

Andrews Community Forest¹

DRAFT Management Plan

Richmond, Vermont

Fall 2018



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¹ The Steering Committee recommends calling the forest the Andrews Community Forest

Table of Contents

Introduction	4
Acquisition of the Andrews Community Forest	4
Governance of the Andrews Community Forest	4
Management Plan Development	4
Public Input Process	5
Future Management Plan Updates	5
Management Plan	6
General Property Description	6
Conservation Easement	7
Public Access	8
Summary of Allowed Uses	8
Summary of Restricted/Prohibited Uses	8
Parking	8
Road Use	9
Cultural History	9
Remaining Historical Sites and Features	10
Management Objectives	10
Management Actions	10
Geology, Topography, and Climate	10
Biophysical Region	10
Bedrock Geology	10
Surficial Geology	11
Topography and Aspect	11
Climate	12
Management Objectives	12
Management Actions	12
Water Resources	12
Streams and Riparian Buffers	12
Management Objectives	13
Management Actions	13
Wetlands	14
Wetland Types on the Andrews Community Forest	14
Management Objectives	14
Management Actions	15
Vernal Pools	15
Management Objectives	15
Management Actions	16
	2

Forestry	16
Management Objectives	17
Management Actions	17
Upland Natural Communities	18
Upland Natural Community Types on the Andrews Community Forest	18
Management Actions	20
Wildlife Habitat	20
Interior Forest and Connectivity	21
Ledges, Cliffs, Talus and Ridges	21
Mast Stands	22
Deer Wintering Areas	22
Management Objectives	23
Management Actions	23
Recreation	24
Trail Concept Map	25
Trail Development	26
Management Objectives	27
Management Actions	27
Rules	28
Agriculture	28
Agricultural Partnerships	28
Management Objectives	28
Management Actions	29
Education	29
Potential Partnerships	29
Management Objectives	30
Management Actions	30
Legal Agreements on the Property	30
Agricultural Lease	30
Powerline Right-of-Ways	31
VELCO	31
Green Mountain Power	31
Management Objectives	31
Management Actions	31
Summary of Management Objectives and Management Actions	32
Appendices	36
References	37

Introduction

Acquisition of the Andrews Community Forest

In 2018, the Town of Richmond, with the assistance of Vermont Land Trust, purchased a 428-acre, largely wooded parcel from the Andrews family to create a new community forest. Simultaneous with the sale, a conservation easement was conveyed to both the Vermont Land Trust and the Vermont Housing and Conservation Board to protect the property's natural resources and ensure public access in perpetuity.

Governance of the Andrews Community Forest

[This section subject to the Selectboard's decision about governance of the Town Forest. This content reflects the Committee's recommendation about the long-term governance and management of the Town Forest.]

As a municipally-owned property, the Town of Richmond Selectboard is ultimately responsible for the management and stewardship of the Community Forest. However, this responsibility has been delegated to the Community Forest Steering Committee, a nine-person committee with representatives from both the Conservation Commission and the Trails Committee. The purpose of the Community Forest Steering Committee is to:

- Serve as representatives of the Town in decisions related to management of the Community Forest.
- Manage the Community Forest responsibly and in accordance with the Management Plan and the Conservation Easement.
- Act as a liaison with the Vermont Land Trust when input or approval is needed.
- Lead the management planning process whenever updates are needed.
- Provide opportunities for public engagement with the Town Forest and in the planning/management of this community-owned property.
- Educate the public about the Community Forest.

Furthermore, the Steering Committee agrees to strive towards the following guiding tenets:

- Demonstrate an ongoing commitment to providing meaningful public access and outdoor recreation opportunities while simultaneously providing meaningful natural resource protection.
- Demonstrate an ongoing commitment to learning more about the property and its natural history.
- Demonstrate an ongoing commitment by the Committee to work together across differences as representatives of the Town and all of its residents.

By this model, Richmond residents serve as the stewards of the property, guiding and directing its future through this management plan. Further information about the governance of the Community Forest can be found in Appendix D.

Management Plan Development

Upon purchasing the property, the Selectboard established an Interim Town Forest Steering Committee to develop a full management plan for the property and governance structure for the Community Forest,

subject to final approval by the Selectboard. The Community Forest Committee prepared an Interim Management Plan to provide short-term guidelines for the management of the property and allow “breathing room” for the development of the full plan. The Interim Management Plan was signed by the Town and approved by the Vermont Land Trust in March 2018.

Meanwhile, the Town, through a grant from the Vermont Urban and Community Forestry Program, worked to develop the full management plan with the consulting groups SE Group and Arrowwood Environmental. Beginning in 2018, these groups assisted the management plan process by leading the public input process, conducting environmental analysis, and drafting the plan.

Public Input Process

Public input opportunities into the management planning process were advertised by email, social media, Front Porch Forum, via signage in Town, and in TimesInk! Results from the public input process are available on the Town of Richmond website and participation is summarized below:

- *Visioning Workshop* – A public workshop was held on January 18, 2018 with about 80 community members in attendance. Attendees gave their input on a vision, management balance, and appropriate activities and facilities for the community forest.
- *Visioning Survey* – A survey, open from January to March 2018, asked similar questions to those posed at the workshop. The survey received 317 responses from residents of Richmond and surrounding towns.
- *Stakeholder Interviews* – Small group interviews were held on June 14 and June 18, 2018 to discuss the future of the property with five stakeholder group: hunters/trappers, neighbors, education, trail-based recreation, natural resources, and others. Other interested members of the public were invited to join.
- *Draft Strategies Workshop* – A public workshop was held on July 12, 2018 to present the progress of the plan and hear feedback from the community on draft strategies for the future development and management of the property.
- *Community Forest Committee* – The Community Forest Committee met twice a month through this process. The committee also met as smaller working groups to inventory and plan for each resource in the property.

Future Management Plan Updates

This management plan is intended to a living and evolving document. As the Andrews Community Forest is new to public ownership, there is a need to better understand conditions on the ground and respond to new conditions that may arise . Adaptive management is an iterative cycle of evaluating and learning, adjusting, planning, and doing. The Town should make management decisions based on the latest information combined with the resource management objectives. In addition, the Town should be constantly gathering new information to guide future management decisions and update this plan.

This plan should be updated, at a minimum, every ten years. However, more frequent revisions may be necessary in the early years of municipal ownership as the community’s use of the property evolves. The Committee will plan to discuss once annually whether an update to the Management Plan is needed, and to employ aspects of the “adaptive management model” (Figure 1).

Any changes to the Management Plan must be reviewed and approved by VLT, and any activities on the property which are not contemplated in the management plan must be reviewed and approved by VLT stewardship staff.



Management Plan

General Property Description

The Andrews Community Forest is a 428-acre largely forested parcel just outside Richmond Village in Chittenden County. The property is a diverse forestland with two small meadows. It has an abundance of hard-mast stands, predominantly oak and beech, that serve as important habitat for many species of wildlife. The forest includes several patches of Dry Oak Forest, Dry Red Oak-White Pine Forest, and Dry Oak-Hickory-Hophornbeam Forest, which are uncommon natural communities in Vermont. The property also has patches of dense hemlock, and those pockets, combined with its low elevation and southerly aspect, reportedly make it a heavily used winter deer yard. Recent timber harvesting and blowdown events have created patches of young forest and early successional habitat in the west and south of the property.

Overall, this forest, especially as part of a larger, connected forest block, is a well-conserved wildlife habitat. The forest is one of eight large parcels that originally inspired the Chittenden County Uplands Conservation Project (CCUCP). The CCUCP is a landscape-scale conservation effort with over a dozen partners working to conserve ecologically and culturally important forest blocks and habitat connectors

between and alongside Camel's Hump State Park and Mount Mansfield State Forest. The Andrews Community Forest abuts 6,000 acres of forestland that itself is adjacent to the the 72,000-acre Mt. Mansfield Forest Block. This largely conserved forest block is a critical wildlife corridor and has been ranked in the top 3% of the state's wildlife habitat blocks by the Vermont Department of Fish and Wildlife.

In terms of water resources, the forest has several headwater streams that flow into the Winooski River and then on to Lake Champlain. The property also includes a small beaver pond and wetlands and at least two vernal pools. The quality of these water resources is directly related to the health of the surrounding forest.

There is a long history of timber management on the forest, as the Andrews family actively managed the forest. Most recently, in 2011 - 2014, timber management occurred on a western portion of the property. Western areas were previously logged in 2001-2003 and eastern areas were logged in 1994-1997 by well-respected Richmond/Huntington loggers Mark and Bruce Moultroup. Going forward, the forest is capable of providing timber and other forest products into the future. Many forest management roads (also called "logging roads," or "skid trails") from previous logging operations still exist on the forest, and despite drainage and other sustainability issues, may serve as a component of a multi-use recreational trail network. The use of these trails for recreation should not compromise or preclude their utility as forest management roads into the future.

Along with the existing logging roads, the forest has potential for a future recreational trail network. There is currently a VAST trail running through the forest and there is potential to connect to existing trails on neighboring properties. There are existing hiking trails on the VYCC property to the east and a public multi-use trail was recently constructed on privately owned land abutting the forest to the northwest.

