PROTECTING HOPKINS MEMORIAL FOREST:
An Evaluation of Conservation Alternatives

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Acknowledgements:

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Abstract:

This report was drafted under the guidance of Henry Art, throughout his semester-long Environmental Planning class. Clients for the project included both Hopkins Memorial Forest Manager, Drew Jones, and Williams College Chair of the Biology Department, Manuel Morales. The goals of the project, in brief, were to research and evaluate a range of mechanisms designed to protect Hopkins Memorial Forest (HMF). In order to achieve these goals, multiple methods were utilized. Though interviews were by far most central to the project, archival research, GIS mapping, survey techniques and an evaluation matrix were also employed. We identified and evaluated four alternatives regarding the future management of HMF: status quo, internal agreement, deed restriction, and conservation easement. Our outreach and evaluation method indicated that a conservation easement would align best with the stated values of our stakeholders. In light of this, we propose specific actions that the College could take towards implementing a conservation easement in HMF.

I. Introduction and Background

Description of HMF:

The Amos Lawrence Hopkins Memorial Forest (HMF) is a 2,600-acre multi-use forest belonging to Williams College and centered on a portion of the Taconic Crest. It is primarily located in the northwestern corner of the township of Williamstown, Massachusetts, but also extends into eastern New York and southwestern Vermont.¹ It is comprised of over 25 separate land parcels: two in Vermont, three in New York, and the remainder located in Massachusetts.²

The composition of the forest soil is determined by the largely phyllite bedrock characteristic of the Taconic Mountain Range, but sections of the forest also cover the marble bedrock of the Green Mountains. Most of the forest is Northern Hardwood, although there exists significant diversity, as the land extends from the base of the Hoosic River Valley to the Taconic Crest. The Beinecke Stand is a notable section of the forest that contains old-growth sugar maple-beech trees. The forest is split by several major mountain stream drainages. The climate is humid continental, with cold winters and hot, humid summers.\(^3\)

Beyond this broad characterization of HMF, the land does vary across the three states it straddles. The Massachusetts portion is primarily used for research, education, and recreation purposes, and a permanent plot research grid extends across both Massachusetts and New York. The New York parcels house a weather station and 50-meter-tall wind monitoring tower, an ideal placement with a relatively high elevation of approximately 2000-2400 feet.\(^4\) The portion of HMF situated in southern Vermont is especially rugged and remote, making permanent research relatively unfeasible there due to limited accessibility.\(^5\) This land, instead, is managed under the Vermont Use Value Appraisal program.\(^6\) Under the state-approved management plan, timber stand improvement projects have been undertaken, including thinings and clearings but no commercial harvesting.\(^7\) Sections of open lands can be found in the Massachusetts portion of the forest, while the Vermont and New York sections are almost completely forested and typically steeper and higher in elevation.\(^8\)

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\(^3\)“Hopkins Memorial Forest: HMF Landscape,” Williams College. [https://hmf.williams.edu/hmf-landscape/](https://hmf.williams.edu/hmf-landscape/)

\(^4\) Andrew Jones, email sent to authors, November 7, 2019.

\(^5\) Ibid.


\(^7\) Andrew Jones, email sent to authors, November 7, 2019.

\(^8\) Ibid.
Between its Massachusetts and New York territory, HMF is home to many research projects, both short-term and long-term. One extremely unique element of HMF is its permanent plot system. The first set of these quarter-acre vegetation study sites was established in the mid 1930s by the US Forest Service. Currently there are over 400 plots, spanning over 70 years of ecological history (See Supplemental Materials 2). In aggregate, these plots compose one of the longest such projects in the nation, making it hard to overestimate the value of such a long-term ecological study. The forest also houses four permanent weather monitoring stations, which have generated over 30 years of meteorological data, and four concrete dams splicing Birch Brook, which have been used to measure stream discharge and sediment levels. In total, there are five stream gauging stations with weirs between Birch Brook and Ford Glen Brook amounting to a significant insight into the watershed of HMF and beyond.\(^9\) With these long-term research sites, HMF has already contributed significantly to ecological, hydrological, geological, and meteorological findings, and the data will only increase in value as the studies continue into the future. In an age marked by anthropogenic climate change, research of this variety is becoming more critical as we grapple to understand natural processes and how they are impacted by human activity.

History of HMF:

Much of the land that is now Hopkins Memorial Forest was once dedicated to agriculture, with multiple landowners farming on plots across the site. Amos Lawrence Hopkins consolidated various small subsistence farms between 1887 and 1910, creating the larger Buxton Farms.\(^{10}\) Although “farming reached its peak in the region around 1830,” Buxton Farms remained active

\(^9\) “Hopkins Memorial Forest: Research Facilities,” Williams College, [https://hmf.williams.edu/research-facilities/](https://hmf.williams.edu/research-facilities/).

\(^{10}\) “Hopkins Memorial Forest,” Williams College, [https://hmf.williams.edu/](https://hmf.williams.edu/).
until 1924.11 The Moon family, headed by Alfred C. Moon, also marked an exception to this trend, farming a plot of land in the center of the Buxton Farms conglomerate.12 This centrally located tract changed hands a few times, purchased by Lowell G. Primmer in 1924 and Prentice Bloedel in 1970.13 Ultimately, Williams College acquired both the Moon Lot and Buxton Farms. Although Amos Hopkins died in 1912, his widow maintained the land until 1934, when she decided to donate the property to Williams College in memory of her late husband.14 She wrote in a letter to the president at the time: “As a memorial to him, a graduate of the College, I want to give to Williams College our place, ‘Buxton Farms.’”15 Williams’ administration conducted negotiations with Bloedel in order to purchase the Moon Lot in 1971.16

This amassed land did not remain under Williams College ownership for long. Named “The Amos Lawrence Hopkins Experimental Forest,” the vast property was sold to the US Forest Service for a token amount of $1 in 1935.17 As a post-agricultural landscape, it served as an ideal site for the study of “reforestation of abandoned farm land, forest genetics, and forest management.”18 The USFS built weirs and established a permanent grid system in order to facilitate data collection for long-term ecological research.19 In other words, they “gridded the landscape” into 5-acre cells (See S 2.) and established 0.25 acre permanent plots in the corner of each cell.20

14 Ibid.
16 Ibid.
17 Ibid.
18 Ibid.
19 Ibid.
This infrastructure allowed the Forest Service to perform comprehensive research, cataloging tree species with the intent to measure the rates of vegetation growth of various land types including meadow, field, and woodlot.\textsuperscript{21} Furthermore, during this time aerial photographs were commissioned, and vegetation maps made.\textsuperscript{22}

The USFS eventually decided to consolidate many of their small-scale New England research sites in a central location in New Hampshire, abandoning the Lawrence Hopkins Experimental Forest in 1968.\textsuperscript{23} The land then reverted to Williams College ownership, leaving the Williams College administration to decide its fate. The “Farms to Forest” guide writes about the prospects of the land in the eyes of the College: “Initially, the future of Hopkins Forest as a Williams College resource was uncertain due to pressure to divide and sell a substantial portion of the property.”\textsuperscript{24} Though the administration decided in 1971 to classify the site as a field station, instead of liquidating the property, they also reserved a portion of the land for development.\textsuperscript{25}

The Forest Road Development was envisioned in 1968 as two 25-acre tracts of land on which could stand faculty housing, or houses to be leased to alumni for profit.\textsuperscript{26} There would be two parts to the development, one 15 lot subdivision at the head of Bulkley Street, with a mirror image of 15 lots on Northwest Hill Road.\textsuperscript{27} In 1970, the Northwest Hill subdivision was built, though its mirror image on Bulkley Street was never realized.\textsuperscript{28}

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\footnotesize
\textsuperscript{21} Ibid.  \\
\textsuperscript{22} Art, Henry, “The Amos Lawrence Hopkins Memorial Forest: An Eclectic History of its First Century (1887-1987),” September 19, 2995.  \\
\textsuperscript{23} Ibid.  \\
\textsuperscript{24} Dawn Biehler et. al, Farms to Forest: A Naturalist’s Guide to the Ecology and Human History of Hopkins Memorial Forest (Williamstown, MA: Center for Environmental Studies, 1995).  \\
\textsuperscript{25} Ibid.  \\
\textsuperscript{26} Art, Henry, “The Amos Lawrence Hopkins Memorial Forest: An Eclectic History of its First Century (1887-1987),” September 19, 2995.  \\
\textsuperscript{27} Ibid.  \\
\textsuperscript{28} Ibid.
\end{flushright}
Although symbolically the College-owned lands in HMF were incorporated into the new Center for Environmental Studies program in 1971, housing development projects were still on the table.\textsuperscript{29} Noticing a dearth in affordable faculty housing, the College’s president at the time, Francis Oakley, hired independent consultants to brainstorm solutions to the perceived housing crisis. Though the group initially hoped to develop 15 more lots in HMF, Oakley’s failure to involve members of the College in these major plans resulted in substantial backlash.\textsuperscript{30} Students and faculty protested the proposed intrusion on the forest and condemned Oakley’s lack of transparency about the development. CES member Henry Art lamented, “These plans were not shared with the Williamstown or Williams College communities beyond the walls of Hopkins Hall.”\textsuperscript{31} A student shared similar sentiments, writing in a Record article, “What is strange about the Forest, however, is the lack of information about the whole development plan and the rapidity with which the plan is expected to be carried out.”\textsuperscript{32} This uproar led Oakley, in 1987, to forgo his plans to site a faculty housing subdivision in HMF. In the interim, though, independent of this ploy, one lot had been developed without the College’s permission, and one lot sold under its authority (both located on Northwest Hill Road).\textsuperscript{33} Additionally, the Mason lot, was swapped for land known as the Beauty Parlor lot closer to campus, constituting further infringement on Hopkins Forest land.\textsuperscript{34} On the whole, Professor Art describes the history of Hopkins

\textsuperscript{32} Finch, Chris, “Housing in Hopkins deserves a debate by this community,” The Williams Record, March 3, 1987, 3.
\textsuperscript{34} Ibid.
Memorial Forest as one that is peppered with “episodic intrusions.” The forest has, in his words, a “development history with periodic challenges to its long-term integrity.”

Immediately after this campus-wide hullabaloo, the Hopkins Forest Users Committee drafted an official “Hopkins Memorial Forest Internal Use Zoning Policy.” The Internal Use Zoning Policy, initially drafted in 1987 and finalized ten years later, became the College’s first official documentation of its intended treatment of HMF. The twenty-page document pens a mission statement, details the holdings within the forest, and divides the forest into ten zones: a “Preservation Zone,” “Manipulation Management Zone,” “Destructive sampling Research and Education Zone,” “Public Education Zone,” “Recreation Zone,” “Caretaker Residence Zone,” “Northwest Hill Road Zone,” “Timber Management Zone,” “Other Zone,” and “Zones With Town of Williamstown & Massachusetts Interests.” Zoning ultimately allowed for the bulk of the landscape to be dedicated to non-destructive research and preservation. Zones were originally defined with special consideration of their historical usage, ecological value, and compatibility with research, development, and forestry, and are meant to be treated differentially on this basis.

At its conclusion, the Internal Use Zoning Policy entrusts duties to various bodies: the Vice President and Provost are made responsible for oversight of HMF, meant to consult with the CES director, HMF Manager, and HMF Committee. The HMF Committee, in turn, is to be composed of 8-12 faculty, staff, and students plus a member of the Williamstown community, and is expected to convene monthly to advise the HMF Manager on day-to-day operations in the

35 Henry Art, email sent to authors, December 5, 2019.
36 Ibid.
39 Ibid.
While both the Internal Use Zoning Policy and its stipulated HMF Committee remain in place today, their relevance and bearing on forest use may not play quite as significant of a role as their founders envisioned. The committee no longer meets on a monthly basis, and there exists some unawareness as to the import of (and perhaps even the existence of) the Internal Use Zoning Policy among administrators and faculty members.

Currently, prevailing uses for HMF, as per its webpage, are “to facilitate and research and undergraduate teaching activities while preserving and monitoring forest resources, particularly through long-term ecological research.” With research at the forefront of the forest’s mission, the permanent plot monitoring was rebooted after the College’s reacquisition of the property, and a 20-year census plan was implemented. A census would thus occur in the mid-1930s, the early 1970s, mid-1990s, and early 2010s, allowing for the consistent production ecological data, and for conclusions to be drawn about post-agricultural change and climate-induced change within New England landscapes. As of 1995, 34 theses written by Williams College students had made use of Hopkins Memorial Forest as their research site. There are also seven active and ongoing research projects in HMF now (2019), which include a genetics study and continual plot monitoring, and span geological, botanical and ecological topics. Outside of Williams faculty and Williams-centric projects, Swiss graduate students also use the forest for research and yearly owl banding initiatives contribute to a national database of Saw-Whet migration.

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40 Ibid.
42 Ibid.
46 Ibid.
Current State of ‘Protection:’

The Internal Land Use Zoning Policy currently serves as the only guideline governing Williams’ usage of HMF. As the name suggests, the policy is strictly internal, so it contains no legal mechanisms to ensure compliance. Legal restrictions concerning the development of HMF can be found in town zoning laws and state-wide wetland and wildlife protection mandates.

Since the forest extends across three states, its use is guided by laws in three jurisdictions.

In Massachusetts, where the bulk of the forest sits, Williamstown Chapter 70 Zoning Bylaws have purview over HMF. The land has been categorized into Rural Residence 1 and Rural Residence 2, with the latter area also overlain by an Upland Conservation District. In both of the Rural Residence zones, the development of family dwellings is permitted. Business and industrial uses are off-limits, though uses deemed “institutional” are quite broadly permissible. The Upland Conservation District is treated similarly to Rural Residence 1 in terms of its restrictions, with the caveat that single-family dwellings are forbidden outright, and all development plans must be submitted for review, pending approval by the Development Plan Review Authority (DPRA). The purpose of this conservation designation, stated by Williamstown Zoning Bylaws, is multifaceted: the conserved land aims to protect public safety against floods, prevent erosion, protect wildlife habitat, and reserve a space for community recreational and education purposes. In Vermont, HMF falls within Pownal township. Per the Pownal Zoning Bylaw, HMF lands are part of the “Forest District.” The majority of development in the Forest District is prohibited, aside from various forestry-related usages such as commercial

48 Ibid.
49 Ibid.
forestry, research and education, hiking and hunting. Finally, Petersburgh laws apply to the strip
of HMF in New York. While this township officially has no zoning, the Petersburgh Planning
Board must approve all development plans, which require an extensive application process and
fee.

