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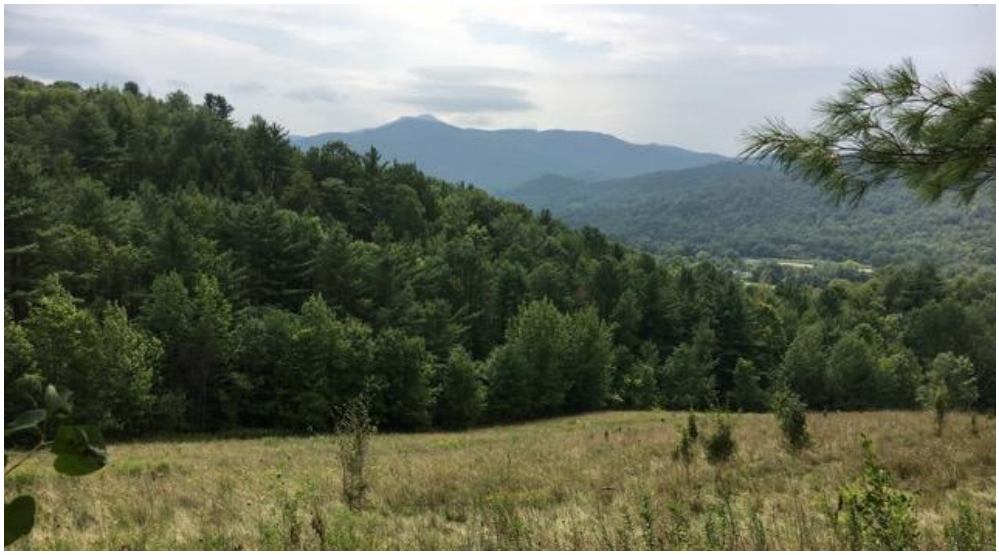
Andrews Community Forest
Comprehensive Management Plan 2.0

Including history, background, and important information about the forest that will both guide and inform management decisions

Richmond, Vermont
2022



Second Edition Adopted __date__ by the Richmond Selectboard

Bard Hill, Chair

David Sander, Vice Chair

Jeff Forward, Selectboard

June Heston, Selectboard

Jay Furr, Selectboard

Josh Arneson, Richmond Town Manager

Approved by the Vermont Land Trust_____

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1. Introduction, Process History, Land Acknowledgement, and Governance Guidelines

1.1 Introduction to this document

This document serves as the Comprehensive Management Plan for the Andrews Community Forest (ACF). The ACF Managment Plan was initially prepared by the Interim Community Forest Steering Committee which comprised Berne Broudy, Cecilia Danks, Brad Elliott, Willie Lee, Hannah Phillips (Chair), Wright Preston, Guy Roberts, and Elizabeth Wright. Assistance was provided from Ethan Tapper (Chittenden County Forester), Bob Heiser, Cara Montgomery, Rebecca Roman (Vermont Land Trust), Drew Pollak-Bruce, Liz Grades, Ellie Wachtel, Taylor Luneau (SE Group), Dori Barton (Arrowwood Environmental). The first iteration of this document was accepted by the Selectboard in November 2018 including Bard Hill, David Sanders, Steve Ackerman, Roger Brown, Christy Witters, and Josh Arneson. The Management Plan underwent a full revision in 2022 by the current Andrews Community Forest Committee (ACFC) to add an Indigenous land use acknowledgment, replace the original recreational trail design concept with a final recreational trail design approved for construction, clarify ambiguities, reorganize the table of contents for ease of reference, generally update language, (the initial document language was all in "future tense") and highlight four years of decisions and accomplishments based on the ACFC's experience managing the forest to the best of its abilities. This document was submitted to the Richmond Selectboard in the _____ of 2022 by the ACFC. Committee members involved in the revision process included current members: Jesse Crary (Chair), Cecilia Danks, Jim Monahan, Caitlin Littlefield, Nick Neverisky, Amy Powers, Daniel Schmidt, Melissa Wolaver, and Chase Rosenberg; and former members Ellen Kraft McCune and Tyler Merritt. The revised Management Plan was approved by the Richmond Selectboard on _____.

1.2 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.

1.3 Indigenous Land Acknowledgment

Andrews Community Forest is located within Ndakinna (in-DAH-kee-NAH), the homeland of the Western Abenaki people, who have a unique connection to this land and have been its traditional stewards for millennia. For many generations before the European colonists arrived, the Abenaki people harvested animals, nuts, plants, berries, fiber, and timber in these forests, without degrading their ecological health. The Indigenous people who preceded the colonists created an extensive system of trails throughout the Green Mountains that attest to the extended relationships between the Abenaki people and other tribes, who also used these forests, and who took refuge here as the settlers drove them from their homes.

The Town of Richmond acknowledges that we have access to this land because it was taken without consent and that our ability to make decisions about its management rests on this historic injustice. The Andrews Community Forest Committee therefore acknowledges the Abenaki people's rights to use this

land in perpetuity and welcomes the Abenaki people as partners in our forest management. We aim to honor and respect the Abenaki people through responsible forest management and sustainable land use. We will strive to incorporate Traditional Ecological Knowledge into our management practices to foster a healthy forest community and to restore a healthy balance between human needs and the needs of the nonhuman people of the forest (see Appendix D). We say their name, and we name trails using the Western Abenaki language, to remind us that the Abenaki people are the Original People of the Dawnland, Ndakinna, out of respect for their culture and special relationship to the land, and to acknowledge their historic and ongoing contributions to our community.

1.4 Governance of the Andrews Community Forest

As a municipally-owned property, the Town of Richmond Selectboard is ultimately responsible for the management and stewardship of the Andrews Community Forest. However, this responsibility has been delegated to the Community Forest Stewardship Committee, now referred to as the "Andrews Community Forest Committee," or "ACFC". The ACFC is charged with meeting the priorities and goals outlined in the Town Forest Management Plan or as directed by the Selectboard or Town Manager. Further information about the governance of the Community Forest can be found in Appendix A: Steering Committee Bylaws.

The ACFC is a seven-to-nine person committee. The Richmond Conservation Commission and the Richmond Trails Committee shall each appoint a current member of their respective committee to sit on the ACFC. Additionally, the Conservation Commission and Trails Committee shall each recommend one person that is not a member of their respective committee for election to the ACFC. In order to incorporate Indigenous perspectives and traditional ecological knowledge into ACF management, the ACFC will seek to fill at least one of its seats with an Abenaki tribal citizen (see Appendix D). ACFC will engage with the local Abenaki community to identify potential ACFC members.

