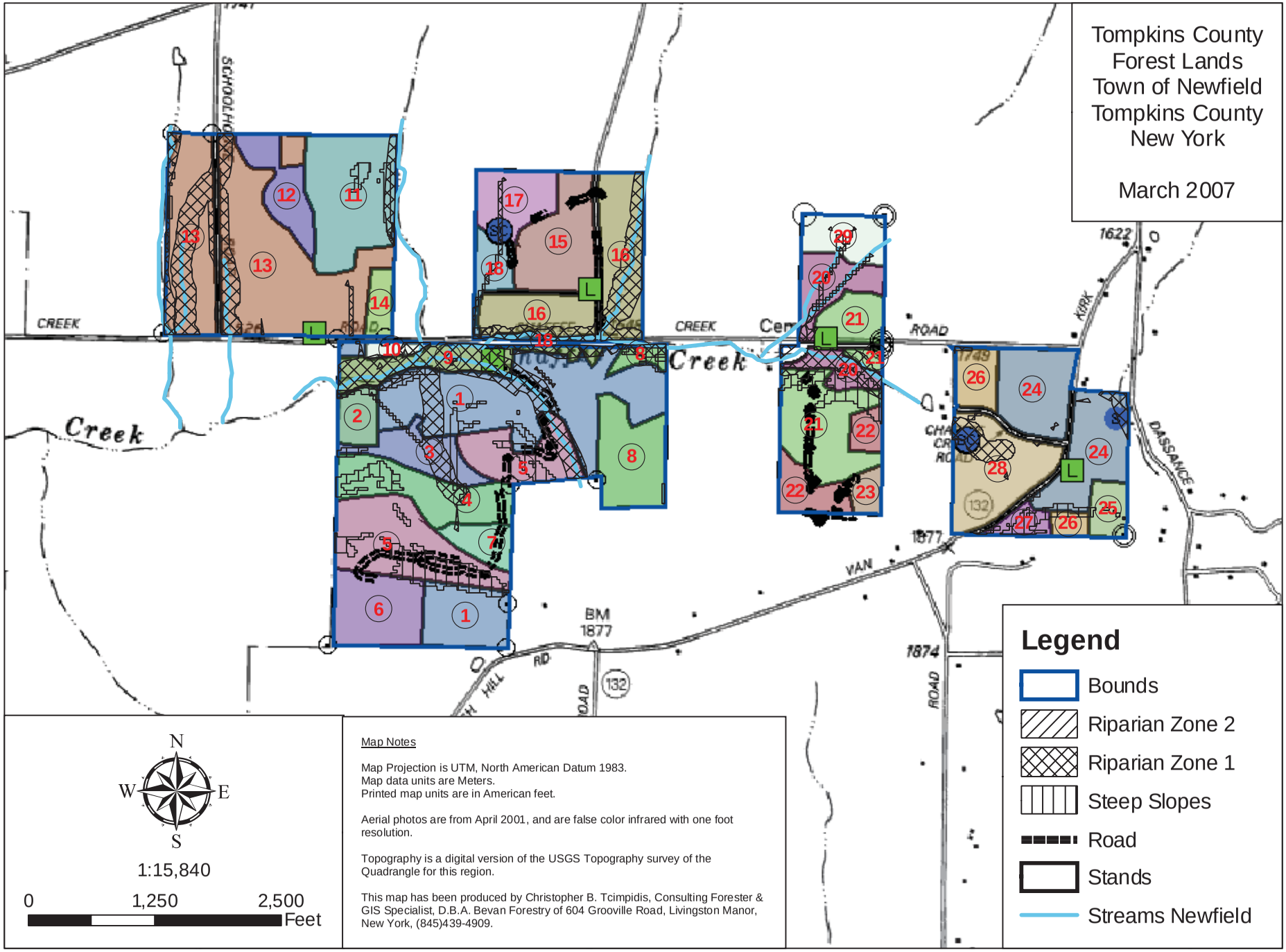
Map N1:Newfield Riparian and Steep Slope Areas