Beyond local town laws, state regulations also dictate legally permissible development.
In Massachusetts, wetlands are protected under Chapter 131 Section 40, which outlines the
Wetlands Protection Act.50, 51 HMF contains four vernal pools (marked by the Natural Heritage &
Endangered Species Program) as well as the Birch Brook Watershed, both of which qualify for
protection under this act.52 Compliance with this act is enforced by the Williamstown
Conservation Commission. Finally, the Massachusetts Endangered Species Act regulates
development within the forest. A strip of land along the eastern edge of the forest—between
Northwest Hill Road and the Hoosic River—has been designated a “Priority Habitat,” mapped
by the Natural Heritage & Endangered Species Program (NHESP).53, 54 Since this area
hosts rare and endangered species, any proposed alteration to the species’ habitat requires a
permit.

51 “General Laws Part I Title XIX Chapter 131 Section 40,” The 191st General Court of the
Commonwealth of Massachusetts, accessed December 16, 2019,
https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXIX/Chapter131/Section40.
52 MacCallum, Wayne, “Natural Heritage & Endangered Species Program’s Guidelines for the Certification of
Vernal Pool Habitat,” Division of Fisheries and Wildlife, March 2009,
53 “321 CMR 10.00: Massachusetts Endangered Species Act,” Division of Fisheries and Wildlife, March 2017,
54 “MassGIS Data: NHESP Estimated Habitats of Rare Wildlife,” MassGIS (Bureau of Geographic Information)
Department of Fish & Game, August 2017,
Figure 1. This map demonstrates the zoning laws of the three townships within which HMF lies. While in Petersburgh, NY, there is no zoning, the portion of HMF located in Pownal, VT is designated “Forest,” allowing only forestry-related uses. In Williamstown, MA, zoning bylaws limit certain development in Rural Residence 1 and 2, but conserve upper areas of the forest by deeming them “Upland Conservation.” As a result of this tri-state zoning, the land most vulnerable to development is located in New York and in the eastern part of the Massachusetts plots. Areas with frontage on NW Hill Road are particularly at risk of being developed.
Peer Institutions as Case Studies:

*Harvard:*

The Harvard Forest, a bit larger in size but similar in purpose to Hopkins Memorial Forest, is the renowned university’s 4,000-acre forest intended for ecological research and education and recreation. While the Harvard Forest consisted of only 2,000 acres in 1907, in the past 20 years, significant land acquisitions have occurred. In conjunction with three different land trusts, the university has worked to protect land around the forest from broader development, with the aim of creating a buffer around their research sites. Harvard negotiated with abutting landowners to purchase land and expand their research forest. In tandem with land trusts, Harvard was able to put lands of cooperating abutters under conservation, and then buy these small parcels of land at a reduced rate. State agencies have also enlisted Harvard to help place conservation easements on tracts of land, even subsidizing an endowment to fund this an 800-acre land acquisition. In 30 years, Harvard has been able to conserve 40-50% of its forest. They have strategically excluded lands from their easement, creating what the Director of Harvard Forest David Foster calls pragmatic “focused areas,” parts of the forest that remain developable.55 Even the areas of the forest placed under conservation easements retain a certain level of flexibility. For instance, while electrical lines, roadways, and gravel pits may not be

constructed per the terms of the easement, the University has ensured the necessary leeway to perform “intensive and sophisticated research.” Says Foster of the ways that the easement is able to accommodate intrusive research, “We build towers… we do big experiments where we simulate a hurricane… we add nitrogen to see how acid rain will affect the forest…we have heating cables in the soil.”56

55 Interview with David Foster, November 5, 2019.
56 Ibid.
57 Ibid.
The language of their easement agreement allows for temporary projects, often spanning 10-30 years, that incorporate significant manipulation of the land, though research proposals must be approved by a committee. This committee works to ensure that all projects abide by the easement contract, meeting all necessary guidelines, and fit into the landscape without disturbing other research sites. David Foster highlights flexibility retained under conservation easements when he says, “Easements are fabulous documents because they can be written to fit exactly the situation.”

Middlebury:

Middlebury treats their conserved lands differently than Williams and Harvard, with their conserved Bread Loaf Mountain functioning more as a site for skiing and writing workshops rather than ecological or forestry-related research. Although the College never explicitly intended to sell the land, without any official form of protection president Ronald Liebowitz “feared that financial hardship experienced under a different administration might one day lead to a sale of some of the land surrounding the campus.”

Indicative of this fear, Middlebury’s trustees rejected the first conservation easement proposal because they “wanted to retain the ability to monetize the Bread Loaf lands in case Middlebury one day needed additional financial resources.” In 2008, though, Middlebury’s endowment dropped $315 million, and pressure to monetize the lands heightened. This pushed Middlebury, under the leadership of Ronald Liebowitz, to develop a conservation plan that would allow the Bread Loaf Campus to stay afloat

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58 Ibid.
59 Ibid.
60 Interview with Mike Schoenfeld, November 22, 2019.
despite the economic struggles. An alumnus with a particularly strong fondness for Bread Loaf Mountain agreed to donate a hefty endowment, which the trustees then matched. The process of conserving 2,100 acres of Bread Loaf lands was rather lengthy, and Middlebury’s easement documentation was developed conscientiously, over the span of a decade.

Like the Harvard case, Middlebury’s easement is able to meet the College’s needs thanks to the thoughtful use of terms outlined by their conservation agreement. They began by inventorying the land, enlisting students to assist with ecological and historical assessment of the natural landscape. The resulting knowledge of the landscape—produced by Middlebury’s own students and faculty—inform the terms of their conservation easement, allowing them to develop a zoning scheme. A key figure in the conservation process, Marc Lapin spearheaded the initial ecological inventory and now monitors the conserved Bread Loaf campus. He surmises that their easement might be “the most complicated in existence,” and its creation involved the Nature Conservancy, the Vermont Land Trust, and a number of other lawyers and consultants.

The document breaks down the land into four zones of protection, all with varying “strictness.” The easement, importantly, exists alongside a management plan, and while the easement is in perpetuity, the management plan is renegotiated every 10-20 years. In this way, the College affords itself—and the land trust—flexibility in approving new projects. Says Lapin, “You want

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63 Interview with Marc Lapin, November 21, 2019.
64 Ibid.
65 Ibid.
66 Ibid.
to leave a lot of flexibility rather than have the hubris to say we knew what people in 100 years will want.”

II. Values of HMF

Throughout its storied history, HMF has had many uses, and nowadays, people value its presence for many different reasons. Understanding the various values of HMF is vital to figuring out the best way to protect it. Accordingly, using the knowledge gathered in our interviews and readings, we have outlined the ecological, research, educational, recreational, moral, and economic values embedded in the forest.

1. Ecological

The ecological value of HMF has been thoroughly researched and documented, both in state-wide databases and College-based research projects. BioMap2 is a comprehensive state-wide assessment of rare species, natural community, and spatial data in Massachusetts that was prepared by the Massachusetts Department of Fish and Game in collaboration with the Nature Conservancy in 2010. This assessment determined that HMF contained “species of conservation concern areas,” which are habitats that contain species either listed under the Massachusetts Endangered Species Act or identified in the State Wildlife Action Plan (Figure 1).

These areas and surrounding habitats are designated by BioMap 2 as “Core Habitat” to indicate their importance in promoting the long-term persistence of endangered and keystone species. Williamstown, as a whole, contains 14,542 acres of Core Habitat area, only 44% of which is

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67 Ibid.
under any sort of conservation restriction (See S.3). It is also home to many species of conservation concern: 1 mammal, 1 bird, 1 reptile, 2 amphibians, and 23 plant species. Among these priority species is the Jefferson’s salamander (*Ambystoma jeffersonianum*), a rare and genetically unusual species that was first encountered in HMF in 2006. This discovery prompted the protection of a 57 acre tract of land containing the salamander habitat, purchased to be added to the Hopkins Memorial Forest, and placed under a conservation restriction by local landowners. There are currently no legal development restrictions on the

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remaining 9-acre section of salamander habitat under the purview of HMF.

The Conservation Assessment and Prioritization System (CAPS) was developed by the University of Massachusetts Amherst to provide a statewide assessment of “ecological integrity,” or areas with the highest potential to sustain biodiversity and support ecosystem processes in the long-term.71 This system divides land into percentiles of ecological importance based on a variety of metrics, including proximity to roads, endangered species habitat, hydrology, and connectivity. HMF also receives high marks under this framework, with nearly all of the Massachusetts land falling into the top 50%, and a large amount qualifying in the top 10% for ecological integrity (Figure 2)72.

Figure 2: CAPS IEI map of Williamstown illustrating the high ecological value in the area of HMF (northwestern corner) in Massachusetts.73

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72 “Habitat Mapping and Conservation Prioritization,” Annie Hayder, Adie Mitchell, and Andrew Nemeth, Williamstown, MA, Fall 2014.
Additionally, in a report for the Town of Williamstown, members of the 2014 Environmental Planning Workshop determined, based on extensive GIS habitat mapping, that HMF is the top priority land holding for conservation in Williamstown. The authors of the report reference the high-elevation ridgetop land on Taconic Crest, the BioMap2 Core Habitat areas, CAPS areas of “ecological integrity,” wetland areas, and recreational benefits as reasons to pursue conservation in HMF. We see our report as an extension of their work and a feasibility study into the process of placing conservation restrictions on HMF.

{For further regional conservation corridor significance of HMF land preservation see Supplemental Materials S. 4 and https://www.mass.gov/files/documents/2016/12/xk western-mass-fla.pdf .}

2 Research

The stated mission of HMF is to “facilitate research and undergraduate teaching activities while preserving and monitoring forest resources, particularly through long-term ecological research,” which demonstrates the unique and long-standing commitment to research in HMF and speaks to its value as a research forest. Throughout our outreach process, it was clear that the value of past, present, and future academic research in HMF is difficult to overstate.

Research activities in HMF have been occurring continuously for 50 years, and span across many academic disciplines, including biology, chemistry, environmental science, and geoscience. An Internal Use Policy draft from 1997 indicates that the philosophy of HMF is “integrated, interdisciplinary endeavors that link biologic and geologic processes with an
understanding of how human activities, both past and present, shape the HMF landscape.”

In addition to the land itself, the research resources offered by the forest include an office, two labs, computer workstations, a 70-foot canopy walk, and books, field guides, and research equipment available for checkout at the Rosenburg Center.

The permanent plots, known by some as the “crown jewels” of HMF, are immensely valuable sources of detailed, long-term ecological data and among the highest priority for preservation. The 424 permanent plots are laid out in a grid formation throughout the forest, and were originally established by the US Forest Service in the 1930s. With more than 70 years of data, it is possible to observe long-term ecological trends that provide invaluable insight into local climate conditions and variability. The CES Internal Use Policy zoning scheme from 1997 gestured toward the importance of preserving the permanent plots, stating that “any destructive sampling outside the permanent plots must be approved in writing by the HMF Manager after consultation with the HMF Committee and a record kept on file at the CES.” However, this document was strictly internal and is not legally binding or enforced.

Another existing source of valuable long-term data are the stream gauges and weather monitoring stations, currently managed by Jay Racela, a lab supervisor and CES lecturer. Jay described the importance of this database, citing a recent paper by Dethier et al. (2018) that uses 30-year hydrogeochemical data from the stream gauges to report on acid deposition in Birch Brook and the adjacent Ford Glen. In addition to scientific publications, the weather and water

76 “DRAFT: Hopkins Memorial Forest Internal Use Zoning Policy,” Center for Environmental Studies, Williams College, 1997, pg. 4
78 “HMF Internal Use Zoning Policy,” 1997, pg. 1
79 “HMF Internal Use Zoning Policy,” 1997, pg. 5
database has been used for student research and long-term class projects, such as climate modeling and environmental sampling in Introduction to Environmental Studies. The weather stations are all low-impact and do not impose on the permanent plots or inhibit other uses of the forest. Ensuring the protection and continuation of these long-term research programs is an ecological imperative in a changing climate, and can be seen as part of the College’s responsibility to both the immediate and the broader community.

The research potential of HMF aids with faculty recruitment in Biology, Geosciences, and Environmental Studies. Our interviews with members of the HMF users committee indicated that the opportunity to conduct long-term and/or manipulative research in the forest was influential in their decision to work at Williams, and has been instrumental in encouraging young, highly qualified faculty to teach and do research here. Additionally, research projects that occur on land under permanent conservation are more attractive from a funding perspective, as there is no risk of development activities impeding research. The National Science Foundation’s National Ecological Observatory Network (NEON) and Long-Term Ecological Research (LTER) programs only place research sites on lands that are under permanent conservation: Harvard Forest, for example, has a relocatable NEON site that is not only permissible within the terms of their conservation easement, but only possible because of it. It has been suggested that faculty candidates would be attracted to working at Williams given a permanent guarantee that their research will be able to be sustained in the long run.

3 Educational
Education goes hand-in-hand with research as a central asset of HMF to the Williams community and mission. Students frequently visit the forest for both lab classes in the natural sciences and humanities classes such as Nature Writing and some religion classes. The extensive database of weather and hydrological data is often analyzed for student projects in Statistics, Biology, or Geosciences. Additionally, Williams College students can work as Caretakers or Educators in the forest, and can conduct their own research or assist professor with ongoing research projects.