1.4.1 Purpose of the Committee

The purpose of the Andrews Community Forest Committee is to:

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

Furthermore, the ACFC 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.

1.5 Management Plan Development

Upon purchasing the property, the Selectboard established an Interim Community Forest Steering Committee (see section 1.1) to develop a Comprehensive Management Plan and governance structure for the Community Forest, subject to final approval by the Selectboard. The Interim 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 Comprehensive Management Plan. The Interim Management Plan was signed by the Town and approved by the Vermont Land Trust in March 2018 (Appendix H).

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 in management planning by leading the public input process, conducting environmental analyses, and drafting the plan. The first Management Plan was adopted by the Select Board in November 2018 in compliance with conditions attached to a grant from the US Forest Service.

1.5.1 History of the Public Input Process

Public input opportunities into the initial management planning process in 2017 and 2018 were advertised by email, social media, Front Porch Forum, via signage in Town, and in the local print newspaper, the TimesInk! This process was critical to ensure the Management Plan reflects the interests of Richmond residents, and to give the Committee an opportunity to consider and reach consensus on important management issues such as hunting, trail development, and more. A chart showing the evolution of allowed/prohibited uses in the Community Forest can be found in Appendix C.

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 groups: 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.
- *Public Input on Draft Management Plans* -- 44 people attended a presentation of the 1st draft of the Management Plan on 9/20/18; an additional 14 people submitted comments in writing. The

comment period was open for two weeks. A second draft plan was released on 10/21/18, followed by a two week comment period and including another public meeting.

Public input opportunities into the 2022 Management Plan revision, including public engagement regarding the development of the approved trail design and the inclusion of an Indigenous land use acknowledgment occurred in 2020-2022. In addition to the monthly open meetings convened by the ACFC in which members of the public were welcomed to offer their perspectives and ask questions, the ACFC carried out the following specific public engagement efforts to further ensure a robust community engagement process:

- Sept 2020: Initial draft of proposed trail design RFP was reviewed and shared with members of the Richmond public, with their feedback incorporated; ACFC approves to establish a joint RFP for ecological review and trail design services requiring the ecologist and trail designer to collaboratively establish a proposed trail design
- May 2021: Pubic walk held at ACF with Arrowwood and Sinuosity (professional ecologist/trail build team) to walk part of the proposed trail and discuss routing
- June 2021: Public presentation by Arrowood and Sinuosity of proposed design; representatives from VLT and SB invited and expressed support
- March 2022: Online public comments form launched seeking feedback on ACFC's approved preliminary trail design (*notice of public comment period and options for providing feedback communicated via Front Porch Forum, Facebook, Instagram and the Town Forest website*)
- April - May 2022: 128 public comments received on proposed trail design. ACFC thematically codes comments and publically releases formal responses to the 25 emergent themes/concerns
- May 2022: Members of the ACFC met 1:1 with community members who had been particularly engaged during public meetings and via other fora (e.g., Front Porch Forum, the Times Ink)
- TBD: professionally facilitated public meeting to solicit feedback related to proposed Management Plan revision (*include # attendees, details on outcome, etc.*)

1.5.2 Comprehensive Management Plan Updates: Amendments and Revisions

This Comprehensive Management Plan is intended to be 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 acting. The ACFCis required to make management decisions based on resource management objectives and current best management practices. In addition, the ACFC is required to gather information on relevant management practices that can guide future management decisions and management plan revisions.

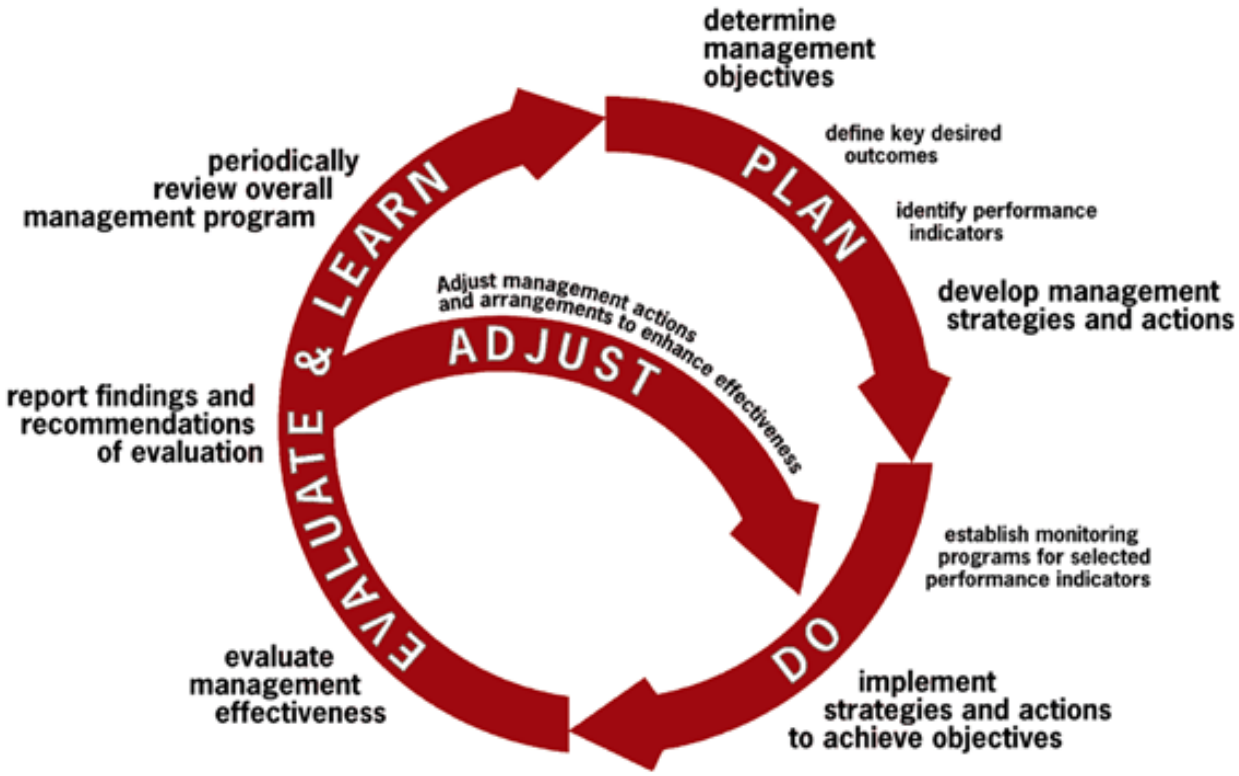
This plan must be reviewed and updated, at a minimum, every ten years, as required by the Conservation Easement. However, more frequent revisions may be necessary in the early years of municipal ownership as the community's use of the property evolves. The ACFC will plan to discuss potential updates once annually and make changes as needed according to the "adaptive management model" (Figure 1). Updates to the Comprehensive Management Plan can be of two kinds, revisions or amendments, which vary in degree of public outreach and data collection.

