Mercy Woods Preserve

Forest Stewardship Plan

Prepared For:

The Town of Cumberland

October 14, 2024

Prepared by:
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New England
Forestry Consultants, Inc.
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Landowner & Property Information

LANDOWNER INFORMATION

Property Owner(s):	Town of Cumberland
Landowner Contact:	Attn: Glenn Modica
Address:	45 Broad Street Cumberland, RI 02864
Telephone:	401-728-2400 (Ext 240)
Email:	gmodica@cumberlandri.org

PROPERTY INFORMATION

Assessors Map	Lot/Parcel	Deed Book	Deed Page	Forest Acres	Total Acres
48	2	1776	202	47.64	52.77
48	3	1776	202	13.56	18.46
48	10	1776	202	97.70	105.71
48	55	1776	202	34.58	34.58
			TOTALS	193.48	211.52

FUNDING SOURCE: Blackstone Valley Resilient Riparian Forest Project

PLAN PREPARER INFORMATION

Prepared By:	New England Forestry Consultants, Inc. Gary H. Gouldrup - MA Licensed Forester #81 30 Jewell Hill Road Ashburnham, MA 01430 508-397-9206 (cell) gouldrupnefco@gmail.com
Plan Completed	October 2024

Landowner Goals – *Town of Cumberland, Mercy Woods Preserve*

In your own words please describe your goals for the property:

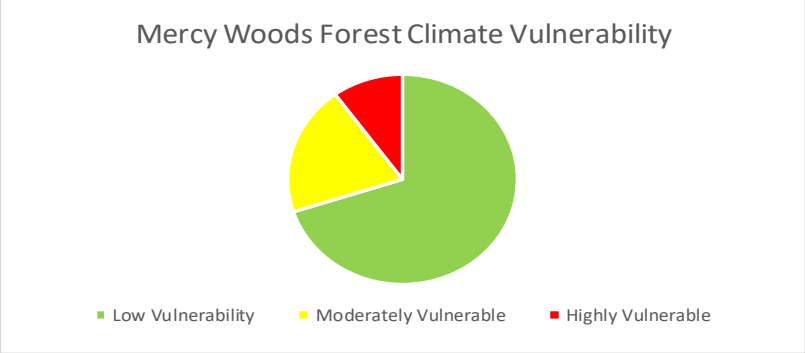
To preserve and protect its natural, environmental and cultural resources through conservation and best land management practices. To improve watershed management and protect water quality to ensure a safe drinking water supply. To preserve and enhance habitat for wildlife, birds, aquatic creatures and native flora and fauna. To improve scenic beauty, forest resiliency and biodiversity. To maintain open green spaces and encourage passive recreation.

Plan Summary

Forested land plays a critical role on the landscape. Clean air, clean water, wildlife habitat, forest products, carbon sequestration, carbon storage, scenic beauty, and recreational opportunities are some of the benefits provided by the forest.

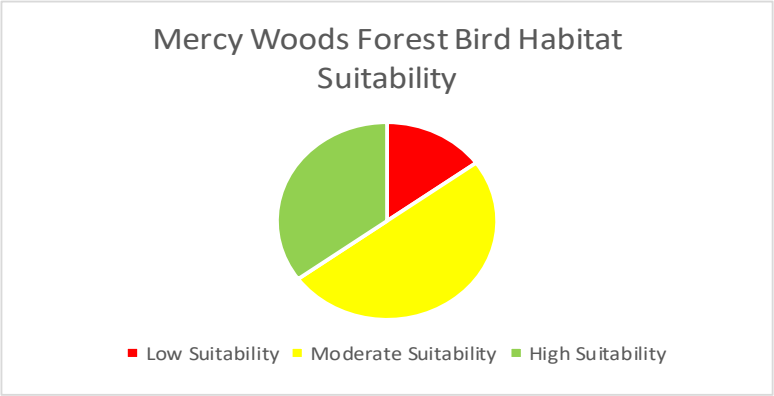
Currently forest cover in Rhode Island is approximately 53%. The biggest challenge to maintaining this forest cover is permanent loss by conversion to non-forested land. 68% of the forest land in RI is owned by private landowners. Private landowners and the stewardship choices they make can positively impact their woodlands and the greater region.

The purpose of this plan is to help to provide the Town of Cumberland with a baseline of the overall ecology and function of the permanently protected Mercy Woods Preserve. Understanding the current composition can help land managers and other property stewards make sound long-term decisions when implementing stewardship actions on the property. Over-all, the forest is relatively healthy when compared to other forests in the region. Access to the provides options for enhancing the forests functions in areas where invasive plant species and forests insects have impacted the forest's function.



During this era many landowners are also invested in maintaining the forest's function pertaining to carbon sequestration and storage. For this reason, the Mercy Woods Preserve was also assessed for its vulnerability in a changing climate. On a property level, Mercy Woods primarily displays low to moderate vulnerability to impacts from climate change. This rating is based on current tree species composition, species health, and the forest structure. Some tree species that occur on the property, such as scarlet oak, are projected to continue to find suitable habitat on-site in a changing climate. Implementing good stewardship practices that focus on maintaining and promoting a diversity of climate-adapted tree species is key when managing this parcel into the future. This property has the capacity to provide continued carbon sequestration and storage throughout this plan period. The biggest challenges to maintaining the forests' function are insects and disease, invasive plant species and browsing of tree seedlings and saplings by deer.

Along with providing opportunities for continued carbon storage and sequestration, the current structure of the Mercy Woods Preserve provides multiple habitat characteristics for a suite of declining forest bird species. This rating was based on observations of key habitat characteristics including woody materials, complex structure, leave litter, and available water. Maintaining and enhancing observed bird habitat characteristics onsite often blends well with maintaining the carbon function within the woodlands.



Due to the community's goals of maintaining natural processes, promoting carbon function, and maintaining and increasing bird habitat characteristics there will be multiple management and stewardship practices suggested for this plan period. These practices include invasive species removal, timber stand improvement harvests, timber salvage, installing nesting boxes, and planting new species to increase diversity.

Property Overview

Located along Wrentham Road, Sumner Brown Road, and Highland View Roads in Cumberland, Rhode Island is the 211.52-acre Mercy Woods Preserve. Approximately 193.48 acres of the property is covered by forest. Open fields, meadows and tree arboretums consist of approximately 18.04 acres. The well-maintained Mercy Woods Preserve provides permanently protected open space in a region subject to high development pressure. Adjacent to municipal watershed lands, this property helps to provide contiguous land for natural hydrologic processes to take place. The Cumberland Land Trust holds a Conservation Restriction on most of the property and currently has an agreement with the Town of Cumberland to manage the property. There is a 17.5 acre parcel that is not part of this Management Plan that is designated for recreational use (See Forest Stand Type Map).

The property is surrounded by forest land, Mercy Mount Country Day School, Sisters of Mercy complex, Mount Rita Health Center, the Pawtucket Water Supply Board property, clustered neighborhoods, and larger house lots. Though close to developed areas, the Mercy Woods Preserve provides visitors a place to escape to nature. The trail lay-out allows a hiker to explore the whole property. There are approximately 1,172 acres of conservation land within one mile of the property. The Town of Cumberland owns 245-acres, Pawtucket Water Supply Board owns 815-acres, Rhode Island Department of Environmental Management (RIDEM) owns 107 acres and the Cumberland Land Trust owns 12 acres.

History

Stone walls throughout the property and the current forest structure lends itself to suggesting the property was used for various agricultural practices post settlement and provides significant heritage interpretation. Areas in the woodlands that are composed of productive soils and have a primarily level terrain may have been used for crop production. Areas with a lot of ledge, rocky outcrops, wetlands, and areas with steep slopes may have been used for grazing by livestock. Barbed wire observed within the woodlands also further suggests the land was used for grazing.

In 1913 the Sister's of Mercy began purchasing the parcels that compose the current tract of land. The Sisters of Mercy actively stewarded the property during their ownership. Different features found in the woods may have been constructed during the ownership of the Sister's of Mercy. Protecting old stone features within the woodlands can help preserve the property's anthropogenic integrity.

The property was protected by a Conservation Easement with the Rhode Island Department of Environmental Management (RIDEM), Cumberland Land Trust and Pawtucket Water Supply Board in June 2018.

Forest Overview

The forested land on the property is even-aged. The forest is second growth, which is common in the region. Second growth forests are forests that occur on lands that were once cleared for agriculture. The canopy primarily contains red oak, black oak, white oak, red maple, white pine, and other species commonly found in New England. Other species observed, such as pitch pine, occur less frequently in the area. The understory and midstory within the forest are also diverse and contain all the species listed in the overstory.

In this plan the forest is broken into 5 separate forest stands. Forest stands are areas where species are of similar composition and the forest is of similar structure. Breaking the forest into stands helps provide detailed information about the forest in a systematic way. See the stand description portion of the plan for details pertaining to each stand.

Witch hazel, highbush blueberry, winterberry, arrowwood, sweet pepperbush, green briar, Canada mayflower, wintergreen, lowbush blueberry, wild raspberry, maple-leaf viburnum, goldenrod, wood aster, skunk cabbage, huckleberry, partridgeberry, and ferns were some of the species observed within the woodlands. The landowners hosted a Bio-blitz early in 2021 to use citizen science to help increase their knowledge and maintain detailed records of species occurring on the land.

Plants growing as ground cover or in the shrub layer display good health. Shrubs and ground cover species can take longer than trees to become established. Protecting ground cover and shrubs from unnecessary damage during harvesting or stewardship activities can help the plants thrive. Shrubs and ground cover species can take longer to establish themselves than many trees. Protecting species in these layers can help maintain diversity.

Invasive species were observed on the property. Invasive species observed includes burning bush, Japanese barberry, honeysuckle, Autumn olive, knotweed, multiflora rose and bittersweet. These species are well-suited for growing in the region and can outcompete native species for nutrients and growing space. Funding to offset the cost of removing invasive species is offered through the USDA NRCS program. In some areas invasive species are prevalent. Treating these areas first may provide benefits to reducing future impacts and establishments in adjacent areas. Birds, mammals, timber harvesting, and OHV are some of the ways invasive species seeds may spread. Taking action early can reduce future costs. Another invasive species of concern is the spotted lanternfly that is known to be in the Cumberland region.

Forest Health

Forest health on the property is generally good. This second growth forest contains many mature trees that are providing an adequate seed source to the stand. Damage from moths was visible on some of the overstory oak. Due to the timing of the inventory, it is difficult to identify if winter moth or spongy moth caused the damage. Areas of Stand 3 are heavily infested by invasive species. These areas also contain an abundance of trees that display poor health, vigor, damage from forest insects, and display vulnerability to a changing climate. White ash mortality and decline is accelerating in these areas as a result of the Emerald Ash Borer. The spotted lanternfly has very recently been identified in Cumberland and may also be present on the property. Beech leaf disease is also present. Deer browse is prevalent within the woodlands. In some areas this browse is beginning to prohibit a new age class of trees from becoming established.

Fire

The presence of pitch pine is an indicator that forest fires may have had an impact on this forest in the past. Best Management Practices (BMPs) surrounding slash will be followed if stewardship activities or harvesting is to occur. Recreation is for day-use only and fires are not permitted.

Forest Recreation & Aesthetics

Recreation is encouraged on the property. Many respectful recreators were observed on the property. The inventory was conducted during the winter months when many open space properties see a decrease in user activity. Groups of people, solo hikers, and leashed dogs were observed. A photographer was observed taking photos of a vernal pool. The trails are well-labeled, well-traveled, and well-maintained. It is essential to protect the trails if/when harvesting activities occur. They play a valuable role within the community by offering natural woodlands in a highly fragmented region. Aesthetics are therefore extremely important to this forest.

Forest Hydrology

The streams, vernal pools and wetlands on the property are well-functioning. Hiking trails provide visitors with glimpses of some of the hydrologic features occurring on the property. Maintaining these areas as well-functioning will help the landowners meet one of the primary goals of protecting water quality in the region. Allowing streams, forested wetlands, and vernal pools to function uninterrupted can help to maintain the water quality onsite. If these areas are to be managed, an example would be removing invasive species in wetland areas, it is important to following proper permitting and to implement best management practices to ensure no negative impacts to streams or wetlands are to occur. These water resource areas on the property also provide a source of water to wildlife. The property is in close proximity to the Diamond Hill Reservoir. The Diamond Hill Reservoir is a public drinking water supply for the City of Pawtucket. The Mercy Woods Preserve plays an important role in the watershed of Diamond Hill Reservoir.

Wildlife Habitat

Many wildlife habitat features were observed in the woodlands. Stone walls can provide habitat to some small mammals, such as short-tailed weasels. Large overstory trees provide habitat for the flying squirrel. Acorns produced by large overstory trees are fed on by Turkey, deer, black bear, Blue Jay, and many other local wildlife species. Evidence of deer, black bear, bobcat, and coyote were observed on the property. Fishers have also been observed on the property by others. Raspberry provides a food source for terrestrial woodland turtles. Dead snags created from insects on the property also provide excellent bird habitat for feeding and nesting. The Rhode Island Natural Heritage Survey Bio Blitz also called out Eastern Red Bat, Big Brown Bat and Hoary Bat.

Forest Soils

Forest soils on the property are productive and capable of growing high quality timber resources. The table below lists the different soil types on the property. Please also see the Soils Map.