To gauge student involvement with HMF and interest in conservation, we surveyed a randomly generated group of 200 undergraduate students. Out of the 44 respondents, we found that 68% had been to HMF at least once; of those who had been, the most common uses were education and recreation (20 respondents each). This result indicates that education in HMF is not just a College priority, but a legitimate use of the forest that many students have taken advantage of.

One of the main takeaways from the Middlebury conservation case study was the opportunity to use the conservation process as an educational opportunity for students. We spoke with Marc Lapin, a faculty member in the Environmental Studies department at Middlebury, about how he was able to involve students in the ecological inventory process that informed the zoning policy of their conservation easement. For the 6,000 acres of Middlebury’s Breadloaf Campus, he had 10 students working with him over 3 field seasons working on GIS mapping, landscape analysis, and species surveys. Based on this inventory, they created zones of varying degrees of protection for the purposes of their easement: Ecological Protection, containing state-significant natural communities; and Surface Water Protection Zones, containing both
wetlands and buffer areas. Lapin also indicated that the conservation process itself can a valuable interdisciplinary educational opportunity; after spending a semester researching conservation easements from multiple standpoints, we can also attest to this.

4 Recreational

Hopkins Forest today serves a role as a site of extensive recreation and community education. The Williams Outing Club (WOC) offers a great deal of co-curricular programming in HMF, including hiking, snowshoeing, and cross-country skiing classes, overnight camping trips in the WOC cabin and lean-to, and first-year orientation backpacking trips. Additionally, the 70-foot canopy walkway, though no longer used for research, has been repurposed as a recreational and educational resource. It has been used in Environmental Studies classes about conservation and biodiversity, as well as for community festivals. Scott Lewis, WOC Director, spoke about the opportunity for mindfulness exercises in HMF; he personally attested to the value of “forest bathing” for allowing students to take a break from their busy schedules and live peacefully in the moment. Our survey revealed that access to quiet, peaceful, walking paths is one of the most valued assets of HMF from a student perspective (Appendix B).

The HMF trail systems connect Williamstown to the Taconic Crest Trail, and facilitate the enjoyment of many who may otherwise not be able to access this natural landscape. The Berkshire National Resources Council (BNRC) is currently undertaking a project, “The High Road,” to increase pedestrian accessibility and connectivity throughout the Berkshire region. The benefits of increasing continuity between conservation lands are ecological (habitat

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81 “The High Road,” Berkshire Natural Resource Council, last modified 2016, [https://www.bnrc.org/the-high-road/](https://www.bnrc.org/the-high-road/)
conservation), recreational (pedestrian access), and economic (boosting local businesses).

Mackenzie Greer, Director of Public Programs at BNRC, emphasized the importance of HMF in the context of regional conservation; as one of the largest non-conserved land holdings in the Northern Berkshire area, HMF is a priority on the regional conservation radar.

5 Moral

In addition to the practical, tangible reasons to pursue conservation for HMF, it is also important to consider the moral imperative to permanently commit HMF to research and education in the face of the impending climate crisis. As the College undergoes its year-long, campus-wide Strategic Planning initiative, it appears to be an opportune moment to make a statement about our institutional priorities regarding climate change and sustainability. The “Sustainability” working group has thus far identified 12 core dimensions of sustainability at Williams that will be important to center in forthcoming administrative actions. It is evident that HMF conservation aligns with many of these dimensions, most notably “teaching and research,” “buildings and landscaping,” “emissions,” and “College and community.” Forested areas like HMF have become increasingly important in the global fight to mitigate the effects of climate change, as changing temperatures and weathers prompt migrating species to rely on natural wildlife corridors and as forests become increasingly central to the global narrative based on their status as carbon sinks. While the carbon sequestration and ecological services provided by HMF may likely continue into the future with or without current action, several of our interviewees emphasized the symbolic significance of a public and lasting declaration of the
College’s commitment to the importance of conservation in this era of climate catastrophe. If Williams were to put HMF under a permanent conservation easement it would be positioning itself as a leading institutional advocate for taking immediate and decisive action on behalf of environmental stewardship in addition to publicly affirming its commitment to supporting research that may have far-reaching environmental implications.

6 Economic

One of the main administrative concerns regarding the perpetual conservation of HMF is the fiduciary responsibility of a non-profit institution like Williams to maximize the value of its assets for the long-term good of its beneficiaries. This fiduciary responsibility means that Williams would not simply be able to donate the development rights to a third-party organization; the value of the rights would need to be accounted for, either by way of alumni donations or state grants. From an administrative perspective, there is a degree of discomfort associated with directing alumni funds, which could otherwise be spent on other College goals, toward protecting against what may seem to be a low-probability threat.

While we recognize the economic hesitation to devote large sums of money to a binding, permanent policy, we wish to reframe “fiduciary responsibility” to reflect the imperative to invest in the educational and research value of HMF and the potential to unlock the dormant value of development rights that likely would not otherwise be realized in the near future. It is reasonable to suggest that there are a number of young, environmentally-minded, Williams alumni who would be inclined to donate toward HMF over other causes; it is even possible that

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82 Interview with David Dethier. October 29, 2019
HMF conservation could attract donors who would otherwise not give to the College. If that is the case, then the risk of diverting resources away from other College goals and initiatives is minimized.

The cost of placing HMF under conservation, which we have *roughly* estimated at 2.8 million, appears less daunting when we consider how much the College has spent on building and renovating other laboratory facilities that have comparable educational and research value. The College “Building Report” from March 2018 indicates that the combined South/North Science Center project cost a total of $204 million. This demonstrates the willingness of the College to invest in top-tier laboratory facilities, offices, and study spaces to further the goals of education and research. Placing HMF under conservation would be a comparatively low-cost, high-reward investment in an outdoor, experiential, interdisciplinary counterpart to the Science Center.

III. Description of Alternatives:

In order to evaluate the best path forward for the College concerning HMF, we developed four concrete alternative measures the College could pursue. In this section, we describe in general terms what they are and how they might function. In the following section, Evaluation of Alternatives, we will expand on their potential efficacy when it comes to meeting the goals and needs of HMF and its users.

1. Conservation Easement/Restriction

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83 This estimate is based on the example of the Cowee Forest lands, a 23,000 acre parcel in MA/NY/VT that was recently placed under conservation for about $25 million. In addition to the cost of the development rights, there would also be lesser costs (~$10,000) associated with various bureaucratic procedures, such as ecological surveys, site assessments, and annual monitoring.

Every property has a “bundle” of rights associated with it. These include the rights of access, the right to sell the property, mineral rights, and the right to develop on the land. A conservation easement (known as a “conservation restriction” in Massachusetts) is a voluntary transaction between a landowner and a second party in which the landowner sells or donates the development rights of their land for perpetuity to the second party, who ensures that the land is conserved according to the terms of the contract.\(^{85}\) The land is conserved for the good of the public either as farmland or in a natural state; however, it remains on the tax rolls as private land and the landowner retains every other right to their property.\(^{86}\) If the landowner were to sell the land, its value would not include the development value as the restriction would remain attached to the land regardless of ownership.\(^{87}\) Often public access is a stipulation of a conservation easement.\(^{88}\) Entering into a conservation easement may be appealing for a landowner for several reasons: many have altruistic intentions, but they also may be seeking money for their unused development rights, thus “unlocking value” on their land, or they may be looking to get a tax credit for the easement.\(^{89}\) This second party is often a non-profit land trust, whose purpose is to hold the development rights to various properties within their jurisdiction and to monitor and enforce the development restrictions. There are local land trusts that operate at the township level, such as the Williamstown Rural Lands Foundation, and there are larger land trusts that work at a regional or state level such as the Berkshire National Resources Council and the

\(^{85}\) Interview with David McGowan, October 25, 2019.


\(^{87}\) Interview with David McGowan, October 25, 2019.

\(^{88}\) Ibid.

Vermont Land Trust. The second party might also be the State or municipal conservation boards or commissions.\textsuperscript{90}

Conservation easements are originally drafted by the State in which they are located and their final form must be approved by a state body. Each state has its own process for conservation easements. In Massachusetts, the Executive Office of Energy and Environmental Affairs provides an initial template and is responsible for approving any proposal.\textsuperscript{91} The approval process is outlined in the Massachusetts Conservation Restriction Handbook provided by the EOEEA. To acquire approval, the proposed conservation restriction must meet minimum conservation standards, achieve a clarity and balance of values informing future potential uses, and fulfill a “public interest.” \textsuperscript{92} Given our interviews with members of the College and regional community, we believe the conservation of HMF provides a clear and urgent public interest that would engender support from the EOEEA. The EOEEA requires a Baseline Documentation Report, which includes mapping, photographs of existing natural resources, and other relevant inventories and plans as well as a management plan.\textsuperscript{93} The specific stipulations of the restriction and the management plan would be fulfilled in the process of creating the documentation for the conservation restriction, which would be a collaborative process between the second party and the College’s interested groups and its legal council.

Since the landowner must be held accountable for adhering to the terms of the contract, the second party is responsible for annual monitoring of the property to ensure its continued

\textsuperscript{90} Interview with David McGowan, October 25, 2019.
\textsuperscript{92} Ibid.
\textsuperscript{93} Ibid.
conserved status. The landowner is typically responsible for the costs of this monitoring. The recommended method to ensure this cost is covered for perpetuity is for the landowner to create an endowment for the continued management of the forest, and the interest accrued is used to pay for the continual monitoring and upkeep. It should be noted that HMF already has an endowment for its expenses and management. It also should be noted that the monitoring process can be constructed as a partnership, rather than as oversight.

While conservation easements are for perpetuity and the terms cannot be renegotiated, there can be significant flexibility built into the agreement, and the management plan can be amended over time. In the case of HMF, conservation easements could be put in place on smaller, more critical areas of land, at least initially. Since land within HMF would have to be conserved on a state-by-state basis, the College could focus on conserving land in Massachusetts, or one of the other two states. Alternatively, the College could exempt certain zones, such as the area around the Rosenberg Center, from a conservation easement to allow for potential future development needs only in that area. It is important to realize that conservation easements can allow for a broad range of forest manipulation including sustainable forest management techniques like selective harvesting. Additionally, the terms of the conservation easement can be worded to allow for future research needs, a primary concern of several HMF stakeholders. The structuring of the document can and should be a collaborative process between the College and the land trust or State partner.

94 Interview with David McGowan. October 25, 2019.
95 Ibid.
96 Interview with Drew Jones. October 1, 2019.
97 Interview with David McGowan. October 25, 2019.
98 Interview with Nan Janks-Jay. November 13, 2019
100 Interview with David Foster. November 5, 2019.
Conservation easements and restrictions have been implemented successfully by peer institutions Harvard and Middlebury. The Harvard Forest has partnered with two local land trusts, three conservation groups, and local and state government to put sections of their forest as well as abutting properties under conservation on a piece-by-piece basis.\(^{101}\) Harvard has demonstrated the potential for collaboration between a large collegiate institution and local interests that benefits both parties. This case study also illustrates the potential to craft flexible conservation restrictions with language that accommodates a working research forest featuring a potentially large range of manipulative research.\(^{102}\)\(^{103}\) For example, research activities have included building towers, simulating hurricanes, adding nitrogen to the soil to simulate acid rain, and running heating cables through the soil.\(^{104}\) All research proposals are reviewed by a committee that ensures the project complies with the terms of the conservation easement and advises the researchers on how to fit their study into the existing landscape in a minimally invasive or destructive way.\(^{105}\) Unlike Harvard, Middlebury put their Breadloaf Campus under one very complicated conservation easement in partnership with the Vermont Land Trust. While their land is not a research forest, their successful conservation of the Breadloaf Campus illustrates the possibility of crafting an easement that allows for a diverse range of uses through a zoning system within the easement.\(^{106}\) Comparing and contrasting these two cases shows how a


\(^{102}\) Harvard Forest. “Watershed Preservation Restriction: Land South of Tom Swamp Road…” Harvard University, 2016, p.5 (See appendix C).


\(^{104}\) Interview with David Foster. November 5, 2019.

\(^{105}\) Interview with Nan Janks-Jay. November 13, 2019.
conservation easement can accommodate the wide range of uses and values associated with an educational institution-owned forest.

2 Deed Restriction

A deed restriction is a legally-binding option for conservation that is not for perpetuity, and our interviewees often presented them as an alternative to a conservation easement. Deed restrictions work through similar legal mechanisms as conservation easements; they are an agreement between the landowner and a second party in which the landowner places a restriction on their development rights. The primary differences are that the restriction remains in place for only 35 years at a time (after which the restriction must be renewed), there is no state oversight, and there is no established process for monitoring. Deed restrictions are typically not seen as particularly binding given that any oversight fall to the second-party private body, typically a neighbor, and the landowner bears no responsibility for any costs associated with monitoring or enforcing the agreement. Deed restrictions are also vulnerable to what College legal council Jaime Art called the “clever lawyer syndrome,” which means that a landowner with good legal council could probably manage to find a way to wiggle out of the agreement. This combination of factors have made deed restrictions unpopular for restricting land development for conservation purposes. Multiple interviewees painted deed restrictions as essentially obsolete, though they were integral to setting the legal precedent for the creation of conservation easements.

107 Interview with David McGowen, October 25, 2019.
109 Ibid.
3 Internal Agreement

In general, the College tends to stay away from legally binding agreements on their land, such as conservation easements or deed restrictions. Accordingly, there is the possibility for strictly internal action. However, any internal policy is severely limited when it comes to conservation as it would be vulnerable to amendment or reversals. Without any legal clout, it would be impossible to ensure the perpetual conservation of the forest, but there are certain measures that may make the possibility of development in HMF less likely.