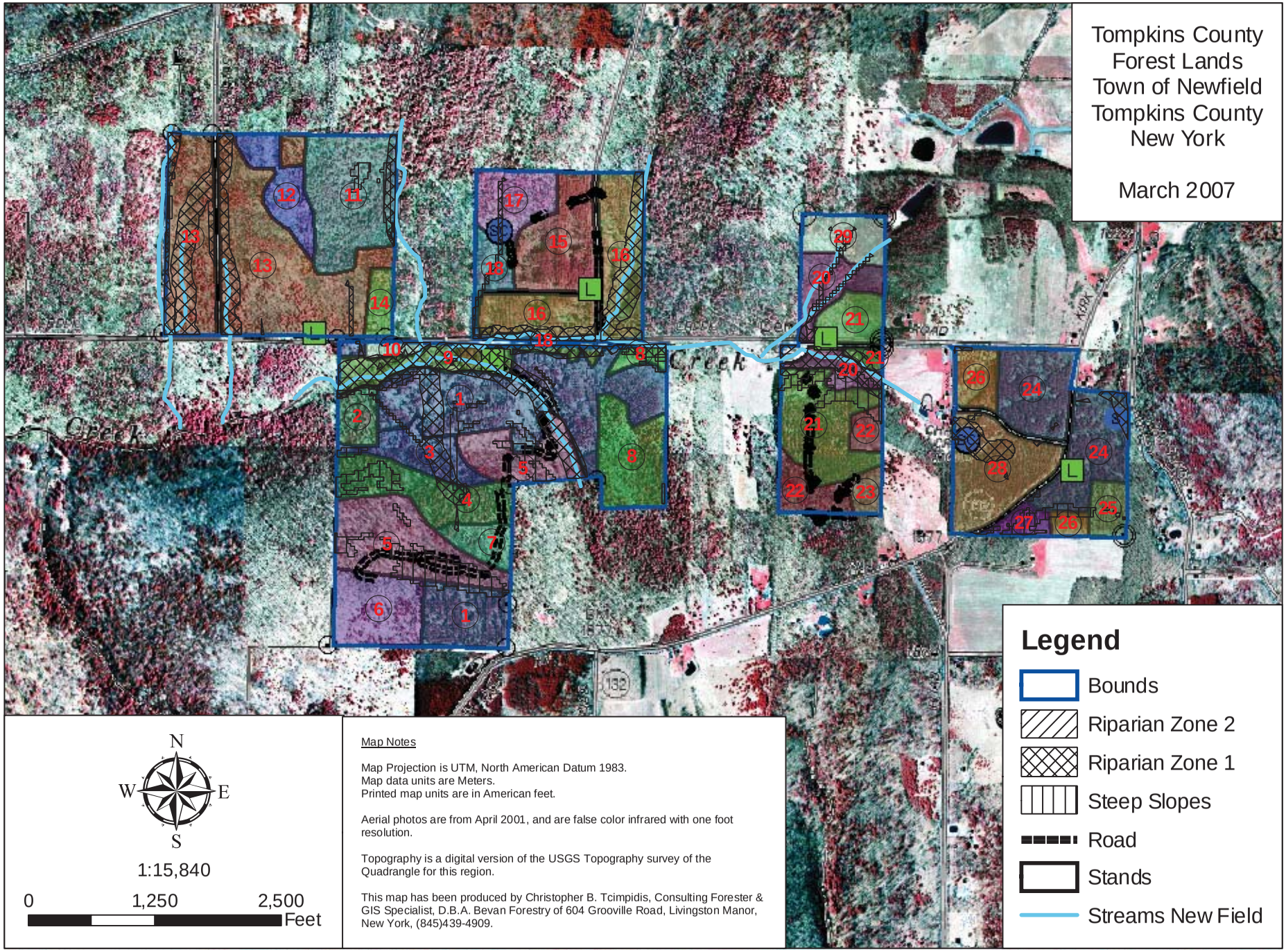
Map N2: Newfield Cultural Resources



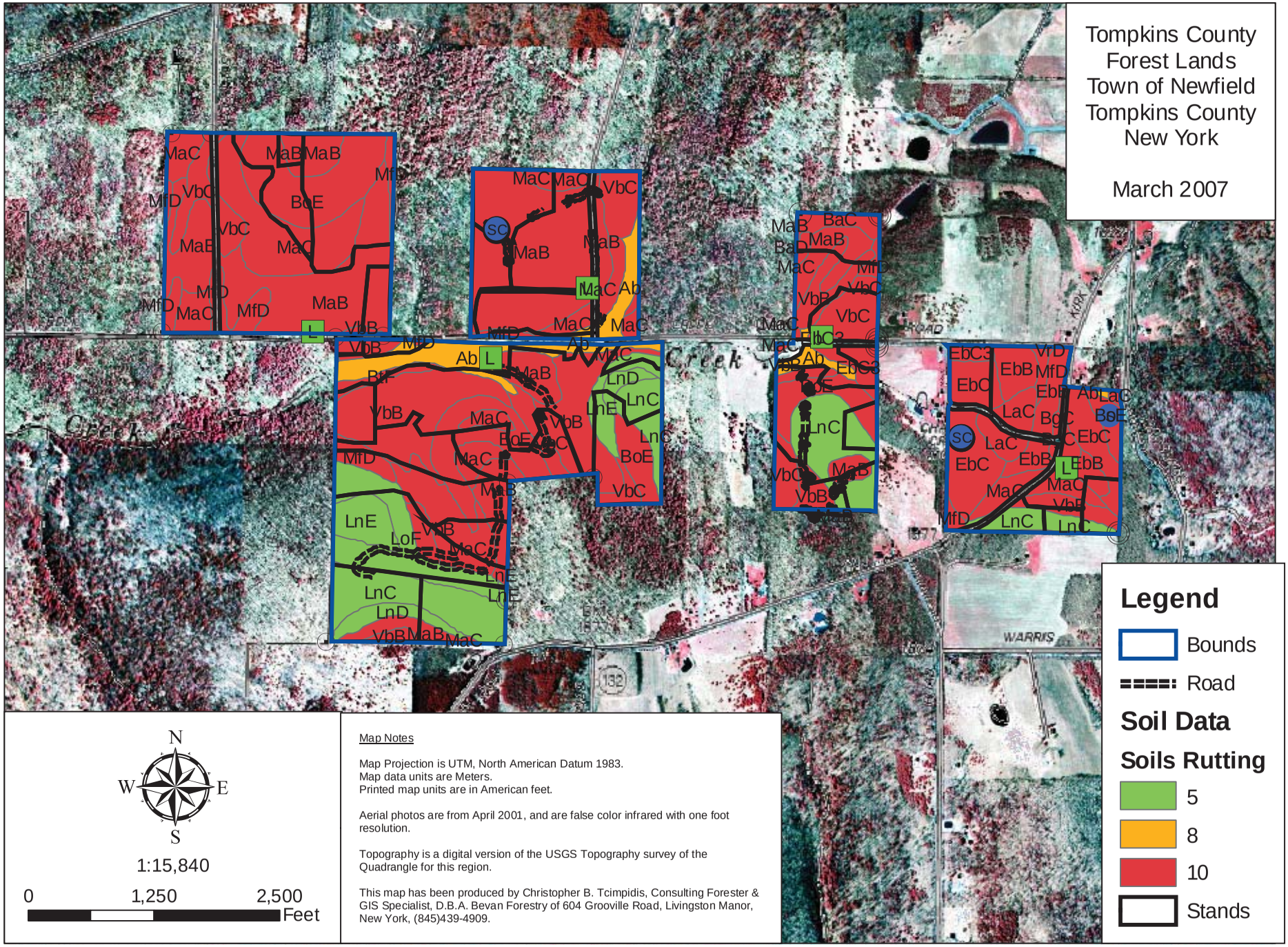
Map N3: Newfield Forest Stands



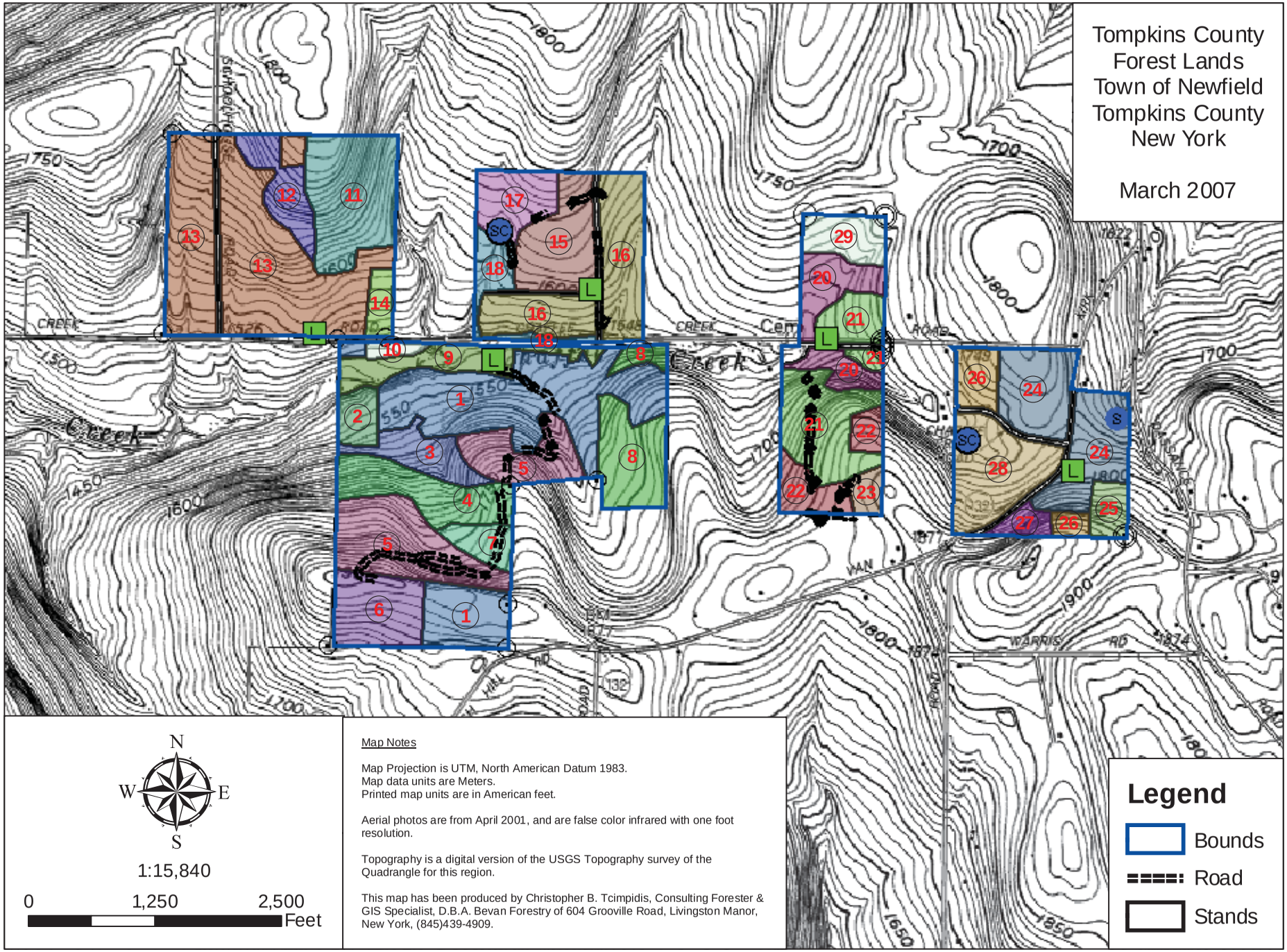
Map N4: Newfield Aerial Photo



Map N5: Newfield Soils



Map N6: Newfield Topography



Town of Caroline Forest Stands (Stand 30 – Stand 34)

Summary of Management Recommendations for Caroline Forest Stands

Stand 30 – 53.6 acres

- Prescription
    a. Even-aged management
    b. Goal
        i. Manage for northern hardwoods, favoring black cherry, white ash birch and sugar maple.
    c. Treatment
        i. No treatment
    d. Reason
        i. This stand is a sapling stand of pioneer hardwoods and northern hardwoods. No treatment will be needed until there are at least 17 feet of clear bowl (stem) on the average tree.

Stand 31 – 5.9 acres

- Prescription
    a. Even-aged management
    b. Goal
        i. Manage for northern hardwoods. Favor sugar maple and black cherry.
    c. Treatment
        i. Evaluate for commercial thinning in 2017
    d. Reason
        i. This stand has pockets of larger timber and pole size timber. Even though the inventory states that there is about 5,900 feet per acre of saw timber, this number is skewed due to the size of the stand and the patchy nature of the stand. Waiting 10 years will allow some of the pole timber to develop into saw timber.

Stand 32 – 28.2 acres

- Prescription
    a. Retain this stand for development of forests with old-growth characteristics
    b. Goal
        i. Let nature take its course, with the intention of having large trees and old-growth structure.
    c. Treatment
        i. No treatment

Stand 33 – 6.7 acres

- Prescription
    a. Even-aged management
    b. Goal
        i. Manage for northern hardwoods. Favor sugar maple, white ash, and black cherry.
    c. Treatment
        i. Non-commercial Timber Stand Improvement (TSI)
    d. Reason
        i. Use a non-commercial thinning to control Unacceptable Growing Stock (UGS) and concentrate growth on crop-trees.

Stand 34 – 3.2 acres

- Prescription
    a. Even-aged management
    b. Goal
        i. Manage for northern hardwoods.
    c. Treatment
        i. This stand could use a crown thinning, but it is composed mostly of white ash, which currently has a poor market value. Also, I am skeptical of the interior quality of the trees found in this stand. I suspect the white ash has large, brown hearts, which decrease the value even more. We will need to wait for the market to change before attempting any commercial thinnings in this stand.
    d. Reason

i. The current market does not support thinnings in this stand.

Stand Description and Management for Stand: 30