Soil Type	Label	Drainage Class	App. Acreage
Canton-Charlton-Rock Outcrop	CaD	Well Drained	57
Hinckley gravelly sandy loam rolling	HkC	Excessively Drained	4
Canton & Charlton fine sandy loam	CdB	Well Drained	17
Canton & Charlton fine sandy loam	CdA	Well Drained	12
Ridgebury, Whitman, Leicester – Extremely Stony	Rf	Poorly & Very Poorly Drained	12
Canton & Charlton fine sandy loams	CeC	Well Drained	122
Sutton extremely stony fine sandy loam	SvB	Moderately Well Drained	5

Natural Heritage Threatened & Endangered Species

The Rhode Island Natural History Survey has identified one (1) plant species on the property of concern. *Equisetum sylvaticum (wood horsetail)* is located between Preserve Drive and Highland View Road in Stand 3. There are three (3) other plant species just off of the property on the southeast side of the property. *Quercus prinoides (chestnut oak)*, *Ranunculus micranthus (rock buttercup)* and *Capnoides sempervirens (rock harlequin)*. *Quercus prinoides (chestnut oak)* is the closest to the property. Prior to forest management activities, any impacts that forest management may have on these species will be determined, and proper action will be taken to protect the species. Please see the Natural Heritage Map at the end of this Plan.

Biological Diversity

Biodiversity management on the property will be related to promoting a healthy forest ecosystem by promoting unevenaged forest management that creates layers of vegetation throughout the forest. Diversifying species types, size class, and habitat types can help in accomplishing this goal. Maintaining native vegetation and eliminating non-native invasive species can also be done as part of the management of this forest. Managing for climate change is another important aspect of biodiversity. Growing the tree species that are best suited to each site and are expected to be resilient to climate change, maintaining or restoring stocking that fully occupies sites, growing and harvesting more of the wood our forests are capable of providing, achieving a diverse stand size class distribution from seedlings to large diameter trees in multi-storied stands, creating stand conditions that are well suited to the great majority of native wildlife species, employing Best Management Practice to protect water resources, soils, riparian habitats and aquatic habitats as well as aesthetics, protecting special habitats including wildlife trees, habitats of species identified as having special needs not entirely met by the management outlined above, and habitats which are critically important to more common species are all part of promoting biological diversity on the property.

Cultural Resources

Cultural resources on the property include a foundation opposite the parking lot on the north side of Sumner Brown Road and stone walls along the boundary lines and forest interior. Cultural resources and heritage interpretation sites will be protected during forest management activities.

Wood & Fiber Production

Timber resources available on the property include sawtimber that can be sawn into lumber, pulp for paper products and firewood for energy. Timber markets are available for the selling of the timber resources at the Mercy Woods Preserve. The properties' location allows for good access to trucking routes to wood mills buying timber. Local markets for firewood are also available for selling low quality hardwood resources on the property. Timber management recommended in this Plan will be directed at long-term sustained yield for producing timber resources into the future.

Focal Forest Birds

The Rhode Island Birder's Dozen is made up of twelve forest birds that represent priority habitat types of conservation need in Rhode Island. These birds were selected by the Rhode Island Woodland Partnership with the assistance of ornithologists from the University of Rhode Island, the Rhode Island Bird Atlas 2.0, the North American Breeding Bird Survey (BBS), and the Audubon Society of Rhode Island, and in consultation with the 2015 Rhode Island Wildlife Action Plan and data collected from neighboring New England states as birds that can benefit from managed forests. The Mercy Woods Preserve offers habitat for these bird species.

These twelve species in the *Rhode Island Birder's Dozen* were selected because they:

- Are simple to identify by sight or sound;
- Collectively use a wide range of forest types and conditions for feeding and for breeding;
- Are showing a decline in their global breeding populations or are at risk for decline; and
- Are supported by large tracts of contiguous forest.

1) **Barred-Owl –** prefer to nest in large tracts of forest with tall trees greater than 19" in diameter. Relies on existing cavities or nests on platforms for nesting. Cannot create its own nesting site.
2) **Black-and-White Warbler** – Prefers partially open mature mixed-wood with 70% canopy cover. Utilizes swampy forests.
3) **Black-throated Green Warbler** – Prefers large tracts 250+ acres softwood and mixed woods, associated with red spruce eastern hemlock, maintain well-stocked uneven-aged mixed-wood and softwood sawtimber stands with >80% canopy cover.
4) **Eastern Wood-Pewee** - Requires hardwood forest with closed canopy cover near openings and edges.
5) **Northern Waterthrush –** Nests in thickets near surface water
6) Ovenbird- Nests in leaf litter on forest floor
7) **Pileated Woodpecker-** Nests in tree cavities. Can create it's own nesting spot**.**
8) **Pine Warbler-** Creates cup shaped nest high in pine trees.
9) **Red-eyed Vireo-** Breeds in mature interior forests. Nest 10-15' off ground in midstory trees.
10) **Rose-breasted Grosbeak-** Nest 50' off ground or higher. Prefers a canopy that is primarily closed.
11) **Scarlet Tanager** – Nests greater than 50' off ground. Prefers a primarily closed canopy.
12) **Wood Thrush –** Nests on lower limbs of saplings and shrubs.

Regional and Property Specific Bird Habitat Characteristics

Habitat characteristics are features that occur in the forest that benefit bird species. Below are some terms and descriptions for commonly mentioned desired habitat features.

Cavity Tree: A tree with one or multiple openings that can be utilized by birds or wildlife.
Coarse Woody Material: Large tree branches and limbs.
Early Successional Habitat: Young-forest habitat. Examples could be recently abandoned fields or maintained powerlines.
Fine Woody Material: Small limbs and branches.
Complex Structure: When a combination of forest layers comes together to provide a dense layer of plants. Forest layers can include ground cover, shrubs, understory species, midstory species, overstory species.
Leaf Litter: Deciduous leaves.
Snag: A standing dead tree.

Soft Mast: Species that produce a fruit. Species include but are not limited to black cherry, blueberry, and raspberry.
Interior Forest: Large contiguous block of forested land.

Landscape Analysis
Bird Species have a variety of habitat needs. Knowledge of young forest, mature forest, fragmentation, and available open space in the region helps to provide land managers with the information needed to effectively manage the woodlands.

2,500 acre Block Surrounding the Property

Landscape Level Bird Habitat Characteristics Within a 2,500 acre Block Surrounding the Property Includes:
- Percent Forest: 40%
- Mature Forest vs. Young Forest: 90% Mature
- Non-Forested Areas, Farmland, Shrubland, Urban, Wetland: 60%
- Degree of Fragmentation: Medium

Bird Habitat Characteristics Missing from the Property(P) and Surrounding Landscape(L):
- Early Successional Habitat: (P/L)
- Complex Structure: (L)
- Woody Material: (L)

Specific Bird Habitat Characteristics Occurring on the Property:
- Interior Forest
- Complex Structure
- Available Water
- Leaf Litter and Woody Materials

Climate SMART Forestry

Broadly speaking, based on available climate models, we know that:

- Temperatures will increase throughout all seasons in the Northeast region over the next century, annual temperature projected to increase by 3 to 10°F.
- Future precipitation rates are uncertain but are, and will continue to change. Total annual precipitation is generally expected to increase over the next 100 years.
- The greatest precipitation increases are expected to occur during the winter months, where warmer temperatures will result in more precipitation falling as rain instead of snow.
- Strong storms will occur more frequently
- Some tree species are vulnerable to decline from impacts from climate change
- Suitable habitat conditions will increase for deer and invasive plant species

Even minor, incremental changes in temperature and precipitation can have significant impacts on a forest. Climate change and interacting factors not only affect the health and vitality of the trees currently living in the forest, but also influence which young trees can get established to create the future forest, and our ability to respond to these changes through management. The outline below summarizes impacts from climate change and how they could specifically impact the Mercy Woods Forest.

Climate Change Impacts

Impact: Temperatures will increase throughout all seasons in the Northeast region over the next century, annual temperature projected to increase by 3 to 10°F.

A. **Vulnerability:** This temperature shift will impact woodlands in many ways. Southern plant species will begin to migrate north as growing conditions become more suitable. A longer growing season will cause plants to leaf out early. This makes the canopy more succeptable to damage from late snow events. Some plant species will decline as suitable habitat conditions decrease.
B. **Challenge**: Maintaining a diverse ecosystem of vigorously growing climate-adapted tree species.
C. **Opportunity**: Red oak, scarlet oak, black oak, white oak, hickory, sugar maple and red maple are projected to be well-adapted to a warmer climate. Establishing forest regeneration naturally and through enrichment plantings of resilient forest species will help in sequestering a new generation of climate resilient trees.

Impact: Future precipitation rates are uncertain and will continue to change. Total annual precipitation is generally expected to increase over the next 100 years. The greatest precipitation increases are expected to occur during the winter months, where warmer temperatures will result in more precipitation falling as rain instead of snow. Strong storms will occur more frequently

A. **Vulnerability:** Steep slopes, rocky ourcrops, and areas with shallow soils will be subjet to erosion. Natural areas near developed areas could be negatively impacted by storm water in rain events.
B. **Challenge**: Maintaining function of riparian areas and maintaining access.
C. **Opportunity**: Enhance and maintain vegetation in stream channel. Maintain healthy, vigorous trees for soil stabilization. Layout access roads to avoid creating runoff channels. Maintain appropriate filter strip lenths along stream and wetlands. Maintain/improve storm water infrastructure within Mercy Woods Preserve property bounds.

Impact: Suitable habitat conditions will increase for deer and invasive plant species

A. **Vulnerability:** Current tree stocking levels in the understory and midstory ranges from inadequate to adequate. As temperatures warm, habitat will become more suitable for deer. Their populations could potentially increase. Deer browse was observed throughout the property. The longer growing season will also increase habitat suitability for invasive species. Many invasive species leaf out early which helps them to grow quickly. Invasive plants were observed on the property.
B. **Challenge**: Maintaining a diverse ecosystem with appropraite tree stocking in each canopy layer.

C. **Opportunity**: Seek funding opporunities to help offset the cost of invasive species removal and enrichment plantings of reslilient forest species. If necessary deer deterents can be used to supress deer browse if harvesting or plantings are to occur.

This table summarizes how favorable habitat conditions are expected to be for these species at the end of the century (gathered from the USFS Climate Tree Atlas), how susceptible the species are to physical disturbances from storms or drought, whether pests or diseases are expected to impact forest health in the near term, and whether regeneration of the species requires specific attention.

Frequently Observed Tree Species on the Property		Total % of Basal Area	Climate Vulnerability Long term Projections	Stressors			
				Storm	Drought	Pest/Disease	Regeneration
Black/Scarlet Oak		24		CONCERN		CONCERN	
Red Oak		22		CONCERN		CONCERN	CONCERN
Red/Norwy Maple		6		CONCERN			CONCERN
Sugar Maple		4		CONCERN			CONCERN
White Pine		21	*Concern	CONCERN	CONCERN	CONCERN	
White Ash		4	*Concern	CONCERN		CONCERN	
Hickory		5		CONCERN			
Blck/Yellow Birch		4				CONCERN	CONCERN
White Oak		5				CONCERN	
Aspen		<1		CONCERN	CONCERN	CONCERN	CONCERN
Black Cherry		<1		CONCERN			

**Species of High Concern – White ash mortality is accelerating throughout the property. White pine is currently not showing signs of decline through needle diseases.*

Responding to Climate Change

Maintaining a well-stocked overstory, midstory, and understory containing a diversity of climate-adapted species could help maintain the resilience of the forest. Across most of the forest the forest resiliency can be maintained. Some areas that contain dense pockets of invasive plant species may be transitioned back towards a natural ecology containing primarily native species.

Carbon Storage and Sequestration

Your forest is a powerful natural climate solution and is currently storing roughly 32.18 metric tons of carbon per acre (t/ac) for a total of approximately 6,806 metric tons. As the forest continues to mature, the natural cycle of tree loss and regeneration will continue to play out. These processes will lead to movement of carbon between various pools. Trees that die will continue to store some carbon for many decades in the form of dead and decaying wood. As trees decay, carbon will also move into forest soils and be lost back to the atmosphere. Overall, as the forest matures the amount of carbon stored will continue to grow unless there are extreme disturbances within the system.

Ensuring vigorous young trees are present in the forest will be key to promoting both carbon sequestration and storage over the long term. Planting climate-adapted tree seedlings adds to the climate mitigation potential of the site. Additional protections associated with reducing herbivory and treating invasive species will support forest regeneration, enhance biodiversity, and lead to carbon gains while reducing risk. Timber harvesting of high-risk species in particular will reduce carbon stocks on the short-term and sequester carbon of resilient trees into the future. A short-term loss of carbon for a long-term gain of carbon.

Management

Forest management prescribed in this plan will help to increase the forests' ability to withstand impacts from climate change and will increase habitat for selected focal bird species.