An internal agreement could come in a few different forms. One might be a change to the official and public policy of the College concerning HMF. The College could adopt a policy of perpetual or long-term conservation of their forest, making a public statement to this effect. In a way, the College has already done this by refusing to count HMF as site for carbon offsets, reasoning that HMF would not represent additionality as it has no intentions to develop the forest.112 The College could take this one step further and explicitly state the reasons it values HMF and why that precludes them from ever developing on the land. Indeed, this could be more than simply an affirmation of intention: The College could establish a policy, like it did with the Internal Use Policy, that under no circumstances will it develop HMF or otherwise curtail current non-destructive uses. While this wouldn’t have any mechanism of external enforcement, the public nature could potentially deter future administrators looking to develop the forest or otherwise change its character. At the very least, such a statement could provide ammunition for any future opposition to these future administrators.

Another possibility is a procedural change wherein any decision concerning the use of the forest, anywhere from research proposals or development plans, would have to go through a more strenuous and transparent process of approval. Decisions could be routed through CES, the HMF Users’ Committee, the Board of Trustees, or all three bodies. This could help avoid a “bad actor” scenario in which development plans are made unilaterally and behind closed doors.

4 Status Quo

Finally, the College could continue to manage HMF as it does presently. As a part of the Oakley? Agreement made in the 1980s, the CES) has administrative power over HMF, with day-to-day management provided by the HMF Manager.113 (cite) The HMF Internal Use Policy, written in 1997, provides a more concrete set of recommendations for managing HMF by dividing the forest into zones with different permitted uses.114 As we have seen, the status quo management of HMF as a research and educational forest is a non-perpetual and non-binding means of conservation, given that it has not restricted development in in the past. The upper tier of the administration—the President, Provost, and Vice President—have the ability to determine the future of the forest with little to no input from others.

IV. Evaluation of Alternatives

To evaluate the efficacy of each of our proposed four alternatives (Status Quo, Internal Agreement, Deed Restriction, and Conservation Easement), we developed a pair of evaluation matrices to help us organize our thoughts. The first, the Stakeholder Value Matrix (Table 2),

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113 Interview with Drew Jones. October 1, 2019
outlines the importance of various purposes of the forest to identified stakeholder groups. The information about which purposes or goals achieved by the forest are the most important on the whole is then factored into our second matrix, the Option Evaluation Matrix (Table 4), to compare how successfully each of the four alternatives fulfills the stated objectives.

To begin this process, we first listed groups of stakeholders, groups who we believed had an interest in how the forest is managed into the future. They are as follows:

1 Students
   a. This group includes all current and future students at Williams College, who generally use the forest for educational and recreational purposes and as a natural refuge during their four years here.

2 Faculty
   a. This group includes all current and future faculty at Williams College. Faculty from the Biology, Environmental Studies, and Geoscience departments use HMF frequently as both a classroom and research facility. In addition, many of the faculty enjoy the forest as a recreation location.

3 Administration
   a. This group includes current and future members of the College administration, including the President, the Vice President, the Provost, and their associated offices. They have an interest in the long-term success of the institution as a whole and tend to value the forest as an educational and research facility, an image-enhancer for the College, and a valuable asset.

4 Alumni
a. This group includes all former students of Williams College, who generally have a nostalgic connection to the forest and value it for its education and recreational purposes. In addition, they represent a major source of funding for College initiatives.

5 Local community

a. This group includes residents of Williamstown and surrounding towns who frequently use the forest for recreation and as a social gathering space. This group also includes local school groups who go on field trips to the forest.

6 Regional community

a. This group includes users of HMF from the greater New England area and also regional conservation organizations. They have an interest in the forest as a recreational spot and a nature reserve.

7 National and global community

a. This group includes the rest of the world who may or may not have been to HMF but who have an interest in HMF as a nature reserve and carbon sink.

8 Wildlife/Nature

a. We believe the natural world and wildlife have an interest in HMF as a relatively undeveloped area with great ecological value.

Next, we came up with a list of ten goals that could be achieved to various extents through alternative management schemes for HMF.

1. Offer education opportunities

2. Preserve existing research sites
3. Accommodate potential research needs
4. Preserve agency of future administration
5. Preserve access the recreation
6. Optimize economic potential of the College
7. Promote collaboration between the College and community
8. Enhance the College’s image
9. Act as environmental stewards
10. Preserve historic character

We arrived at these ten goals through our interviews, and they are meant to cover the range of values and purposes of HMF as covered in Section II.

Noting that each of these goals are not of equal importance to various stakeholder groups, we established a rating system (Table 1) to determine how much each goal mattered to particular stakeholder groups.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Not important at all</td>
</tr>
<tr>
<td>1</td>
<td>A little important</td>
</tr>
<tr>
<td>2</td>
<td>Somewhat important</td>
</tr>
<tr>
<td>3</td>
<td>Important</td>
</tr>
<tr>
<td>4</td>
<td>Very Important</td>
</tr>
<tr>
<td>5</td>
<td>Extremely important</td>
</tr>
</tbody>
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Table 1. Rating system for the Stakeholder Value Matrix
Further, we also noted that some stakeholder groups’ preferences should carry more weight than others. For example, since the forest is owned by the College and the College’s primary mission is education, students’ preferences should carry more weight than the regional community. Accordingly, the preferences of students, faculty, and the administration are given full weight (1.00), while those alumni and the local community are given slightly less weight (0.75), and those of the regional community, national and global community, and nature and wildlife are given the least weight (0.50).

Finally, a note about how we arrived upon the ratings for each stakeholder group: The ratings attached to the students come from the randomized survey wherein we asked students about their individual opinions of the importance of each goal and then used the mean values in the matrix. The ratings for the rest of the stakeholder groups are educated guesses, informed by our interviews, readings, and lived experience at the College.

Putting this all together, we arrived at the following Stakeholder Value Matrix (Table 2):
Table 2: The Stakeholder Value Matrix rates the importance of selected goals associated with HIM to each stakeholder group (see Table 1 for ranking).

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Preserve historic sites</td>
</tr>
<tr>
<td></td>
<td>Enhance college image</td>
</tr>
<tr>
<td></td>
<td>Promote collaboration</td>
</tr>
<tr>
<td></td>
<td>Optimize economic performance</td>
</tr>
<tr>
<td></td>
<td>1. Improve access to education</td>
</tr>
<tr>
<td></td>
<td>2. Enhance career guidance</td>
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<tr>
<td></td>
<td>3. Improve research opportunities</td>
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<tr>
<td></td>
<td>Research needs</td>
</tr>
<tr>
<td></td>
<td>Research goals</td>
</tr>
<tr>
<td></td>
<td>Other educational</td>
</tr>
</tbody>
</table>
As you can see from the Stakeholder Value Matrix, acting as environmental stewards and offering education opportunities came out ahead as top priorities, while optimizing the economic potential of the College and enhancing the College’s image were deemed least important of the listed goals. The relative importance of each goal was then used to assess which alternative best meets these criteria.

Our second matrix, the Option Evaluation Matrix, rates how well each option (status quo, internal policy, deed restriction, and conservation easement) meets the objectives of stated goals (See Table 3 for rating system).

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
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<tbody>
<tr>
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<td>Actively impedes goal</td>
</tr>
<tr>
<td>-1</td>
<td>Likely impedes goal</td>
</tr>
<tr>
<td>0</td>
<td>Neither impedes nor achieves goal</td>
</tr>
<tr>
<td>1</td>
<td>Partially achieves goal</td>
</tr>
<tr>
<td>2</td>
<td>Successfully achieves goal</td>
</tr>
</tbody>
</table>

Table 3. Rating system used in the Option Evaluation Matrix (Table 4).
Table 4. Option Evaluation Matrix: The left side of this matrix rates how well each option (Conservation easement, deed restriction, internal policy, existing use) satisfies each goal. The right side of the matrix rates the relative importance of each goal as established in the Stakeholder Value Matrix. The columns on the right side of the matrix are weighted percentage values that are multiplied by the weighing percentage to incorporate. Better fit and lower values a worse fit. These ratings are then summed to determine how well each option aligns with the relative importance of each goal, with higher values meaning a better alignment.

<table>
<thead>
<tr>
<th></th>
<th>Preserves historic character</th>
<th>Protects existing use</th>
<th>Promotes cooperation between college and community</th>
<th>Enhances college image</th>
<th>Optimizes economic potential of college</th>
<th>Preserves access to open space</th>
<th>Supports needs of research institutes</th>
<th>Preserves existing educational opportunities</th>
<th>Other educational opportunities</th>
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<tr>
<td>0.00</td>
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<td>2.00</td>
<td>2.00</td>
<td>2.00</td>
<td>2.00</td>
<td>2.00</td>
</tr>
</tbody>
</table>

Options | Conservation easement | Deed restriction | Internal policy | Status quo |
--------|-----------------------|------------------|-----------------|------------|
        | Weighted Values       | Weighted Percentage |                |            |
--------|-----------------------|------------------|-----------------|------------|
Conservation easement | 0.00 | 0.00 | 0.00 | 0.00 |
Deed restriction | 0.12 | 0.12 | 0.12 | 0.12 |
Internal policy | 0.11 | 0.11 | 0.11 | 0.11 |
Status quo | 0.22 | 0.22 | 0.22 | 0.22 |
The Option Evaluation Matrix clearly places a conservation easement as most aligned with stated goals with a positive value far above the other options. This is because it most successfully protects various uses of the forest, from education to research to recreation, through the strict guidelines mandated by the conservation easement process and the fact that such agreements are in perpetuity. Related to the perpetual nature of a conservation easement, we found it to be the most limiting option in terms of preserving the agency of members of the future administration since once the agreement is set, it is quite inflexible. The “1” on the optimization of economic potential of the College requires a little explanation: Because the College has no plans to use the development rights associated with HMF, it would actually be “unlocking value” in the forest if the College were to sell those rights as part of a conservation easement. There are certainly costs associated with a conservation easement, including initial site assessments and monitoring costs, yet because of the value gained by selling the development rights, we believe a conservation easement would be a net economic benefit to the College. In addition, a conservation easement would represent a great boon to doing research in the forest and would attract not only outside researchers but new faculty members to the College as protection of and access to research sites would be guaranteed. Further, the designation of a conservation easement in HMF would allow for researchers basing their studies in the forest to apply for grants from organizations such as the National Ecological Observatory Network (NEON) and Long Term Ecological Research Network (LTER) that require a conservation easement when granting money to researchers.

Next, the option of an internal policy comes in second in our Option Evaluation Matrix. As can be seen in the matrix, this option does a little bit to protect some uses of the forest;
however, any internal agreement or policy is very vulnerable to change, for it can be taken away as easily as it was instituted in the first place. Because of this, an internal policy option would successfully preserve the agency of any future administration, with only a little encumbrance associated with potentially changing an internal policy.

Coming in third, we have the option of a deed restriction. As explained in Section III, deed restrictions are essentially older, often ineffective versions of conservation easements. Obviously putting a deed restriction on HMF would protect uses and values of the forest to a certain extent, but the fact that deed restrictions need to be renewed every 35 years and they have no enforcement mechanism renders this protection less effective. In theory, this option would certainly limit the agency of future administrations, but the malleable nature of restriction means that this limitation is not absolute.

Finally, the status quo emerges as the least favorable option. Presently, there are no protections in place for HMF beyond the goodwill of current faculty and staff members and administrators, and accordingly, doing nothing would not be an effective way to protect any of the current valued uses of the forest. This does of course represent the surest way of preserving the agency of future administrators precisely because it does not put any limitations on them. It is worth considering, however, that this option does leave the economic potential embedded in the forest underutilized as the College receives no value for the property’s unused development rights.

The results from the matrix are in agreement with our own hypothesis about the effectiveness of our four alternatives. Ultimately, we see very few benefits to remaining with the status quo and doing nothing, while a conservation easement presents the most opportunity to
fulfill stated goals. Admittedly, the matrix surely reflects our own preconceived biases in both structure and content and should not be understood as a set of objective facts, but we nonetheless believe it reflects a useful way of organizing and collating the information gathered throughout the process of this project. Thus, the fact that a conservation easement emerges as the best available option in the matrix remains a meaningful result, especially in tandem with our own original guesses.

V. Recommendations and Implementation:

Given our research and analysis of both the forest itself and mechanisms to protect it, we recommend that the College begin a deeper investigation into the possibility of putting HMF under a conservation easement. To start them off, we have begun a list of considerations the College will have to account for when implementing such a scheme.

First, we want to stress that there are many different scales on which a conservation easement could function on at HMF, which could allow the College to “ease” into such a restriction. Because the forest spans three states, each with its own conservation easement processes and requirements, the College would have to enter into three different contracts with three different entities (likely land trusts). This does add a layer of complexity, but it is worth noting that the Harvard Forest lands are conserved with three different organizations and the director, David Foster, said that this has not been a major inconvenience.\textsuperscript{115} Additionally, representatives from local land trusts have expressed excitement over the possibility of a collaborative approach to monitoring and managing a conservation easement in HMF. However,

\textsuperscript{115} Foster, “Interview with David Foster.”
if the multi-state approach was seen as too daunting, Williams could consider putting just the Massachusetts portions under conservation, which should greatly simplify the process and protect the most vulnerable portion of the forest. Furthermore, Williams could pick and choose specific areas within the forest to exclude from the conservation easement, such as the area around the Rosenberg Center and the entrance of HMF, to allow for some flexibility while still achieving the goal of protecting the core of the forest.

Second, the financial cost of a conservation easement is an important consideration that we did not directly factor into the evaluation matrix. Currently, the value of the development rights of HMF is an unknown quantity. Extrapolating from a recent conservation easement on timber lands in nearby Rensselaer County where the rights were sold for approximately $1,100/acre, the value of development rights for HMF could be roughly estimated at $2.8 million.\footnote{Therrien, “Conservation Fund Purchases Forestland in Three States.”} This number represents a very general, ball-park estimate and a third-party appraisal of the land would be needed to get a more realistic per acre value. In addition, several other bureaucratic process would be needed, including a land survey, title assessment, and environmental site assessment, which would likely add $10,000+ to the project costs. Finally, there would be a fair amount of labor involved in the process of doing a conservation easement, and these costs would have to be factored in as well.