Any *amendments* to the plan, as suggested by Figure 1, may include minor adjustments that improve effectiveness of management actions or minor changes to wording. Amendments to the plan will, at a minimum, be proposed and warned as part of the ACFC's regular business. Additional public meetings focused on plan amendments are at the discretion of the ACFC.

Any major changes to the plan objectives or proposed actions requires a plan revision, which entails a planning and outreach process that includes scoping of concerns, collection of any needed data, and a public engagement process that invites stakeholders and other residents to provide input on proposed revisions. Such a process may entail a combination of surveys, ecological assessments, field trips, and public meetings dedicated to the plan revision.

Any changes to the Comprehensive Management Plan, either amendments or revisions, must be reviewed and approved by the Vermont Land Trust and submitted for approval by the Richmond Selectboard. Any activities on the property which are not contemplated in the Management Plan must be reviewed and approved by Vermont Land Trust stewardship staff to ensure compliance with the Conservation Easement (see Appendix C).

Figure 1. Adaptive Management Model



2. Management Plan

2.1 General Property Description and Background

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.

2.1.2 The Forest In Context

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 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.

2.2 Timber Management and Forestry Activities

There is a long history of timber management within the forest, as the Andrews family actively managed the forest. 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 Richmond/Huntington loggers Mark and Bruce Moultroup.

The most recent timber harvest was completed in the spring of 2021 under the direction of Chittenden County Forester, Ethan Tapper, and the work was done by_____. The ACFC, Vermont Land Trust, and the Select Board Adopted a Forest Management Plan specific to forestry activities in November of 2019, and used a 'zone' approach that divides the forest into three different management styles for perpetuity and emphasizes a diverse and resilient forest as well as addresses invasive species management. Section 8 of this Comprehensive Management Plan provides more detail about the Forest Management Plan that was crafted by Ethan Tapper and adopted by the Select Board on November 18,

2019. Additional timber stand improvement (TSI) activities were completed in the winter of 2022 and included crop tree release as well as selective cutting.

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 in 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.

2.3 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 (See Appendix). 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, Vermont Land Trust 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 Vermont Land Trust 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 Vermont Land Trust. Section 1.B. of the Conservation Easement dictates what information the Management Plan must include. Public input is required for any updates to the Plan.

3. Public Access

3.1 Town Forest Rules

- **General Rules:**
    - The Andrews Community Forest is open to the public year-round from dawn-to-dusk, with exceptions granted outside of these hours for hunting and other forms of quiet recreation which do not disturb neighboring landowners.
    - As the Original People who stewarded these lands, the Western Abenaki People and other Indigenous Peoples are extended a special invitation to visit the ACF and pursue traditional and contemporary practices as outlined in Appendix D Part 2, and as acknowledged here below.
- **Allowed Uses:**
    - Dispersed pedestrian access is allowed on 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 is restricted to the VAST trail, and may only be used when the trail is opened by VAST.

- Hunting is allowed on the Andrews Community Forest and is subject to the State of Vermont hunting seasons, rules, and regulations.
  - Temporary tree stands and ground blinds are allowed: from the third Sunday in August through the third Saturday in December, May 1 through May 31, and during any Youth Hunting Day. Tree stands and ground blinds must be erected such that no damage is done to a living tree (except that branches <1" diameter on the main stem may be trimmed). Stands and blinds must have the owner's name and contact information in an easily identifiable location. Stands and blinds that do not conform to these regulations may be confiscated.
- Dogs are allowed on the Andrews Community Forest, subject to the Town of Richmond Dog Animal Control Ordinance, which indicates that dogs should be on a leash or under voice control.
- The Abenaki People may use ACF for gatherings and ceremonies, including the erection of small, temporary structures relevant to ceremonies Prior notification of the ACFC is requested for large gatherings.
- The Abenaki People have the right to collect fungi, plants, and plant parts in a sustainable manner, which is described in Appendix D.
- Additional uses not listed here may be considered by the ACF Committee if they comply with town and state law and the Conservation Easement.

3.2 Restricted and Prohibited Uses

Salient restricted and prohibited uses are highlighted below. For a more comprehensive list of restricted and prohibited uses, reference the Conservation Easement (see Appendix C).

- **Restricted Uses:**
  - Motorized vehicles are not allowed on the property, except for use by those with physical disabilities, snowmobiles using the VAST trail, vehicles required for property management, or in case of emergency.
- **Prohibited Uses:**
  - Campfires
  - Overnight parking
  - Horseback riding
  - Camping
  - New trail development without prior approval of the ACFC.
  - Timber harvest outside of the approved Forest Management Plan.
  - Trapping. Trapping poses a safety hazard to visitors and their pets and at this time is seen as incompatible with recreational and educational off-trail hiking by residents, school groups, researchers and hunters. Exceptions may be granted by the ACFC in conjunction with the Vermont Land Trust to address animals of concern/natural resource management concerns. Signage will notify visitors of the trap location and purpose.

3.3 Parking

Parking is available off of Route 2 across from Maple Wind Farm, at 1129 East Main Street, Richmond and is permitted to accommodate one parked school bus and five parked cars. The upper landing area can be used for parking during special events. Members of the community will need to submit a proposal suggesting special parking access to the Committee Chair, with Committee review as needed. Requests

will be approved on a case-by-case basis. The Town of Richmond is responsible for maintenance and plowing.

3.4 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.

4. Geology, Topography, and Climate

4.1 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.

4.2 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 schist 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.

4.3 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 above sea level, 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.

4.4 Topography and Aspect

The Andrews Community Forest stretches over 428 acres of mostly south-facing hillside. Elevations range from just below 400' above sea level at the parking area to about 1240' above sea level 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.

4.5 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 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).

4.5.1 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.

4.5.2 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).

5. Cultural History

5.1 Indigenous History

Richmond is located within Ndakinna (in-DAH-kee-NAH), the homeland of the Western Abenaki people, also known as the Original People, who have a unique connection to this land and have been its traditional caretakers since at least the last Ice Age. For hundreds of generations before the European colonists arrived and applied their own borders and labels, the Western Abenaki people lived and worked on this land, stewarding resources in an ecologically sustainable way. Given that ACF lies along important east-west and north-south transportation and trade routes, other tribes are likely to have visited the forest as well.