Prescribed Management 2024-2033

- Invasive Species Removal
- Timber Stand Improvement via Commercial Thinning
- Individual & Group Selection Harvest
- Salvage dead and dying white ash being affected by the Emerald Ash Borer
- Nest Boxes
- Trail Management
- Reduce/Eliminate Hazard Trees from nearby trails & roads within Mercy Woods Preserve
- Boundary Identification

Prescribed Management 2034-43

- See 2024-2033 management practices

Desired Future Condition 2050

- Increased Habitat Characteristics
- Increased Tree Vigor
- Increased Complex Structure
- Increased Diversity
- Adequate levels of Forest Carbon Stocks of Resilient Tree Species

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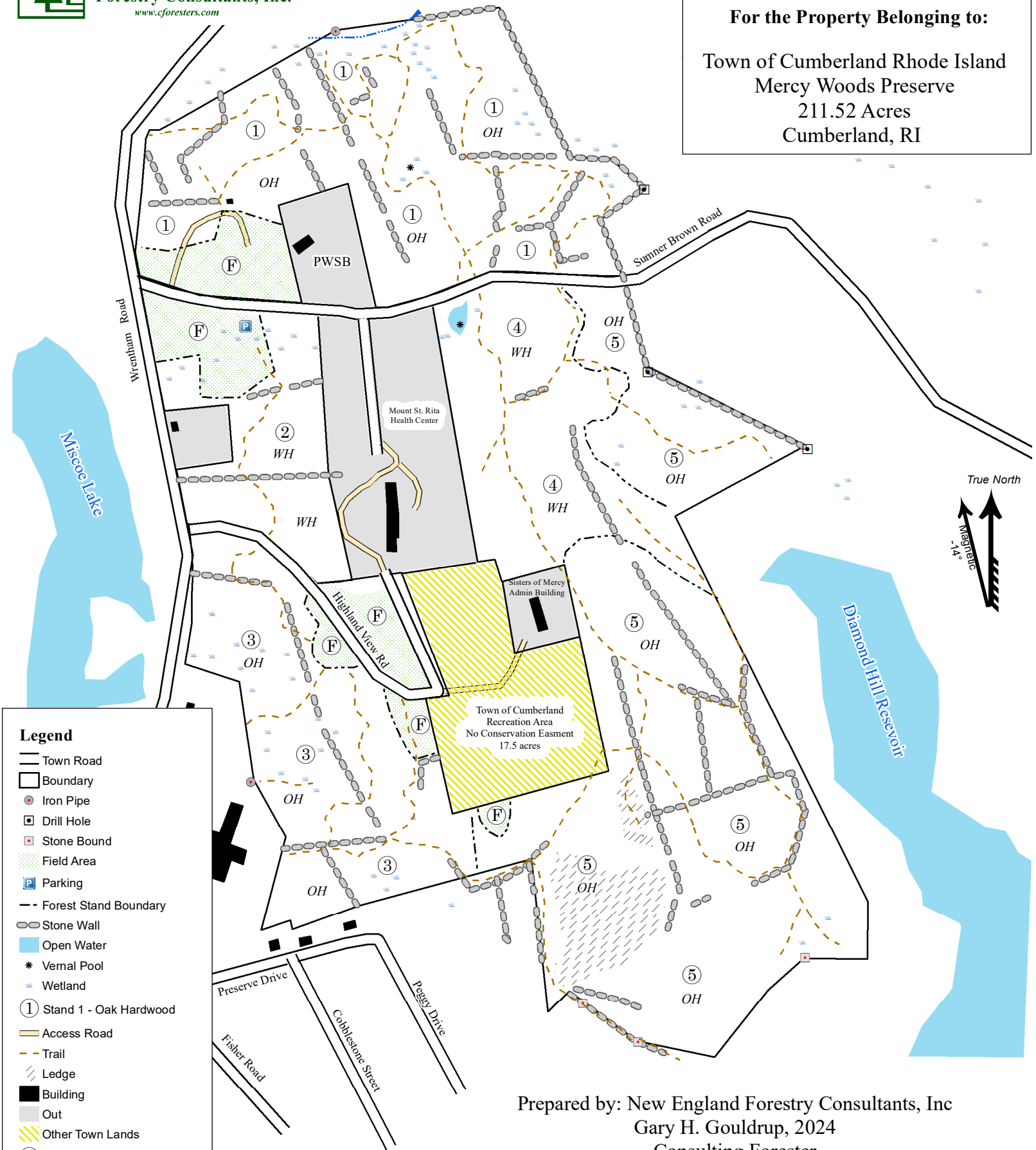
BOUNDARY & STAND TYPE MAP

For the Property Belonging to:

Town of Cumberland Rhode Island
Mercy Woods Preserve
211.52 Acres
Cumberland, RI



Legend

- Town Road
- Boundary
- Iron Pipe
- Drill Hole
- Stone Bound
- Field Area
- Parking
- Forest Stand Boundary
- Stone Wall
- Open Water
- Vernal Pool
- Wetland
- (1) Stand 1 - Oak Hardwood
- Access Road
- Trail
- Ledge
- Building
- Out
- Other Town Lands
- (F) F - Field
- (5) Stand 5 - Oak Hardwood
- (4) Stand 4 - W. Pine Hardwood
- (3) Stand 3 - Oak Hardwood
- (2) Stand 2 - W. Pine Hardwood

0 600 Feet

Prepared by: New England Forestry Consultants, Inc
Gary H. Gouldrup, 2024
Consulting Forester
Data taken from MassGIS Datasets,
Assessor Maps,
Field Reconnaissance, and a Survey of Land
For Forestry Purposes Only

Stand Summary

For the purposes of this report a forest stand is an easily defined area that is relatively uniform in composition and structure.
Summary of the Forest Stands on your property

Stand/Type	Acres	Important Observations regarding Bird Habitat Characteristics		Important Features and Attributes	Climate Risk
1 OH Oak-Hardwood	47.64	**Overstory Height:** 40-65' **Percent Cover:** 80-100% **Distribution:** Even **Midstory Height**: 5-30' **Midstory cover:** 50-70% **Distribution:** Patchy **Understory Height:** 0-5' **Understory Cover:** Hardwood & white pine seedlings, saplings, shrubs and plants **Distribution:** 30% Cover, Patchy	**Soft Mast:** Generally Present **Invasive Species:** Moderate, patchy **Leaf Litter:** Adequate **Fine Woody Material:** Inadequate **Coarse Woody Material:** Adequate **Cavity Trees:** Adequate **Snags:** Adequate	Sangs provide insect habitat, which provides foraging opportunities for some birds. Mortality from moth infestations in the oak and the Emerald Ash Borer have left adequate amounts of snag trees. Soft and hard mast produced by trees provides another food source for birds. Leaf litter provides materials for ground nesting birds.	Low Oak, maple and hickory represent 78% of the forest stocking. These species are projected to be "good capability" of being resilient to climate change.
2 WH White Pine Hardwood	14.90	**Overstory Height:** 40-100' **Percent Cover:** 90-100% **Distribution:** Even **Midstory Height**: 5-30' **Midstory cover:** 30-50% **Distribution:** Even **Understory Height:** 0-5' **Understory Cover:** Seedlings, saplings, shrubs and plants **Distribution:** 30% Cover, Patchy	**Soft Mast:** Generally Present **Invasive Species:** Moderate, Scattered **Leaf Litter:** Adequate **Fine Woody Material:** Inadequate **Coarse Woody Material:** Inadequate **Cavity Trees:** Present, Adequate **Snags:** Present, Adequate	The softwood overstory canopy that this stand provides excellent cover for bird species that require a mature softwood canopy. Early successional and young forest habitat is lacking.	Moderate-High White pine represents 74% of the forest stocking. This species is projected to be "poor capability" of being resilient to climate change.
3 OH Oak-Hardwood	31.58	**Overstory Height:** 30-70' **Percent Cover:** 20-90% **Distribution:** Patchy **Midstory Height**: 5-30' **Midstory Cover:** 50-90% **Distribution:** Patchy **Understory Height:** 0-5' **Understory Cover:** Hardwood & white pine seedlings, saplings, shrubs and plants **Distribution:** Uneven, 20-75% Cover	**Soft Mast:** Present **Invasive Species:** Prolific, High Density **Leaf Litter:** Adequate **Fine Woody Material:** Adequate **Coarse Woody Material:** Adequate **Cavity Trees:** Present **Snags:** Adequate, Excessive	An open canopy has provided some early successional and young forest conditions as a result of Emerald Ash Borer infestations. Sangs provide insect habitat, which provides foraging opportunities for some birds. Soft and hard mast produced by trees provides another food source for birds. Leaf litter provides materials for ground nesting birds.	High Emerald Ash Borer has resulted in high white ash mortality. Invasive species are prolific and affecting natural regeneration.

Stand Summary

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Summary of the Forest Stands on your property

Stand/Type	Acres	Important Observations regarding Bird Habitat Characteristics		Important Features and Attributes	Climate Risk
4 WH White Pine Hardwood	24.92	**Overstory Height:** 50-100' **Percent Cover:** 90-100% **Distribution:** Even **Midstory Height**: 5-30' **Midstory Cover:** 20-50% **Distribution:** Patchy **Understory Height:** 0-5' **Understory Cover:** Hardwood & white pine seedlings, saplings, shrubs and plants **Distribution:** Uneven, 0-50% Cover	**Soft Mast:** Present **Invasive Species:** Low-Moderate **Leaf Litter:** Adequate **Fine Woody Material:** Inadequate **Coarse Woody Material:** Inadequate **Cavity Trees:** Present **Snags:** Present	The softwood overstory canopy that this stand provides excellent cover for bird species that require a mature softwood canopy. Early successional and young forest habitat is lacking.	Moderate-High White pine represents 55% of the forest stocking. This species is projected to be "poor capability" of being resilient to climate change.
5 OH Oak-Hardwood	74.44	**Overstory Height:** 30-70' **Percent Cover:** 75-100% **Distribution:** Even **Midstory Height**: 5-30' **Midstory Cover:** 50-90% **Distribution:** Patchy **Understory Height:** 0-5' **Understory Cover:** Hardwood & white pine seedlings, saplings, shrubs and plants **Distribution:** Even	**Soft Mast:** Present **Invasive Species:** Low-Moderate **Leaf Litter:** Present **Fine Woody Material:** Inadequate **Coarse Woody Material:** Inadequate **Cavity Trees:** Present **Snags:** Present	This mostly closed canopy forest does provide a good mix of bird habitat with a fairly dense midstory for nesting and feeding. Early successional habitat is lacking.	Low Oak, maple and hickory represent 87% of the forest stocking. These species are projected to be "good capability" of being resilient to climate change.
Fields & Arboretum	12.91	**Overstory Height:** 30-75' **Percent Cover:** 10% **Distribution:** Scattered **Midstory Height**: 5-30' **Midstory Cover:** 0-15% **Distribution:** Scattered **Understory Height: 0-5'** **Understory Cover: Grass, shrub** **Distribution:** 100% Cover	**Soft Mast:** Present **Invasive Species:** Moderate **Leaf Litter:** Inadequate **Fine Woody Material:** Inadequate **Coarse Woody Material:** Inadequate **Cavity Trees:** Inadequate **Snags:** Inadequate	This area is an open field and meadow that is mowed periodically. There are scattered trees that are in an arboretum setting rather than a forest. The open fields do provide some nesting and feeding opportunities for early successional bird species if mowing is timed appropriately.	NA

STAND DESCRIPTIONS

STAND#	TYPE	AC	MSD	TREES/AC	BA/AC	VOL/AC	SITE INDEX
1	OH	47.64	11.5”	121	100 sf	4.812 MBF & 13.1 Cords	59 RO

Stand 1 - General Description

Mixed oaks and hardwoods dominate the overstory of this fully-stocked sawtimber and pole sized stand with a mostly closed canopy. The mixed oaks include black oak, scarlet oak, red oak and white oak. Scattered red maple, hickory, black birch, yellow birch, sugar maple, white ash and tupelo poles and sawtimber can also be found. White pine and pitch pine sawtimber and pole sized stems are present as well. The timber quality ranges from poor to good.

On average, the oldest trees in the overstory are 80 years old. The compound annual rate of growth in this stand is 3%. It is likely that forest fires may have had an impact on this stand in the past with the presence of pitch pine in the overstory. Land use in the past is likely to have been for grazing livestock as the terrain and soils do not support intensive agriculture and crop production.

The midstory consists of many of the species listed above. The midstory saplings and poles are generally well-established. The midstory is suppressed in many areas where the overstory canopy is closed. The understory in the stand is patchy and consists of witch hazel, highbush blueberry, lowbush blueberry, ferns and associated upland ground cover. Some of the wetland resource areas within the stand have dense pockets of sweet pepperbush, green briar, and swamp azalea. Invasive species are at low to moderate levels and can be found in areas that or open or have experienced overstory tree mortality due to insect and diseases. Bittersweet, Japanese barberry, knotweed, multiflora rose, buckthorn, burning bush, and autumn olive are within this stand or in very close proximity.

Dead oak and white ash trees can be found as a result of insect infestations. Forest health is generally good although the forest has and is experiencing forest health issues. The emerald ash borer is currently on the property and increasing white ash decline in the stand. Dead oak trees are likely the result of spongy moth infestations that occurred in the area in the past 5-7 years.

The terrain is gently to steeply sloped with areas of ledge and soils that are shallow to bedrock. The soils are mostly well drained fine sandy loam (Canton-Charlton, Site Index of 52) that are capable of producing high quality timber resources. The average site index of 59 indicates that these soils are “moderate productivity” for tree growth. There are wetland resource areas in the northern sections of the stand that are poorly drained and consist of fine sandy loam (Ridgebury-Leicester, Site Index of 66). Hydrological features and water quality protection will be used near these wetland resource areas by following Best Management Practices Guidelines.

There are several wildlife features occurring in the stand. A primary feature is the acorns produced by the mature overstory oak. Acorns provide an important source of carbohydrates and fats to wildlife. White oak is one of the most prevalent overstory trees. These acorns are preferred by some wildlife due to their high fat content and contain a lower amount of acidic tannins than black and red oak. Focal Bird Species habitat provided in this stand will benefit the Rhode Island Birder’s Dozen mentioned previously in this Plan.