Other current uses of the property include Maple Wind Farm agriculture and grazing and a Vermont Electric Power Company (VELCO) power line that cuts across the property.

Conservation Easement

The Andrews Community Forest is encumbered by a conservation easement ("easement") held by the Vermont Land Trust and the Vermont Housing and Conservation Board (Appendix A). The purposes of the easement are to conserve the property's natural resources and ecological processes, open space values, provide for non-motorized, non-commercial recreation and education, and involve the public in the management of the property.

Vermont Land Trust acts as the primary easement steward. As the primary easement steward, they will conduct annual monitoring to ensure activities on the property are consistent with the terms of the easement. The easement steward is also the Committee's primary contact at VLT for reviews and approvals of proposed actions which are not contemplated in the management plan.

The easement requires a management plan and any future changes to the management plan must be reviewed and approved by VLT. Please see Section ___ of the easement for specific information about what information the management plan must include. Public input is required by any updates to the Plan.

Public Access

Summary of Allowed Uses

The following **general rules** apply to use of the Andrews Community Forest:

- The Andrews Community Forest is open dawn-to-dusk, year-round.
- Dogs must be under voice command of their owners; no more than two dogs are permitted per individual. Owners are expected to remove dog waste from the property.

The following uses are **allowed** on the Andrews Community Forest:

- Dispersed pedestrian access is allowed the property for uses such as hiking, walking, wildlife observation, or cross-country skiing unless otherwise noted.
- Trail-based recreational activities, such as hiking, walking, mountain-biking, cross-country skiing, and other uses, are allowed unless otherwise noted. Mountain-biking is only allowed on designated trails.
- Snowmobiling, restricted to the VAST trail
- Hunting is allowed above the powerlines during big game rifle seasons starting in early November and ending in early December.

Summary of Restricted/Prohibited Uses

The following uses are **restricted** on the Town Forest:

- Hunting is not permitted below the powerlines or outside of these seasons.
- Trails above the powerlines will be closed annually for big game rifle season, beginning in early November and ending in early December.
- Motorized vehicles are not allowed on the property, except for use by those with physical disabilities, snowmobiles, vehicles required for property management, or in case of emergency.

The following uses are **prohibited** on the Town Forest:

- Campfires, horseback riding, camping, and trapping.
- Public use of the ACF before dawn or after dusk, or until 11 p.m. with permission of the Steering Committee chair.
- New trail development without prior approval of the Community Forest Committee.
- Timber harvest without the adoption of an approved Forest Management Plan.

Parking

Parking is available off of Route 2 across from Maple Wind Farm, at 1129 East Main Street, Richmond. The parking lot will be expanded in fall 2018 to accommodate 5-6 cars. The community has expressed concern that this may not be enough parking. The Committee will monitor use of the expanded parking area over the coming year and, if necessary, explore additional parking solutions.

The upper landing area can be used for parking during special events or by request. Members of the community will need to submit a proposal for special parking access to the committee, and requests will be approved on a case-by-case basis.

Visitors may also access the property by parking at adjacent properties and accessing the Andrews Community Forest by trails. Parking is available to the east at VYCC and the Community Forest is accessible by logging roads and VAST trails. Parking is available to the west at the base of the Old Jericho Road, and the property is accessed by taking the Old Jericho Road to the top of the Sip of Sunshine trail.

Road Use

Motorized vehicles will be permitted on the VELCO road up to the landing for management purposes or for special events. Above the landing and on the “east road,” only vehicles used in performing management of the Community Forest, VELCO vehicles performing maintenance on the powerlines and access roads, vehicles associated with the use and management of the VAST trail, or vehicles required for use in an emergency will be permitted. Use of any road on the property by motorized vehicle requires permission from the Committee Chair, with the exception of the “east road,” over which Maple Wind Farm has a right-of-way.

Cultural History

The Andrews Community Forest property has a rich history - over 200 years of agriculture and forest management. “Gray Rocks Farm,” as it was formerly known, is on the National Register of Historic Places. The farm is a testament to the importance and prevalence of dairy farming in 19th and 20th century Vermont and exemplifies the growth and development of that industry. The land that is now the Community Forest was largely the farm’s pasture and woodlot, and most of the farmland and remains of the historic farm’s agricultural buildings are on land now owned by Maple Wind Farm.

The existing forest parcel, along with 212 additional acres, was first farmed by James Butler, beginning around 1800. He constructed a farmhouse, blacksmith shop, and an English barn before selling the property to Asa Rhodes in 1813. The property remained in the Rhodes family for over a hundred years, passing from father to son.

The 1850 agricultural census indicates that the Rhodes farm was primarily a dairy farm, with 45 cows producing 1,800 lbs. of butter and 15,000 lbs. of cheese annually. As was common in Richmond at the time, the farm also had other livestock – horses, chickens, sheep, and swine. The Rhodes also harvested 125 tons of hay and 200 lbs. of maple syrup annually and grew many different crops: corn, oats, rye, potatoes, peas, and beans.

Over the years, ownership passed first to Asa’s son, Cornelius, and then to his son Edward, around the turn of the century. The farm continued to grow and ultimately thrived as the market for butter and cheese expanded. Given the farm’s success, in 1917, Edward reconstructed the English barn into a large U-shaped barn that more than doubled the space available for the cows. The new barn also added space for horses, a granary, and a milk house and he added a silo for storing cereals elsewhere on the property.

In 1923, Edward Rhodes sold the farm to Clarence Andrews. Andrews continued dairying operations on the property until 1978. The Andrews also operated a successful inn, the Gray Rocks Inn, from 1928 to 1941. Ina Andrews, Clarence’s wife, ran the inn, cooking three meals a day for guests from Massachusetts, New York, and Connecticut. During this period, the Richmond area was full of small inns

for travelers looking to experience the idyllic countryside. The tourism business was vital to the Richmond economy and an important period in the town's history.

The Andrews family also kept a small deer camp, known as "Odds and Ends," on the northern portion of the property. They built a rustic cabin there in the 1950s but stopped using it in the 1990s and eventually had it burned in 2013. Only the metal roof and two 1950s automobiles remain on the property.

Remaining Historical Sites and Features

Today, all that is left of the many farmstead buildings on the community forest parcel is two former farmstead sites with stone foundations. One foundation is on the northwestern side of the property, near the VAST trail. The other remaining foundations are near the end of the eastern farm road. One remaining foundation, set slightly apart, was either a springhouse or a small barn. The adjacent parcel to the east, now owned by Maple Wind Farm, was also part of Gray Rocks Farm. The 1813 farmhouse and barn and the 1830 barn remain.

Management Objectives

- Educate forest visitors about the cultural history of the forest and its context within Richmond.
- Protect remaining cultural features.
- Engage visitors of all ages with the forest's cultural history.
- Continue to expand and enhance the information known about the forest.

Management Actions

- Protect and highlight remaining cultural features in the forest.
- Add interpretive signage about Gray Rocks in the forest, especially at historic sites.
- Encourage future research and study of the forest's cultural history, particularly with local schoolchildren.
- Conduct and record interviews with community elders who remember Andrews Farm.
- Place buffers on main trails located near cultural resources; consider access to cultural resources via spur trails.
- Work with the Andrews sisters to host programs and tours about the cultural resources of the farm.

Geology, Topography, and Climate

Biophysical Region

The Andrews Community Forest is located in the Northern Green Mountains biophysical region which contains the state's highest point (Mount Mansfield), coldest climate, and greatest annual precipitation. Across the biophysical region, the bedrock is primarily acidic, composed of non-calcareous schists, phyllites, gneisses, and granofels. At lower elevations in the region, including the Andrews Community Forest, the forests are dominated by Northern Hardwood Forest natural communities. The heavy precipitation and deep snows of the area, especially at higher elevations, feed some of the state's largest rivers, including the Winooski.

Bedrock Geology

Bedrock is the solid rock responsible for the shape of the mountains and valleys, the local topography. In addition, the bedrock affects the fertility and other properties of the soil above it, determining and impacting the vegetation growing on the site. Bedrock is typically below the soil and visible only in rock outcrops or cliffs.

A location's bedrock is a direct product of its geologic history – folding, faulting, and other geologic events. Those events determined the collection of rocks and minerals found in that location. Those collections are known as bedrock formations and can be anywhere from a few acres to thousands of acres in size.

The Andrews Community Forest contains both Underhill and Pinnacle bedrock Formations. The western part of the forest, from its northernmost point over is Underhill, and the eastern area is Pinnacle. Both formations are metamorphic sedimentary rocks, formed by sediments collecting at the bottom of an ancient sea, stacking on top of each other, then metamorphosing and compacting into rock during the Taconic Orogeny, the event that created the Green Mountains. As metamorphic rocks, they are typically dense and non-porous and have cracks and visible fractures.

The Pinnacle Formation is made of schistose greywacke rock, metamorphosed from bits of rock, mud, and debris that had already broken down somewhat from their original state. It is gray to buff in color and the stripes of varying layers in the rock are generally visible. The minerals present are quartz, sericite, biotite, and chlorite. The formation dates back at least to the Cambrian Period, 500 to 630 million years ago.

The Underhill Formation is a silvery-green color and a combination of phyllite and schists rocks. The minerals present are chlorite, muscovite, and quartz. Compared to the Pinnacle Formation, the Underhill Formation bedrock also dates back to at least the Cambrian Period but has coarser grains.