Abenaki oral tradition and written accounts, historical resources, and archaeological studies of prehistoric sites in Richmond inform our understanding of how the ACF landscape has been stewarded and its continued importance to Indigenous people of our town and region. General resources include books such as those by Wiseman (1995, 2001), an Abenaki elder and scholar, and Haviland and Power (1994), as well as numerous online resources. Appendix 3 in Wiseman (2001) lists many written, video, and museum resources regarding Abenaki cultural history.

Specifically for the Richmond area, archaeological studies in the 1990s near the bridges in Jonesville over the Huntington and Winooski rivers have yielded valuable physical evidence of occupation and forest use by Indigenous peoples before colonization (Thomas et al. 1995; Doherty et al. 1996). These sites were radiocarbon dated to approximately 1040 AD (near Winooski bridge) and 1500 AD (near Huntington bridge), and thus considered to represent the Middle to Late Woodland period. The sites show that animals “including black bear, deer, beaver, porcupine, muskrat, fisher, mink, skunk, cottontail, red squirrel, and chipmunks were taken for both meat and pelts. Various nuts, including butternut, hickory nuts, beech nuts, and acorns from red oak” were also collected and processed for consumption and storage (Thomas et al. 1995). Diverse tree species were used for firewood at the Huntington River site, including beech, maple, birch, red pine, eastern hemlock, elm, eastern hophornbeam, eastern cottonwood, red pine, and possibly alder. No evidence of maize was found at these sites, even as maize, beans, and other plants were being cultivated at that time along the Winooski River closer to Lake Champlain. Thomas (2008) surmises that these Jonesville sites were seasonal encampments occupied between September and late December/early January to collect and process forest resources. Such findings suggest that the forests where ACF is now located were largely stewarded and used for hunting and gathering, rather than agriculture. This pattern concurs with broader geographical accounts of Abenaki practices, such as Wiseman (2001:27), who stated that the Abenaki “… had smaller seasonal camps along most rivers eight thousand winters ago” and described gathering and hunting activities in the uplands.

The Jonesville archeological digs also uncovered the dramatic environmental changes that occurred as a result of forest clearing by European settlers (Thomas et al. 1995). The alluvial terrace on the Huntington River, which the Abenaki families occupied over 500 years ago, had developed slowly over thousands of years with minimal flooding evident in the analysis of sediments. In contrast, during the 19th and early 20th centuries, catastrophic flash flooding became more common as upland and riparian forests were cleared for farming. Thomas (2007:9) noted that "between roughly 1810 and 1880, four to seven feet of sand, gravel, and even small cobbles were deposited on the terrace surface." These extraordinary floods covered or destroyed most evidence of precontact use and settlements. More recently, as abandoned farmland grew back to forest, flooding has declined. "Since the early decades of the twentieth century, less than eight inches of alluvium have been deposited on the terrace surface next to the Huntington bridge, and most of this was probably due to the great flood of 1927" (Thomas 2007:10).

5.1.1. Plants and Animals of Special Cultural Importance for Western Abenaki

A number of forest species were and continue to be of special cultural importance to the Abenaki people, and as such deserve special management consideration. Among tree species, these include black ash (*Fraxinus nigra,* also called brown ash and *maalakws* in Abenaki) used for basketry, and white birch (*Betula papyrifera*, also called canoe birch, its bark called *wigwa* in Abenaki) for canoes, homes, and containers. Unfortunately, black ash populations are currently highly threatened by the emerald ash borer, which is already present in Richmond. Butternut (*Juglans cinerea,* in Abenaki *pagon* or *bagon)* were among the trees highly valued for food, medicines, materials, and dyes (Haviland and Power 1994; Wiseman 1995b, 2001). This culturally important species is also threatened. The butternut canker fungus, first found in Vermont in 1983, now infects early all butternut trees causing dieback and often death. Maple sugaring (*Pkwamhadin* – "gathering of maple sap" (Chenevert 2021)) was an important seasonal activity among the Western Abenaki, one which was taught to colonists (Cotnoir n.d.).

Thomas (et al. 1995:61-64) lists the uses by the Abenaki of some thirty species of trees and shrubs abundant in the mixed deciduous forests of Vermont, many of which are found in ACF. Wiseman (1995a, 1995b, 2001) describes a wide range of forest plant species that were and are collected for construction materials, food, medicines, and dyes by Abenaki people. In Appendix 2, Wiseman (2001) lists many forest plants used in Abenaki herbal medicines by the maladies that they treat. A complete list of culturally important species found now or in the past at ACF would be valuable to develop for use by the ACFC in management decisions and educational materials. Ideally, such a list would be compiled, and important species prioritized, in partnership with the Abenaki people.

Before colonization, the Abenaki likely hunted and trapped a wide range of animal species for food and pelts in the forested landscape where ACF is now located. Thomas et al. (1995:65-75) describes the traditional uses of the 11 species of animals found at the Huntington River site. Wiseman (2001) describes the relationship and importance of many species to the Abenaki, as well as how they were traditionally hunted and used. The acts of hunting and fishing, as well as the resulting food, skins and other usable body parts (e.g., bones and sinew), remain culturally important for many Indigenous peoples. As mentioned for forest flora above, it would be valuable to develop a prioritized list of ACF's animal species of cultural importance in consultation with Abenaki partners, including uses, stewardship, and both Abenaki and scientific names.

5.1.2. Abenaki language and the ACF

The Western Abenaki language, which is in the Algonquian family of languages, is considered critically endangered by UNESCO (2010). It is a descriptive language based on root words specifying physical qualities. For example, the region's largest river is named Winoskisibo – built from *Winos* means onion, *ki* means land, and *sibo* means river. Thus the Winooski River is named for the ramps and other wild onions which were known to grow in abundance along its shores. Maintaining the Abenaki language and culture is deeply connected to the Abenaki homeland and its stewardship. For example, Cotnoir (n.d.), a citizen of the Nulhegan Band of the Coosuk Abenaki Nation, wrote that "…sugaring still functions as a time for our community members to gather and connect with the woods and one another. Through sugaring, we continue to cultivate a working relationship with the land, while practicing our language – Western Abenaki."

Conservation efforts, such as the ACF, can inadvertently contribute to the erasure of Indigenous presence when introducing and perpetuating nonnative place names and management practices. Conversely, the ACF can support the revival of the Western Abenaki language and culture by supporting the use of Abenaki language for places, practices, flora, and fauna in the naming of trails, educational materials, and signage. Appendix D includes suggestions developed by the Richmond Racial Equity committee in collaboration with Abenaki tribal citizens and culture keepers. If ACFC decides to go beyond that list, Abenaki culture keepers should be consulted.