Because Williams is a non-profit institution and has a fiduciary responsibility to its current and future constituents, it cannot in good faith simply give away the value of the development rights of HMF, so outright donation is not an option. On the other end, the value of the development rights is likely too large for any land trust to outright purchase, and such a
purchase would likely fall outside of their own conventions. However, we believe there could be some creative ways to pay for these costs. Alumni donations could be a good option, as we believe there are likely many alumni of the College who might give money to conserving HMF who would otherwise not donate money to the College outright, or perhaps would give more to HMF than they otherwise would have. It could be possible to allow alumni to attach their name to certain parcels in order to incentivize large gifts. In addition, state conservation grants represent another potentially enormously useful source of funding. Harvard, in particular, has been able to use this method to pay for many of its conserved lands. Examples of the type of funds that the College could apply for include the Massachusetts Landscape Partnership Grant and the Massachusetts Conservation Partnership Grant, together providing up to $1.35 million.\footnote{“Grant Programs Offered by the Division of Conservation Services.”}

Both Vermont and New York also offer possibilities, such as the Vermont Forest Legacy Program (up to 75% of the cost of a conservation easement) and the New York State Conservation Partnership Program (up to $2.25 million).\footnote{“Forest Legacy Program.” “New York State Conservation Partnership Program.”} Lastly, we believe that if conserving HMF was afforded similar consideration to the construction of new buildings on campus and other ongoing projects, the magnitude of investment in the forest would seem comparatively negligible to other projects and would represent a worthwhile use of funds.

In light of our outreach, research, and evaluation results, we are proposing a few concrete steps that the College could take toward pursuing conservation in HMF. With these recommendations comes the understanding that preparing and implementing a conservation easement is necessarily a long-term process that will require patience and collaboration over many years.
1. Incorporate HMF into **Strategic Planning** priorities.

   As the outreach portion of the year-long Strategic Planning initiative comes to a close, we encourage the Sustainability working group to consider the ways in which placing HMF under conservation aligns with Williams’s commitment to “define ourselves as a leader in the area of sustainability.” On the level of the institution, conservation would be a strong statement of the College’s intention to *sustain* the current status of HMF as a multi-use forest, and protect the values outlined in Section II. Additionally, it is a sustainability effort that fulfills the goal of “integrating sustainability throughout the curriculum and co-curriculum.”

   Throughout the report, we have emphasized the curricular and co-curricular values of HMF and potential to use conservation as an educational opportunity. We maintain that taking proactive steps to protect HMF should be an urgent priority in the next 5-10 years; though we recognize and respect that the current administration has no intention to use the forest for development purposes, both historical precedent and examples from peer institutions indicate that we cannot necessarily hold future administrations to the same standard.

2. Undergo ecological inventory or compile existing data to prepare a **baseline documentation report**.

   Procedurally, it will be necessary to compile a report documenting the site history, ecological conditions, existing uses, and other relevant information regarding the current condition of HMF prior to the implementation of a conservation easement. This document serves as a reference point for site monitoring, and is generally prepared by the third-party organization (land trust) and certified by the landowner. However, it is possible that Williams students,

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119 “Expand our sustainability commitments,” Williams College, Strategic Planning, 2019, [https://www.williams.edu/strategic-planning/welcome/working-group-8-expand-our-sustainability-commitments/](https://www.williams.edu/strategic-planning/welcome/working-group-8-expand-our-sustainability-commitments/)

120 “Expand our sustainability commitments,” 2019
faculty, or staff would be able to be involved in the process of preparing this document. Luckily, HMF has been remarkably well-studied and documented throughout its history, and so this should not present any enormous challenges or labor costs.

3 Conduct **appraisal report** to determine financial value of HMF development rights.

Before a conservation easement transaction could take place, it would be necessary to hire an independent contractor to appraise the value of the HMF development rights. As mentioned, the estimate of $2.8 million is based roughly on a local example, and does not take into account the development limitations already imposed by ecological conditions such as elevation, slope, and proximity to wetlands. Once the development value of the land was determined, Williams could then start a conversation about funding strategies, keeping in mind that we would not necessarily have to raise the full value of the development rights in order to go forward with the transaction.

4 Form a **working group** to further discuss and pursue conservation in HMF.

Finally, we believe it is important to continue to highlight the value of HMF as a research and educational facility at Williams. To this end, we encourage the College to convene a committee or working group dedicated to planning for the future of HMF, and considering how/whether conservation aligns with the College’s mission and values. Such a group could be comprised of members from various interest groups, including administrators, faculty, staff, students, and community members. Our outreach demonstrated the breadth and depth of perspectives, experience, and insight that different stakeholders and experts are able to contribute to this project. The ultimate goal of our project is to catalyze and inform further discussion and
collaboration—a conservation conversation—among representatives of the College and the greater community.

References:


Art, Jamie. Interview with Jamie Art. Interview by Ingrid Thyr, Anna Lietman, Ivy Spiegel-Ostrom, and Emily Elder, November 4, 2019.


Campbell, Donald. Interview with Donald Campbell. Interview by Ingrid Thyr, Anna Lietman, and Ivy Spiegel-Ostrom, October 29, 2019.


Evans, Mike. Interview with Mike Evans. Interview by Anna Lietman and Emily Elder, October 22, 2019.


Foster, David. Interview with David Foster. Interview by Ingrid Thyr, Anna Lietman, Ivy Spiegel-Ostrom, and Emily Elder, November 5, 2019.


Greer, Mackenzie. Interview with Mackenzie Greer. Interview by Ivy Spiegel-Ostrom, November 19, 2019.


Jones, Drew. Interview with Drew Jones. Interview by Ingrid Thyr, Anna Lietman, Ivy Spiegel-Ostrom, and Emily Elder, October 1, 2019.

Jorling, Tom. Interview with Tom Jorling. Interview by Emily Elder, November 22, 2019.

Lapin, Marc. Interview with Marc Lapin. Interview by Emily Elder, November 21, 2019.

Lewis, Scott. Interview with Scott Lewis. Interview by Emily Elder, October 29, 2019.


Mandel, Maud. Interview with Maud Mandel. Interview by Ivy Spiegel-Ostrom and Emily Elder, November 25, 2019.


Morales, Manuel. Interview with Manuel Morales. Interview by Ingrid Thyr, Anna Lietman, and Emily Elder, November 4, 2019.


Puddester, Fred. Interview with Fred Puddester. Interview by Ingrid Thyr, Anna Lietman, Ivy Spiegel-Ostrom, and Emily Elder, November 1, 2019.

Racela, Jay. Interview with Jay Racela. Interview by Emily Elder, October 25, 2019.

Schoenfield, Mike. Interview with Mike Schoenfield. Interview by Emily Elder, November 22, 2019.


Appendices:

A. List of Interviewees
B. Student Survey Questions
C. Examples of Development Restrictions from Harvard Forest

A. List of Interviewees:

College Administration:
- David Love, Provost
- Maud Mandel, President
- Fred Puddester, Vice President
- Jamie Art, Legal Counsel

HMF Users Committee:
- Manuel Morales, Chair, Prof. of Biology
- Drew Jones, HMF Manager
- Hank Art, CES Director
- Ron Bassar, Prof. of Biology
- David Dethier, Prof. of Geoscience Emeritus
- Joan Edwards, Prof. of Biology
- Scott Lewis, Williams Outing Club Director
- Jay Racela, Envi. Analysis Lab Supervisor and Lecturer

Peer Institutions:
- David Foster, Harvard Forest Director
- Nan Jenks-Jay, Dean of Environmental Affairs, Middlebury College
- Marc Lapin, Associate Professor of Environmental Studies, Middlebury College
- Mike Schoenfield, Senior Vice President and Chief Philanthropic Advisor, Middlebury College

Conservation Organizations:
- David McGowan, Williamstown Rural Lands Foundation, Executive Director
- Donald Campbell, Vermont Land Trust, Southwest Regional Director
- Mackenzie Greer, Berkshire Natural Resources Council, Director of Public Programs
- Jim Bonesteel, Rensselaer Plateau Alliance, Executive Director

Other:
- Tom Jorling, former Director of CES
- Nancy Nylen, community member
B. Student Survey Questions

**Hopkins Memorial Forest Preservation**
This survey is being sent out as a part of class project for ENVI 302: Environmental Planning.

"The Hopkins Memorial Forest is 2680 acre (1040 ha) reserve in Massachusetts. New York and Vermont managed by the Williams College Center for Environmental Studies (CES) to facilitate and research and undergraduate teaching activities while preserving and monitoring forest resources, particularly through long-term ecological research." (https://hmf.williams.edu)

Thank you for your response!

* Required

1. What is your affiliation with Williams College? *
   - Mark only one oval.
   - Student
   - Faculty
   - Staff
   - Senior staff
   - Community member
   - Alum
   - Other:

2. Have you been to Hopkins Memorial Forest (HMF)? *
   - Mark only one oval.
   - Yes
   - No
   - I don't know

3. If you answered yes to the previous question, what have been your reason(s) for going to HMF? (Select all that apply.) *
   - Check all that apply.
   - Class (or other non-research educational outing)
   - Recreation
   - Research
   - Job as a caretaker or educator
   - Festival or event
   - Other
4. What do you like about the forest?


5. *Currently the college has no legal protection in place for HMF. Would you support a permanent plan to preserve the forest? *
Mark only one oval.

☐ Yes
☐ No
☐ I don't know

6. Why do you think HMF should or should not be preserved?


7. Please indicate how important each of the following goals concerning HMF is to you
Mark only one oval per row.

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<thead>
<tr>
<th>Goal</th>
<th>0 (Not important to me at all)</th>
<th>1 (A little important to me)</th>
<th>2 (Somewhat important to me)</th>
<th>3 (Important to me)</th>
<th>4 (Very important to me)</th>
<th>5 (Extremely important to me)</th>
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<tr>
<td>Offer education opportunities</td>
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<td>Preserve existing research sites</td>
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<td>Accommodate potential research needs</td>
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<td>Preserve agency of future administration</td>
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<td>Preserve access to recreation</td>
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<td>Optimize economic potential of the College</td>
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<td>Promote collaboration between the College and the community</td>
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<td>Enhance the College's image</td>
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<td>Act as environmental stewards</td>
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<tr>
<td>Preserve historic character</td>
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C. Examples of Development Restrictions from Harvard Forest

Part 1. Watershed Preservation Restriction: East of Barr Road

WATERSHED PRESERVATION RESTRICTION

East side of Barre Road, Petersham, MA

KNOW ALL PERSONS BY THESE PRESENTS that PRESIDENT AND FELLOWS OF HARVARD COLLEGE, a Massachusetts educational and charitable corporation, 1350 Massachusetts Avenue, Suite 980, Cambridge, Massachusetts 02138 (hereinafter “Grantor” which term in each instance shall mean the Grantor and Grantor’s agents, successors and assigns), as additional consideration for the purchase by Grantee of a WPR from JB & T Family Limited Partnership, recorded herewith, does hereby grant to the COMMONWEALTH OF MASSACHUSETTS, acting by and through its DEPARTMENT OF CONSERVATION AND RECREATION, 251 Causeway Street, Boston, Massachusetts 02114 (hereinafter “Grantee” which term in each instance shall mean the Grantee and Grantee’s agents, successors and assigns), by virtue of the power and authority conferred upon it by Section 17 of Chapter 92A 1/2 of the General Laws and acts in amendment thereof or in addition thereto, and every other power and authority hereto enabling, for the purposes and of and subject to its provisions and Article 97 of the Amendments to the Massachusetts Constitution, IN PERPETUITY, a WATERSHED PRESERVATION RESTRICTION, as defined in Section 31 of Chapter 184 of the General Laws, and further defined hereinbelow (hereinafter “WPR”), upon a parcel of land located in the Town of Petersham, Worcester County, Massachusetts, containing approximately 126 +/- acres, shown as “126 Acres” ± on a map prepared by Edmond J. Boucher, P.L.S., entitled “Exhibit Plan, Prepared for President & Fellows of Harvard College, Petersham, MA, dated September 6, 2012,” labeled Exhibit A, attached hereto and incorporated herein by reference, being a portion of Tract number three conveyed by James W. Brooks to the President and Fellows of Harvard College, by deed dated April 1, 1908, recorded at Worcester District Registry of Deeds at Bock 1881, Page 328, (hereinafter “Premises”).

1. PURPOSE:

The purpose of this WPR is to retain the Premises in its natural condition in perpetuity, in accordance with the laws stated above, for the purposes of watershed protection and treatment.
management, including but not limited to the prevention of soil erosion, soil compaction, surface water run-off, sedimentation or other fouling or degrading of the water supply or the watershed lands surrounding the water supply.

II. PROHIBITED USES: In order to carry out the purposes set forth in Sections I above, Grantor, its successors and assigns, shall hold, use and convey the Premises, subject to the purposes stated above, and the following restrictions, which shall apply in, on, over and under the Premises:

1. No construction or placing of any temporary or permanent buildings, structures, facilities, roads, ways, paths or any improvements of any kind, on, under or above the Premises; except such fencing, signage, trails, plots and temporary structures for storing or protecting research equipment, as provided in Article III.1 below.

2. No construction or placing of poles, towers, conduits, wires or cables, or any utility or telecommunications delivery systems, or any portions thereto.

3. No division or subdivision of the Premises.

4. No use of the premises or any portion thereof to satisfy zoning requirements for the development of any adjoining, unrestricted land.

5. No septic systems, leach fields, or other sanitary disposal facilities.

6. No excavation, dredging, stockpiling or removal of loam, peat, gravel, soil, sand, rock, or other mineral resource or natural deposit, except as needed to maintain the Premises’ roads and trails; and no placing, filling, storing or dumping refuse, trash, equipment, mobile home, trailer, vehicle bodies or parts, rubbish, debris, junk, waste or any other substance or material, except brush/wood piles shall be allowed.

7. No storage, stockpiling, mixing or use of hazardous materials, petroleum products, pesticides, herbicides, manure or fertilizers.

8. No tillage or other agricultural activities.

9. No grazing or sheltering of livestock or animals.

10. No public recreational use with attendance of greater than 25 people, without the prior written consent of the Department.