Surficial Geology

Surficial geology refers to loose materials deposited above the bedrock layer by wind, water, or glaciers. Like much of the Green Mountain Region, the Andrews Community Forest is covered in rocks deposited when the glaciers receded at the end of the last ice age (roughly 14,000 years ago). Fine silt, pebbles, stones, and boulders of all sizes deposited by glaciers are known as glacial till. The glacial till covers the underlying bedrock surface to form the surface shape of the visible landscape. In addition to glacial till, soil particles deposited by the post-glacial Lake Vermont, which filled much of the Champlain and western Winooski River Valley following the retreat of the Laurentide Ice Sheet up to an elevation of about 600 feet ASL, cover much of the southern portions of the Andrews Community Forest.

In the Andrews Community Forest, where the bedrock is not exposed, till covers the land and is the source of stones in the forest's rocky soils. The glacial till is thicker in the valleys and thinner in the uplands. Many of the exposed uplands in the forest have experienced significant post-glacial erosion, leaving only rubble and scattered boulders on top of the bedrock.

Topography and Aspect

The Andrews Community Forest stretches over 428 acres of mostly south-facing hillside. Elevations range from just below 400' ASL at the parking area to about 1240' ASL in the northern corner. Much of

the terrain is steep but there are some flatter areas north of the parking lot and along the forest's southeastern boundary.

Climate

Climate describes the average weather patterns in an area over time, particularly temperature and moisture parameters. Climate is an important consideration in forest management because of its effect on the myriad complex interactions between abiotic and biotic factors that influence forest ecology, and the ability of forests to regenerate, develop, and remain resilient in the face of disturbance. While the Andrews Community Forest is part of the Northern Green Mountains biophysical region, which it has a cooler climate and more precipitation than other portions of the State, it is significantly influenced by the Champlain Valley biophysical region, which is warmer and features a longer growing season than most other parts of Vermont. Coupled with its southerly aspect, this produces a forest dominated by tree species adapted to warm, dry sites with poorer soils on upper elevations, and those adapted to slightly richer forest soils on lower elevations (due to the influence of Lacustrine deposits).

Management Objectives

- Protect the physical attributes and processes of Andrews Community Forest.
- Ensure that any proposed activities or management actions are appropriate for the physical characteristics of the site.

Management Actions

- Any permanent or semi-permanent improvements should carefully consider the disturbance to the site and the capacity of the site to support the use.
- Minimize disturbance to the site to protect soil and vegetation.
- Slope steepness affects erosion and access for management. Topography should be an important consideration for forest management and recreational uses (i.e. trails).

Water Resources

The Andrews Community Forest is located within the Winooski watershed. Water from forests and fields runs off into the Winooski River, which flows into Lake Champlain. Surface waters on the property include an inactive beaver pond and wetlands, three headwater streams, and two confirmed vernal pools. Maintaining forested riparian cover adjacent to these resources is vital for the protection of water quality and conservation of important aquatic habitat.

Streams and Riparian Buffers

Several perennial streams arise on and meander through the property on their way to the Winooski River. A stream is the full length and width, including the bed and banks, of any watercourse. A stream has a channel that periodically or continuously contains moving water, has a defined bed, and has banks that serve to confine water at low or moderate flows. Streams include not only perennial but also intermittent streams that do not have surface water flow throughout the year and/or throughout the defined channel. Riparian buffers are the width of land adjacent to the watercourse between the top of the bank and the edge of other land uses. Riparian buffers are typically undisturbed areas consisting of trees, shrubs, ground cover plants, duff layer, and an uneven ground surface.

Forested streamside riparian habitats offer a suite of ecological benefits. Forested riparian buffers anchor the stream shoreline and limit streambank erosion, preventing wetland and water-quality degradation. They offer important plant and animal habitat by providing shade and coarse woody debris which provide structural and substrate diversity. They also provide organic matter and nutrients that fuel stream food chains.

Management Objectives

- Maintain and preserve surface and groundwater quality.
- Provide food and cover for aquatic and terrestrial species as well as structural habitat diversity within the stream channel with leaf litter and woody debris.
- Protect channel stability by preventing excessive scour and erosion of streambanks.
- Preserve wildlife travel corridors.
- Buffer aquatic plants and animals from disturbance.

Management Actions

- Protect soil integrity and minimize erosion.
- Maintain natural water levels and flows.
- Forestry and agricultural uses of the property shall, at a minimum, comply with the terms of the Conservation Easement and with state and local water-quality regulations.
- Stream Crossings: Stream crossings can have a significant impact on the movement and distribution of aquatic species. The goal of a stream crossing is to accommodate wildlife and aquatic organism movement and to minimize habitat fragmentation. Stream crossings should be designed to maintain the course, the current, and the cross-section of the natural stream channel and maintain existing in-stream conditions. Stream crossings should be strategically located to minimize the number needed and to minimize the impacts to the watercourse. Crossings should be constructed perpendicular to the channel and to span the width of the channel.

Bridges are generally recommended for stream crossings in community forest environments. Culverts often cause changes to channel alignment, channel diversity, and hydraulic conditions, which may degrade habitats above and below the structure. An undersized stream crossing can lead to bank erosion or failure of the structure. Culverts can be designed to maintain natural stream substrates within the structure and minimize disruption to the channel and riparian corridors. Timing of construction, erosion and sediment control planning, and post-construction revegetation are all critical components of a successfully constructed stream crossing.

- Riparian Buffer Zone: Maintain 50' Riparian Buffer Zone (RBZ) on all perennial streams as required by the Conservation Easement. Any management or use of the RBZ must be conducted in a manner designed to protect soil integrity and minimize erosion, and must incorporate up-to-date ecological knowledge and management practices. Any forest management activities or new stream crossings within the RBZ require approval of the easement steward (VLT).

Agriculture is not permitted within the RBZ.

- Within these buffers, no cutting of trees or operation of logging equipment should occur, except what is necessary to cross streams (as described above) and where existing forest management roads are stable, located within this buffer, and no reasonable alternative trail exists.
- Trail networks should be designed to avoid parallel alignment within a riparian buffer.

Wetlands

The Andrews Community Forest sits well above the Winooski River lowlands, occupying the southern slopes of the Green Mountain foothills. This is primarily a landscape of upland communities, with wetlands being confined to the few low areas, narrow benches and areas of groundwater discharge. Overall, the total acreage of wetlands is relatively small, but their rarity makes them that much more important.

Three wetland types have been identified on the Andrews Community Forest, as summarized in the table below. Two of the Shallow Emergent Marshes are on the southern border of the community forest and continue off-property. All three are beaver-influenced wetlands and contain a diverse mixture of open water, herbaceous vegetation and occasional shrubs. The northern marsh sits in a scenic low area surrounded by upland forests. These marshes are significant for a wide range of functions and values including water quality, erosion control and floodwater attenuation. Being part of a public, conserved parcel, they also have the opportunity to be used for recreation and education/research. Perhaps the most important function that they serve is that of wildlife habitat. The mosaic of open water and herbaceous vegetation in a forested matrix is ideal for a wide variety of song birds, raptors, mammals, reptiles and amphibians.

Seeps are small wet areas that are the sites of groundwater discharge which often form the headwaters of small streams. Because this groundwater can flow throughout the winter, they are often the first areas in the spring to harbor green vegetation, making them important for wildlife, including bears. Certain amphibians such as the spring and two-lined salamanders also rely on these wetlands. Providing a cold, clean source of water for downstream surface waters also makes them important for water quality.

Because these wetlands are small, it is difficult to map them remotely. It is likely that more seeps are present on the Andrews Community Forest that remain unmapped.

Wetland Types on the Andrews Community Forest

Natural Community	State Rank	Number of Occurrences	Total Acreage
Seep	S4	3	0.62
Shallow Emergent Marsh	S4	3	5.73
Vernal Pool	S3	4*	0.08

* two vernal pools have been confirmed and are discussed in the Vernal Pool section below

Management Objectives

- Protect and conserve significant wetland resources.

- Prevent wetland and water quality degradation.
- Protect important plant and animal habitat.
- Protect significant wetland functions and values.

Management Actions

- Identify and map wetland resources on the community forest.
- Avoid construction of recreational trails through wetlands.
- Utilize boardwalks and bridges for any necessary wetland crossings.
- Provide wetlands with naturally vegetated buffers.
- Identify and control exotic species.

Vernal Pools

Vernal Pools are seasonally flooded forested wetlands that hold water in the spring and typically dry out by late summer. They typically have six characteristics: 1) they occur in a forested matrix (though there are exceptions to this); 2) they have a seasonal hydrology; 3) they are isolated from surface waters; 4) they are small; 5) they lack fish, and 6) they have vernal pool indicator species present. Vernal pool indicator species are those species that are dependent on these habitats.

Vernal Pools provide critical habitat for a wide variety of amphibians and invertebrates including indicator species such as wood frogs, spotted salamanders, blue-spotted salamanders, Jefferson salamanders, fairy shrimp and fingernail clams. Unlike other amphibians in the region, the eggs of these indicator species do not have any defenses against predation by fish; they are therefore reliant on the fishless aquatic habitat of Vernal Pools.