Stand Description for Stand 30

Description of Dominant Vegetation and Successional Trends:	This is a clear cut pine stand that was allowed to regenerate to northern hardwoods. It is currently covered in a pioneer hardwoods. This cover type will give way to a northern hardwood cover type in the next few decades.
Riparian Area:	0.5 acres – This riparian area is associated with a small drainage that runs through the southern end of this stand. The drainage runs generally in a southwest direction. Management in this riparian area is to be very restricted. Management will be allowed, but commercial tree cutting will only be conducted as needed and in association with harvests in neighboring stands. Heavy equipment is not allowed in the stand.
Stand History:	This stand was used for agricultural purposes.
Logging History:	This stand was cleared for agricultural purposes in the 1800's. It was turned into a plantation. The plantation was treated chemically and then thinned, but eventually was clear-cut to allow for the northern hardwoods to regenerate.
Forest Type:	Northern Hardwoods
Acreage:	53.6
Size Class:	Pole Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	The stand is in good health.
Site quality:	2
Timber Quality:	3
Estimated Growth Rate (%):	2
Disturbance:	Logging/Natural
Operability:	Unrestricted

Stocking Data for Stand 30

Stocking Level:	Understocked
Basal Area:	25.5
Trees per Acre:	2280
Mean Stand Diameter:	1.317

Species Distribution for Stand 30

Species Name	% of Species in Stand
Fire Cherry	44%
Red Maple	25%
Quaking Aspen	11%
Sugar Maple	7%
Red Pine	5%
Black Cherry	2%
Beech	2%
White Ash	2%
Black Birch	1%

Wildlife, Cultural and Natural Features for Stand 30

Habitat and Wildlife Uses:	The hardwoods on the stand provide good browse for wildlife.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.

Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand will eventually be a productive northern hardwoods stand. Recreation and wildlife habitat are two probable uses for this stand.
Recreational Uses:	Although access to this stand is limited, camping and hiking are two possible recreational activities for this stand.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 30

Recommended Priority Objectives for the Stand:	This stand should remain being managed for hardwood production.
Favored Species:	Red maple
Silvicultural System:	Even-aged
Rotation Age:	80
Prescription and Reasoning for Prescription:	No treatment is required. This is a sapling stand that resulted from clear-cutting a red pine plantation. The stand is currently well stocked and does not need treatment until most of the trees within the stand have about 1 log (16 feet) clear of branches and limbs.