11. No motorized or vehicular recreation use except as required for land management, emergency response or access to the property by persons with disabilities.

12. No conversion of the forested portions of the property into other land uses.
13. No industrial or commercial uses or activities; except as provided in Article III.

14. No cutting, removing or otherwise destroying native trees, grasses, shrubs or other native vegetation, except as permitted in Article III.2 below.

15. No other acts or uses detrimental to drainage, flood control, water or soil conservation, erosion control, or the quality of surface to ground water, as determined by the duly authorized representative of the Grantee, its Division of Water Supply Protection, its successors or assigns, or such other authority which legally controls or holds this restriction, or which are prohibited by federal, state or local law or regulation, or which are inconsistent with the terms of this WPR and its intent that the Premises remain, predominantly in its natural condition.

III. RESERVED RIGHTS: Notwithstanding the provisions of Article II above and subject to and in accordance with applicable laws, regulations and bylaws, Grantor reserves the following rights, uses and activities on the Premises, provided that such acts and uses are consistent with the purposes of this WPR as described in Article I.

1. Research and Demonstration. The right to conduct ecological research activities and manipulations as deemed appropriate by staff scientists to fulfill the research mission of the Harvard Forest and Harvard University, including demonstrations in conjunction with such research, provided there shall be no more than 25 people gathered at any one time without the written consent of Grantee; and the right to install and maintain such fencing, signage, trials, plots and temporary structures needed to protect and store research equipment, provided these features are included in a Forest Stewardship Plan which is approved by the Department, and provided such activities are conducted in accordance with prudent and sound research practices, all federal and state laws, statutes and regulation, and including but not limited to 350 CMR 11.09, and provided such activities do not materially alter the landscape nor impair the purposes of this WPR.

2. Vegetative Management. The cutting, removal and planting of trees, shrubs and other vegetation for ordinary improvement and maintenance of the Premises; to improve wildlife habitat; to prevent threat of injury or damage to persons or property; to prevent or mitigate pest infestation, blight or disease, and to control or eliminate exotic or invasive species not native to Worcester County; the right to conduct forest management activities, including commercial cutting or harvesting or lumbering activities, provided such cutting or harvesting shall be in accordance with a Massachusetts Forest Management Plan and a Cutting Plan in compliance with the Massachusetts Forest Cutting Practices Act, as amended. Said Plans shall reference this WPR and shall set management goals that protect the conservation values of the Premises, including, without limitation, water quality, water features including but not limited to streams, seeps, floodplain, and vernal pools and other wetlands, scenic views, wildlife habitat, endangered or threatened species, and forest health. The Management plan shall describe in detail plans for carrying out forest management activities permitted under this CR. Said Plans shall be prepared by a licensed Massachusetts forester, licensed through the Massachusetts Department of Conservation and
Recreation ("DCR"). Grantors shall include a copy of this WPR with their application to the state forester for approval of Cutting and Management Plans.

3. **Motor Vehicles.** The right to use motor vehicles by the Grantor or its employees and agents as reasonably necessary to carry out activities permitted under this WPR; for access by Grantee for purposes set forth in Article IV, hereof, for access by police, fire, emergency, public works or other governmental personnel in carrying out their official duties.

### IV. INSPECTION, MONITORING, ENFORCEMENT

1. **Baseline Documentation Report.** Grantee shall prepare a report, to be on kept on file with Grantor and Grantee, to which they collectively agree, provides an accurate representation of the condition of the Premises at time this WPR is recorded (including all boundaries, natural features and man-made structures), and the conservation values of the Premises. The Baseline Documentation Report is intended to serve as an objective information baseline for monitoring compliance with the terms of this WPR.

2. **Inspection and Enforcement.** The WPR hereby conveyed includes the right of the Grantee to enter upon the Premises, as necessary, at any time for the purpose of inspecting said land and enforcing the foregoing restrictions and obligation and remedying any violations of same.

   This right of entry and inspection shall be in addition to any other remedies available to the Grantee, its successors, assigns or other authority, for the enforcement of the foregoing restrictions and the remedying of any violations of the same.

   The WPR hereby conveyed shall be enforced by the Grantee in its sole discretion. Nothing herein shall impose upon the Grantee any affirmative obligation or liability relating to the condition of the Premises. Failure by the Grantee to enforce any provision or condition set forth herein, or to exercise any rights hereby conveyed, shall not constitute a release or waiver of any such right or condition.

### V. COSTS, TAXES, LIABILITY:

Grantor shall pay and discharge when due any and all real property taxes and other assessments levied by competent authority on the Premises.
Part 2. Watershed Preservation Restriction: Land South of Tom Swamp Road and North of New Salem Road

WATERSHED PRESERVATION RESTRICTION

Address: Land South of Tom Swamp Road and North of New Salem Road (aka Mass. Route 122), Petersham, Worcester County, Massachusetts 01366
Being a Portion of the Harvard Forest, So-called

KNOW ALL PERSONS BY THESE PRESENTS that The President and Fellows of Harvard College, a charitable and educational corporation existing under the laws and the Constitution of The Commonwealth of Massachusetts, with an address c/o Harvard Planning and Real Estate, Smith Campus Center, 1350 Massachusetts Ave., Cambridge, Massachusetts 02138 and at 324 Main Street, Petersham, Massachusetts 01366 (hereinafter “Grantor” which term in each instance shall mean the Grantor and Grantor’s heirs, legal representatives, mortgagees, successors and assigns), for consideration paid of Eight Hundred and Fifty Thousand Dollars ($850,000.00), paid by a grant from the Forest Legacy Program of the United States Department of Agriculture (Forest Legacy Program Grant Award #13-DG-1142000-070), the receipt and sufficiency of which is hereby acknowledged, does hereby grant, with QUITCLAIM COVENANTS, in perpetuity and for the purposes set forth in Article 97 of the Amendments to the Massachusetts Constitution, a Watershed Preservation Restriction (hereinafter “WPR”) in accordance with Massachusetts General Laws (hereinafter “G.L.”) Chapter 184, Sections 31 and 32, G.L. Chapter 92A 1/2, Section 17, and G.L. Chapter 132A, Section 3, to the Commonwealth of Massachusetts, acting by and through its Department of Conservation and Recreation, 251 Causway Street, Boston, Massachusetts 02114 (hereinafter “Grantee”), its successor and assigns, upon land located in the Town of Petersham, Worcester County, Massachusetts, containing approximately 646.55± acres, said land being described in Exhibit A and shown on “Plan of Land in Petersham, Massachusetts prepared for The President and Fellows of Harvard University” by Alfred M. Berry to be regarded herewith in the Worcester South District Registry of Deeds Book 220 Page 92 (hereinafter “Premises”). The Premises are also approximately shown on the sketch plan attached as Exhibit B. All exhibits attached hereto are incorporated herein by reference.

For Grantor’s title to the Premises, see Worcester South District Registry of Deeds, Book 1881 Page 328; Book 16799 Page 226.

This purchase has been funded in part through the USDA Forest Service Forest Legacy Program. The management of the Premises and the enforcement of the WPR shall follow an approved Forest Stewardship Plan, further described in Article III.H below (hereinafter “Stewardship Plan”).

1
I. PURPOSE:

A. The purpose of this WPR is to retain the Premises in perpetuity for the purposes and protections set forth in Article 97 of the Amendments to the Massachusetts Constitution; to carry out the purposes of the Forest Legacy Program administered by the United States Forest Service; to retain the Premises predominantly in its natural, scenic, and open condition; to protect and promote the conservation of biological diversity, forests, soils, natural watercourses, ponds, wetlands, water supplies, and wildlife thereon; to protect the natural resources of the Premises; to protect and enhance the natural resource value of abutting and nearby conservation areas, to create an unfragmented corridor linking the Quabbin Reservoir watershed lands with the Wachusett Reservoir watershed lands; to protect the scenic qualities of the open space resources of the Premises; to allow passive recreational use; to allow for sustainable and sound management of the forest resources, to protect the premises from subdivision and commercial or residential development, to prudently manage the Premises so that its natural condition is maintained while allowing, accommodating, expanding and encouraging activities in furtherance of the mission of the Harvard Forest including but not limited to forestry, historical, paleontological, ecological, silvicultural, hydrological, biological, horticultural, geological, atmospheric, meteorological, climatological and other research, experiments, demonstrations, and education activities on, at and from the Premises; to allow for establishing, maintaining and expanding research and education activities at the Harvard Forest (being a division of the President and Fellows of Harvard College, founded in 1636, being an educational and charitable corporation established under the Harvard Charter of 1650 from the General Court of the Massachusetts Bay Colony), a world-recognized Ecological Research Site, and to encourage the long-term professional stewardship of these resources in a manner consistent with Best Management Practices (BMPs), applicable local, state and federal law, and in conformance with an approved Forest Stewardship Plan.

These purposes are consistent with the open space conservation goals and objectives stated in the Forest Legacy Program established in Section 1217 of Title XII of the Food, Agriculture Conservation and Trade Act of 1990 (Public Law 101-624; 104 stat. 3359; 16 USC Section 2103(c)), which was created to protect environmentally important private forest lands threatened with conversion to non-forest uses. The Premises is within the North Quabbin Corridor Forest Legacy Area, and protection of the Premises will contribute to and implement the purposes described in the Forest Legacy Assessment of Need for the Commonwealth of Massachusetts approved by the Secretary of the U.S. Department of Agriculture on August 9, 1993.

B. The Grantor and the Grantee agree that all boundaries, natural features and man-made structures existing on the Premises at the time of the execution of this WPR, as well as the specific conservation values of the Premises, shall be documented in a report to be on file in the offices of the Grantee (“Baseline Documentation Report”). This Baseline Documentation report shall consist of documentation that the Grantor and the Grantee collectively agree provides an accurate representation of the condition and the conservation values of the Premises at the time this WPR is recorded and which is intended to serve as an objective
information baseline for monitoring compliance with the terms of this WPR.

II. PROHIBITED USES: In order to carry out the purposes set forth in Article I above, the Grantor shall refrain from and will not permit any activity that will be inconsistent with the purposes of this WPR. Except as set forth in “RESERVED RIGHTS,” Article III, below, Grantor covenants that the Premises will at all times be held, used and conveyed subject to and not in violation of the following prohibitions:

A. Constructing, placing, or allowing any building, residential dwelling, tennis court, ball field, bench, well, septic or sewerage disposal system, artificial water impoundment, roadway, asphalt or concrete pavement, landing strip, mobile home, swimming pool, billboard or other advertising display, antenna, paved parking area, utility or telecommunication pole, tower, conduit or line, windmill, wind turbines, satellite dish, above or underground storage tanks, or any other temporary or permanent structure or facility on, below, or above the Premises; and

B. Mining, excavating, dredging, extracting or removing from the Premises of soil, loam, peat, gravel, sand, rock, or other mineral resource or natural deposit, or alteration of any natural contours or features whatsoever, including the excavation of holes, the dislocation of stone walls, cellar holes, or other features on the landscape; and

C. Archeological surveys or investigations except under an Archeological Field Investigation Permit issued by the State Archeologist authorized pursuant to G.L. Chapter 9, Section 26A and associated regulations; and

D. Placing, filling, storing or dumping on the Premises of soil, snow, sand, rock, mineral or ore, refuse, trash, equipment, mobile home, trailer, vehicle bodies or parts, rubbish, debris, junk, waste, tillage or other substance or material whatsoever; and

E. Storage, stockpiling, mixing or use of hazardous materials, petroleum products, pesticides and herbicides, manure and fertilizers; and

F. Cutting, removing or otherwise destroying trees, grasses, shrubs or other natural vegetation; and

G. Planting or broadcasting any genetically modified or replicated organisms or species, or any exotic species, defined as species that are not native to Worcester County by current published lists of native species, including The Vascular Plants of Massachusetts: A County Checklist, First Revision (2011), by Melissa Dow Cullina, Bryan Connolly, Bruce Sorrie, and Paul Somers, published by the Massachusetts Division of Fisheries and Wildlife Natural Heritage & Endangered Species Program, as amended, or as identified in a similar professionally acceptable publication available in the future, without prior written approval of the Grantee in accordance with Article IV, below; and the purposeful introduction of species prohibited by federal and state laws and regulations, such as those species included in the “Massachusetts Prohibited Plant Species List" published by the Massachusetts Department of Agricultural
Resources, or as identified in a similar, professionally acceptable publication available in the future; and

H. Commercial or industrial use of any kind, including but not limited to commercial camping, commercial fishing, hunting or trapping, and other commercial recreational activities; and

I. Tillage of soil, grazing or sheltering of livestock, including horses, animal husbandry, and other agricultural activities; and

J. Activities detrimental to drainage, flood control, water conservation, erosion control or soil conservation, or archaeological conservation and acts or uses detrimental to watershed protection and water quality, as determined by the duly authorized representatives of the Department, its Division of Water Supply Protection, its successors or assigns, or such other authority which legally controls or holds this restriction; and

K. The use, parking, or storage of motorcycles, motorized trail bikes, snowmobiles, and all other motor vehicles, except as required by the police, firefighters, or other governmental agents in carrying out their lawful duties; and

L. Conveyance of a part or portion of the Premises, as compared to conveyance of the Premises in its entirety, which is allowed; and

M. Any subdivision of the Premises including but not limited to the subdivision of the Premises under G.L. Chapter 41, Section 81K et seq.; or the use of the Premises or any portion thereof to satisfy zoning requirements, or to calculate permissible building density or lot yield, or to transfer development rights, or for purposes of subdivision or development of the Premises or any other property, whether or not such property is owned by the Grantor or is adjacent to the Premises; This paragraph should not be construed to prohibit agreements to resolve bona fide boundary disputes or ambiguities, with the prior written consent of the Grantee, which consent shall not be unreasonably withheld; and

N. Any other use of the Premises or activity that would materially impair the conservation interests protected by this WPR or that is prohibited by federal, state or local law or regulation, or that is inconsistent with the intent that the Premises remain predominantly in its natural condition, or that is otherwise inconsistent with the purposes of this WPR; and

O. Use of more than twenty-five percent (25%) of the Premises for "Compatible Non-Forest Uses" such as cultivated farmland solely for hayfields, grassland, shrubland, open water, and wetlands, as defined in the Forest Legacy Program Implementation Guidelines effective June 2003 as amended May 18, 2012. Notwithstanding the foregoing, "Compatible Non-Forest Uses" shall not include forested wetland, shrub swamp or shrub wetland, as such areas are considered forested under this WPR. Any portion of the Premises in Compatible Non-Forest Use at the time of conveyance of this WPR that becomes forested shall not return to Compatible Non-Forest Uses, and no forested land on the Premises at the time of conveyance of this WPR shall be converted to Compatible Non-Forest Uses, provided, that change or conversion resulting from non-human agents or natural processes shall not be considered a conversion requiring
action on the part of the Grantor and shall not be treated as change or conversion to “Compatible Non-Forest Uses,” and further provided that an open water body destroyed by natural disaster or adverse event may be restored within three (3) years after such event regardless of whether it becomes forested.