Like the seepage wetlands described above, vernal pools are also small wetlands that are difficult to remotely map. Two vernal pools have been field confirmed and described in the Baseline Documentation Report (Diamond, 2017) while two others still await field confirmation.

Both of the field-confirmed pools were assessed by Diamond (1997) and are likely state significant examples of vernal pools. Each contained many hundreds of eggs of wood frogs and spotted salamanders and appeared to be stable breeding habitat for these (and many other) species. The surrounding forests are a moderately good condition, though the northern pool has some recent timber harvesting in the vicinity. Overall, the upland landscape surrounding these pools provides valuable year-round habitat for these pool-breeding amphibians. In order to maintain this habitat, certain management guidelines are recommended.

These two vernal pools are further protected under the Conservation Easement by Vernal Pool Ecological Protection Zones (EPZ), which include a 100' undisturbed buffer, and a 500' secondary protection zone where harvesting is allowed, but must have the goal of protecting and enhancing amphibian habitat, and be addressed in the Forest Management Plan.

Management Objectives

- Provide and maintain high quality amphibian habitat.
- Promote and maintain high levels of shade and coarse woody debris.

- Per the Conservation Easement, clearly identify management practices within the EPZ zones in the Forestry Plan.

Management Actions

- Avoid any disturbance or impact to the actual vernal pool.
- Maintain undeveloped and undisturbed 100' primary ecological protection zone around the vernal pool. Pedestrian trails are compatible in the primary EPZ.
- Avoid creating ruts or pools of standing water for recreational trails in the primary EPZ.
- Follow harvest prescriptions in the EPZ's as identified in the Forestry Plan.
- Identify and control exotic species in the vernal pool and surrounding buffer zones.

Forestry

Forest management, in the form of the periodic harvesting of timber, is an important part of land conservation, maintaining the working landscape and supporting the forest products economy in Vermont. The forest products industry, in addition to being economically important in Vermont, supports the maintenance of healthy, intact ecosystems by providing the means for enhancing wildlife habitat, elevating the health and resilience of forested ecosystems, and generating periodic income to fund important stewardship activities. It is also a source of local, renewable resources in the form of forest products. Forest management for timber on municipal lands can serve as a demonstration of responsible, sustainable forest management, educating residents of Richmond and beyond in how to harvest forest resources in a sustainable way.

In the course of a normal timber harvest, choices of which trees to retain and which to harvest are guided by a combination of ecological principles (which tree is "healthier," which trees are in use, or may be used, by wildlife), human desires (what the management objectives are for a property) and economic ideas (which tree is of a more valuable species or may produce a more valuable product in the future). Through harvesting, the growth potential of the forest is concentrated on the specific trees that exhibit some combination of these values in order to grow these individuals more efficiently, or redirected from trees that have maxed-out their potential value to new regeneration or existing immature trees. The forest is fully capable of executing this selective process on its own through competition and natural mortality events, but it will not necessarily do so in a way that supports the goals, objectives, and values of the Andrews Community Forest and Richmond community, nor will it do so while producing a range of local, renewable resources and economic benefits.

As alluded to above, the harvesting of timber, while it utilizes means which are not entirely equivalent to natural processes, positively interacts with a number of broad environmental concerns. Forest products are a renewable resource which can be sustainably extracted while preserving or enhancing wildlife habitat, forest ecology and other ecological benefits. It does so while providing fuel for heat and electricity, fiber for paper products, and timber for building materials. Harvesting timber also provides periodic income to forest landowners, helping lower development and subdivision pressure on forested lands. Finally, timber sale proceeds can allow landowners to engage in non-lucrative stewardship activities, including ecosystem restoration and wildlife habitat enhancement.

The ability of a forest to respond to, and maintain its health during, disturbance is known as resiliency. Research has shown that forests, in addition to being comprised of myriad independent species, have evolved as systems in many ways. Diverse forests efficiently respond to disturbance, stabilizing nutrients and soil and creating conditions suitable to the growth of subsequent generations of healthy trees. While forests today encounter regular natural disturbance events, the largest sources of disturbance are, and will be into the indefinite future, human-related. In the face of an unstable climate, invasive exotic plants, animals and pathogens, and many other unpredictable problems it is prudent to manage forests for resiliency in the course of any long-term forest management planning. Practically this means managing to encourage diversity, specifically species and structural diversity, at all times. For all the reasons listed above the encouragement of all types of diversity should be paramount in the management of the Andrews Community Forest.

From a forest management perspective, encouraging a diversity of different age classes of trees provides the greatest opportunity for the periodic output of timber from a given area; for example, a forest with a single age class of trees may usually only be harvested all at once, with a long time period between harvests. Forests with a diversity of age classes can provide landowners with income and forest products more frequently, as different age classes periodically mature and require treatment at different times. From an ecological perspective, research has shown that many relatively undisturbed forests consist of trees of several age classes. Encouraging a variety of different age classes and habitat conditions more closely mimics disturbance regimes in an unmanaged forest, allowing us to harness to forest's natural regenerative capacity to keep itself healthy, vibrant and productive. Managing using "uneven-aged silviculture" also allows us to minimize the scale of our disturbances to forest ecosystems at any one time.

Management Objectives

- Maintain a healthy and productive forest
- Maintain and encourage a diversity of native species, of all taxa
- Maintain and encourage a structurally complex forest
- Protect sensitive natural resources, including water resources, significant natural communities and rare, threatened and endangered species
- Protect the forest from the invasion of exotic, invasive species, including taking steps to control existing populations of invasive exotic plants.
- To use any timber harvesting in the Andrews Community Forest for educational and demonstrational purposes, demonstrating sustainable timber harvesting to residents of Richmond and beyond.
- Enhance wildlife habitat whenever possible.
- Preserve the cultural and historic importance of the responsible stewardship of forested land on a property with a tremendous history, of which forest management has been a part for centuries.
- Conduct all management activities in accordance with Vermont's Acceptable Management Practices to prevent soil erosion, protect water quality.
- Manage forest stands for long rotations, including retaining biological legacy trees and areas of trees indefinitely.

Management Actions

- Create a Forest Management Plan with the County Forester, to be approved by Vermont Land Trust before engaging in any forest management activities.

- Hold educational events around forest management activities to inform the public about the rationale and best practices of sustainable forest management.

Upland Natural Communities

Natural Communities are our way of categorizing different vegetation patterns across the landscape. In areas with similar climate, precipitation, soils, geology and topography, reoccurring assemblages of plants dominate. These categories of vegetation are called natural communities and have been described in the book: *Wetland, Woodland, Wildland: A guide to the natural communities of Vermont* (Thompson & Sorenson, 2000). These natural communities include familiar types such as Northern Hardwood Forests, Hemlock-Northern Hardwood, Dry Red Oak-White Pine, and Red Pine Forests.

Each natural community type is ranked based on its relative rarity on a S1 – S5 scale. Communities with a S1-rank are those types that are extremely rare in the state, such as Alpine Meadows and Pitch Pine Woodland Bogs. S5-ranked communities are common and widespread in the state and include such familiar types as the Northern Hardwood Forests and Alder Swamps. Each occurrence of a natural community is also ranked based on its quality (EO-rank). “Significant” natural communities are those sites that meet the combination of rarity and quality to represent the best occurrences of their community type in the state.

Natural communities are important because they form the basis for the natural world that we use and interact with regularly. They provide the habitat for all the wildlife that we encounter as well as for myriad rare species. Conserving natural communities is often considered a good “coarse filter” approach for conserving biodiversity in general. Natural communities act as habitat for most of the common and rare species of plants and wildlife.

The conservation easement protecting the Andrews Community Forest describes several areas of the property that are uncommon or particularly sensitive, and therefore require special treatment. Natural communities that are uncommon or rare in Vermont will be managed in a more sensitive manner to allow the natural communities that contribute to statewide biodiversity to persist into the future.

Upland Natural Community Types on the Andrews Community Forest

Natural Community	State Rank	Number of Occurrences	Total Acreage
Dry Oak Forest/ Dry Red Oak-White Pine Forest	S3	6	16
Red Pine Forest or Woodland	S2	1	2
Hemlock-Northern Hardwood Forest	S5	1	313

Hemlock Forest	S4	3	18
White Pine-Northern Hardwood Forest	S4	5	314
Mesic Red Oak-Northern Hardwood Forest	S4	5	385

The Ecological Report (Diamond, 2017) provides a good overview of the natural communities present on the Andrews Community Forest. The table above illustrates a breakdown of the upland natural communities present on the forest and their size and abundance. As can be seen from this table, three communities comprise most of the forest: Mesic Red Oak-Northern Hardwood Forest, White Pine-Northern Hardwood Forest and Hemlock-Northern Hardwood Forest. The White Pine-Northern Hardwood Forest occupies much of the southern portion of the forest and is indicative of areas formerly in pasture or other agricultural production. In the northern part of the forest, roughly north of the VELCO transmission line, the forest is more dominated by red oak and northern hardwoods. These large, matrix forming communities extend well beyond the community forest borders and comprise a portion of the large forest block to the north and east.