5.2 Colonial History

Since European settlers have arrived, the Andrews Community Forest property has had a rich history - over 200 years of agriculture and forest management. "Gray Rocks Farm," as it was formerly known, was placed on the National Register of Historic Places in 1996 "because of its dual architectural and agricultural significance" (Longstreth 2007). The farm exemplifies the growth and development of dairy farming in 19th and 20th century Vermont. 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 and protected by an agricultural conservation easement The farm house and immediate yard are privately owned.

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.

Angus Cummings (2019), a UVM student, interviewed several of the Andrews sisters and other townspeople familiar with the recent history of the parcel in 2018. A link to his thesis and historical photos of the site contributed by the Andrews family can be found on the ACF website.

5.3 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, was also part of Gray Rocks Farm and the Andrews Farmstead. The 1813 farmhouse and barn remain there, just outside of the town-owned forest property. In 2013 Maple Wind Farm bought 189 acres from the Andrews family largely below Route 2, which is conserved by an agricultural use easement On January 13th, 2014 the barn located across the street from the ACF entrance, burned down from an electrical fire. Maple Wind Farm rebuilt the barn in the same location in 2014, and they operate a farm selling grass-fed beef, pasture-raised, non-GMO pork, chicken, turkey and eggs.

5.4 Potential partners regarding ACFC cultural history

- Abenaki Nation of Missisquoi, https://www.abenakination.com/
- The Nulhegan Band of the Coosuk Abenaki Nation, https://abenakitribe.org/
- Kerry Wood and Annette Urbschat for consultation regarding the Western Abenaki language
- Conseil des Abénakis d'Odanak, https://caodanak.com/en/
- Abenaki Arts and Education Center, https://abenaki-edu.org/
- Radiate Art, https://www.radiateartspace.org/, Contact: Rebecca.
- radiate.art.space@gmail.com
- Richmond Racial Equity, Contacts: Scott Silverstein and Alexis Latham
- Chittenden County Forester: Ethan Tapper

5.5 Management Objectives

- Educate forest visitors of all ages about the Indigenous and colonial cultural history of the forest and its context within Richmond.

- Protect remaining cultural features and values.
- Maintain viable populations of plants and wildlife of cultural importance.
- Include Indigenous perspectives, knowledge, and language in ACF educational materials, management and naming practices.
- Continue to expand and enhance the cultural information known about the forest.

5.6 Management Actions

The following actions are recommended to protect and highlight cultural features in the forest:

- Establish a good working relationship with the Western Abenaki People. Make a concerted effort to welcome them to this land and to contribute to our community's understanding of the cultural importance of ACF to Indigenous people.
- Add interpretive signage about the cultural history of this forest land, especially at historic sites.
- Place buffers on main trails located near cultural resources; consider access to cultural resources via spur trails.
- Coordinate with Chittenden County forester Ethan Tapper and Abenaki tribal forester(s) regarding the best management of black ash given its cultural importance and the existential threat of the emerald ash borer. In addition, explore with them the best approach to managing any butternut trees that may be found in the ACF and any other culturally important species that may be threatened.
- Partner with Abenaki tribal representatives and other interested parties (e.g., schools, Eagle Scouts, college students) to develop and prioritize lists of culturally important forest plant, animal and fungal species to help the ACFC manage them sustainably and provide educational materials. Such lists should include Abenaki names, scientific names, traditional and current uses, traditional ecological knowledge and stewardship practices, potential threats, and other information, stories or sources that would help in their sustainable management.
- Implement naming practices, signage, interpretive materials and activities that reintroduce the Abenaki language and keep it alive on the landscape.
    - Choose AFC trail names from the list of Abenaki words for animals of the forest and landscape features found in Appendix D Part 4. These words were proposed and vetted by Abenaki tribal citizens and culture keepers.).
    - Develop and deploy interpretive signage and other educational materials that explain and celebrate Abenaki language, forest uses and stewardship practices.
    - Connect with Radiate Art, which has agreed to share high quality images of their murals for use by the ACF interpretive materials and signage.
    - Encourage ACF involvement in partnerships to generate educational materials and programming for the UN International Decade of Indigenous Languages 2022 – 2032. See: https://www.un.org/development/desa/indigenouspeoples/indigenous-languages.html
- Consider connecting with the Abenaki Trails Project, exploring the potential for ACF to be an educational site for that effort. See: https://abenakitribe.org/abenaki-trails-project
- Place buffers on main trails located near cultural resources; consider access to cultural resources via spur trails.
- Work with the Abenaki tribes, the Andrews family, and others with cultural knowledge of the forest to host programs and tours about the history and contemporary resources of the ACF.
- Consult with an Abenaki Forester or tribal affiliate upon any management plan revisions and major management activities that may affect cultural resources. (See Appendix D, Part 3).

6. Upland Natural Communities

6.1 Natural Communities in the Forest

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. "Significant" natural communities are those sites that meet the combination of rarity, size, 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.

6.2 Upland Natural Community Types on the Andrews Community Forest Chart

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 in 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.

6.3 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.

6.4 Management Actions

- Implement Forest Management Plan, adopted by the Vermont Land Trust, ACFC, and the Select Board in November 2019.
- Update natural community mapping as more on-the-ground data becomes available; communicate this information forward to the Vermont Land Trust.
- Within 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 the Vermont Land Trust's prior written approval;
    - New roads or trails are prohibited without the Vermont Land Trust's prior written approval.
- Identify and control exotic species in conjunction with the 2019 Forest Management Plan.

7. 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.

7.1 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.

7.1.2 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.

7.1.3 Management Actions

- Protect soil integrity and minimize erosion.
- Protect 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 foot 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 (Vermont Land Trust). 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.

7.2 Wetland Natural Communities

The Andrews Community Forest sits well above the Winooski River lowlands, occupying the south facing 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 within 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 offer opportunities for education and 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.

7.2.1 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	2*	0.08

* More vernal pools may exist

7.2.2 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.

7.2.3 Management Actions

- Identify and map wetland resources within 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 areas where invasive species are having a significant negative impact on wetlands and develop/implement an invasive species management strategy.

7.3 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 (2017) and are examples of vernal pools. Each contained many hundreds of eggs of wood frogs and spotted salamanders and appeared to be a stable breeding habitat for these (and many other) species. The surrounding forests are in 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. To maintain this habitat, certain management guidelines are recommended.