Stand Description and Management for Stand: 31

Stand Description for Stand 31

Description of Dominant Vegetation and Successional Trends:	This is a Northern Hardwoods, Red Maple cover type. Red Maple is the dominant species of this stand. This stand will continue to develop as it already has for many decades. Other, more shade tolerant, trees will eventually dominate the stand.
Riparian Area:	0 acres
Stand History:	This stand was used for agricultural purposes.
Logging History:	This stand was cleared for agricultural purposes in the 1800's. This stand was previously managed and it was recommended under a previous management plan that the stand undergo a commercial thinning; however this was never implemented.
Forest Type:	Northern Hardwoods
Acreage:	5.9
Size Class:	Saw Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	This stand is in good health.
Site quality:	
Timber Quality:	2
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 31

Stocking Level:	Overstocked
Basal Area:	133
Trees per Acre:	635
Mean Stand Diameter:	4.93

Species Distribution for Stand 31

Species Name	% of Species in Stand
Red Maple	85%
Sugar Maple	5%

Ironwood	5%
Black Cherry	5%

Wildlife, Cultural and Natural Features for Stand 31

Habitat and Wildlife Uses:	This stand provides browse for wildlife. Most game species of wildlife use this stand in passing. Small animals, such as rodents, find their daily needs within the stand.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand can be managed for northern hardwoods and mixed recreational uses. Recreation and wildlife habitat are two probable uses for this stand.
Recreational Uses:	Although access to this stand is limited, camping and hiking are two possible recreational activities for this stand.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 31

Recommended Priority Objectives for the Stand:	This stand should continue to be managed for northern hardwoods.
Favored Species:	Red maple, black cherry and sugar maple.
Silvicultural System:	Even-aged
Rotation Age:	82
Prescription and Reasoning for Prescription:	This stand is overstocked and in need of a commercial thinning to reduce stand over crowding. A marked thinning should be prepared for this stand to reduce stand stocking by about 1/3. Favor the development of sugar maple, black cherry and good red maple.

Stand Description and Management for Stand: 32

Stand Description for Stand 32

Description of Dominant Vegetation and Successional Trends:	This is a Northern Hardwoods cover type. It is composed of a mix of maples, white ash, black cherry, oaks, birches, basswood, pine and hemlock. It is suspected that this stand will continue to develop much as it already has for many decades.
Riparian Area:	13.6 acres – This is the largest riparian area on both the Caroline Forest and Newfield Forest lands. This riparian area is associated with the West Branch of the Owego Creek. This riparian area has both a zone 1 and zone 2 area.
Stand History:	This stand is naturally occurring and was probably not used for agriculture because of the slope of the property.
Logging History:	This stand, under the previous management plan, was to have a shelter wood cut; however this stand did not receive the prescribed management treatment..
Forest Type:	Northern Hardwoods
Acreage:	28.2
Size Class:	Saw Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	This stand is in good health.
Site quality:	2
Timber Quality:	2
Estimated Growth Rate (%):	2

Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 32

Stocking Level:	Overstocked
Basal Area:	102
Trees per Acre:	243
Mean Stand Diameter:	7.581

Species Distribution for Stand 32

Species Name	% of Species in Stand
Sugar Maple	45%
Red Maple	23%
White Ash	9%
Ironwood	7%
Black Cherry	5%
Basswood	5%
Hawthorn	2%
Other Non-commercial	2%
Fire Cherry	2%

Wildlife, Cultural and Natural Features for Stand 32

Habitat and Wildlife Uses:	This stand has limited carrying capacity for large and small game animals. It is most likely that game animals use this stand in passing and derive little of their daily needs within this stand. Rodents and small animals should be able to find their needs by foraging for seeds and other food sources produced within the bounds of the stand.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	The northeastern corner of this stand contains a Freshwater Forested/Shrub Wetland classified by the US Fisheries and Wildlife Service. This area is also within the riparian area of the West Branch of the Owego Creek.
Potential Uses:	This stand has been chosen to be managed to create a natural forest with old-growth characteristics. Over time, this stand should support large trees, old-growth ecosystems and undisturbed native forests.
Recreational Uses:	Although access to this stand is limited, camping and hiking are two possible recreational activities for this stand, as well as nature observation, such as birding.
Water Quality Issues:	No water quality issues were noted during the forest survey. However, being as this stand has a large riparian area and serves to filter and shade the West Branch of the Owego Creek, a high level of restriction has been placed on this stand. This is one of the few stands in this ownership with a Zone 1 Riparian Area.

Prescription for Stand 32

Recommended Priority Objectives for the Stand:	This stand is being managed for old-growth characteristics. There will be no timber production in this stand. It is accepted that over time certain species will fall out of the stand stocking, while others will become more dominant, as would naturally happen within this stand over several centuries.
Favored Species:	Sugar maple
Silvicultural System:	Even-aged
Rotation Age:	Several hundred years

Prescription and Reasoning for Prescription:	No prescription is recommended, being as this stand is be left to naturally develop into a forest with old-growth characteristics.

Stand Description and Management for Stand: 33

Stand Description for Stand 33

Description of Dominant Vegetation and Successional Trends:	This is a Northern Hardwoods, Red Maple cover type. Red Maple is the dominant species of this stand. This stand will continue to develop as it already has for many decades. Other, more shade tolerant, trees will eventually dominate the stand.
Riparian Area:	0 acres
Stand History:	This stand was used for agricultural purposes in the 1800's.
Logging History:	This stand was cleared, most likely for agriculture, and locust was planted here for fence posts. The locust was prescribed in the previous management plan to be clear-cut out of the stand, but this management technique was never applied.
Forest Type:	Northern Hardwoods-Locust
Acreage:	6.7
Size Class:	Pole Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	This stand is in good health.
Site quality:	2
Timber Quality:	2
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 33

Stocking Level:	Acceptable stocking level
Basal Area:	127
Trees per Acre:	265
Mean Stand Diameter:	8.886

Species Distribution for Stand 33

Species Name	**% of Species in Stand**
Red Maple	42%
White Ash	42%
Sugar Maple	5%
Black Cherry	5%
Other Non-commercial	5%

Wildlife, Cultural and Natural Features for Stand 33

Habitat and Wildlife Uses:	This stand may provide limited cover for game that forage in the near-by farm field. Any other use by large and small game is limited to foraging while passing. Small mammals find many of their daily needs within the bounds of this stand and can forage for tree, shrub and grass seeds under the cover of the canopy.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand should be managed for hardwoods. Recreation and wildlife habitat are two probable uses for this stand.

Recreational Uses:	Although access to this stand is limited, camping and hiking are two possible recreational activities for this stand, as well as nature observation, such as birding.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 33

Recommended Priority Objectives for the Stand:	This stand should continue to be managed for northern hardwood species.
Favored Species:	Red maple, white ash
Silvicultural System:	Even-aged
Rotation Age:	82
Prescription and Reasoning for Prescription:	This stand is currently acceptable and lacks enough volume to conduct a commercial thinning. Evaluate in 5 years for commercial thinning.

Stand Description and Management for Stand: 34

Stand Description for Stand 34

Description of Dominant Vegetation and Successional Trends:	This stand is a Red Pine Plantation that has had limited success. Northern hardwoods dominate as much of this stand as does red pine. This stand is naturally shifting to a northern hardwoods cover type. This stand is dominated by white ash and red pine. Its economic value is low at this time, because of poor markets for white ash.
Riparian Area:	0 acres
Stand History:	This stand was most likely agricultural land that was abandoned and planted to red pine.
Logging History:	This stand was scheduled for a selection thinning under the previous management plan, but it appears that the thinning was not completed.
Forest Type:	Northern Hardwoods
Acreage:	3.2
Size Class:	Pole Timber
Structure:	Even-Aged
Origin:	Natural
Stand Health:	This stand is currently healthy.
Site quality:	2
Timber Quality:	2
Estimated Growth Rate (%):	2
Disturbance:	Natural
Operability:	Unrestricted

Stocking Data for Stand 34

Stocking Level:	Overstocked
Basal Area:	180
Trees per Acre:	392
Mean Stand Diameter:	8.825

Species Distribution for Stand 34

Species Name	% of Species in Stand
White Ash	78%
Red Pine	22%

Wildlife, Cultural and Natural Features for Stand 34

Habitat and Wildlife Uses:	This stand provides both cover and browse for wildlife.
Threatened and Endangered Species:	No threatened, endangered or rare species are known to exist within this stand.
Cultural Importance:	No items of cultural or historical importance were noted during the forest

	survey.
Important Natural Features:	No important natural features were noted during the forest survey.
Potential Uses:	This stand should be managed as a northern hardwoods stand. Recreation and wildlife habitat are two probable uses for this stand.
Recreational Uses:	Although access to this stand is limited, camping and hiking are two possible recreational activities for this stand, as well as nature observation, like birding.
Water Quality Issues:	No water quality issues were noted during the forest survey.