Management recommendations for upland communities that are considered significant depend largely on the type of forest, how rare the community is, and how large of an area it typically occupies on the landscape. Occurrences of large, common, communities such as Northern Hardwood Forests and Hemlock-Northern Hardwood Forests are much more resilient to small perturbations than rarer communities that occur in small patches.

The Dry Oak Forest communities present in the northern part of the parcel, though smaller, are excellent examples of an uncommon community type and may be state significant communities. These communities are restricted to the droughty ridges and summits with southern exposure. These sites typically have shallow soils, frequent bedrock outcrops and are more susceptible to disturbance. This, coupled with the fact that they are typically small sites, means that any development or perturbations in part of the community could have a detrimental effect on the entire stand. Clearing of land for recreational activities should be avoided in these areas.

The Dry Oak natural communities, as they are currently mapped, are protected under the property's conservation easement. However, due to recent timber harvesting, some areas of significant natural communities, or with the potential to exhibit traits of these natural communities, were altered. Should areas of these natural community types become evident in the recently harvested area, they should be protected with equal measure to those defined in the Conservation Easement. If the extent of these communities is expanded at a later date, Town Committee members should communicate these updates to the Vermont Land Trust stewardship staff.

Management Objectives

- Protect Dry Oak Forest, Dry Red-Oak White Pine Forest, Dry Oak-Hickory-Hophornbeam Forest, Red Pine Forest, and other significant natural communities as well as the ecological processes that sustain them.
- Retain soil integrity, water quality, natural species composition, natural disturbance regimes and natural hydrology.

Management Actions

- Update natural community mapping as more on-the-ground data becomes available; communicate this information forward to VLT.
- With the Ecological Protection Zones, which represent state-significant natural communities, the following conservation easement limitations apply (paraphrased)
 - All activities shall incorporate steps to retain soil integrity, water quality, natural species composition, natural disturbance regimes, and natural hydrology;
 - All forest management activities are prohibited without VLT's prior written approval;
 - New roads or trails are prohibited without VLT's prior written approval
- Identify and control exotic species (with approval from VLT)

Wildlife Habitat

In response to a survey about whether the Town of Richmond should purchase the Andrews Forestland as a community forest, wildlife habitat protection was the most often listed interest of respondents related to the opportunity. Significant information regarding wildlife habitat exists through work completed in the Chittenden County Uplands Conservation Project has been a focus for wildlife study and presents an opportunity for continued study about wildlife use of the forest given the blocks' area and through statewide priority mapping of wildlife blocks. Information on some of the property's natural communities and sensitive features exist from previous work for Vermont's Natural Heritage Program and a four-town, science-to-action, resource inventory completed by Arrowwood Environmental (desktop review). Allaire Diamond, an ecologist from Vermont Land Trust, collected and mapped information on uncommon natural communities and sensitive areas found in two days of field research on the property in the Ecological Report included here as Appendix E.a. Audubon Vermont conducted a forest bird habitat assessment on the property in July of 2017 and reported its findings in November, 2017 (Appendix E.c.). More on-the-ground ecological study is warranted to fill in any gaps in the aforementioned reports.

Besides the specific habitat elements discussed below, the Andrews Community Forest provides habitat for a range of wildlife species. These include everything from amphibians and reptiles to birds and bats and wide-ranging carnivores such as fisher, bobcat, fox and coyote. White-tailed deer are active throughout the property, with heavy browse in the seedling, sapling, and shrub layers, and beds in or near hemlock cover. Moose have stripped bark off of striped maples. Bobcat tracks traversed the ledgy dry oak area in the northern corner as well as the edge of the small beaver wetland. Coyote, fox, turkey, fisher, and weasel tracks have been noted. Recent claw marks on American beech trees in at least two areas, as well as tracks and scat on the VAST trail, indicate the presence of black bears.

The following wildlife habitat elements have been identified on the Andrews Community Forest with their approximate boundaries shown on the attached natural resource maps.

Interior Forest and Connectivity

The Vermont Conservation Design (2015), a landscape-level conservation prioritization from Vermont Land Trust and the Vermont Agency of Natural Resources, considers the entire Property to be part of a ‘Highest Priority Interior Forest Block’ providing critical ecological function on a statewide level. The forest is the latest addition to the long-standing 10,000-acre Chittenden County Uplands Conservation Project.

In addition, the entire property is notable in its contribution to Vermont’s physical landscape diversity. Adjacent to other large blocks of conserved land and with connections to the Winooski River valley and its floodplain, this property also plays an important role in landscape connectivity, offering a corridor for wildlife and other species to move.

“Forest interior” habitats are those forests that are distant from human development. The term forest interior is often used interchangeably with the term “core forests”. Forest interior habitat is often defined as being at least 100 meters from the nearest human disturbance such as a road, house, or agriculture. Forest interior habitat is usually characterized as containing less forest “edge” than smaller, fragmented habitats.

Because forest interior habitats are generally large, they can often provide the many life requisites for species, such as black bear, moose, and fisher which have large home ranges and travel extensive distances. Species such as black bear cover large territories in search of a diversity of habitat elements such as wetlands, berry-producing shrubs, mast-bearing food species and remote denning sites and exemplifies the type of wildlife that requires large areas of relatively unfragmented habitats. Community Forests such the Andrews Community Forest, that border on or are connected to other habitat by some type of corridor are more likely to be able to support Vermont’s large-ranged species like black bears and bobcats. Therefore, these lands are more likely to have greater species diversity and the wildlife populations within those forests are more likely to be stable in the long run.

A wide-variety of birdlife in Vermont utilize the larger contiguous forests available only in interior forest habitats. These birds include species such as the broad-winged and red-shouldered hawks, owls, and forest songbirds like the ovenbird, wood thrush, scarlet tanager, pileated woodpecker, and the Canada and black and white warblers. Several of these species suffer from greater nest predation (by animals such as squirrels, raccoons, snakes and other birds) and nest parasitism (by other birds such as the brown-headed cowbird) where nesting grounds are near human disturbance and the habitat edges it creates.

Ledges, Cliffs, Talus and Ridges

Ledge and cliff habitat develops where bedrock outcrops occur in areas of steep slopes. Ledges and cliffs can occur as areas of sheer rock wall or as a broken jumble of rocks and crevices. Though there is no technical distinction, generally ledges are small areas of outcrop within a forested matrix while cliffs have an open canopy and tend to be larger. Talus consists of a field of large rocks that typically develop at the base of cliffs and ledges, though can sometimes occur independently of these features.

Ledges, cliffs and talus can provide important habitat for a wide range of species, depending on the nature and extent of the rock structures. Vertical rock structure (cliffs) can be important habitat for species such

as nesting peregrine falcon, common ravens, and the small-footed bat. In areas with broken ledge and talus, the hollows and small caves created by the rock are used extensively by coyote, porcupine, fisher and other weasels, ruffed grouse and other wildlife as refugia from inclement weather and for escape cover.

In many areas throughout the northeast, bobcats use ledges for courting and breeding grounds and the broken ledge (often at the foot of a ledge) for birthing and rearing of their young. Broken ledge is considered defensible from predators like the coyote that may try to kill and eat bobcat young. Bobcats, coyote and fisher are reported to also utilize broken ledge when it's cold and snowy as well as when it's hot, for relief from the heat. There is some evidence that ledges facing south and west (areas that generally are more exposed to the sun) may receive higher use by certain species and are more valuable to wildlife.

Mast Stands

Mast refers to the nuts and seeds of trees and shrubs, many of which are eaten by a variety of wildlife. "Hard mast" consists of the nuts of trees, especially those of beech and oak. "Soft mast" refers to the berries of a variety of species including woody plants such as serviceberry and cherry. These food resources may be available only seasonally, usually in fall. A "stand" refers to an area where many of the trees or shrubs are growing together in one area.

The berries and nuts from mast trees and shrubs provide an important and often essential source of food for a variety of wildlife. Black bears may rely on acorns and beechnuts to provide enough energy for over-wintering and the production of cubs. These nuts provide a fat-rich food source to bear, white-tailed deer, wild turkey, squirrels, and many other species of wildlife. As many as 171 species of birds, mammals, amphibians, and reptiles use these beech and oak forests as habitat (DeGraaf et al., 1992).

Deer Wintering Areas

Forests where white-tailed deer congregate during the winter months in Vermont are called deer wintering areas (also known as "deer yards"). Deer use these dense stands of mature or maturing evergreen trees in years with significant snow accumulation. Evergreen trees intercept snow as it falls to the ground generally resulting in shallower snow beneath the canopies of these forests. The overhead canopy of needles also shield deer from the cold. Deer congregate in these areas when snow depths exceed ~15 inches and often remain until the snow melts in spring. The heaviest used wintering areas often have a southern aspect, though stands with a westerly or easterly aspect are also sometimes used.

By providing easier mobility and protection from the cold, deer wintering areas can be critical in limiting the energy expenditures of deer and supporting the continued survival and reproduction of this species along the northern extent of their range – an area which includes Vermont.

Eastern hemlock, balsam fir, and Northern white-cedar stands provide the best cover and food value to deer, but pine and spruce will sometimes be utilized. These winter habitats are also home to bobcat, coyote, and scavenging bear and fisher that come looking for weakened and dead deer in spring. Other animals such as conifer-nesting birds, porcupines and fox also utilize these habitats during other seasons.