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 foot secondary protection zone where timber harvesting is allowed, but must have the goal of protecting and enhancing amphibian habitat, and must be addressed in the Forest Management Plan.

7.3.1 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.

7.3.2 Management Actions

- Avoid any disturbance or impact to the actual vernal pools.
- Maintain an undeveloped and undisturbed 100' primary ecological protection zone and a 500' secondary ecological protection zone around the vernal pools, as described in the Conservation Easement. Pedestrian trails are compatible in the primary EPZ but must be approved by Vermont Land Trust.
- Avoid creating ruts or pools of standing water as the result of recreational trails in the primary EPZ.
- Follow harvest prescriptions in the EPZ zones as identified in the Forestry Plan.
- Identify areas where invasive species are having a significant negative impact on vernal pools and develop/implement an invasive species management strategy for both the vernal pool and the surrounding buffer zone.

8. Forestry

8.1 Forestry Activities

Forest management, in the form of 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. Forests, such as ACF, can sustain plant and wildlife species of special cultural importance to Abenaki peoples. Forest management for timber on municipal lands can serve as a demonstration of responsible and sustainable forest management, educating residents of Richmond and beyond in how to harvest forest resources in a sustainable way. If forest management incorporates traditional practices by engaging Abenaki foresters and culture keepers, it offers the opportunity to educate the community about historical and contemporary Indigenous forest stewardship practices.

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 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 utilizing 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. Timber harvests provide 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 composed of myriad independent species, have evolved as systems in many ways. Diverse forests efficiently respond to disturbance, stabilizing nutrients and soil and create 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 timber harvesting 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 the 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.

8.2 Forest Management Plan

On 11/18/2019 The Selectboard Adopted a Forestry Management Plan written by Ethan Tapper. The document details how the forest will be managed for its timber and other natural resources. The document covers topics such as diversity and resiliency of species, connectivity of the forest block, invasive species control, wildlife habitat, water management, soil assessments, carbon sequestration and storage, recreation, cultural features, and boundaries. It discusses active forest stewardship practices, addresses Emerald Ash Borer and other invasive management techniques that should be used within the ACF. Most importantly, the forest has been broken into three zones that each have a different management approach. Zone 1 (148 acres, 36% of ACF) located in the lower sections of the forest allows for the most intensive forestry and forest management activity to occur. Patch cuts of up to five acres can occur in stands 1 and 2 in zone 1. Zone 2 (145 acres, 35% of ACF) is located in the Eastern half of the property and includes stands 3-6. Mixed age stands are encouraged and no openings greater than one acre can occur. Management objectives prohibit whole tree harvesting techniques and the intent is to “enhance structural and species diversity and to encourage the development of late successional characteristics in the forest” (FMP, Tapper, p. 6). Zone 3, 117 acres (28% of the forest), located in both Eastern and Western

sections, is a "reserve zone" also called "ecological protection zones" (EPZ's), with management only for monitoring and controlling invasive and exotic plants. These areas are distributed throughout the forest. This Forest Management Plan provides an initial schedule for maintenance and on-going forest management activities by stand and zone. All forestry activities should be in agreement with this document. (Located on the town website; click here for direct access).

8.3 Management Objectives

- Follow the Forest Management Plan Adopted on 11/18/2019
- 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.
- Identify areas where invasive species are having a significant negative impact and develop/implement an invasive species management strategy.
- Use 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.
- Enhance species of cultural importance, especially to the Abenaki peoples.
- Preserve the cultural and historic importance of the responsible stewardship of forested land on a property with a long, rich history of which forest management has been a part for millennia.
- Conduct all management activities in accordance with Vermont's Acceptable Management Practices to prevent soil erosion and protect water quality.
- Manage forest stands for long rotations, including retaining biological legacy trees and areas of trees indefinitely.
- In cooperation with Abenaki nations, incorporate traditional ecological knowledge in management of trees and understory plants and wildlife habitat.

8.4 Management Actions

- The Forest Management Plan was created by Chittenden County Forester, Ethan Tapper, in conjunction with the Vermont Land Trust and was adopted by the Selectboard in November of 2019.
- Hold educational events around forest management activities to inform the public about the rationale and best practices of sustainable forest management.
- Reach out to Abenaki tribal foresters to contribute to future forest management planning and activities.
- In collaboration with Abenaki partners, identify culturally important species (e.g., black ash) and the stewardship practices needed to sustain them, to inform future forest management activities.

9. 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. Habitat has been a focus for wildlife study and presents

an opportunity for continued study about wildlife use within the forest, given the block's 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 F.a. Audubon Vermont conducted a forest bird habitat assessment on the property in July of 2017 and reported its findings in November, 2017 (Appendix F.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 have 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 in the Andrews Community Forest with their approximate boundaries shown on the attached natural resource maps.

9.1 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, stated that the entire Property was part of a 'Highest Priority Interior Forest Block' that provides 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. Black bears exemplify 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 utilizes 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, Canada warbler, and black and white warbler. 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.

9.2 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, bobcat, 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 defendable 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 is cold and snowy as well as when it is 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.

9.3 Mast Stands

Mast refers to the nuts and seeds of trees and shrubs, many of which are eaten by 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 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. As many as 171 species of birds, mammals, amphibians, and reptiles use these beech and oak forests as habitat (DeGraaf et al., 1992).

9.4 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 support 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.

9.5 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.

9.6 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, maintenance of a multi-layered forest canopy, maintenance of downed and standing dead and live woody debris and snags, maintenance of small natural forest openings and food sources, and 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, 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 one 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.

10. Recreation

10.1 History of Recreation and Trail Design Consideration

The Andrews Community Forest contributes significantly to the town's scenic rural and natural character. The natural communities of the forest are not confined to human-drawn boundaries. Therefore, conservation and stewardship of wildlife habitat, water resources, and vegetation must extend beyond those boundaries as well.

The Andrews Community Forest offers recreation opportunities to town residents and visitors. A 2018 visioning 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. Town residents

identified connectivity with abutting trail systems to the east and west 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 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, poor drainage, and potential for erosion. Sustainable trail design will redirect visitors onto trails, reducing use of existing skid roads when appropriate. Other roads (the VELCO road, the Maple Wind Farm road on the eastern boundary, and the VAST trail) act as important recreational and management corridors throughout the property and remain in use.

10.2 Conservation Easement

The Conservation Easement allows for non-motorized, non-mechanized recreational use of the forest (i.e., walking, snowshoeing, skiing, and hunting). Additionally, Section IIIA of the easement allows for "snowmobiling, and for non motorized mechanized recreation such as mountain biking, and by animals capable of transporting humans…" This plan provides the rules for these uses and guides the management of recreational infrastructure. 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.