Recreation is a high public use within this stand. Trails meander throughout the stand and are used on a daily basis. Balancing public recreation and forestry will be necessary for public safety and education.

The desired future condition is a stand that can be resilient to climate change, provide habitat for wildlife, and recreational opportunities for the public.

Management within this stand will focus on the following:

1) *Silviculture that enhances forest resiliency due to a changing climate.
2) Improve recreation by maintaining trails for public safety and educational opportunities associated with forest management.

**Silviculture is defined as the art of producing and tending a forest; the application of knowledge of silvics in the treatment of a forest; the theory and practice of controlling forest establishment, composition, structure and growth (Spurr, 1979).*

Stand 1 – Climate Vulnerabilities by Forest Component

Stand Vulnerability Rating	Vulnerability Time Horizon
LOW	**Short-Term:** White ash has been declining as a result of the emerald ash borer infestation.
	Long-Term: White pine is likely to become more vulnerable in the long-term with needle diseases. Expect more white pine mortality. Monitoring will be important for the species listed above.
Forest Strata	**Climate Vulnerability and Adaptation Options**
Canopy	**Vulnerabilities:** Areas of overstocking produce slower growth rates and suppression of desired regeneration. Mortality of high-risk species such as white pine and black birch are the concern. Good diversity, favorable soils and climate adapted species means lower risk.
	Carbon: Carbon storage is adequate given the density of trees within this stand.
	Adaptation: Improvement Thin by selection harvest to release and increase vigor of canopy trees, carbon sequestration, and forest structure in the future.
Midstory	**Vulnerabilities:** Presence of climate adapted species is moderate in the mid-story and those that are here are suppressed and are less likely to survive in the absence of disturbance.
	Carbon: Potential to balance sequestration and storage through forest thinning.
	Adaptation: Reducing canopy density will allow for midstory development.
Regeneration	**Vulnerabilities:** Regeneration is present and suppressed from a mostly closed canopy. Low to moderate levels of climate resilient species are present.
	Carbon: Establish regeneration of climate resilient species through timber harvesting for sequestration. Consider enrichment plantings of oak, hickory and disease resistant American chestnut.
	Adaptation: Timber harvesting will create gaps in the canopy for potential climate resilient species regeneration especially the oak. Reduce the deer herd locally. Fencing of desired regeneration or enrichment plantings may be necessary to protect seedlings from deer browse.

Climate Change & Adaptation

Stand one has low vulnerability to climate change in the near-term. Softwood species of high-risk will likely decline over time. Preparing the forest to anticipated changes will include the potential harvesting. Short term losses of carbon through harvesting will promote long-term gains in carbon storage and sequestration. Planting resilient species of oak, hickory and potentially disease resistant American chestnut will also be considered in the future.

STAND DESCRIPTIONS

STAND#	TYPE	AC	MSD	TREES/AC	BA/AC	VOL/AC	SITE INDEX
2	WH	14.90	14.5”	112	135 sf	8.183 MBF & 19.1 Cords	58 WP

Stand 2 - General Description

White pine and mixed hardwoods dominate the overstory of this adequately stocked sawtimber and pole sized stand with a mostly closed canopy. The mixed hardwoods include black oak, red oak, red maple, white ash, black cherry, beech, sugar maple, and Norway maple poles and sawtimber. Red cedar pole sized stems are present as well. The timber quality ranges from poor to good.

On average, the oldest trees in the overstory are 80-100 years old. The compound annual rate of growth in this stand is 3%. Land use in the past is likely to have been for grazing livestock. The terrain and soils may have been used for agriculture and crop production.

The midstory consists of many of the species listed above. The midstory saplings and poles are generally well-established. The midstory is suppressed in many areas where the overstory canopy is closed. The understory in the stand is patchy and consists of witch hazel, highbush blueberry, lowbush blueberry, ferns and associated upland ground cover. Invasive species are at low to moderate levels and can be found in areas that or open or have experienced overstory tree mortality due to insect and diseases. Bittersweet, Japanese barberry, buckthorn, burning bush, and autumn olive are within this stand or in very close proximity.

Dead white ash trees can be found as a result of insect infestations. Forest health is generally good although the forest has and is experiencing forest health issues. The emerald ash borer is currently on the property and increasing white ash decline in the stand and on the property as a whole. Dead oak trees are likely the result of spongy moth infestations that occurred in the area in the past 5-7 years.

The terrain is flat to gently sloped. The soils are mostly well drained fine sandy loam (Canton-Charlton, Site Index of 58) that are capable of producing high quality timber resources. The site index of 58 indicates that these soils are “moderate productivity” for tree growth. There are no major wetland resource areas in the stand although seasonal drainage areas are present. Hydrological features and water quality protection will be used near these seasonal wetland resource areas by following Best Management Practices Guidelines.

There are several wildlife features occurring in the stand. A primary feature is the acorns produced by the mature overstory oak. Acorns provide an important source of carbohydrates and fats to wildlife. White oak is one of the most prevalent overstory trees. These acorns are preferred by some wildlife due to their high fat content and contain a lower amount of acidic tannins than black and red oak. Focal Bird Species habitat provided in this stand will benefit the Rhode Island Birder’s Dozen mentioned previously in this Plan. Species that require mature softwood stands in particular will benefit from this stand.

Recreation is a high public use within this stand. Trails meander throughout the stand and are used on a daily basis. Balancing public recreation and forestry will be necessary for public safety and education.

The desired future condition is a stand that can be resilient to climate change, provide habitat for wildlife, and recreational opportunities for the public.

Management within this stand will focus on the following:

1) Silviculture that enhances forest resiliency due to a changing climate.
2) Improve recreation by maintaining trails for public safety and educational opportunities associated with forest management.

Stand 2 – Climate Vulnerabilities by Forest Component

Stand Vulnerability Rating	Vulnerability Time Horizon
High	**Short-Term:** White ash has been declining as a result of the emerald ash borer infestation.
	Long-Term: White pine is likely to become more vulnerable in the long-term with needle diseases. Expect more white pine mortality. Monitoring will be important for the species listed above.
Forest Strata	**Climate Vulnerability and Adaptation Options**
Canopy	**Vulnerabilities:** Areas of overstocking produce slower growth rates and suppression of desired regeneration. Mortality of high-risk species such as white pine are the concern. Good diversity, favorable soils and climate adapted species means lower risk.
	Carbon: Carbon storage is adequate given the density of trees within this stand.
	Adaptation: Improvement Thin by selection harvest to release and increase vigor of canopy trees, carbon sequestration, and forest structure in the future.
Midstory	**Vulnerabilities:** Presence of climate adapted species is low to moderate in the mid-story and those that are here are suppressed and are less likely to survive in the absence of disturbance.
	Carbon: Potential to balance sequestration and storage through forest thinning.
	Adaptation: Reducing canopy density will allow for midstory development.
Regeneration	**Vulnerabilities:** Regeneration is present and suppressed from a mostly closed canopy. Low to moderate levels of climate resilient species are present.
	Carbon: Establish regeneration of climate resilient species through timber harvesting for sequestration. Consider enrichment plantings of oak, hickory and disease resistant American chestnut.
	Adaptation: Timber harvesting will create gaps in the canopy for potential climate resilient species regeneration especially the oak. Reduce the deer herd locally. Fencing of desired regeneration or enrichment plantings may be necessary to protect seedlings from deer browse.

Climate Change & Adaptation

Stand two has high vulnerability to climate change in the long-term. Softwood species of high-risk will likely decline over time. Preparing the forest to anticipated changes will include the potential harvesting. Short term losses of carbon through harvesting will promote long-term gains in carbon storage and sequestration. Planting resilient species of oak, hickory and potentially disease resistant American chestnut will also be considered in the future.

STAND DESCRIPTIONS

STAND#	TYPE	AC	MSD	TREES/AC	BA/AC	VOL/AC	SITE INDEX
3	OH	31.58	10.8”	97	70 sf	4.369 MBF & 7.4 Cords	57 RO

Stand 3 - General Description

Mixed oaks and mixed hardwoods dominate the overstory of this stand. Species composition, stand density and size class varies throughout the area. The overstory species include red oak, black oak, white oak, white ash, hickory, black cherry, Norway maple, sugar maple, red maple, white pine and red cedar. The timber quality ranges from poor to good. Approximately 90% of the white ash component has died from the emerald ash borer infestations.

On average, the oldest trees in the overstory are 60 years old. The compound annual rate of growth in this stand is 5%. Land use in the past is likely to have been for grazing livestock. The terrain and soils may not have been conducive for agriculture and crop production.

The midstory consists of many of the species listed above. The midstory saplings and poles are generally well-established. The midstory is suppressed in areas where the overstory canopy is closed. The understory in the stand is patchy and consists of witch hazel, highbush blueberry, maple-leaf viburnum, lowbush blueberry, ferns and associated upland ground cover. The presence of invasive species is at high levels in areas that or open or have experienced overstory tree mortality due to insect and diseases. The areas where white ash mortality is the highest is where invasive species are most prolific. Bittersweet, Japanese barberry, multiflora rose, autumn olive, buckthorn, and burning bush are all present.

Dead white ash trees can be found as a result of insect infestations. Forest health is generally good although the forest has and is experiencing forest health issues. The emerald ash borer is currently on the property and increasing white ash decline in the stand and on the property as a whole. Dead oak trees are likely the result of spongy moth infestations that occurred in the area in the past 5-7 years.

The terrain is flat to moderately sloped. The soils consist of well drained fine sandy loam and loamy sand in the uplands (Canton-Charlton-Hinckley, Site Index of 52) and somewhat poorly drained fine sandy loam in the wetland resource areas (Sutton, Site Index of 62). The soils are capable of producing high quality timber resources. The average site index of 57 indicates that these soils are “moderate productivity” for tree growth. Wetland resource areas can be found along the lower elevations on the west side of the stand. Hydrological features and water quality protection will be used near these wetland resource areas by following Best Management Practices Guidelines.

There are several wildlife features occurring in the stand. A primary feature is the acorns produced by the mature overstory oak. Acorns provide an important source of carbohydrates and fats to wildlife. White oak is one of the most prevalent overstory trees. These acorns are preferred by some wildlife due to their high fat content and contain a lower amount of acidic tannins than black and red oak. Focal Bird Species habitat provided in this stand will benefit the Rhode Island Birder’s Dozen mentioned previously in this Plan. Species that require early successional and young forest habitat will benefit from the openings in the canopy as a result of white ash mortality.

Recreation is a high public use within this stand. Trails meander throughout the stand and are used on a daily basis. Balancing public recreation and forestry will be necessary for public safety and education.

The desired future condition is a stand that can be resilient to climate change, provide habitat for wildlife, and recreational opportunities for the public.

Management within this stand will focus on the following:

1) Silviculture that enhances forest resiliency due to a changing climate.
2) Improve recreation by maintaining trails for public safety and educational opportunities associated with forest management.

Stand 3 – Climate Vulnerabilities by Forest Component

Stand Vulnerability Rating	Vulnerability Time Horizon
High	**Short-Term:** White ash has been declining as a result of the emerald ash borer infestation. Invasive species are prolific in this stand and threaten natural communities.
	Long-Term: White pine is likely to become more vulnerable in the long-term with needle diseases. Expect more white pine mortality. Monitoring will be important for the species listed above.
Forest Strata	**Climate Vulnerability and Adaptation Options**
Canopy	**Vulnerabilities:** White ash decline and mortality will continue within this stand due to the emerald ash borer. Areas of overstocking produce slower growth rates and suppression of desired regeneration. Mortality of high-risk species such as white ash and white pine are the concern. Good diversity, favorable soils and climate adapted species means lower risk.
	Carbon: Carbon storage is declining and sequestration of resilient tree species in the understory is needed.
	Adaptation: Salvage and Improvement Thin is needed to release and increase vigor of resilient canopy trees, carbon sequestration, and forest structure in the future.
Midstory	**Vulnerabilities:** Presence of climate adapted species is low to moderate in the mid-story. Invasive species pose a threat to their survival.
	Carbon: Potential to balance sequestration and storage through salvage and forest thinning.
	Adaptation: Reducing invasive species in the understory will increase the development of a midstory comprised of resilient forest species.
Regeneration	**Vulnerabilities:** Regeneration opportunities will decline as the invasive species increase. Low to moderate levels of climate resilient species are present.
	Carbon: Establish regeneration of climate resilient species through timber salvaging for sequestration. Consider enrichment plantings of oak, hickory and disease resistant American chestnut.
	Adaptation: Salvage harvesting will scarify the ground and help in the effort to control invasive species. Reduce the deer herd locally. Fencing of desired regeneration or enrichment plantings may be necessary to protect seedlings from deer browse.

Climate Change & Adaptation

Stand three has high vulnerability to climate change in the short-term. White ash mortality and increased invasive species will affect forest sequestration. Salvaging dead and dying ash and planting resilient species of oak, hickory and potentially disease resistant American chestnut will also be considered in the future.

STAND DESCRIPTIONS

STAND#	TYPE	AC	MSD	TREES/AC	BA/AC	VOL/AC	SITE INDEX
4	WH	24.92	12.3”	121	120 sf	7.116 MBF & 15.7 Cords	58 WP

Stand 4 - General Description

White pine and mixed hardwoods dominate the overstory of this adequately stocked sawtimber and pole sized stand with a mostly closed canopy. The mixed hardwoods include black oak, red oak, white oak, red maple, big tooth aspen, white ash, hickory and black cherry poles and sawtimber. Pitch pine and red cedar are present as well. The timber quality ranges from poor to good.