III. RESERVED RIGHTS: Notwithstanding the provisions of Article II above and subject to and in accordance with applicable laws, regulations and bylaws, Grantor reserves the following rights, uses and activities on the Premises, but only to the extent that such acts and uses do not materially impair the purposes of this WPR:

A. Research and Education

Conducting educational and scientific research activities, studies, and manipulations of the Premises, including demonstrations in conjunction with such research, and conducting classes at or on the Premises as deemed appropriate by the Grantor’s staff or affiliated scientists to fulfill the research and education mission of the Harvard Forest and Harvard University, including but not limited to:

1. The removal from or placement on the Premises of reasonable amounts of soil, gravel, sand, rock or other mineral resource or natural deposit in accordance with Section III.C. regarding excavation and in accordance with Section IV regarding notice and approval or as included in a Forest Stewardship Plan. Notwithstanding the previous sentence, each of the following soil disturbances shall be exempt from the requirements of Section III.C and Section IV, and exempt from a requirement of inclusion in the Forest Stewardship Plan for the following activities:

   a. Any soil disturbance limited to and not beyond the O, A and B horizons;

   b. Core sampling and extractions, from any soil horizon, with a diameter less than four (4) inches for research and analysis; and

   c. With fourteen (14) days notice to the Grantee, the excavation of test pits outside a two hundred (200) foot buffer of any Surface Water as defined by 350 CMR 11.03 or any regulated or unregulated tributary, provided that at no time does the area of any individual test pit exceed one hundred (100) square feet, nor does the area of such test pits open at any given time exceed five thousand (5000) square feet in the aggregate.

2. Cutting, removal or destroying of trees or vegetation in accordance with Section III.I and Section III.H.

3. Installation, construction, reconstruction, maintenance, repair, replacement, demolition and use of fencing, signage, trails, boardwalks, bridges and any other similar improvements reasonably needed to conduct research, experiments, manipulations or demonstrations provided such activities are in accordance with Sections III.B. and III.G as applicable.

4. Reconstruction, maintenance, repair, replacement or discontinuance of existing unpaved woods roads or construction, relocation, and replacements of new unpaved woods roads in accordance with Section III.B.2.
5. Installation, construction, reconstruction, placement, storage, maintenance, repair, replacement, demolition and use of research related equipment, structures, buildings, facilities and utilities provided that:

   a. All structures, buildings, and facilities are non-residential and non-commercial;

   b. Structures, buildings, and facilities with an area greater than one hundred and twenty (120) square feet and all towers, regardless of area, with a height greater than or equal to thirty-five (35) feet shall require notice to and approval from the Grantee in accordance with Section IV or shall be included in a Forest Stewardship Plan; and

   c. The following related soil disturbances shall be in accordance with Section III.C. and shall require notice to and approval from the Grantee in accordance with Section IV or shall be included in a Forest Stewardship Plan:
      (i) any related soil disturbances, of any depth, within a two hundred (200) foot buffer of any Surface Water as defined by 350 CMR 11.03 or any regulated or unregulated tributary; or
      (ii) any related soil disturbance outside the above referenced 200 foot buffer greater than six (6) feet deep; or
      (iii) any related soil disturbance outside the above referenced 200 foot buffer, equal to or less than six (6) feet deep and with a surface area greater than ten (10) square feet.

The structures, buildings, facilities and improvements in Section III. A. 1-5 shall be constructed and used in accordance with prudent and sound research practices, and all applicable federal and state laws, statutes and regulations. No more than one and one-half percent (1.5%) in the aggregate, of the Premises at any given time may be used for the footprints of such research structures, buildings, improvements, and related excavation, storage or placement that would prevent trees from growing or regenerating in such footprints and such structures, buildings, improvements and the like with footprints up to such 1.5% of the Premises cap shall be permitted notwithstanding any other provision of this WPR to the contrary.

B. Improvements

1. The maintenance, use, and repair of existing fences, bridges, culverts, gates and stone walls, identified in the Baseline Documentation Report and the approved Forest Stewardship Plan ("Improvements"), substantially in their present condition; and the construction, relocation, or replacement of like Improvements necessary in conducting permitted activities on the Premises, provided such new construction, relocation, or replacement shall be approved by Grantee in each instance in accordance with Article IV, below; and

2. Woods Roads and Log landings: The maintenance, use and repair, or discontinuance of, existing unpaved woods roads identified in the Baseline Documentation Report and the approved Forest Stewardship Plan, substantially in their present condition; and the construction, relocation, replacement of new unpaved woods roads and log landings for forestry purposes with a travel surface not to exceed twelve (12) feet in width, provided such new unpaved woods roads and log landings are in the approved Forest Stewardship Plan and any required Forest Cutting Plan described in Article
III.B, below, and are consistent with Forestry Best Management Practices (BMPs). The approved Forest Stewardship Plan must demonstrate (1) that the road improvements are necessary to provide reasonable forest management access to the Premises, (2) that the system of existing woods roads is not reasonably adequate, (3) the locations of natural deposits on the Premises that are suitable for extraction or excavation and use as road building materials, and (4) that such road improvements do not materially impair the purposes of this WPR. Upon intentional discontinuance of any unpaved woods roads, Grantor shall restore the roadbed, bridges, culverts and any disturbed abutting areas to a natural state, with even contour and in such a manner so as not to cause erosion, in order that natural re-forestation and re-vegetation may occur. Such restoration of woods roads shall be in accordance with Forestry BMPs and the approved Forest Stewardship Plan. Further, the importation of soil, gravel, sand, rock or other mineral resource or natural deposit (hereinafter “road building materials”) to construct such roads shall only be permitted when insufficient resources are available for excavation or extraction on the Premises as determined and approved by the Grantee in accordance with Article IV, below. BMPs to prevent the introduction of species that are not native to Worcester County (see II. G. above) shall be implemented when soil, sand, gravel and other materials are moved within the Premises or imported to the Premises for the purposes described in this Paragraph III. B. 2. Such BMPs shall be included in an approved Forest Stewardship Plan; and

3. Trails: The maintenance, use, and repair, or discontinuance of, existing unpaved trails and boardwalks identified in the Baseline Documentation Report and the approved Forest Stewardship Plan, substantially in their present condition; and the construction, relocation, replacement, repair and use of new unpaved trails and boardwalks, provided such new unpaved trails and boardwalks shall not have a travel surface that exceeds (5) five feet in width and are described in the approved Forest Stewardship Plan; and

4. Any maintenance, use, repair, construction, relocation, replacement, or discontinuance of improvements, woods roads or trails and boardwalks under this Article III.B shall be designed, located and constructed in a manner that will minimize negative impacts to water quality, soil conservation, wildlife conservation, cultural resources, and is not wasteful of the natural resources of the Premises, or detrimental to the purposes of this WPR.

C. Excavation. Excavation or extraction of soil, gravel, sand, rock or other mineral resource or natural deposit from the Premises solely for use in the construction, repair, maintenance or relocation of unpaved woods roads and trails on the Premises or on property contiguous with the Premises in common ownership by the Grantor or for purposes consistent with Section III.A, provided that:

1. The Grantor’s proposal for any such excavation or extraction and associated use shall be included in the Forest Stewardship Plan for the Premises unless below the applicable threshold outlined in Section III.A.1 or Section III.A.5, and shall not be permitted unless such excavation or extraction and associated use are deemed compatible with and in support of forest management by the Grantee and are described in the approved Forest Stewardship Plan; and
2. No excavated or extracted material shall be removed from the Premises except, the Grantor may remove a reasonable amount of soil, gravel, sand, rock or other mineral resource or natural deposit for purposes consistent with Section III.A. Excavation exceeding the applicable threshold described in Section III.A.1 or Section III.A.5.c, shall require notice to and approval from the Grantee pursuant to Section IV or shall be included in a Forest Stewardship Plan; and

3. No excavation or extraction shall be permitted from within the filter strips associated with rivers, streams, lakes, ponds, or wetlands described in the Forestry BMPs, except, with prior notice and approval from the Grantee pursuant to Section IV, the Grantor may remove a reasonable amount of soil, gravel, sand, rock or other mineral resource or natural deposit for purposes consistent with Section III.A so long as there is no material adverse impact on water quality as reasonably determined by the Grantee and in accordance with BMPs. Notice to and approval from Grantee shall be required under this section regardless of the amount of soil disturbance; and

4. Grantor shall restore all areas affected by said excavation or extraction either to the natural topography and condition (which means as existing prior to the excavation or extraction) or to a state that reasonably matches and blends in with the natural topography and condition. Said restoration to the natural topography and condition shall include, but not necessarily be limited to, the grading of cut banks to a natural angle of repose, the spreading of topsoil over the affected areas, the stabilization of the affected and adjacent areas against erosion, and the re-vegetation of affected areas with native plant species. Any topsoil removed during excavation or extraction shall be stockpiled onsite and used in the restoration of affected areas however, such topsoil may be removed or extracted for research purposes consistent with Section III.A. Extraction and excavation must be conducted in accordance with Forestry BMPs.

D. Compatible Non-Forest Uses. Maintaining and mowing of existing hayfields, grassland, fields, meadows, and shrubland; provided that:

1. The activities are conducted within the areas approximately identified in Exhibit C as Compatible Non-Forest Uses Area attached hereto and incorporated herein, the Baseline Documentation Report, and the approved Forest Stewardship Plan; and

2. The activities, in a Compatible Non-Forest Uses Area on the Premises, shall be conducted in a manner that minimizes to the maximum extent practicable any adverse effects on the natural resources on the Premises, including but not limited to any watercourse or wetlands on the Premises; and

3. No structures are erected except for purposes consistent with Section III.A; and

4. Any portion of the Premises in Compatible Non-Forest Use at the time of conveyance of this WPR that becomes forested shall not return to Compatible Non-Forest Uses.

In the event of any conflict between the provisions of this WPR and other applicable law regarding mandatory pond maintenance, such other law shall govern.
E. **Recreational Activities.** Passive recreational activities by the Grantor and the Grantor's invitees such as hiking, horseback riding, bicycling, snowshoeing, cross-country skiing, bird watching, non-motorized boating, nature study or research, and other like non-motorized activities (provided that reasonable access for persons with disabilities using motorized wheelchairs or other power-driven mobility devices shall be allowed), and as allowed by law, for trapping, hunting in compliance with all federal, state and local laws barring the use lead shot for hunting waterfowl, and fishing, including scouting for sites, use of portable and temporary deer stands, the erection thereof no earlier than two weeks before the appropriate hunting season and removal thereof no later than two weeks after the close of said season, provided that such use does not materially alter the landscape and are carried out in a reasonable manner that does not impair the purposes of this WPR.

F. **Archaeological Investigations.** The conduct of archaeological activities, including without limitation survey, excavation and artifact retrieval, following submission of an archaeological field investigation plan and its approval in writing by Grantee and the State Archaeologist of the Massachusetts Historical Commission (or appropriate successor official) and subject to approval by the Grantee in accordance with Article IV, below.

Grantor and Grantee shall make every reasonable effort to prohibit any person from conducting archaeological field investigation including metal detecting, digging, or artifact collecting without approval of the State Archaeologist of the Massachusetts Historical Commission (or appropriate successor official), and shall promptly report any such prohibited activity to the State Archaeologist of the Massachusetts Historical Commission (or appropriate successor official). Grantor and Grantee shall include the prohibition against digging, artifact collecting, or metal detecting in any list of rules for visitors to the Premises.

G. **Signs.** The erection and maintenance of signs no larger than two (2) square feet for the purpose of identifying ownership interests of the Premises; funding sources and other contributions; the restrictions on the use of the Premises; the identity or location of trails, areas of interest, natural features, historic significance; to mark property boundaries, and for providing other like information. The design and location of such signs shall be approved by the Grantee in accordance with Article IV, below. Every effort shall be made to keep sign size and number to a minimum.

H. **Vegetation Management.** The ordinary improvement and maintenance of landscape features of the Premises, including trimming, maintaining or replacing trees, shrubs or other plantings, and the de minimus dispersal and/or piling of these organic materials on the Premises; removing diseased or insect damaged trees or vegetation, removing limbs and trees that are a hazard to private property or public or private health or safety; controlling or eliminating insect infestations or invasive plant species, and cutting, mowing, or replacing grasses and other vegetation in accordance with established horticultural practices. The use or application of pesticides, herbicides, insecticides and fungicides, but not the storing, mixing or preparation for use thereof, shall be allowed to
carry out the activities authorized in this paragraph, provided that: (i) such substances are used in a way that minimizes impacts to and contact with non-target species, streams, vernal pools, wetlands, lakes and any other water bodies on the Premises, (ii) such use is based on prudent and sound silvicultural and horticultural principles, as applicable, and in conformance with manufacturer's directions, and (iii) all treatments must be described in the approved Forest Stewardship Plan for the Premises or obtain the approval of the Grantee in accordance with Article IV hereof.