10.3 Snowmobiling

The ACF contains a snowmobile trail that was previously part of the VAST trail network. Snowmobiling will be permitted in the ACF if and when VAST seeks to formally reestablish the trails as an official part of the VAST trail network and the ACF approves a use contract ensuring all snowmobiling is conducted in a manner compatible with the Management Plan's other goals and objectives. The Committee will meet with VAST representatives periodically to determine if and when the trail might be reconnected to the VAST network and to ensure any snowmobile usagee is compatible with the other management goals for the Community Forest.

10.4 Hunting

Hunting is allowed on the property in accordance with all state and federal laws and the activities are within the stated allowable uses. Indigenous people have hunted in the forests in this area for thousands of years. As of 2021, citizens of recognized Abenaki tribes may obtain free hunting licenses from the state of Vermont. When the property was owned by the Andrews family, it was open to both hunting and trapping. Many members of the community are still interested in using the property to hunt. A smaller number of residents are interested in using the property for trapping. However, the property did not previously contain recreational trails, such as those proposed for development in the Andrews Community Forest. The coexistence of these various uses in the same forest presents a management challenge. The Town will place an emphasis on education about hunting season safety for both hunters and non-hunters. Trapping will not be permitted on the Town Forest because of the safety hazard it presents to visitors and their pets, who may be traveling both on and off trail.

10.5 Connectivity to Surrounding Properties

The conserved lands around the ACF create opportunities for a larger, connected trail network. Consistent with the Management Plan's recreational objectives, the ACF Trail Design seeks to connect to existing, mapped, public trails on properties adjoining the ACF. The VYCC campus, which adjoins the property to the east, has a number of available multi-use trails. 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 its campus to be a showcase for their trail-building abilities and seeks to have a "porous" boundary between the two properties. The ACFC has an established relationship with VYCC and there is currently one trail connecting the two properties and trail networks. Adjoining the ACF to the north is a 173-acre property owned by David Sunshine and Carol Jordan. The property contains a multi-use trail network. The trail network links to trails on adjoining properties available for public use, including the Old Jericho Road Trail. The ACF Trail Design includes a northerly connection to Sip 'O Sunshine Trail located on the Sunshine/Jordan property. Other surrounding property owners have trails on their property that are open to the public. The ACFC's trail design seeks to develop a trail system that connects to these existing, mapped, public trails. Management practices will also include working with neighboring landowners to develop signage that indicates land ownership and allowed uses.

10.6 Trail Design Map

The Trail Design Map (See Map C) is the product of extensive public input, expert consultation, and ACFC deliberation. It reflects the ACFC's best efforts to balance ecological impacts and trail-based recreation per the 2018 First Edition of the Management Plan. The Trail Design Map also represents an improvement on the earlier Trail Concept Map, included in the 2018 First Edition of the Management Plan, by further limiting ecological impacts. For details on the ACFC's deliberations in this regard, please see the ACFC's Response to Community Feedback on ACF Trail Network Proposal, Spring 2022 (See Appendix ___). The Trail Design Map and this 2022 Second Edition of the Management Plan have been approved by the ACFC, the easement holders and the Selectboard. The Trail Design Map is intended to achieve the following objectives listed as top priorities in the 2018 First Edition of the Management Plan:

- Establish connectivity between public, mapped trails to the east and west of the property.
- Establish one long loop from the parking area, and many shorter loops.
- Create a lower density of trails above the powerlines and higher density below the powerlines to place equal emphasis on conservation of the interior forest areas of the property, while still inviting and encouraging public visitation.
- Avoid sensitive areas whenever possible and give an appropriate buffer to sensitive areas, as delineated by professional ecologists.
- Provide 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.

10.7 Process for Constructing Approved Trails

- A hired professional trail designer will flag a route that, to the best of their ability, follows the route appearing in the approved Trail Design Map.
- Arrowwood, or another professional ecologist, will walk the flagged route and a 50 foot buffer on either side to determine whether there are any fine-scale features (rare, threatened, or endangered

species) that would be adversely impacted by trail development in that particular location. If there are,the trail designer will consult with the ecologist to identify a suitable re-route.

- The Committee may make minor adjustments to the Trail Design Map to maintain a 200' buffer between the trail and known sensitive areas, when possible, as identified and mapped in existing ecological assessments. When a 200' buffer cannot be reasonably achieved, the Conservation Easement terms sets a minimum standard for what is acceptable, and the Arrowwood Environmental Natural Resource Guidance Toolkit offers further guidance. The Committee acknowledges that this 200 foot buffer is aspirational and a best practice, but may not always be possible while achieving the basic objectives of the Trail Design (outlined above). Nevertheless, the Committee will strive to achieve this buffer.
- Once a trail corridor has been assessed by Arrowwood (or another professional ecologist) and deemed suitable for trail construction, the Committee will engage with the community via an open public process to ensure the Trail Design is consistent with the community's goals at such time and continues to comply with Management Plan's objectives to offer recreational opportunities while protecting the ACF's natural resources.
- Following easement holder and Selectboard approval, the Committee will proceed to work with the Richmond Trails Committee, Richmond Mountain Trails, and/or a hired trail-builder to install trails which meet standards and designs agreed upon by the Committee.
- The Committee will adopt trail names that bring Indigenous presence and language back to this landscape (rather than contribute to their erasure). Consult Appendix D Part 4 for suggested names that were proposed and vetted by Abenaki tribal citizens, culture keepers and language experts.
- The ACFC will continue to seek and obtain grant funding as necessary to support the design, construction and maintenance of trails approved and included on the Trail Design Map.

10.8 Process for Considering Future Trails

- The addition of any new future trails not reflected on the Trail Design Map shall not be approved for construction until a new Trail Design Map is adopted through a full revision of the management plan, which is subject to public review and approval by the Selectboard, and the easement holders. The Trail Design Map shall not be revised independently of the Management Plan.
- In considering the appropriateness of adopting any new future trails, the Committee will (1) seek appropriate professional guidance to assist it in evaluating the impact of trail density on the ACF's wildlife and forested ecosystems; and (2) engage with the community via an open public process to ensure that any changes to the trails design are consistent with the community's goals at such time and continue to comply with Management Plan's objectives to offer recreational opportunities while protecting the ACF's natural resources.