On average, the oldest trees in the overstory are 80-100 years old. The compound annual rate of growth in this stand is 3%. Land use in the past is likely to have been for grazing livestock due to the sloping terrain.

The midstory consists of many of the species listed above. The midstory is suppressed in many areas where the overstory canopy is closed. The understory in the stand is patchy and consists of witch hazel, arrowwood, maple-leaf viburnum, highbush blueberry, lowbush blueberry, huckleberry, ferns and associated upland ground cover. Invasive species are at low to moderate levels and can be found in areas that or open or have experienced overstory tree mortality due to insect and diseases. Bittersweet, multiflora rose, buckthorn, and honeysuckle are within this stand or in very close proximity.

Dead white ash and oak trees can be found as a result of insect infestations. Forest health is generally good although the forest has and is experiencing forest health issues. The emerald ash borer is currently on the property and increasing white ash decline in the stand and on the property as a whole. Dead oak trees are likely the result of spongy moth infestations that occurred in the area in the past 5-7 years. No signs of needle diseases were seen during the forest inventory.

The terrain is gently to moderately sloped. The soils are mostly well drained fine sandy loam and rock outcrop (Canton-Charlton, Site Index of 58) that are capable of producing high quality timber resources. The site index of 58 indicates that these soils are “moderate productivity” for tree growth. There are no major wetland resource areas in the stand although seasonal drainage areas are present. There is a vernal pool that can be found in the northwest corner of the stand. Hydrological features and water quality protection will be used near these wetland resource areas by following Best Management Practices Guidelines.

There are several wildlife features occurring in the stand. A primary feature is the acorns produced by the mature overstory oak. Acorns provide an important source of carbohydrates and fats to wildlife. White oak is one of the most prevalent overstory trees. These acorns are preferred by some wildlife due to their high fat content and contain a lower amount of acidic tannins than black and red oak. Focal Bird Species habitat provided in this stand will benefit the Rhode Island Birder’s Dozen mentioned previously in this Plan. Species that require mature softwood stands in particular will benefit from this stand.

Recreation is a high public use within this stand. Trails meander throughout the stand and are used on a daily basis. Balancing public recreation and forestry will be necessary for public safety and education.

The desired future condition is a stand that can be resilient to climate change, provide habitat for wildlife, and recreational opportunities for the public.

Management within this stand will focus on the following:

1) Silviculture that enhances forest resiliency due to a changing climate.
2) Improve recreation by maintaining trails for public safety and educational opportunities associated with forest management.

Stand 4 – Climate Vulnerabilities by Forest Component

Stand Vulnerability Rating	Vulnerability Time Horizon
High	**Short-Term:** White ash has been declining as a result of the emerald ash borer infestation.
	Long-Term: White pine is likely to become more vulnerable in the long-term with needle diseases. Expect more white pine mortality. Monitoring will be important for the species listed above.
Forest Strata	**Climate Vulnerability and Adaptation Options**
Canopy	**Vulnerabilities:** Areas of overstocking produce slower growth rates and suppression of desired regeneration. Mortality of high-risk species such as white pine are the concern. Good diversity, favorable soils and climate adapted species means lower risk.
	Carbon: Carbon storage is adequate given the density of trees within this stand.
	Adaptation: Improvement Thin by selection harvest to release and increase vigor of canopy trees, carbon sequestration, and forest structure in the future.
Midstory	**Vulnerabilities:** Presence of climate adapted species is low to moderate in the mid-story and those that are here are suppressed and are less likely to survive in the absence of disturbance.
	Carbon: Potential to balance sequestration and storage through forest thinning.
	Adaptation: Reducing canopy density will allow for midstory development.
Regeneration	**Vulnerabilities:** Regeneration is present and suppressed from a mostly closed canopy. Low to moderate levels of climate resilient species are present.
	Carbon: Establish regeneration of climate resilient species through timber harvesting for sequestration. Consider enrichment plantings of oak, hickory and disease resistant American chestnut.
	Adaptation: Timber harvesting will create gaps in the canopy for potential climate resilient species regeneration especially the oak. Reduce the deer herd locally. Fencing of desired regeneration or enrichment plantings may be necessary to protect seedlings from deer browse.

Climate Change & Adaptation

Stand four has high vulnerability to climate change in the long-term. Softwood species of high-risk will likely decline over time. Preparing the forest to anticipated changes will include the potential harvesting. Short term losses of carbon through harvesting will promote long-term gains in carbon storage and sequestration. Planting resilient species of oak, hickory and potentially disease resistant American chestnut will also be considered in the future.

STAND DESCRIPTIONS

STAND#	TYPE	AC	MSD	TREES/AC	BA/AC	VOL/AC	SITE INDEX
5	OH	74.44	11.3”	126	98 sf	5.854 MBF & 10.2 Cords	52 RO

Stand 5 - General Description

Mixed oaks and hardwoods dominate the overstory of this fully-stocked sawtimber and pole sized stand with a mostly closed canopy. The mixed oaks include black oak, scarlet oak, red oak and white oak. Scattered red maple, hickory, beech, black birch, white ash and pitch pine can also be found. White pine and pitch pine sawtimber and pole sized stems are present as well. The timber quality ranges from poor to good.

On average, the oldest trees in the overstory are 70-80 years old. The compound annual rate of growth in this stand is 3%. It is likely that forest fires may have had an impact on this stand in the past with the presence of pitch pine in the overstory. Land use in the past is likely to have been for grazing livestock as the terrain and soils do not support intensive agriculture and crop production. There are areas in the southern section of the stand that appear to have been excavated for stone removal.

The midstory consists of many of the species listed above. The midstory saplings and poles are generally well-established. The midstory is suppressed in many areas where the overstory canopy is closed. The understory in the stand is patchy and consists of witch hazel, highbush blueberry, lowbush blueberry, huckleberry, maple-leaf viburnum, winterberry, green briar, arrowwood, ferns and associated upland ground cover. Invasive species are not prolific, although isolated occurrences of buckthorn, barberry and bittersweet were observed.

Dead oak and white ash trees can be found as a result of insect infestations. Forest health is generally good although the forest has and is experiencing forest health issues. The emerald ash borer is currently on the property and increasing white ash decline in the stand. Dead oak trees are likely the result of spongy moth infestations that occurred in the area in the past 5-7 years. Beech leaf disease is present in the stand as well.

The terrain is gently to moderately sloped with areas of ledge and soils that are shallow to bedrock. The soils are mostly well drained fine sandy loam and rock outcrop (Canton-Charlton, Site Index of 52) that are capable of producing high quality timber resources. The site index of 52 indicates that these soils are “low to moderate productivity” for tree growth. There are no significant wetland resource areas, although seasonal drainage occurs within the stand and runoff drains east toward the Diamond Hill Reservoir. Hydrological features and water quality protection will be used near these wetland resource areas by following Best Management Practices Guidelines.

There are several wildlife features occurring in the stand. A primary feature is the acorns produced by the mature overstory oak. Acorns provide an important source of carbohydrates and fats to wildlife. White oak is one of the most prevalent overstory trees. These acorns are preferred by some wildlife due to their high fat content and contain a lower amount of acidic tannins than black and red oak. Focal Bird Species habitat provided in this stand will benefit the Rhode Island Birder’s Dozen mentioned previously in this Plan.

Recreation is a high public use within this stand. Trails meander throughout the stand and are used on a daily basis. Balancing public recreation and forestry will be necessary for public safety and education.

The desired future condition is a stand that can be resilient to climate change, provide habitat for wildlife, and recreational opportunities for the public.

Management within this stand will focus on the following:

1) Silviculture that enhances forest resiliency due to a changing climate.
2) Improve recreation by maintaining trails for public safety and educational opportunities associated with forest management.

Stand 5 – Climate Vulnerabilities by Forest Component

Stand Vulnerability Rating	Vulnerability Time Horizon
LOW	**Short-Term:** White ash has been declining as a result of the emerald ash borer infestation.
	Long-Term: White pine is likely to become more vulnerable in the long-term with needle diseases. Expect more white pine mortality. Monitoring will be important for the species listed above.
Forest Strata	**Climate Vulnerability and Adaptation Options**
Canopy	**Vulnerabilities:** Areas of overstocking produce slower growth rates and suppression of desired regeneration. Mortality of high-risk species such as white pine and black birch are the concern. Good diversity, favorable soils and climate adapted species means lower risk.
	Carbon: Carbon storage is adequate given the density of trees within this stand.
	Adaptation: Improvement Thin by selection harvest to release and increase vigor of canopy trees, carbon sequestration, and forest structure in the future.
Midstory	**Vulnerabilities:** Presence of climate adapted species is moderate in the mid-story and those that are here are suppressed and are less likely to survive in the absence of disturbance.
	Carbon: Potential to balance sequestration and storage through forest thinning.
	Adaptation: Reducing canopy density will allow for midstory development.
Regeneration	**Vulnerabilities:** Regeneration is present and suppressed from a mostly closed canopy. Low to moderate levels of climate resilient species are present.
	Carbon: Establish regeneration of climate resilient species through timber harvesting for sequestration. Consider enrichment plantings of oak, hickory and disease resistant American chestnut.
	Adaptation: Timber harvesting will create gaps in the canopy for potential climate resilient species regeneration especially the oak. Reduce the deer herd locally. Fencing of desired regeneration or enrichment plantings may be necessary to protect seedlings from deer browse.

Climate Change & Adaptation

Stand five has low vulnerability to climate change in the near-term. Softwood species of high-risk will likely decline over time. Preparing the forest to anticipated changes will include the potential harvesting. Short term losses of carbon through harvesting will promote long-term gains in carbon storage and sequestration. Planting resilient species of oak, hickory and potentially disease resistant American chestnut will also be considered in the future.

STAND DESCRIPTIONS

STAND#	TYPE	AC	MSD	TREES/AC	BA/AC	VOL/AC	SITE INDEX
F	Field	18.04	NA	13	8 sf	1.3 Cords	52 RO

Stand F - General Description

This area consists of open fields, meadows and trees that are more like a tree arboretum than a forest stand. Tree species include but is not limited to oak, Norway maple, black locust, beech, Norway spruce, red cedar, silver maple, dogwood, white ash, and birch. These areas are periodically mowed and maintained.

The meadow adjacent to the parking lot on Sumner Brown Road contains autumn olive, milk weed, golden rod, wildflowers, pokeberry, poison ivy, and ferns. Invasive species include autumn olive, bittersweet, knotweed, buckthorn, multiflora rose, and honeysuckle.

The terrain is gently to moderately sloped. The soils are mostly well drained fine sandy loam (Canton-Charlton, Site Index of 52) that are capable of producing high quality timber resources. The site index of 52 indicates that these soils are "low to moderate productivity" for tree growth. There are no significant wetland resource areas, although seasonal drainage occurs within the fields. Hydrological features and water quality protection will be used near these wetland resource areas by following Best Management Practices Guidelines.

There are several wildlife features occurring in the stand. A primary feature is the habitat for birds. Areas that are only periodically mowed provide the best habitat for nesting, feeding and cover. Focal Bird Species habitat provided in this stand will benefit some of the Rhode Island Birder's Dozen mentioned previously in this Plan. Early successional bird species in particular will benefit the most.

Recreation is a high public use within this stand. Trails meander throughout the stand and are used on a daily basis. Aesthetics, recreation and wildlife habitat are the primary uses of the fields and meadows.

The desired future condition is an area that can be provide habitat for wildlife and recreational opportunities for the public.

Management within this stand will focus on the following:

1) Aesthetic and Recreational pursuits.
2) Wildlife habitat improvements. Scheduled mowing for supporting field nesting birds.
3) Reduce invasive species such as Autumn olive (and if found the tree of heaven).