Prescription for Stand 34

Recommended Priority Objectives for the Stand:	This stand should be managed for northern hardwoods.
Favored Species:	Northern Hardwoods
Silvicultural System:	Even-aged
Rotation Age:	80
Prescription and Reasoning for Prescription:	This stand is overstocked and needs a commercial thinning to reduce crown crowding. The economic value of white ash is currently depressed and thinning should be planned around spikes in the market. With that said, I am not sure about the quality of this white ash and I suspect that it is of poorer quality, with a brown heart. This means that thinning efforts in a poor market will fail, and thinning efforts in a good market will still be difficult.

Soils of the Town of Caroline Land Holdings

The soils found within these parcels tend to create modest to high restrictions for harvesting. Most of the soils experience a high degree of *rutting*, have a medium to high degree of *on-trail erosion* or are not well suited for *natural surface roads*. Most of the soils have a medium degree of restriction for harvest equipment; either due to poor strength of the soil, slope or wetness.

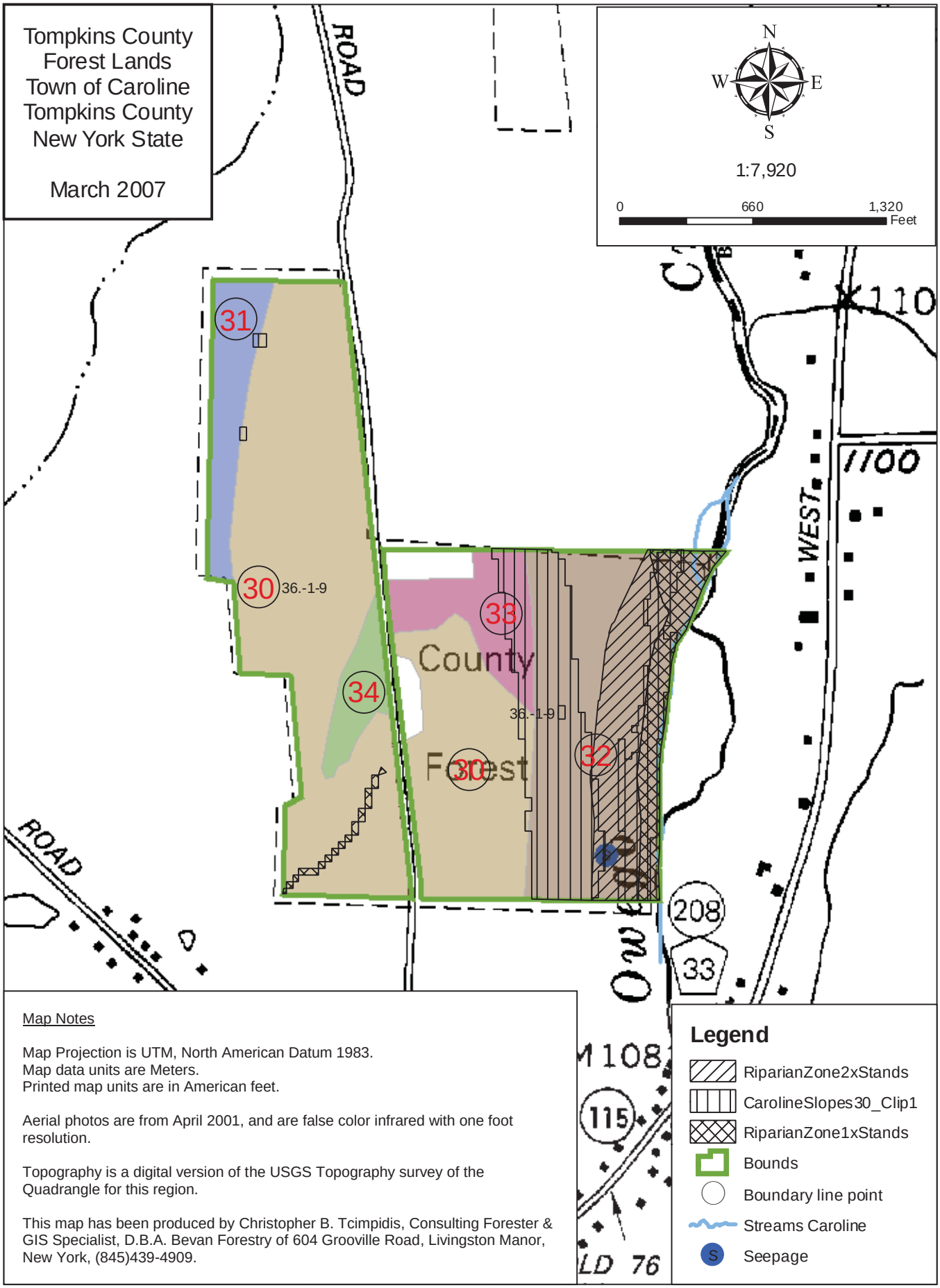
Rutting:
Many stands had obvious rutting from past forest operations. The better drained and upland sites seemed not to have as much rutting. Rutting can change drainage patterns and create new opportunities for erosion within the forest. The issue of excessive rutting within the forest can be addressed by timing the forest operations with seasonal weather conditions. No spring operations should be allowed, due to the amount of available water within the soils. Within some of the stands with a lower index for rutting, summer operations may be possible, but access to most of these stands is through stands with a high index for soil rutting. I believe it best to limit the use of heavy equipment to winter operations, when the ground is firmly frozen. The least, if any, damage will occur to soils when the ground is frozen. The only exception to the rule would be the creation of new natural surface roads or skid trails that require side hill cuts. It appears that all such road work has been completed on these parcels, so there should be little need
for such work. Salvage operations (such as operations done in response to disease, windthrow or natural disaster) may require summertime operations instead of winter.

Trail Erosion:
Most, if not all, erosion that occurs on the trails and roads can be eliminated with proper water bar placement and use of BMP's. No water-bars or other BMP's were noted during the forest survey.

Natural Surface Roads:
All of the parcels within this forest block have frontage on town roads. There is little need to construct roads for trucks or pickup trucks. The existing roads should be maintained to aid in accessing stands and monitoring the forest.

Review of findings:
Most of the soils found on this forest block are susceptible to damage from forest activities. Proper planning of forest activities and use of BMP's will reduce or eliminate the damage to soils from forest operations.