Management Objectives

- Provide a diversity of upland, wetland and riparian habitats for wildlife.
- Identify and accurately map significant wildlife habitat elements.
- Identify an appropriate balance of all resource attributes of and uses for the Property.
- Provide a plan for recreation trails with minimal impact on natural resources.

Management Actions

- Interior Forest and Connectivity:
 - Utilize multi-aged silvicultural treatments over the majority of the property. Avoid creating new permanent openings or wide (> 20 feet wide), linear roads and trails. Consider creating 5-10 acres of young forest/early-successional habitat. Although there is currently sufficient young forest habitat on the Andrews Community Forest, the function of this habitat is likely to diminish around the year 2025 due to maturation of the forest. In order to maintain this valuable habitat condition it is recommended to create a new area(s) sometime after 2025.
 - Management guidelines that enhance the value of the forest for a variety of deep forest species such as bear, fisher and a variety of songbirds is recommended. This can include the retention and establishment of older growth forest areas, maintaining a multi-layered forest canopy, the maintenance of downed and standing dead and live woody debris and snags, the maintenance of small natural forest openings and food sources, and the maintenance of canopy closure over trails.
- Ledge, Cliff, Talus and Ridges:
 - A forested canopy should be maintained over these rock habitats that occur in a forested matrix.
 - The selective removal of trees near these habitats is compatible with continued use by wildlife.
 - Ledges are likely to contain very steep slopes and forest management activities should be conducted only in a manner consistent with minimizing the erosion of soils.
 - Maintain a 100' buffer to broken ledge and talus that provide concealment cover for wildlife.
- Mast Stands:
 - Forest management activities that promote the establishment, maintenance, and long-term persistence of these species within the forest should be encouraged.
 - Use of the nut and berry mast by wildlife, particularly sensitive species such as black bear, can be negatively impacted by the presence of human development and many human activities. For this reason, encouraging increased human access and use of these stands, including recreational activities, should be limited and carefully managed.
 - Seasonal restrictions on recreation, such as limiting heavy use by humans during fall (for beech and oak stands) is appropriate. Limit use in fall (Sept 15-Nov 15) in areas exhibiting extensive bear use.
 - Trail construction should avoid cutting of mast-producing species.
- Deer Wintering Areas:
 - The Hemlock and Hemlock-Northern Hardwood forest communities on the parcel could be managed specifically to enhance the conifer overstory and hemlock regeneration

which would serve to enhance the value of the habitat for wintering deer. The best deer wintering habitats maintain at least 70% closed forest canopy of evergreen trees. Additional forest management activities that are compatible with the continued use of these habitats by deer include the creation of small areas (less than 1 acre) of food production including the promotion of fruit-bearing trees and shrubs, and the creation of young early succession forest.

- Avoid the introduction of new trails, especially which would be used in the winter, in these forest types.
- Hiking trails within actively used deer wintering areas should be closed during winter months. Use during other seasons is compatible.
- Organized recreational activities such as snowshoeing, cross country skiing, and snowmobiling in and near deer wintering areas should be discouraged.

Recreation

The Andrews Community Forest is deeply intertwined with the land and town around it. The Andrews Community Forest contributes significantly to the town's scenic rural and natural character. The natural communities on the forest are not confined to the human-drawn boundaries of the forest. Therefore, conservation and stewardship of wildlife habitat, water resources, and vegetation must extend beyond those boundaries as well. In addition, Richmond's extensive recreational trail system reaches properties abutting on the west and east. Town residents identified connectivity with abutting trail systems to be an important attribute of trail design. The community's management and use of the property must protect the ecological, timber, recreational, educational, open space, and scenic resources of the town and property.

The Andrews Community Forest, now as public forested land, is primed to offer recreational opportunities to town residents and visitors. A survey of town residents indicated that many Richmond residents are eager to hike, run, walk, bike, hunt, snowshoe, ski, view birds and wildlife, walk dogs, and picnic in the forest.

The forest, when owned by the Andrews family, was not posted and allowed hunting, walking, snowshoeing, and skiing. The forest was also managed for timber, leaving logging roads scattered throughout the property. Some of these skid roads are unsuitable for recreational use due to their steep grades; thoughtful trail design will redirect traffic onto trails, reducing use of existing skid roads. Some roads act as important recreational and management corridors throughout the property and remain in use. Those include the recently improved VELCO road, the Maple Wind Farm road on the eastern boundary, and the VAST trail running east-west across the property.

The conserved lands around the community forest create opportunities for a larger, connected trail network. The VYCC campus, which adjoins the property to the east, has a number of short trail loops (pedestrian-access only presently). Their work, along with the Monitor Barn, brings many visitors to the campus. Many of these visitors may be interested in longer trail loops onto the Community Forest and VYCC wants the forest to be a showcase for their trail-building abilities and a "porous" boundary between the two properties. Other surrounding property owners have trails on their property that are open to the public. The committee will seek to develop a trail system that connects to these existing, mapped, public trails. In doing so, the Committee will also work with neighboring landowners to appropriately sign changes in landownership and allowed uses.

The conservation easement allows for non-motorized, non-mechanized recreational use of the forest (i.e., walking, snowshoeing, skiing, hunting). Other uses must be included and provided for in this plan to be permissible on the forest. Given the community's interest in both mountain biking and snowmobiling, as was apparent in the survey and in public forums, such trails will be incorporated in the trail concept for the Community Forest. The VAST trail passes through the forest and snowmobile use will be allowed in the forest on the existing VAST corridor. The Committee will meet with VAST representatives annually to review the use contract and ensure snowmobile use is compatible with the other management goals for the Community Forest.

The trail system should be encouraging of both resident and visitor use. The forest and its trail system shouldn't be explicitly a destination, but rather an additional amenity that adds to the array of outdoor recreational opportunities that draw visitors to Richmond. Given the forest's proximity to town, creating a walking/biking connection to the forest from Richmond Village would benefit both residents and visitors. The Committee will work with the Selectboard, the Town Highway Department, and the Richmond Land Trust to explore this option when the timing is appropriate.

The property, when owned by the Andrews family, was open to hunting and trapping, and members of the community are still interested in using the property for these purposes. However, the property did not previously contain recreational trails, such as those proposed for development in the Town Forest. The coexistence of these various uses in the same forest presents a public safety concern and management challenge. The Committee has worked with members of the hunting/trapping community and the trail-based recreation community to consider the ways that these uses might co-exist. Due to the public safety risks associated with having guns near recreational trails, complete "coexistence" may not be entirely possible. As a result, the Committee has explored strategies to segment uses by physical zones and seasons, so as to allow meaningful access to the property in key seasons. Furthermore, trapping poses a safety hazard to visitors and their dogs and is incompatible with recreational and educational off-trail hiking by residents, school groups, researchers and hunters. The Committee proposes the following use guidelines:

- No trapping or year-round small game/furbearer hunting (coyote skunk, weasel, opossum, etc.).
- Rifle/muzzleloader hunting allowed during a designated period (November 3 - December 9). This includes a youth deer weekend, a 16-day regular season, and muzzleloader season.
- During this hunting period, there will be a partial closure of the trail system with the trails below the powerline open for trail use and the trails above the powerline closed for trail use. The design of the trail system should facilitate closure while still providing trail-based recreation opportunities during that time.

Trail Concept Map

Trails depicted in the Trail Concept (Appendix L) are the product of extensive public input and committee deliberation. The Trail Concept reflects a compromise of many recreational uses, and achieves the following objectives determined by the Committee to be a top-priority:

- The Trail Concept establishes connectivity between public, mapped trails to the east and west of the property.
- The Trail Concept establishes one long loop from the parking area, and many shorter loops.

- The Trail Concept is intentionally lower density above the powerlines and higher density below the powerlines to place equal emphasis on natural resource protection in the interior forest areas of the property, while still inviting and encouraging public visitation. This “zoning” also facilitates streamlined trail closures during hunting season.
- The Trail Concept avoids sensitive natural features whenever possible and gives an appropriate buffer to natural resources, as guided by professional ecologists.
- The Trail Concept provides shorter loops at a lower grade from the parking area to ensure the property is accessible and inviting to people of all ages and abilities.

Trail Development

Prioritization:

- The Community Forest Committee will seek grant funding to support the professional design and construction of trails throughout the Richmond Community Forest.
- When prioritization decisions must be made, projects will be selected based on their utility for the greatest number of people.

To bring the trail concept from “concept” to “action,” the Committee has agreed to the following process:

- The hired professional trail designer will flag a route that, to the best of their ability, follows the route recommended by SE Group.
- Arrowwood, or another professional ecologist, will walk the flagged route and a 50’ buffer on either side to determine whether there are any fine-scale features that would be adversely impacted by trail development in that particular location. If there are, Arrowwood (or another professional ecologist) will propose a suitable re-route.
- Once a trail is “cleared” for installation, Committee members will work with RTC, RMT, or a hired trail-builder to install trails which meet standards and designed agreed upon by the Committee.

Assessment:

- The Committee will continue to seek opportunities to work with ecologists to study the impacts of trail-based recreation on wildlife.
- The Committee should continue to survey the community to determine whether the trail system meets the community’s wishes. It will be the onus of the committee and hired professionals to determine when the community’s wishes are incompatible with the objective to protect the property’s natural resources.