Management Recommendations

Summary of the Management Recommendations for your property

Stand	Desired Condition	Management Action	Benefits			Management Priority
			Bird Habitat & Focal Birds	Climate Change Adaptation	Forest Carbon	
3	Unevenaged Forest	***Enhance Adaptive Capacity in Forests*** *Salvage/Improvement Thin*	Create gaps in the canopy increase midstory & understory vegetation.	Perform silviculture that will favor growth, development & regeneration of climate resilient species.	Improve Sequestration, Short term loss for long term gain.	High
4 & 5	Unevenaged Forest	***Enhance Adaptive Capacity in Forests*** *Selection Harvest*	Create gaps in the canopy increase midstory & understory vegetation.	Perform silviculture that will favor growth, development & regeneration of climate resilient species.	Improve Sequestration, Short term loss for long term gain.	Medium
3, 4, 7	Successful Sequestration of Climate Resilient Regeneration	***Reforest*** Plant trees to increase forest stocking, protect saplings from deer browse	Establish Midstory & Understory Vegetation	Reforest with climate resilient species. Oak, hickory, sycamore, red cedar and disease resistant American chestnut recommended.	Improve Sequestration	High
3, 4, 7	Protect saplings from deer browse	***Deer Browse Protection*** – FCRP Practice. Protective tubes around planted saplings.	NA	Protect newly planted trees (Oak & Hickory) for long term climate resilience.	Improve sequestration of desired tree species.	High

Management Recommendations

Summary of the Management Recommendations for your property

Stand	Desired Condition	Management Action	Benefits			Management Priority
			Bird Habitat & Focal Birds	Climate Change Adaptation	Forest Carbon	
1-5 F	Forest & Fields With native vegetation	***Invasive Plant Control*** ***Brush Management***	Increase abundance of native trees & plants providing food & habitat for birds & wildlife	Successful regeneration & growth of native trees & plants, especially those with good adaption capacity.	Improve Sequestration	High
1-5 F	Safe and Enjoyable Hiking Trails	***Recreation Enhancement*** *Trail Management* *Hazard Tree Removal*	NA	NA	NA	High
F	Improved Wildlife Habitat	***Wildlife Habitat Enhancement*** *Field Mowing &* *Bird Boxes*	Maintain open fields and meadows for wildlife habitat	NA	NA	Medium
All	Property Lines Identified	***Boundary Identification*** Blazing & Property Signs	NA	NA	NA	High

Management Practices

Stand(s)	TYPE	SILVICULTURAL PRESCRIPTION Or Management Practice	AC	TO BE REMOVED		TIMING
				BA/AC	TOT VOL	
3	OH	**Salvage & Improvement Thinning**	31.5	25 sf	12 MBF & 126 Cords	2025-2027

Management will focus on salvaging the dead and dying white ash timber resources as a result of the Emerald Ash Borer infestation. The target is to harvest approximately 4 cords per acre to accomplish this goal. Efforts will be made to thin around the healthy and well-formed red oak and mixed hardwoods within the stand for the purpose of increasing their health, growth and regeneration potential. Biological legacy trees (25" DBH+) will also be retained for the purpose of maintaining forest carbon stocks. The improvement thinning will be focused towards the removal of poorly formed, diseased and dead hardwoods of all species for firewood. Understory scarification will also be conducted to weed and clean out undesirable vegetation in order to prepare the site for enrichment plantings of climate resilient species such as oak, hickory, sycamore, sugar maple and potentially disease resistant American chestnut. This harvest will remove hazard trees near and along hiking trails for public safety. The salvage harvest will also be beneficial to a variety of wildlife species as the stand changes to a multi-layered and unevenaged forest with pockets of early successional habitat for Focal Bird Species. Retaining snag trees and cavity trees will be done in areas where recreational use of the stand is non-existent.

Management Considerations:
Course woody debris will be retained after management activities for soil stabilization, wildlife habitat, carbon storage, and nutrient retention. Skid trails will be laid out in advance in order to take into account the landowner's goal of protecting aesthetic value. Best management practices will be strictly adhered to during harvesting activities. Properly located water bars will be important to protecting soils and water quality due to changing weather conditions. It is important that management be flexible and adaptive. Practices may take longer to complete than in the past due to wetter soil conditions in the winter, spring, and fall seasons. There may be funding opportunities for conducting the salvage harvesting of low-value forest products in this stand.

Harvest Impacts on Carbon Stocks & Dynamics:
The recommended harvest will be a short-term loss of carbon stocks for the preparation and development of a long-term gain of carbon into the future with tree species that will be retained that are projected to be climate resistant. Harvesting will promote the sequestration of carbon in developing the future forest through regeneration of desired climate resistant species as well. The harvest will only occur if it is determined that hemlock woolly adelgid will ultimately cause wide-spread mortality within the stand.

Focal Bird Species Considerations:
Woody material retention guidelines for focal birds:
Snags >10" DHB: 5 per acre
Cavity trees > 18" DBH: 1-3 per acre
Cavity trees 12-18" DBH: 4 per acre
Fine Woody material: 2 Cords per acre

Codes: STD = stand AC = acres MBF = thousand board feet CD = cords BA/AC= basal area per acre VOL= volume

Management Practices

Stand(s)	TYPE	SILVICULTURAL PRESCRIPTION Or Management Practice	AC	TO BE REMOVED		TIMING
				BA/AC	TOT VOL	
4	WH	**Selection Harvest Individual & Small Group**	24.9	35 sf	60 MBF & 72 Cords	2028-2030

Management will focus on individual and group selection harvesting techniques that will promote an unevenaged and climate resilient forest into the future. The target is to harvest approximately 25-33% of the overstory volume. The emphasis will be to harvest species that are projected to be high risk for climate change. These high-risk species within the stand include white pine and white ash. Efforts will be made to thin around the healthy and well-formed oak, hickory, red maple, sugar maple and mixed hardwoods within the stand for the purpose of increasing their health, growth and regeneration potential within the stand. Biological legacy trees (25" DBH+) will also be retained for the purpose of maintaining forest carbon stocks. The selection harvesting will be individual sawtimber and small groups of sawtimber sized trees (16" DBH+) to create openings in the canopy. Poorly formed and low-quality trees of all sizes will be harvested as well. Thinning within this stand will release the advanced regeneration that is being suppressed and prepare the stand for new desired regeneration such as oak, hickory, red maple, and sugar maple. The harvest will also make openings within the canopy that may potentially be reforested with other resilient climate change species such as hickory. High value sawtimber will be sold as sawlogs, while the low-quality trees and portions of trees will be utilized as firewood and pulp. This harvest will produce a forest that is growing high quality timber resources in several size and age classes that will be beneficial to a variety of wildlife species as the stand changes to a multi-layered and unevenaged forest. The harvest will create gaps in the canopy and increase the amount of vegetation in the understory and midstory for Focal Bird Species and other native wildlife.

Management Considerations:
Course woody debris will be retained after management activities for soil stabilization on slopes, wildlife habitat, carbon storage, and nutrient retention. Skid trails and landing sites will be laid out in advance in order to take into account the landowner's goal of protecting aesthetic value. Best management practices will be strictly adhered to during timber harvesting activities. Properly located water bars will be important to protecting soils and water quality due to changing weather conditions. It is important that management be flexible and adaptive. Practices may take longer to complete than in the past due to wetter soil conditions in the winter, spring, and fall seasons.

Harvest Impacts on Carbon Stocks & Dynamics:
The recommended harvest will be a short-term loss of carbon stocks for the preparation and development of a long-term gain of carbon into the future with tree species that will be retained that are projected to be climate resistant. Harvesting will promote the sequestration of carbon in developing the future forest through regeneration of desired climate resistant species as well.

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Fine Woody material: 2 Cords per acre

Codes: STD = stand AC = acres MBF = thousand board feet CD = cords BA/AC= basal area per acre VOL= volume

Management Practices

Stand(s)	TYPE	SILVICULTURAL PRESCRIPTION Or Management Practice	AC	TO BE REMOVED		TIMING
				BA/AC	TOT VOL	
5	OH	**Selection Harvest Individual & Small Group**	74.4	30 sf	83 MBF & 200 Cords	2031-2033

Management will focus on individual and group selection harvesting techniques that will promote an unevenaged and climate resilient forest into the future. The target is to harvest approximately 25-33% of the overstory volume. The emphasis will be to harvest species that are projected to be high risk for climate change and poor-quality timber resources that are affecting the growth and development of resilient tree species. These high-risk species within the stand include white pine, white ash and black birch. Efforts will be made to thin around the healthy and well-formed oak, hickory, red maple, sugar maple and mixed hardwoods within the stand for the purpose of increasing their health, growth and regeneration potential within the stand. Biological legacy trees (25" DBH+) will also be retained for the purpose of maintaining forest carbon stocks. The selection harvesting will be individual sawtimber and small groups of sawtimber sized trees (16" DBH+) to create openings in the canopy. Poorly formed and low-quality trees of all sizes will be harvested as well. Thinning within this stand will release the advanced regeneration that is being suppressed and prepare the stand for new desired regeneration such as oak, hickory, red maple, and sugar maple. The harvest will also make openings within the canopy that may potentially be reforested with other resilient climate change species such as hickory. High value sawtimber will be sold as sawlogs, while the low-quality trees and portions of trees will be utilized as firewood and pulp. This harvest will produce a forest that is growing high quality timber resources in several size and age classes that will be beneficial to a variety of wildlife species as the stand changes to a multi-layered and unevenaged forest. The harvest will create gaps in the canopy and increase the amount of vegetation in the understory and midstory for Focal Bird Species and other native wildlife.

Management Considerations:
Course woody debris will be retained after management activities for soil stabilization on slopes, wildlife habitat, carbon storage, and nutrient retention. Skid trails and landing sites will be laid out in advance in order to take into account the landowner's goal of protecting aesthetic value. Best management practices will be strictly adhered to during timber harvesting activities. Properly located water bars will be important to protecting soils and water quality due to changing weather conditions. It is important that management be flexible and adaptive. Practices may take longer to complete than in the past due to wetter soil conditions in the winter, spring, and fall seasons.

Harvest Impacts on Carbon Stocks & Dynamics:
The recommended harvest will be a short-term loss of carbon stocks for the preparation and development of a long-term gain of carbon into the future with tree species that will be retained that are projected to be climate resistant. Harvesting will promote the sequestration of carbon in developing the future forest through regeneration of desired climate resistant species as well.

Focal Bird Species Considerations:
Woody material retention guidelines for focal birds:
Snags >10" DHB: 5 per acre
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Cavity trees 12-18" DBH: 4 per acre
Fine Woody material: 2 Cords per acre

Codes: STD = stand AC = acres MBF = thousand board feet CD = cords BA/AC= basal area per acre VOL= volume

Management Practices

Stand(s)	TYPE	SILVICULTURAL PRESCRIPTION Or Management Practice	AC	TO BE REMOVED		TIMING
				BA/AC	TOT VOL	
3, 4 & 5	OH WH	**Reforestation** **Enrichment Planting of Climate Resilient Species** **Deer Protection**	130.0	NA	NA	After Harvest Operations

Tree planting of climate resilient species will be performed within the small openings created from timber harvesting and salvaging activities. The recommendation is to plant red oak, white oak, hickory and potentially disease resistant American chestnut sapling stock that is roughly 3-8 feet tall. The recommendation is to plant trees at 15 x 15 foot spacing, or sporadically throughout the harvest areas where adequate sunlight is reaching the forest floor. These saplings should then be protected from potential deer browsing by placing tubing or fencing around the saplings. Available funding will ultimately determine the intensity of tree planting and protection.

Stand(s)	TYPE	SILVICULTURAL PRESCRIPTION Or Management Practice	AC	TO BE REMOVED		TIMING
				BA/AC	TOT VOL	
1-5, F	All Stands	**Invasive Species Control** **Brush Management**	211.0	NA	NA	2025-2034

Invasive species are prolific in many areas of this forest. Invasive species will be controlled through mechanical and herbicide treatments. Mechanical cutting, root pulling, and chemical herbicide treatments are all options the landowner can use to prevent the spread of invasive species. Ultimately, expenses will play an important role in the decision making for treatments. The removal of invasive species will promote native vegetation that will help with climate change issues related to forest regeneration. The landowner will monitor the property for occurrences of invasive species growth over the next ten years of management.

Stand(s)	TYPE	SILVICULTURAL PRESCRIPTION Or Management Practice	AC	TO BE REMOVED		TIMING
				BA/AC	TOT VOL	
1-5, F	All Stands	**Recreation Enhancement** **Trail Management**	211.0	NA	NA	2025-2034

Trails on the property will be maintained over the next ten years by the Cumberland Land Trust. Recreation management will focus on constructing, marking, and maintaining trails. Existing trails will be maintained by identifying trail locations, removing hazard trees (with support from the Town), pruning, clearing brush, foot-bridge construction and maintenance, and culvert maintenance as necessary. Efforts to prohibit ATV and other motor vehicle use on the property will be pursued as well. The trails will provide for educational opportunities, wildlife viewing, and other passive recreational uses. Signage will be considered for the management practices that will be conducted on the property.

Codes: STD = stand AC = acres MBF = thousand board feet CD = cords BA/AC= basal area per acre VOL= volume

Stand(s)	TYPE	SILVICULTURAL PRESCRIPTION Or Management Practice	AC	TO BE REMOVED		TIMING
				BA/AC	TOT VOL	
F	Fields & Meadows	**Wildlife Habitat Enhancement** **Bird Boxes** **Periodic Field Mowing**	18.0	NA	NA	2025-2034

The installation of artificial nesting boxes for birds will be done to improve wildlife habitat. The bird species and box specifications will be determined at a later date. Scheduling the mowing of the fields and meadows will be timed to support field nesting birds.

Stand(s)	TYPE	SILVICULTURAL PRESCRIPTION Or Management Practice	AC	TO BE REMOVED		TIMING
				BA/AC	TOT VOL	
1-5, F	All Stands	**Boundary Identification** **Property Signs**	211+/-	NA	NA	2025-2034

Boundary lines will be identified and property signs placed along the property boundary. Property surveys will be used to properly identify the boundary lines (Please see the Boundary & Stand Type Map for physical boundary features).