Map C1: Caroline riparian and Steep Slopes Areas



Map Notes

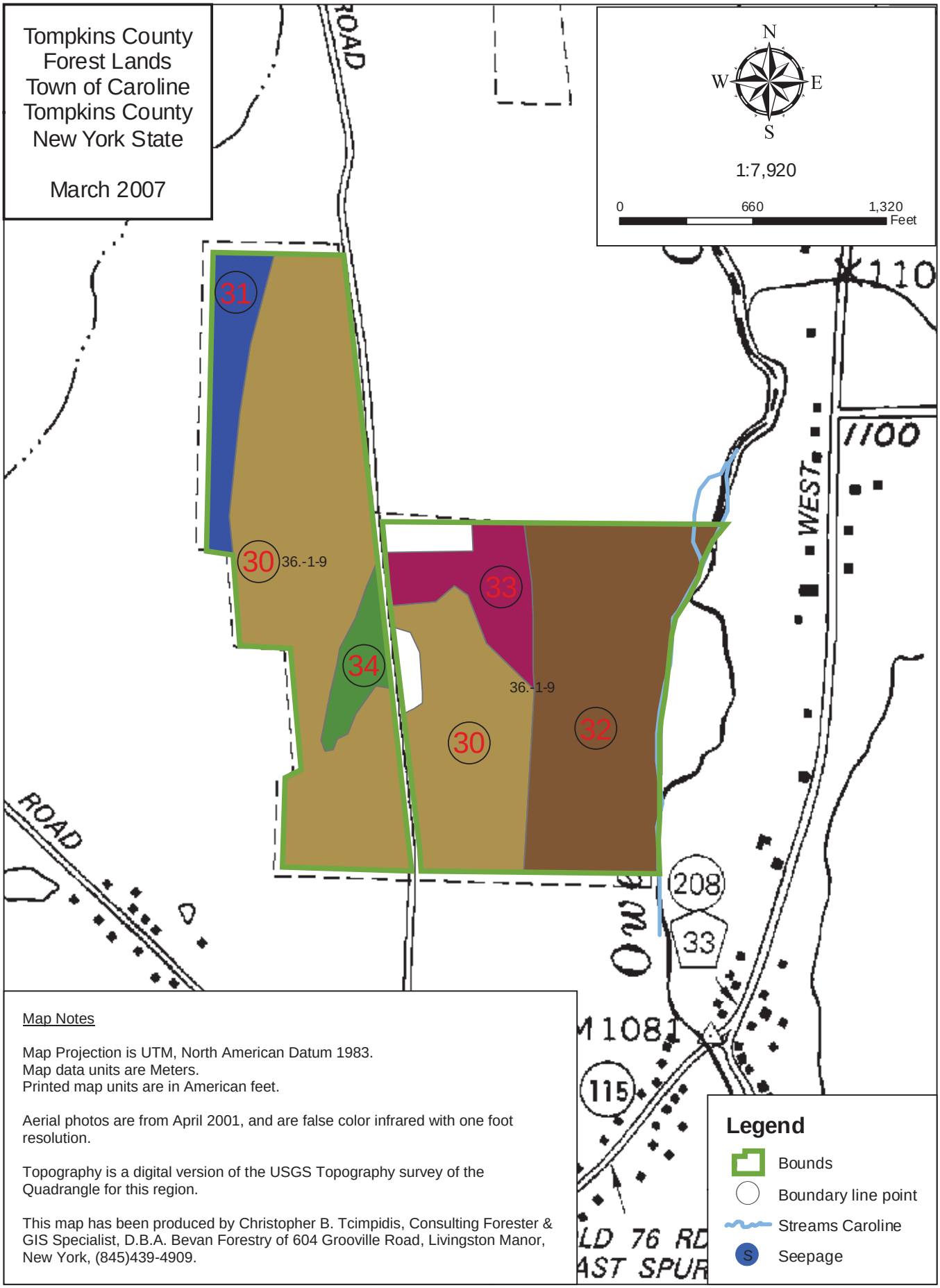
Map Projection is UTM, North American Datum 1983.
Map data units are Meters.
Printed map units are in American feet.

Aerial photos are from April 2001, and are false color infrared with one foot resolution.

Topography is a digital version of the USGS Topography survey of the Quadrangle for this region.

This map has been produced by Christopher B. Tcimpidis, Consulting Forester & GIS Specialist, D.B.A. Bevan Forestry of 604 Grooville Road, Livingston Manor, New York, (845)439-4909.

Map C2: Caroline Forest Stands



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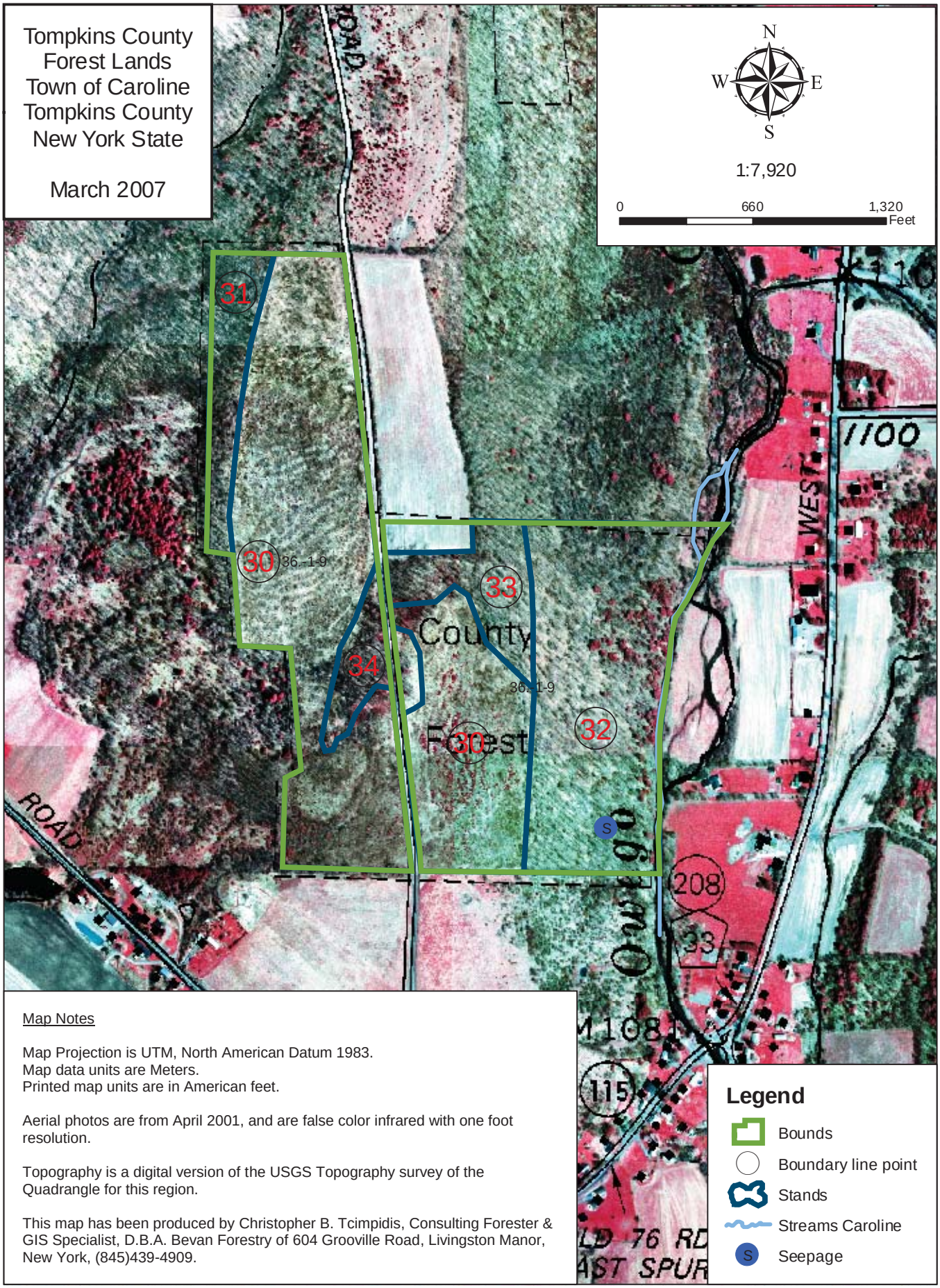
Map C3: Caroline Aerial Photo