Future Trails:

- The Committee will develop a process and criteria by which future trails will be considered; this process will be incorporated into a future version of the management plan.
- Any new trails not contemplated in this Management Plan require review and approval from VLT.
- The Committee will continue to seek professional guidance about the impact of trail density on wildlife in forested ecosystems.

Recreational Partnerships

- Richmond Trails Committee
- Richmond Mountain Trails
- Cochran Ski Area
- Green Mountain Club

- Maple Wind Farm
- VYCC
- Richmond Land Trust
- Scouts
- Community Senior Center

Management Objectives

- Provide a forest that has opportunities for all interested users (hunters, mountain bikers, walkers, etc.).
- Preserve sensitive areas of the forest and route trails around those areas.
- Provide a trail system that is well-connected to trails on adjacent properties and Richmond Village.
- Support local businesses by offering recreational opportunities.

Management Actions

- Phase trail development to ensure trail system provides desired recreation experiences.
- Establish a use agreement with VAST (to be revisited annually) to ensure snowmobile use is compatible with the other management goals for the Community Forest.
- Work with neighboring landowners to appropriately sign changes in landownership and allowed uses.
- Conduct an assessment and review of existing logging roads.
- Route trails away from sensitive natural areas, property boundaries, and cultural resources whenever possible, except to facilitate educational opportunities.
- Build and monitor new multi-use trails to standards adopted by the Committee.
- Explore opportunities to host trail-based events and races on forest trails. Committee members will explore strategies to measure the impacts of these events on forest ecosystems and trail infrastructure, and will seek to employ these before and after events.
- Create signage around trail etiquette, allowed user groups, property ownership etc. both in the forest and at the trailhead kiosk.
- Establish clear signage on all trails and navigational aids throughout the forest (trail markers, blazes, signage, and maps).
- Construct a trailhead kiosk at the parking lot with trail maps and information about proper use of the system.
- Work with Richmond Trails Committee and Richmond Mountain Trails to conduct routine trail maintenance. The Committee will coordinate with these groups to organize, advertise, and facilitate trail work days.
- Take appropriate steps to close the upper trails during hunting season, including installing closure signs at all entrance points to the property and communicating these closures to the public via Front Porch Forum, Facebook, and the Town website.
- Engage recreational groups annually (VAST, Trails Committee, RMT, hunters) to obtain feedback about user group coordinator and conflicts.
- The Committee will work with the Selectboard, VTrans, and the Richmond Land Trust to explore a connection from the Town Center to the Community Forest.
- Explore opportunities for expanding backcountry/glade skiing in combination with forest management.

- Explore interest in grooming wider trails for public cross-country skiing and fat biking.
- The Committee will continue to pursue opportunities to learn more about the impacts of trail-based recreation on wildlife and to translate this learning into on-the-ground management practices.

Rules

- Please see Summary of Allowed Uses and Summary of Restricted/Prohibited Uses on Page 9.

Agriculture

Maple Wind Farm, the current farm lease, is a diversified pasture-based livestock, organic vegetable, and maple syrup farm. The farm started in 1999 in Huntington, and in 2013, the farm acquired 187 acres of former Andrews/Gray Rocks Farm land to begin Richmond operations. Maple Wind also currently farms eight acres of the community forest. They use the “lower meadow” and a meadow along the powerline right-of-way for grazing cattle. Maple Wind typically grazes 30 adult bovines and 30 calves for 10-16 days per year. The Town and Maple Wind are interested in continuing this arrangement and will negotiate a long-term lease.

Maple Wind Farm has a right-of-way for agricultural purposes over the main farm road on the Richmond Community Forest extending from the Dyer-Chadwick property to Maple Wind Farm’s upper meadow. The Town has a right of way over the northern edge of Maple Wind Farm’s upper meadow. The VAST trail has operated on a year-to-year basis over sections of both these roads / rights of way. The Town will work with Maple Wind Farm to ensure compatible shared use of these two roads and rights of way.

Maple Wind Farm has placed a high tensile electric fence around their grazing area in the community forest’s lower meadow. A gate through the fence will allow for public access to the meadow when the pasture is not is use for grazing. When the pasture is in use, the “cutover trail” will be closed.

There may be opportunities on the forest for a community garden/orchard, and agricultural education and demonstration projects. Under the Conservation Easement, agriculture is permitted where the forest has already been cleared. The Steering Committee will remain open to proposals for alternative uses of the agricultural lands, but would not take lightly the decision to stray from a long-term, mutually-beneficial agricultural partnership.

Agricultural Partnerships

- Maple Wind Farm
- Richmond Farmers Market
- Richmond Community Kitchen
- The Farm at VYCC
- NOFA VT
- Vermont Farm Bureau

Management Objectives

- Recognize the importance of agriculture in Richmond and Vermont’s heritage and continue to allow agricultural uses that are compatible with other management goals.

- Promote opportunities for agriculture education and demonstration on the parcel, perhaps in conjunction with Maple Wind Farm or other agricultural entity with a vested interest in the property.
- Work through leases and easements to allow for Maple Wind Farm operations and public access and connections in the trail system.

Management Actions

- Negotiate with Maple Wind Farm on the lower meadow lease and the right-of-way.
- Place signage alerting trail users to the electric fencing.
- Install a gate on the western side of the meadow to allow continued public access across the meadow.
- Explore partnerships with above organizations for educational programming and demonstration projects on the forest.
- Explore opportunities for a community garden on the forest.

Education

With its natural features and its cultural history, the Andrews Community Forest will provide enriching educational experiences for community members from elementary school students, to college students, to curious adults.

Parking may be available on the landing area to accommodate larger educational groups and school buses. The Committee is also exploring expanding the lower parking area enough to provide a school-bus turnaround. Instructors interested in using the Town Forest for educational purposes should contact the Steering Committee to discuss parking arrangements.

Possible educational opportunities include:

- Climate monitoring program
- Biodiversity monitoring program
- Trail building and maintenance (in partnership with VYCC)
- Tree/bird identification programs
- Sustainable forestry and forest products education
- Sustainable agriculture education
- School field trips on ecology and cultural history
- Mountain biking skills clinics
- Kids summer camps and after school programs
- Guided hikes and snowshoes on forest ecology
- Orienteering workshops

Potential Partnerships

There are many schools and organizations that the Andrews Community Forest could partner with for educational programming:

- Richmond Elementary School
- Camels Hump Middle School
- Mount Mansfield Union High School

- University of Vermont
- Vermont Youth Conservation Corps
- Green Mountain Audubon Center
- Boy and Girl Scout Troops
- Maple Wind Farm
- Nature Conservancy
- Essex Technical School
- Richmond Recreation Committee
- Vermont Land Trust
- Vermont Forests, Parks, and Recreation
- Mount Mansfield Modified Union School District (MMMUSD) and MMMUSD summer camps
- Part 2 After School and Summer Camps
- Green Mountain Orienteering Club
- Birds of Vermont Museum

Management Objectives

- Educate local students and community members about natural communities, biodiversity, cultural history, the working forest, and good stewardship practices.
- Engage local students and community members in data gathering/analysis.
- Recognize and take advantage of the educational opportunities created by recreational use.
- Use the forest as a model and example of the value of healthy forests to the community, including educational demonstrations and tours.

Management Actions

- Partner with the schools and organizations listed above to hold programming in the forest.
- Place interpretive signage throughout the forest about natural communities, stewardship, and cultural history.
- Host community events with an educational component.
- Use timber management activities as an opportunity to educate the community about proper forest management.
- Modify educational programming around hunting season.
- Create and maintain locations for birding and viewing wildlife.

Legal Agreements on the Property

There are many agreements, right-of-ways, and easements that will be key to the management of the forest.

Agricultural Lease

Maple Wind Farm is the adjoining land owner and its land includes the remaining acres of the original Andrew farm. Maple Wind Farm has historically used eight acres of what is now the community forest for grazing cattle. For 10-16 days each year, 30 adult bovines and 30 calves graze on the forest's lower meadow and the meadow by the VELCO powerline. Both parties are interested in continuing this arrangement and will explore the possibility of a long-term lease. Vermont Land Trust will need to

approve this lease before it is finalized. No long-term agricultural easements on the property will be allowed.

In negotiating this lease, the Committee seeks to retain a crossover trail across the lower portion of the pasture linking the VELCO road with the Maple Wind Farm road. This trail would be open anytime cows are not grazing in the pasture; when cows are grazing, the Committee proposes closing this trail and installing appropriate signage to redirect visitors to other route on the property.

Powerline Right-of-Ways

VELCO

A VELCO powerline runs through the community forest and VELCO owns the right-of-way. VELCO needs road access to the right-of-way on occasion for maintenance and repairs to the powerline. In 2018, VELCO improved a road from the forest entrance on Route 2 to the powerline; they used the upper landing area to stage their work. Following this work, they re-seeded the landing and the road above the landing, and installed waterbars on the road below the landing. At certain periods, VELCO may need to close some or all of the forest to perform larger projects on the powerline. The Community Forest Stewardship Committee should coordinate with VELCO to prepare for such events and fully inform the public of the closure. (More information needed on vegetation management)

Green Mountain Power

Green Mountain Power has a 75-foot right-of-way adjacent to the VELCO line in the same powerline corridor. Within this corridor, Green Mountain Power manages vegetation with the goals of: (More detail needed).