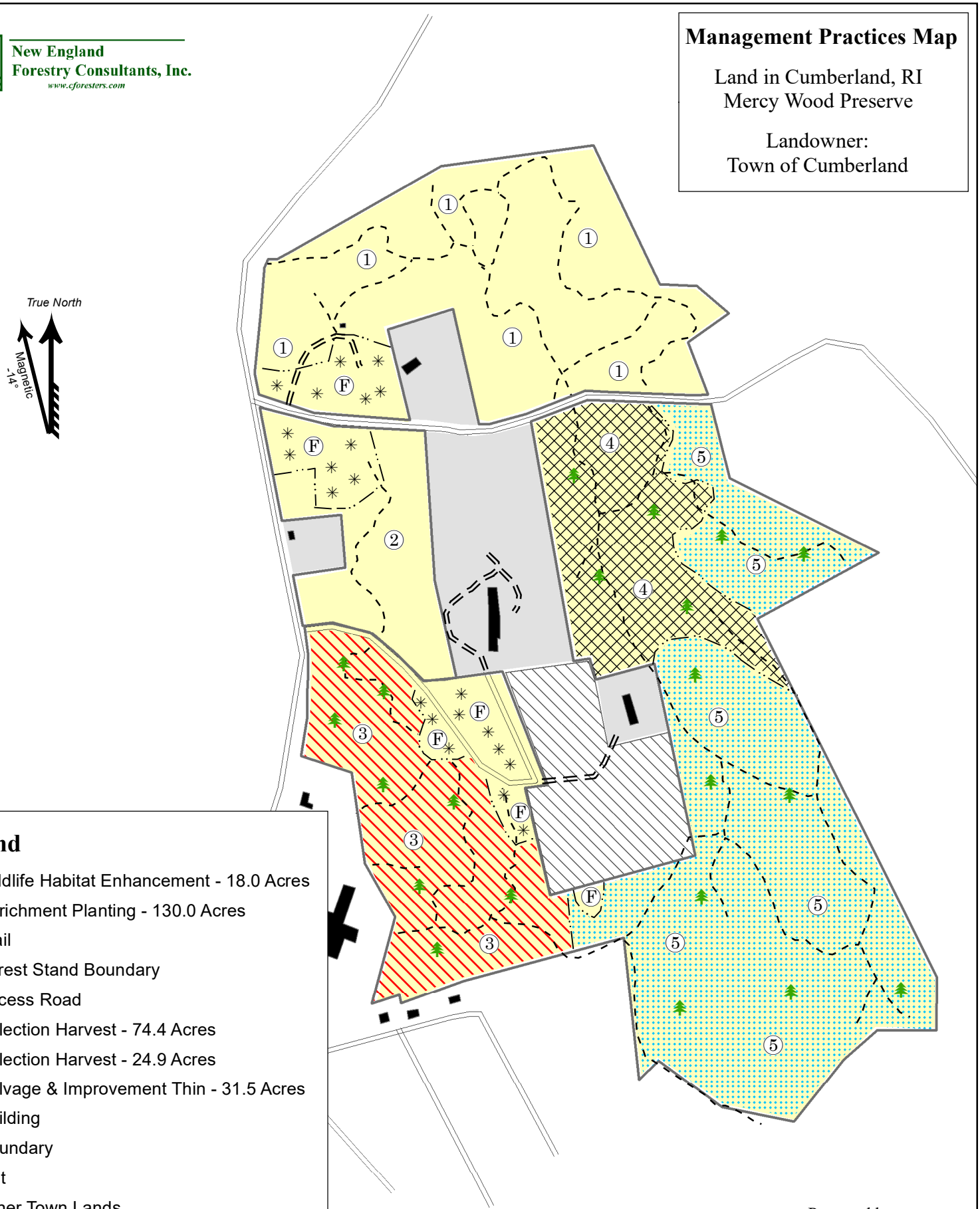
Codes: STD = stand AC = acres MBF = thousand board feet CD = cords BA/AC= basal area per acre VOL= volume

New England
Forestry Consultants, Inc.
www.cforesters.com

Management Practices Map

Land in Cumberland, RI
Mercy Wood Preserve

Landowner:
Town of Cumberland

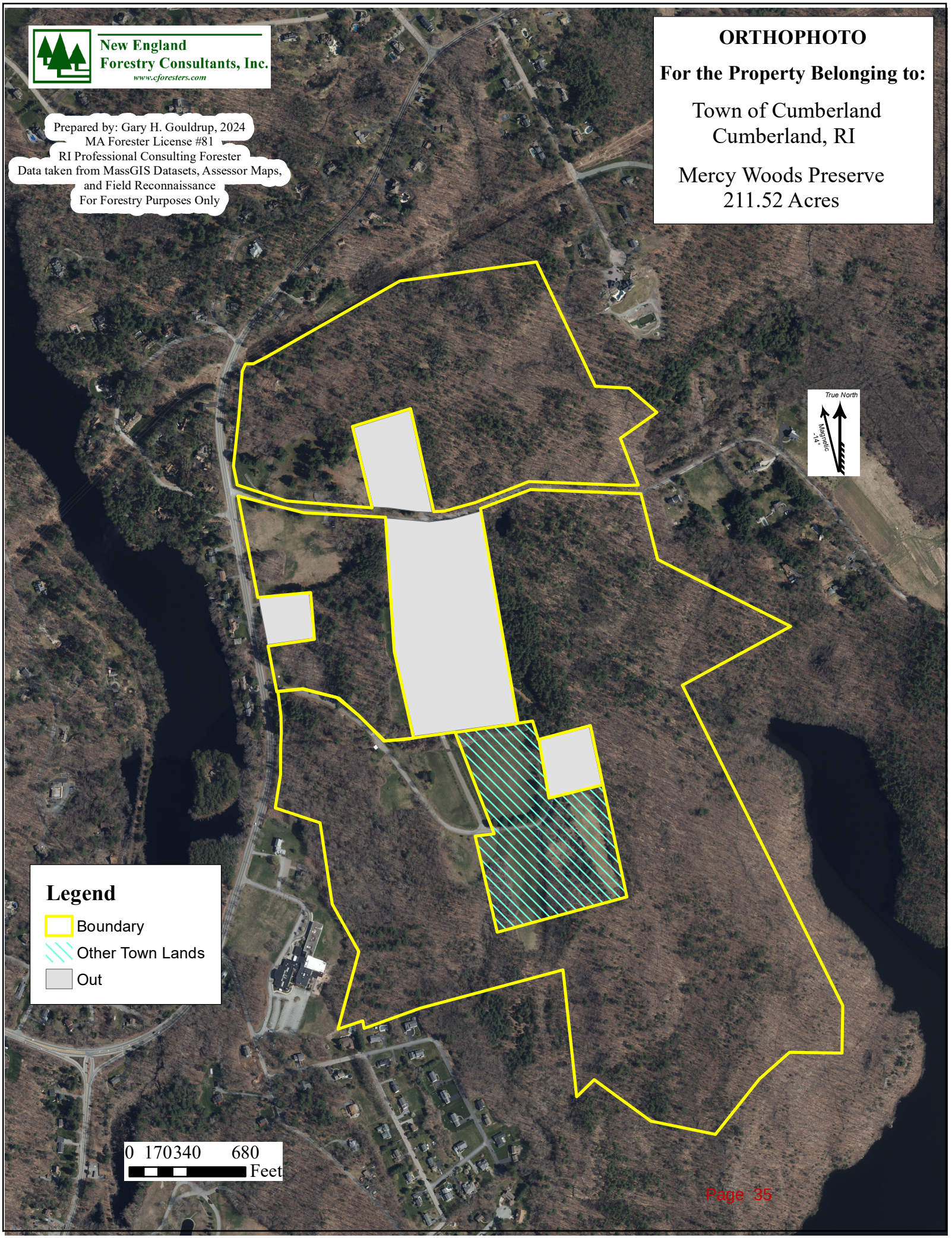


Legend

- Wildlife Habitat Enhancement - 18.0 Acres
- Enrichment Planting - 130.0 Acres
- Trail
- Forest Stand Boundary
- Access Road
- Selection Harvest - 74.4 Acres
- Selection Harvest - 24.9 Acres
- Salvage & Improvement Thin - 31.5 Acres
- Building
- Boundary
- Out
- Other Town Lands
- Town Road
- Invasive Species Control - 211.0 Acres

0 500 1,000 2,000 Feet

Prepared by:
Gary H. Gouldrup
Consulting Forester
MALF #81
Ashburnham, MA 01430
508-397-9206
October 17, 2024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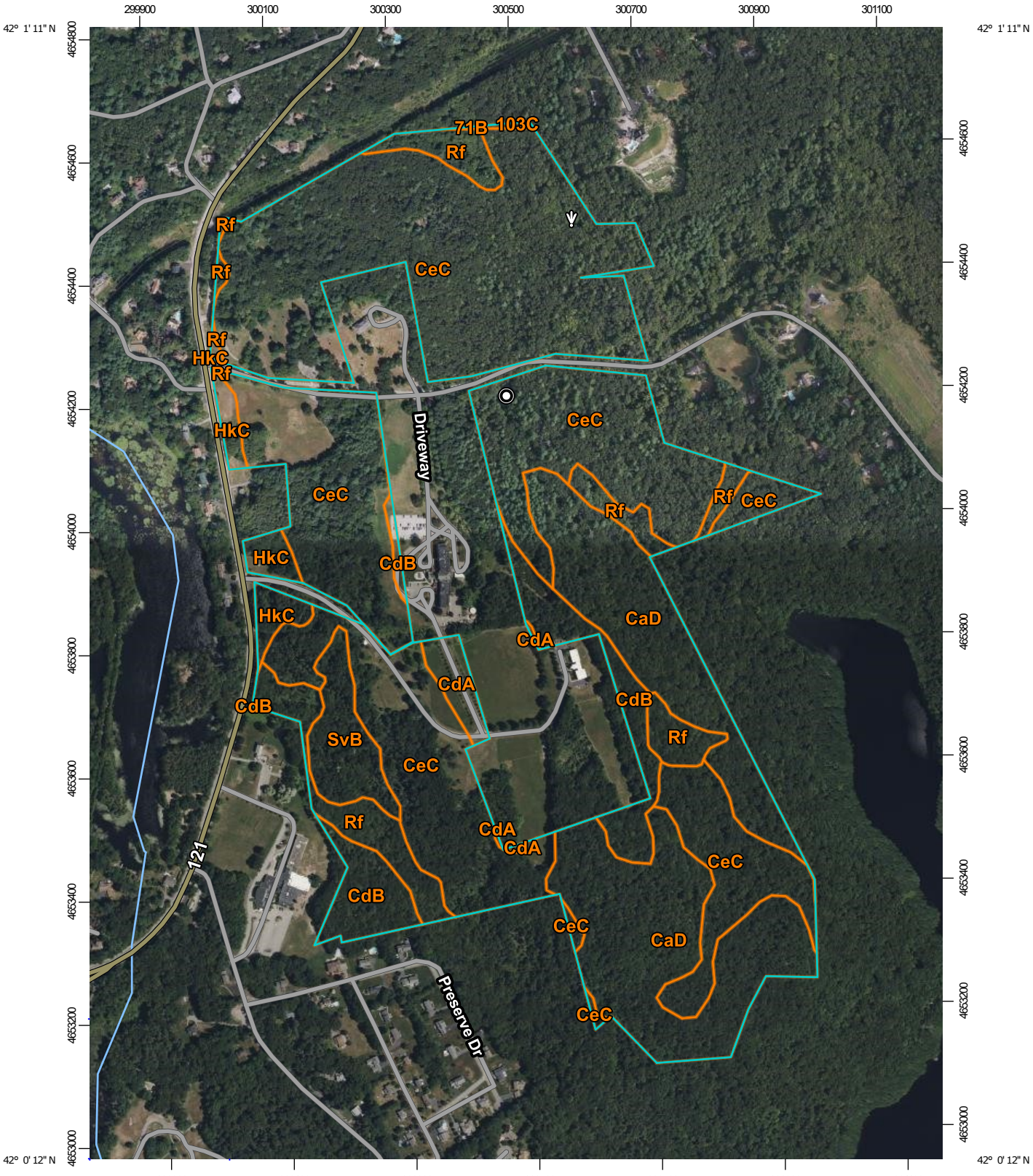
MA Forester License #81
RI Professional Consulting Forester
Data taken from MassGIS Datasets, Assessor Maps,
and Field Reconnaissance
For Forestry Purposes Only
ORTHOPHOTO
For the Property Belonging to:
Town of Cumberland
Cumberland, RI
Mercy Woods Preserve
211.52 Acres
True North
Magnetic
-14°
Legend
Boundary
Other Town Lands
Out
0 170340 680
Feet

Soil Map—Norfolk and Suffolk Counties, Massachusetts; and State of Rhode Island: Bristol, Kent, Newport, ...
(Boundary)



Map Scale: 1:8,950 if printed on A portrait (8.5" x 11") sheet.