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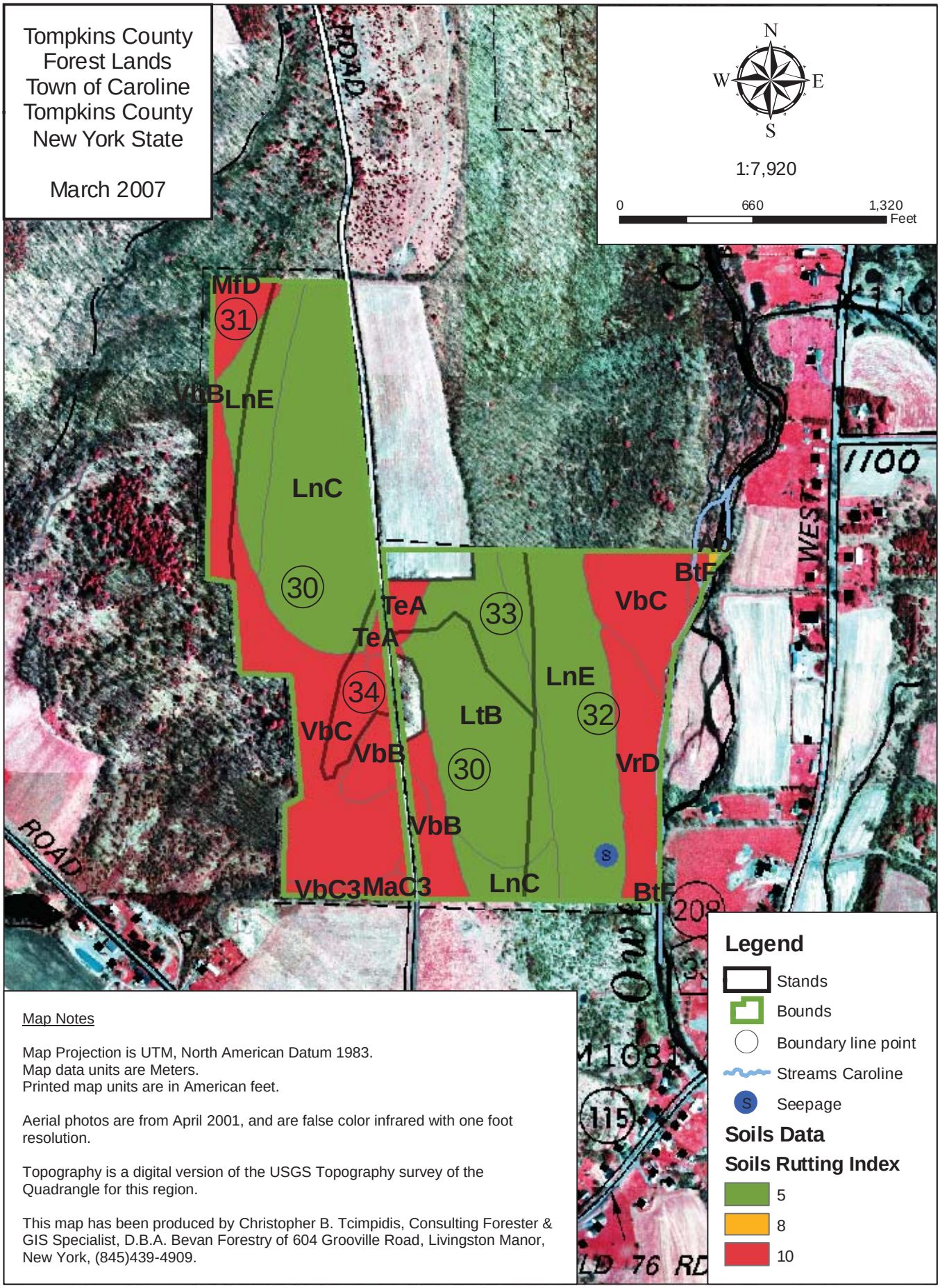

Map Notes

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Map data units are Meters.
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Map C5: Caroline Topographic Map

Map Notes

Map Projection is UTM, North American Datum 1983.
Map data units are Meters.
Printed map units are in American feet.

Aerial photos are from April 2001, and are false color infrared with one foot resolution.

Topography is a digital version of the USGS Topography survey of the Quadrangle for this region.

This map has been produced by Christopher B. Tcimpidis, Consulting Forester & GIS Specialist, D.B.A. Bevan Forestry of 604 Grooville Road, Livingston Manor, New York, (845)439-4909.

Work Schedule

The work schedule, like the management plan itself, is subject to change and modification between updates. These changes and modifications are normally a reflection of a market condition (creation or loss of markets, or negative or positive shifts in markets) or because a condition develops that needs to be address (large windthrow events, ice storms, large scale defoliation, etc). In the advent of such conditions the work schedule will be modified to address these changes. Modifications to the work plan will take into account market conditions, as well as other forest management goals, including wildlife habitat and overall health of forest. Stands that were not previously scheduled for work may need to have treatment. Salvage cuts, aerial application of pesticides, or other treatments not previously scheduled may be required to address conditions of the forest. Likewise, stands that have been schedule for treatment may be removed from the schedule for a variety of reasons, including changes in market conditions that negatively affect the marketing opportunity within these stands, or defoliation that requires delay of planned thinnings until the mortality caused by such defoliation is observed.

The reality of a work schedule is that it is a living document that must change with the needs of the forest and the changing forest products market. While much effort has been put into the work schedule, the effort can only reflect current conditions and can not account for future changes in the forest, owner needs, economy or the environment.