10.9 Potential Recreation Partnerships

- Richmond Trails Committee
- Richmond Mountain Trails/Vermont Mountain Bike Association (VMBA)
- Maple Wind Farm
- VYCC
- Richmond Land Trust
- Scouts

- Community Senior Center
- Western Abenaki Tribes
- Richmond Racial Equity

10.10 Management Objectives

- Develop and promote a community forest that accommodates a wide variety of recreation opportunities (hunters, mountain bikers, walkers, etc.), subject to the limitations of the Conservation Easement and this Management Plan as it may be revised from time to time.
- Preserve sensitive areas 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.
- Enhance cultural and ecological knowledge about the ACF and surrounding landscape for trail users.

10.11 Management Actions

- **Trail Design Build**:
    - Establish trail system and build new multi-use trails in conformity with the ACF Trail Design Map and this Management Plan
    - Choose trail names that bring Indigenous presence and language back to this landscape. Consult Appendix D Part 4 for suggested names that were proposed and vetted by Abenaki tribal citizens, culture keepers and language experts.
- **Steward:**
    - Maintain a trailhead kiosk at the parking lot.
    - Create signage about hunting seasons, hunting safety, trail etiquette, agricultural uses of the property, allowed user groups, property ownership, cultural and ecological information, etc., both in the forest and at the trailhead kiosk.
    - Include the short version of the Land Acknowledgment at all signed entrances, on kiosks and on maps. The language approved by ACF on 1/31/22 for this purpose is: “The Andrews Community Forest is located within Ndakinna, the unceded homeland of the Western Abenaki People, who have a unique connection to this land and have been its traditional stewards for millenia.” (See Appendix D, Part 1.)
    - Install a bike rack at the entrance to the Community Forest to promote bicycling.
    - Educate the public about hunting seasons and hunting season safety through signage and on digital platforms (Front Porch Forum, Facebook, etc.).
    - Work with neighboring landowners to appropriately sign changes in landownership and allowed uses.
    - If and when VAST seeks to formally reestablish the former VAST snowmobile trail, establish a use agreement with VAST to ensure snowmobiling is conducted in a manner compatible with the Management Plan.
    - Establish signage on all trails that includes the Abenaki language trail name and its definition or image as suggested in Appendix D, Part 4. Briefly explain the rationale for this naming approach on maps, kiosk, and website. Create and maintain corresponding navigational aids throughout the forest (trail markers, blazes, signage, and maps).

    - Work with Richmond Trails Committee to conduct routine trail maintenance. The ACF Committee will coordinate with these groups to organize, advertise, and facilitate trail work days.

- **Monitor** impacts of recreational use on natural resources:
    - Pursue opportunities to continue learning more about the impacts of trail-based recreation on wildlife and to translate this learning into on-the-ground management practices.
    - Conduct monitoring of impacts on sensitive ecological and cultural areas. If problems are detected, pursue more detailed monitoring or investigation into causes, severity and potential actions to mitigate impacts.
    - Continue to consider whether and how recreation usage rules may need to be modified (e.g., seasonally) to reduce impacts on wildlife and natural resources.
    - Engage recreational groups (VAST, Trails Committee, Richmond Mountain Trails, hunters) on a regular basis to obtain feedback about user group coordination and conflicts..

- **Explore and Document** future opportunities:
    - In partnership with the Selectboard, the Town Highway Department, and the Richmond Land Trust, explore potential options for creating a walking/biking connection from the ACF to Richmond Village.
    - Explore expansion of groomed winter trails for public cross-country skiing and fat biking in appropriate sections of the ACF.
    - In the event of future expansion to the Trail Design, consider the appropriateness of phasing future trail development to ensure the trail system provides desired recreation and educational experiences while providing appropriate protection for wildlife and habitat.
    - Route future trails away from sensitive natural areas, property boundaries and cultural resources whenever possible, yet providing for educational opportunities.
    - Explore opportunities to host trail-based events and races on forest trails if ecological monitoring activities indicate an ability to do so without negative impacts to forest ecosystems and trail infrastructure. 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.

11. Agriculture

Maple Wind Farm, the current farm leasee, is a diversified pasture-based livestock, poultry, and organic vegetable 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 Andrews 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 in use for grazing. When the pasture is in use, the "cutover trail" will be closed.

There may be opportunities in 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 ACF 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.

11.1 Potential Agriculture Partnerships

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

11.2 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.
- Develop agreements with Maple Wind Farm to allow coexistence of agriculture and public access.

11.3 Management Actions

- Work with Maple Wind Farm to develop a lower meadow use agreement and co-manage the rights-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 within the forest.
- Explore opportunities for a community garden in the pastures within the Community Forest.

12. 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.

The Town has expanded the lower parking area enough to provide a school-bus turnaround. In addition, parking may be allowed on the landing area to accommodate larger educational groups and people of all abilities with prior permission. Instructors interested in using the Community Forest for educational purposes should contact the ACF 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

12.1 Potential Education 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 Field Naturalist Program
- University of Vermont Rubenstein School and Environmental Studies Program
- Vermont Youth Conservation Corps
- Green Mountain Audubon Center
- Boy and Girl Scout Troops
- Maple Wind Farm
- Nature Conservancy
- Essex Technical School
- Richmond Recreation Committee
- Radiate Art
- Richmond Racial Equity
- Abenaki Nation of Missisquoi
- The Nulhegan Band of the Coosuk Abenaki Nation
- 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

12.2 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.

12.3 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.

13. Legal Agreements on the Property

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

13.1 Agricultural Lease

Maple Wind Farm is the adjoining land owner and that 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 routes on the property.

13.2 Powerline Rights-of-Way- 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 ACF Committee should coordinate with VELCO to prepare for such events and fully inform the public of the closure.

13.3 Powerline Rights-of-Way 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. The Committee will work to better understand the vegetation management goals and practices, the landowner's (Town's) rights, to advise the Selectboard to make an informed decision about vegetation management within the Powerline corridor, and to communicate this decision broadly to Community Forest visitors.

13.4 Management Objectives

- Develop agreements that allow partners to work within the forest while limiting the impact (both ecological and human impact) of such work.

13.5 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.

Maps

A. Trail Concept Map 2018 - zones
B. Trail Concept Map 2018- possible trails
C. Arrowwood and Sinuosity proposed map 2021
D. Conservation Easement
E. Interim Management Plan (applicable through 12/31/18)

Appendix (live link)

A. Chart: Evolution of Allowed/Prohibited Uses Through Planning Phases
B. Steering Committee Bylaws
C. Conservation Easement

D. Indigenous Land Acknowledgment and Land Use
E. Baseline Documentation Report
F. 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)
G. Results and Comments from Public Meetings
H. Interim Management Plan (March 2018-December 2018)

References

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