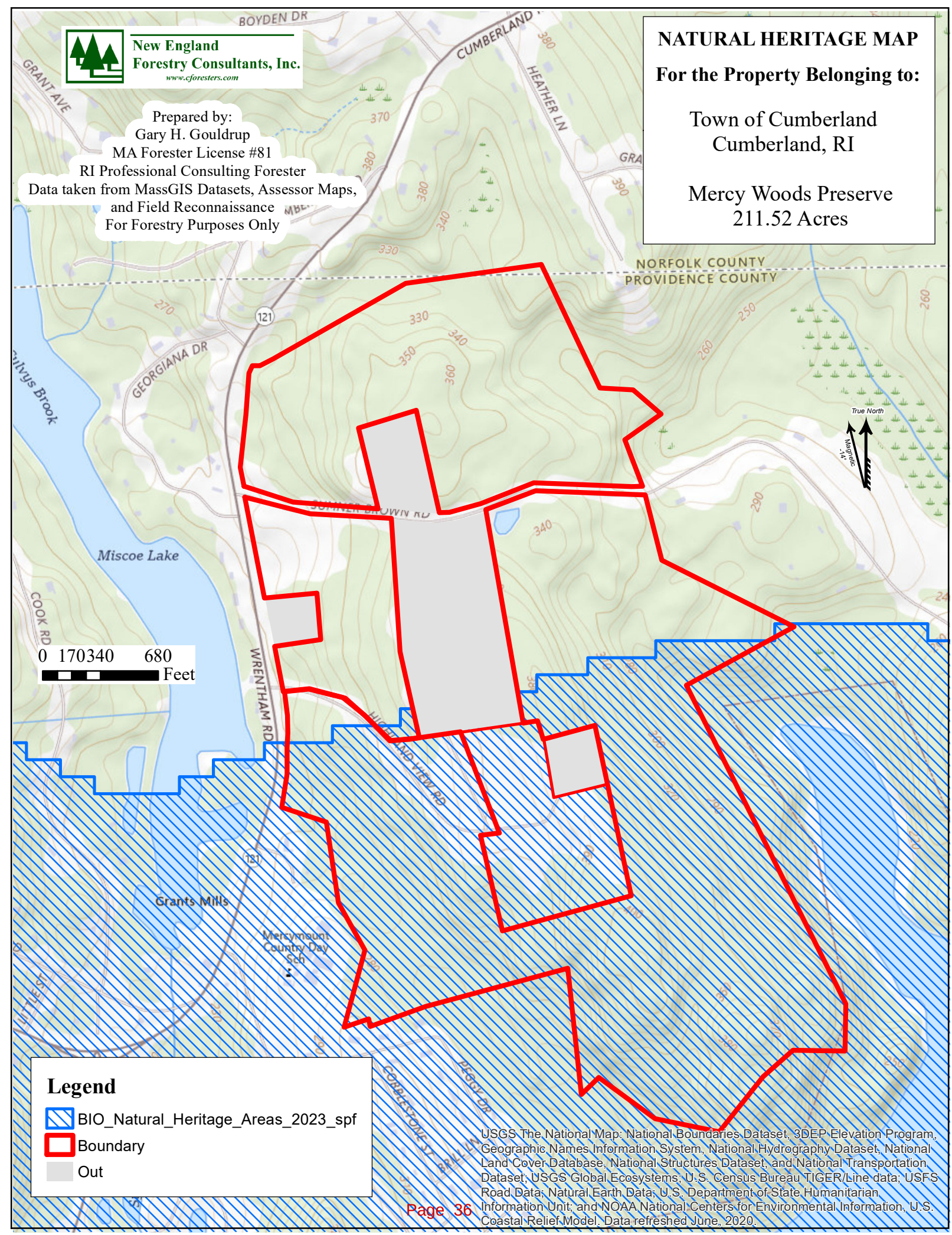
N

Meters: 0 100 200 400 600

Feet: 0 400 800 1600 2400

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

See Soils Descriptions on Page XX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Data taken from MassGIS Datasets, Assessor Maps,
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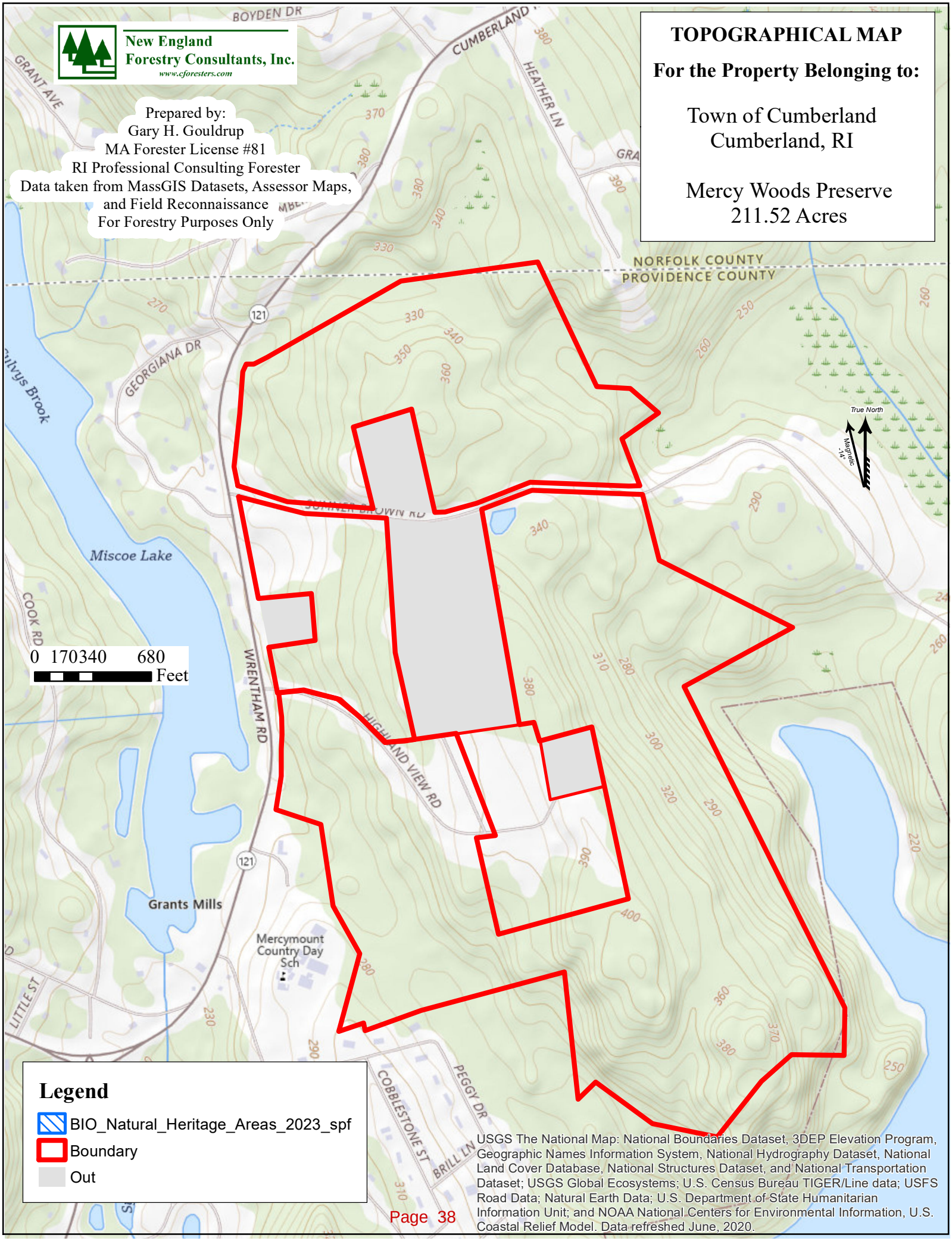
For Forestry Purposes Only
NATURAL HERITAGE MAP
For the Property Belonging to:
Town of Cumberland
Cumberland, RI
Mercy Woods Preserve
211.52 Acres
NORFOLK COUNTY
PROVIDENCE COUNTY
Miscoe Lake
Grants Mills
Mercymount Country Day Sch
GEORGIANA DR
WRENTHAM RD
COOK RD
BOYDEN DR
CUMBERLAND
HEATHER LN
GRANT AVE
True North
Magnetic -14°
0 170340 680
Feet
Legend
BIO_Natural_Heritage_Areas_2023_spf
Boundary
Out
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed June, 2020.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TOPOGRAPHICAL MAP
For the Property Belonging to:
Town of Cumberland
Cumberland, RI
Mercy Woods Preserve
211.52 Acres
NORFOLK COUNTY
PROVIDENCE COUNTY
BOYDEN DR
CUMBERLAND
HEATHER LN
GRANT AVE
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Sylvys Brook
Miscoe Lake
COOK RD
WRENTHAM RD
HIGHLAND VIEW RD
Grants Mills
Mercymount
Country Day
Sch
LITTLE ST
COBBLESTONE ST
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Boundary
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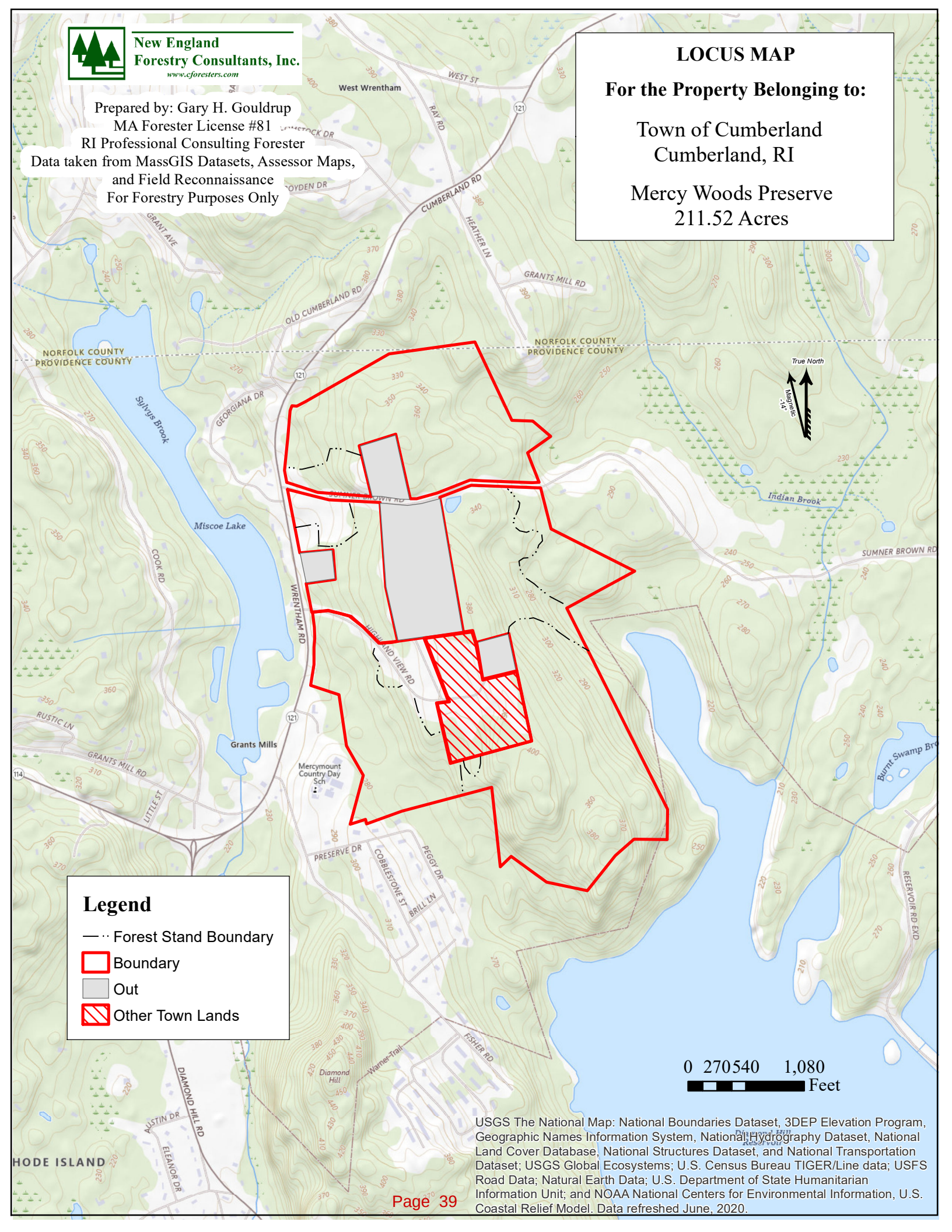
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed June, 2020.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LOCUS MAP
For the Property Belonging to:
Town of Cumberland
Cumberland, RI
Mercy Woods Preserve
211.52 Acres
True North
Magnetic -14°
West Wrentham
WEST ST
RAY RD
CUMBERLAND RD
HEATHER LN
GRANTS MILL RD
OLD CUMBERLAND RD
GRANT AVE
GEORGIANA DR
NORFOLK COUNTY
PROVIDENCE COUNTY
Sylvus Brook
Miscoe Lake
COOK RD
WRENTHAM RD
SUMNER BROWN RD
Indian Brook
HIGHLAND VIEW RD
RUSTIC LN
Grants Mills
Mercymount Country Day Sch
LITTLE ST
PRESERVE DR
COBBLESTONE ST
PEGGY DR
BRILL LN
Burnt Swamp Brook
RESERVOIR RD EXD
Diamond Hill
Warner Trail
FISHER RD
DIAMOND HILL RD
AUSTIN DR
ELEANOR DR
HODE ISLAND
Legend
Forest Stand Boundary
Boundary
Out
Other Town Lands
0 270540 1,080
Feet
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed June, 2020.

Identification & Signature Page

☒ **Forest Stewardship Management Plan**

Plan Prepared: September 27, 2023

Property Location: Assessors Map 48, Lots 2, 3, 10 & 55
Stewardship Acres = 211.52
Deed Book 1776, Deed Page 202
Off Sumner Brown Road & Wrentham Road

Landowner(s):

Town of Cumberland
45 Broad Street
Cumberland, RI 02864

_____ Date 10/23/2024

_____ Date _____

Conservation Easement Holder(s):

Cumberland Land Trust
267 Scott Road
Cumberland, RI 02864

_____ Date _____

_____ Date _____

Pawtucket Water Supply Board
85 Branch Street
Cumberland, RI 02864

_____ Date _____

_____ Date _____

State Forester's Representative(s):

Rhode Island DEM
235 Promenade Street
Providence, RI 02908

_____ Date 10/28/2024

_____ Date _____

Plan Preparer:

New England Forestry Consultants, Inc.
Gary H. Gouldrup
30 Jewell Hill Road
Ashburnham, MA 01430
gouldrupnefco@gmail.com
508-397-9206

_____ Date 10/28/2024

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