Management Objectives

- Create and execute agreements that allow the forest to provide an enjoyable user experience and conserve its resource and partners to carry out their necessary work on the forest.

Management Actions

- Work with VELCO and GMP to understand and select vegetation management strategies in the powerline right-of-ways which are safe, effective, and environmentally responsible.
- Communicate with the public about grazing plans or powerline management activities that may influence the public's experience on the property.
- Manage public use during powerline work or grazing periods to mitigate public safety hazards.
- Establish positive working relationships with Maple Wind Farm, VELCO, and Green Mountain Power to ensure that their use of the property is compatible with public visitation.

Summary of Management Objectives and Management Actions

Theme	Management Objectives	Management Actions
Cultural History	<ul style="list-style-type: none"> ● Educate forest visitors about the cultural history of the forest and its context within Richmond. ● Protect remaining cultural features. ● Engage visitors of all ages with the forest’s cultural history. ● Continue to expand and enhance the information known about the forest. 	<ul style="list-style-type: none"> ● Protect and highlight remaining cultural features in the forest. ● Add interpretive signage about Gray Rocks in the forest, especially at historic sites. ● Encourage future research and study of the forest’s cultural history, particularly with local schoolchildren. ● Conduct and record interviews with community elders who remember Andrews Farm. ● Place buffers on main trails located near cultural resources; consider access to cultural resources via spur trails. ● Work with the Andrews sisters to host programs and tours about the cultural resources of the farm.
Physical Landscape	<ul style="list-style-type: none"> ● Protect the physical attributes and processes of Andrews Community Forest. ● Ensure that any proposed activities or management actions are appropriate for the physical characteristics of the site. 	<ul style="list-style-type: none"> ● Any permanent or semi-permanent improvements should carefully consider the disturbance to the site and the capacity of the site to support the use. ● Minimize disturbance to the site to protect soil and vegetation. ● Slope steepness affects erosion and access for management. Topography should be an important consideration for forest management and recreational uses (i.e. trails).
Water Resources-Streams and Riparian Buffers	<ul style="list-style-type: none"> ● Maintain and preserve surface and groundwater quality. ● Provide food and cover for aquatic and terrestrial species as well as structural habitat diversity within the stream channel with leaf litter and woody debris. ● Protect channel stability by preventing excessive scour and erosion of streambanks. ● Preserve wildlife travel corridors. ● Buffer aquatic plants and animals from disturbance. 	<ul style="list-style-type: none"> ● Protect soil integrity and minimize erosion. ● Maintain natural water levels and flows. ● Forestry and agricultural uses of the property shall, at a minimum, comply with the terms of the Conservation Easement and with state and local water-quality regulations. ● Follow stream crossing and bridge guidelines in management plan. ● Maintain 50’ Riparian Buffer Zone on all perennial streams (as outlined in management plan and conservation easement)

<p>Water Resources - Wetlands</p>	<ul style="list-style-type: none"> ● Protect and conserve significant wetland resources. ● Prevent wetland and water quality degradation. ● Protect important plant and animal habitat. ● Protect significant wetland functions and values. 	<ul style="list-style-type: none"> ● Identify and map wetland resources on the community forest. ● Avoid construction of recreational trails through wetlands. ● Utilize boardwalks and bridges for any necessary wetland crossings. ● Provide wetlands with naturally vegetated buffers. ● Identify and control exotic species.
<p>Water Resources- Vernal Pools</p>	<ul style="list-style-type: none"> ● Provide and maintain high quality amphibian habitat. ● Promote and maintain high levels of shade and coarse woody debris. ● Per the Conservation Easement, clearly identify management practices within the EPZ zones in the Forestry Plan. 	<ul style="list-style-type: none"> ● Avoid any disturbance or impact to the actual vernal pool. ● Maintain undeveloped and undisturbed 100' primary ecological protection zone around the vernal pool. Pedestrian trails are compatible in the primary EPZ. ● Avoid creating ruts or pools of standing water for recreational trails in the primary EPZ. ● Follow harvest prescriptions in the EPZ's as identified in the Forestry Plan. ● Identify and control exotic species in the vernal pool and surrounding buffer zones.
<p>Forests</p>	<ul style="list-style-type: none"> ● Maintain a healthy and productive forest ● Maintain and encourage a diversity of native species, of all taxa ● Maintain and encourage a structurally complex forest ● Protect sensitive natural resources, including water resources, significant natural communities and rare, threatened and endangered species ● Protect the forest from the invasion of exotic, invasive species, including taking steps to control existing populations of invasive exotic plants. ● To use any timber harvesting in the Andrews Community Forest for educational and demonstrational purposes, demonstrating sustainable timber harvesting to residents of Richmond and beyond. 	<ul style="list-style-type: none"> ● Create a Forest Management Plan with the County Forester, to be approved by Vermont Land Trust before engaging in any forest management activities. ● Hold educational events around forest management activities to inform the public about the rationale and best practices of sustainable forest management.

	<ul style="list-style-type: none"> ● Enhance wildlife habitat whenever possible. ● Preserve the cultural and historic importance of the responsible stewardship of forested land on a property with a tremendous history, of which forest management has been a part for centuries. ● Conduct all management activities in accordance with Vermont’s Acceptable Management Practices to prevent soil erosion, protect water quality. ● Manage forest stands for long rotations, including retaining biological legacy trees and areas of trees indefinitely. 	
Wildlife Habitat	<ul style="list-style-type: none"> ● Provide a diversity of upland, wetland and riparian habitats for wildlife. ● Identify and accurately map significant wildlife habitat elements. ● Identify an appropriate balance of all resource attributes of and uses for the Property. ● Provide a plan for recreation trails with minimal impact on natural resources. 	<ul style="list-style-type: none"> ● See extensive list of management actions in Management Plan.
Recreation	<ul style="list-style-type: none"> ● Provide a forest that has opportunities for all interested users (hunters, mountain bikers, walkers, etc.). ● Preserve sensitive areas of the forest and route trails around those areas. ● Provide a trail system that is well-connected to trails on adjacent properties and Richmond Village. ● Support local businesses by offering recreational opportunities. 	<ul style="list-style-type: none"> ● See extensive list of management actions in Management Plan
Agriculture	<ul style="list-style-type: none"> ● Recognize the importance of agriculture in Richmond and Vermont’s heritage and continue to allow agricultural uses that are compatible with other management goals. ● Promote opportunities for agriculture education and demonstration on the parcel, perhaps in conjunction with 	<ul style="list-style-type: none"> ● Negotiate with Maple Wind Farm on the lower meadow lease and the right-of-way. ● Place signage alerting trail users to the electric fencing. ● Install a gate on the western side of the meadow to allow continued public access across the meadow. ● Explore partnerships with above organizations for educational

	<p>Maple Wind Farm or other agricultural entity with a vested interest in the property.</p> <ul style="list-style-type: none"> • Work through leases and easements to allow for Maple Wind Farm operations and public access and connections in the trail system. 	<p>programming and demonstration projects on the forest.</p> <ul style="list-style-type: none"> • Explore opportunities for a community garden on the forest.
Education	<ul style="list-style-type: none"> • Educate local students and community members about natural communities, biodiversity, cultural history, the working forest, and good stewardship practices. • Engage local students and community members in data gathering/analysis. • Recognize and take advantage of the educational opportunities created by recreational use. • Use the forest as a model and example of the value of healthy forests to the community, including educational demonstrations and tours. 	<ul style="list-style-type: none"> • Partner with the schools and organizations listed above to hold programming in the forest. • Place interpretive signage throughout the forest about natural communities, stewardship, and cultural history. • Host community events with an educational component. • Use timber management activities as an opportunity to educate the community about proper forest management. • Modify educational programming around hunting season. • Create and maintain locations for birding and viewing wildlife.
Legal Agreements	<ul style="list-style-type: none"> • Create and execute agreements that allow the forest to provide an enjoyable user experience and conserve its resource and partners to carry out their necessary work on the forest. 	<ul style="list-style-type: none"> • Work with VELCO and GMP to understand and select vegetation management strategies in the powerline right-of-ways which are safe, effective, and environmentally responsible. • Communicate with the public about grazing plans or powerline management activities that may influence the public's experience on the property. • Manage public use during powerline work or grazing periods to mitigate public safety hazards. • Establish positive working relationships with Maple Wind Farm, VELCO, and Green Mountain Power to ensure that their use of the property is compatible with public visitation.

Appendices

- A. Conservation Easement
- B. Baseline Documentation Report
- C. Results and Comments from Public Meetings
- D. Town Forest Steering Committee Bylaws (recommended; not yet adopted)
- E. Ecological Assessments
 - a. Andrews Farm Ecological Assessment – Allaire Diamond
 - b. Four Town Ecological Assessment - Arrowwood Environmental
 - c. Forest Bird Habitat Assessment and Management Recommendations (Hagenbuch, 2017)
- F. Maps
 - a. Interim Management Plan Map
 - b. Conservation Easement Map
 - c. Sample Trail Concept Map

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