Year 2007

Treatment	Stand	Acres
Commercial Thinning	4	16
Commercial Thinning	5	34
Commercial Thinning	6	14
Commercial Thinning	7	5
Paint Boundary Lines	0	560
Summary for Acreage Treated for 2007		629

Year 2008

Treatment	Stand	Acres
Non-commercial Timber Stand Improvement	9	12
Non-commercial TSI	14	4
Commercial Thinning	22	10
Commercial Thinning	28	19
Monitor Stand for Success of Treatment	0	69
Summary for Acreage Treated for 2008		114

Year 2009

Treatment	Stand	Acres
Non-commercial TSI	33	7
Wait for market to improve before cutting	34	3
Monitor Stand for Success of Treatment	0	83
Summary for Acreage Treated for 2009		93

Year 2010

Treatment	Stand	Acres
Commercial Thinning	13	63
Monitor Stand for Success of Treatment	0	47
Summary for Acreage Treated for 2010		110

Year 2011

Treatment	Stand	Acres
Monitor Stand for Success of Treatment	0	96
Summary for Acreage Treated for 2011		96

Year 2012

Treatment	Stand	Acres
Commercial Thinning	20	13
Commercial Thinning	21	26
Commercial Thinning	24	30
Commercial Thinning	26	8
5 year up date	0	0
Paint Boundary Lines	0	560
Evaluate Stand for Commercial Thinning	1	43
Evaluate Stand for Commercial Thinning	8	17
Evaluate Stand for Commercial Thinning	15	17
Evaluate Stand for Commercial Thinning	16	27
Monitor Stand for Success of Treatment	0	63
Summary for Acreage Treated for 2012		804

Year 2013

Treatment	Stand	Acres
Commercial Thinning	28	19
Monitor Stand for Success of Treatment	0	0
Summary for Acreage Treated for 2013		19

Year 2014

Treatment	Stand	Acres
Commercial Thinning	12	10
Monitor Stand for Success of Treatment	0	0
Summary for Acreage Treated for 2014		10

Year 2015

Treatment	Stand	Acres
Monitor Stand for Success of Treatment	0	0
Summary for Acreage Treated for 2015		0

Year 2016

Treatment	Stand	Acres
Monitor Stand for Success of Treatment	0	0
Summary for Acreage Treated for 2016		0

Year 2017

Treatment	Stand	Acres
Commercial Thinning	4	16
Commercial Thinning	5	34
Commercial Thinning	6	14
Commercial Thinning	7	5
Commercial Thinning	18	7
Commercial Thinning	25	5
Paint Boundary Lines	0	560
10 year up date	0	0
Evaluate Stand for Commercial Thinning	3	9
Evaluate Stand for Commercial Thinning	31	6
Summary for Acreage Treated for 2017		656

Year 2018

Treatment	Stand	Acres
Commercial Thinning	14	4
Commercial Thinning	22	10
Commercial Thinning	28	19
Monitor Stand for Success of Treatment	0	0
Thin-Harvest	2	5
Summary for Acreage Treated for 2018		38

Year 2019

Treatment	Stand	Acres
Commercial Thinning	22	10
Commercial Thinning	33	7
Monitor Stand for Success of Treatment	0	0
Monitor Stand for Regeneration	2	5
Summary for Acreage Treated for 2019		22

Year 2020

Treatment	Stand	Acres
Commercial Thinning	13	63
Monitor Stand for Success of Treatment	0	0
Monitor Stand for Regeneration	2	5
Summary for Acreage Treated for 2020		68

Year 2021

Treatment	Stand	Acres
Monitor Stand for Success of Treatment	0	0
Monitor Stand for Regeneration	2	5
Summary for Acreage Treated for 2021		5

Year 2022

Treatment	Stand	Acres
Commercial Thinning	20	13
Commercial Thinning	21	26
Commercial Thinning	24	30
Commercial Thinning	26	8
Paint Boundary Lines	0	560
15 year up date	0	0
Monitor Stand for Success of Treatment	0	0
Final Harvest	2	5
Summary for Acreage Treated for 2022		642

Year 2023

Treatment	Stand	Acres
Monitor Stand for Success of Treatment	0	0
Summary for Acreage Treated for 2023		0

Year 2024

Treatment	Stand	Acres
Monitor Stand for Success of Treatment	0	0
Thin-Harvest	12	10
Summary for Acreage Treated for 2024		10

Year 2025

Treatment	Stand	Acres
Monitor Stand for Success of Treatment	0	0
Monitor Stand for Regeneration	12	10
Summary for Acreage Treated for 2025		10

Year 2026

Treatment	Stand	Acres
Monitor Stand for Success of Treatment	0	0
Monitor Stand for Regeneration	12	10
Summary for Acreage Treated for 2026		10

Year 2027

Treatment	Stand	Acres
Paint Boundary Lines	0	0
20 year up date	0	0
Monitor Stand for Regeneration	12	10
Thin-Harvest	4	16
Thin-Harvest	25	5
Summary for Acreage Treated for 2027		31

Year 2028

Treatment	Stand	Acres
Commercial Thinning	14	4
Commercial Thinning	28	19
Monitor Stand for Success of Treatment	0	0
Monitor Stand for Regeneration	4	16
Monitor Stand for Regeneration	25	5
Final Harvest	12	10
Summary for Acreage Treated for 2028		54

Year 2029

Treatment	Stand	Acres
Commercial Thinning	33	7
Monitor Stand for Success of Treatment	0	0
Monitor Stand for Regeneration	4	16
Monitor Stand for Regeneration	25	5
Summary for Acreage Treated for 2029		28

Year 2030

Treatment	Stand	Acres
Monitor Stand for Success of Treatment	0	0
Monitor Stand for Regeneration	4	16
Monitor Stand for Regeneration	25	5
Thin-Harvest	10	2
Thin-Harvest	13	63

Summary for Acreage Treated for 2030		86

Year 2031

Treatment	Stand	Acres
Monitor Stand for Regeneration	10	2
Monitor Stand for Regeneration	13	63
Final Harvest	4	16
Final Harvest	25	5
Summary for Acreage Treated for 2031		86

Year 2032

Treatment	Stand	Acres
Commercial Thinning	21	26
Commercial Thinning	26	8
Paint Boundary Lines	0	0
Monitor Stand for Success of Treatment	0	0
Monitor Stand for Regeneration	10	2
Monitor Stand for Regeneration	13	63
Thin-Harvest	20	13
Thin-Harvest	24	30
25 year up date	0	0
Summary for Acreage Treated for 2032		142

Year 2033

Treatment	Stand	Acres
Monitor Stand for Regeneration	10	2
Monitor Stand for Regeneration	13	63
Monitor Stand for Regeneration	20	13
Monitor Stand for Regeneration	24	30
Summary for Acreage Treated for 2033		108

Year 2034

Treatment	Stand	Acres
Monitor Stand for Regeneration	20	13
Monitor Stand for Regeneration	24	30
Final Harvest	10	2
Final Harvest	13	63
Summary for Acreage Treated for 2034		108

Year 2035

Treatment	Stand	Acres
Monitor Stand for Regeneration	20	13
Monitor Stand for Regeneration	24	30
Summary for Acreage Treated for 2035		43

Year 2036

Treatment	Stand	Acres
Final Harvest	20	13
Final Harvest	24	30
Summary for Acreage Treated for 2036		43

Year 2037

Treatment	Stand	Acres
Paint Boundary Lines	0	0
30 Year Update	0	0
Summary for Acreage Treated for 2037		0

Grand Total Acreage Treated for Life of Plan **4,065**