I. Forest Management. Forest management, timber harvesting and tree cutting activities, provided that:

1. Forest Stewardship Plan: The Grantor shall have an approved Massachusetts Forest Stewardship Plan ("Stewardship Plan") for the Premises that is consistent with the provisions of section 5(f) of the Cooperative Forestry Assistance Act of 1978, 16 U.S.C. § 2103a(f), and that has been prepared by a Forester licensed under G.L. c. 132, s. 50, and 304 CMR 10.00, as amended, in conformance with the "Directions for the Preparation of the Chapter 61 Forest Management Plans and Forest Stewardship Plans" or such statutes, regulations and directions in effect at the time of the approval of said Stewardship Plan. Subsequent to recording this WPR, any amendment to or renewal of the Stewardship Plan shall reference this WPR and shall set management goals that are consistent with the terms and purposes of this WPR. The Stewardship Plan shall describe in detail the Grantor's plans for carrying out activities permitted under this WPR, including but not limited to forest management, improvements, new woods roads, and recreational activities on the Premises. Any amendment to or renewal of the Stewardship Plan shall reference this WPR and be submitted together with a copy of this WPR, to the Grantee for review and to the Massachusetts Department of Conservation and Recreation, Bureau of Forestry ("State Forester") for approval.

The Stewardship Plan shall be effective for a ten (10) year period and shall be resubmitted once every ten (10) years, together with a copy of this WPR, to the Grantee for review and to the State Forester for approval. Each subsequent submittal or any amendment to the Stewardship Plan shall be submitted by the Grantor for review by the Grantee and approval by the State Forester as provided above. By mutual agreement of the Grantor and the Grantee, the 10-year Stewardship Plan may be revised at any time by written amendment, subject to the provisions of this Article III.

2. Forest Cutting Plan: If any proposed timber or tree harvesting activity exceeds ten thousand board feet ("MBF") or ten (10) cords of wood during any consecutive twelve (12) month period, notwithstanding the thresholds described in G.L. c. 132, s. 44, Grantor shall submit a Forest Cutting Plan (hereinafter "Cutting Plan") prepared by a Forester licensed in accordance with G.L. c. 132, s. 50, and 304 CMR 10.00, as amended, for the written approval of the State Forester or his/her designee. The Cutting Plan shall be prepared in compliance with the Massachusetts Forest Cutting Practices Act, G.L. c. 132, ss. 40-46, inclusive, as amended, and associated regulations at 304 CMR 11.00, as amended, shall be in conformance with related
Department of Conservation and Recreation policies, and shall be consistent with the approved Stewardship Plan and the purposes of this WPR. The Cutting Plan shall reference this WPR and the approved Stewardship Plan, and shall be submitted together with a copy of this WPR and the approved Stewardship Plan, to the Grantee for review and to the State Forester for approval.

3. Commercial Harvesting: Commercial timber or tree harvesting is permitted, provided it is conducted in compliance with (a) the purposes of this WPR, (b) the approved Stewardship Plan, (c) the approved Cutting Plan, if required, and (d) prudent and sound forest management practices, using all required Best Management Practices and, to the extent possible, the recommended guidelines pursuant to the Massachusetts Forestry Best Management Practices Manual (Catanzaro, Fish, and Kittredge 2013) and subsequent versions and replacements thereof as may be approved by the Department of Conservation and Recreation (herein “Forestry BMPs”).

4. Harvesting for Personal Use: The cutting of trees, not to exceed ten (10) MBF or ten (10) cords of wood in any consecutive twelve (12) month period to provide non-commercial forest products for personal use is permitted, provided that the cutting is not inconsistent with the approved Stewardship Plan.

5. No provisions in the Stewardship Plan or the Cutting Plan shall change the meaning or terms of this WPR, and in the case of any conflict between this WPR and the Stewardship Plan or the Cutting Plan, the WPR shall govern.

J. Motor Vehicles. The use of motorized or power-driven vehicles necessary to carry out property management, maintenance and activities permitted under Section III of this WPR but excluding recreational activities.

K. Surveys and Boundaries. Conducting field and instrument surveys of the Premises and installing necessary and appropriate monumentation, including surveys to more accurately depict perimeter boundaries, stands or forestry boundaries, or other boundaries which may be needed to properly manage the Premises and carry out or abide by the terms of this WPR, to enter into agreements to resolve bona fide boundary disputes or ambiguities, with prior notice and approval (Section IV.) to Grantee, which consent shall not be unreasonably withheld.

L. Legal Compliance. The exercise of any right reserved by the Grantor under this Article III shall be in compliance with the then-current Zoning By-Law applicable to the Premises as affected by M.G.L. c.40A and its successor statutes, which contain special protections and exemptions for educational and scientific uses and activities, the Wetlands Protection Act (G.L. Chapter 131, Section 40) and all other applicable federal, state, and local laws and regulations. The inclusion of any reserved right in this Article III requiring a permit from a public agency does not imply that the Grantee takes any position on whether such permit should be issued.
M. Other Rights. Any activity not prohibited in Article II, or use not reserved herein is allowed only with the express written approval of the Grantee stating that such activity or use is not inconsistent with the purposes of the WPR. Any request by Grantor for approval to conduct, undertake or allow an activity or use not otherwise reserved shall be presented in accordance with Article IV, below.

IV. NOTICE AND APPROVAL: Unless otherwise provided herein or by law, the Grantor shall notify Grantee in writing, sent certified mail, return receipt requested, forty-five (45) days before allowing or undertaking any uses or activities on the Premises which require the approval of the Grantee such approval not to be unreasonably withheld, conditioned or delayed. Grantor shall also in the same manner notify the Grantee before allowing or undertaking any uses or activities which may significantly impair the conservation interests found within the Premises or are contrary to the purposes of this WPR. Notice from the Grantor shall describe the nature, scope, design, location, timetable, and any other material aspect of the proposed activity in sufficient detail to permit the Grantee to make an informed judgment as to its consistency with the purposes of the WPR. Grantor shall submit to Grantee such plans and other information as Grantee shall reasonably require determining whether the use or activity is consistent with the purposes of this WPR. Grantor shall also provide the State Forester or his designated representative a copy of all notices. All communications in this regard should be mailed to:

Commissioner
Massachusetts Department of Conservation and Recreation
251 Causeway Street
Boston, MA 02114-2104

with copies to:
Natural Resources Director
Division of Water Supply Protection
Department of Conservation and Recreation
180 Beaman Street
West Boylston, MA 01583

and

State Forester
Massachusetts Department of Conservation and Recreation
251 Causeway Street, Suite 600
Boston, MA 02114-2104

and

Forest Legacy Program Coordinator
Massachusetts Department of Conservation and Recreation
355 West Boylston Street
Clinton, MA 01510
VI. INSPECTION; RIGHT OF ACCESS:

A. Inspection. This WPR includes the grant of the right to Grantee, its successor and assigns to enter upon the Premises in a reasonable manner, including by motor vehicle if appropriate, and at reasonable times, with or without prior notice, for the purpose of inspecting the Premises to determine compliance with the terms of this WPR. In the event of any violation, Grantee must notify Grantor thereof and request Grantor to remedy such violation.

If Grantor fails to cure the violation within forty-five (45) days after receipt of written notice thereof from Grantee, or such additional time as may be reasonable under the circumstances as determined by the Grantee, then the Grantee, with or without an order of court, may enter upon the Premises to take reasonable measures to remedy or abate the violation, and may pursue its remedies as described in Article V, above.

B. Public Access. This WPR also includes the grant of the right to Grantee, its successor and assigns, to enter upon and permit the public to enter upon, traverse and otherwise use the Premises in accordance with all state laws and regulations, for purposes of passive recreational activities such as hiking, snowshoeing, cross-country skiing, bird watching, non-motorized boating, nature study or research, and other like non-motorized activities excluding horseback riding (provided that reasonable access for persons with disabilities using motorized wheelchairs or other power-driven mobility devices shall be allowed), and as allowed by law, for trapping, hunting, (other than waterfowl hunting by the public, which is prohibited) in compliance all federal, state and local laws, and fishing provided that such uses do not materially alter the landscape and are carried out in a reasonable manner that does not impair the purposes of this WPR. Grantor reserves the right to exclude public access from one or more areas of the Premises as needed for public safety, to protect the conservation values of this WPR or to protect the educational, scientific or research activities permitted under Section III.A. Rules and regulations notifying the public of such restrictions may be posted throughout the Premises consistent with signage requirements in Section III.G.

VII. COSTS, TAXES, LIABILITY: Grantor shall pay and discharge when due any and all real property taxes and other assessments levied by competent authority on the Premises.

VIII. EXTINGUISHMENT AND EMINENT DOMAIN; PROCEEDS; REVERSION OF FUNDS: The grant of this WPR gives rise to a real property interest immediately vested in the Grantee and which has a fair market value equal to the amount by which the WPR reduces, at the time of the grant, the appraised fair market value of the Premises as if unrestricted. Such proportionate value of this WPR at the time of the grant is Seventy-Three and One Third percent (73 1/3%), which proportionate value shall remain constant.

A. Extinguishment and Eminent Domain. If any change in conditions, including a taking by a public authority (other than the Commonwealth) under power of eminent domain, gives rise to extinguishment or other release of this WPR under applicable law, Grantee
shall be entitled to its proportionate share of the proceeds equal to the proportionate value of the WPR, subject, however, to any applicable law which expressly provides for a different disposition of proceeds, and subject to the provisions of the Forest Legacy Program. The Grantor and Grantee shall cooperate in recovering the full value of all direct and consequential damages resulting from extinguishment, provided that, if the public authority is The Commonwealth, the Grantor and Grantee shall pursue their remedies separately.

B. Proceeds. The recovery of proceeds by the Grantor and Grantee, if any, shall be governed by the proportionate value of the WPR, as hereinabove defined, as determined by an appraisal at the time of extinguishment.

If the conservation interests protected hereby are unaffected by the taking, and the only interest taken by public authority is the Grantor’s interest, and recovered proceeds are awarded on the basis of the value of the Premises as restricted by this WPR, then the proceeds from such taking shall be payable in their entirety to Grantor.

C. Reversion of Funds. The Grantee acknowledges that this WPR was acquired with Federal funds under the Forest Legacy Program (P.L. 101-624; 104 Stat. 3359), and that the interest acquired cannot be sold, exchanged, released or otherwise disposed except in accordance with the Forest Legacy Program grant requirements, and unless the United States is reimbursed proportionate value of the WPR as determined by an appraisal at the time of the extinguishment. However, the United States Secretary of Agriculture may exercise discretion to consent to the sale, exchange, release or disposition upon the State’s tender of equal valued consideration acceptable to the Secretary, or as otherwise approved by the Secretary.

IX. BINDING EFFECT; ASSIGNMENT; AMENDMENT AND DURATION: This WPR and all terms and provisions hereof shall be deemed to run with the land and be binding upon the Grantor, and the successors and assigns of both the Grantor and Grantee. The benefits of this WPR are not appurtenant to any particular parcel of land, and shall be in gross and assignable or transferable, provided such assignment or transfer is limited only to a government entity; is consistent with Article 97 of the Amendments to the Massachusetts Constitution, Section 170h(1) of the U.S. Internal Revenue Code of 1986, as amended, and the Forest Legacy Program, provided further that such entity has among its purposes the conservation and preservation of land and water and agrees to and is capable of enforcing the conservation purposes of this WPR. Any such assignee or transferee shall have the like power of assignment or transfer.

This WPR may only be voluntarily released, in whole or in part, by the Grantee, or amended by the parties, consistent with G.L. Chapter 184, Section 32, Article 97 of the Amendments to the Massachusetts Constitution, and the Forest Legacy Program. No amendment may be made that will be inconsistent with the purposes of this WPR, affect its perpetual duration thereof, or adversely affect any of the significant conservation values of the Premises. Any such amendment shall be recorded with the Registry of Deeds where the land lies.
X. SUBSEQUENT TRANSFERS: The Grantor agrees to incorporate by reference the terms of this WPR in any deed or other legal instrument by which it divests itself of any interest in the Premises, including, without limitation, a leasehold interest. Grantor further agrees to give written notice to Grantee of such transfer at least thirty (30) days prior to the date of such transfer. Grantor shall also provide the State Forester or his designated representative a copy of all such notices.

XI. SEVERABILITY: If any Article or provision of this WPR shall be held to be unenforceable by any court of competent jurisdiction, this WPR shall be construed as though such section had not been included in it. If any Article or provision of this WPR shall be susceptible of two constructions, one of which would render such Article or provision invalid, then such Article or provision shall be given the construction that would render it valid. If any Article or provision of this instrument is ambiguous, it shall be interpreted in accordance with the policies and provisions expressed in Article 97 of the Amendments to the Massachusetts Constitution, the requirements of the Forest Legacy Program established pursuant to Section 1217 of Title XII of the Food, Agriculture, Conservation and Trade Act of 1990, Public Law 101-624:104 stat. 3359, G.L. Chapter 132A, G.L. Chapter 92A 1/4, and G.L. Chapter 184, Section 32.

XII. MISCELLANEOUS:

A. Excise Stamps. No Massachusetts deed excise tax stamps are required by G.L. Chapter 64D, Section 1, as the Commonwealth is a party to this instrument.

B. Homestead. The Grantor shall record at the appropriate Registry of Deeds simultaneously with this WPR all documents necessary to subordinate to the WPR, any estate of homestead affecting the Premises.

C. Mortgage Subordination: The Grantor shall record at the appropriate Registry of Deeds simultaneously with this WPR all documents necessary to subordinate any mortgage, promissory note, loan, equity credit line, refinance assignment of mortgage, lease, financing statement or any other agreement which gives rise to a surety interest affecting the Premises.

XIII. EFFECTIVE DATE: This WPR shall become effective upon recording in the Worcester South District Registry of Deeds.
Supplemental Materials

S. 1. Buxton Farms - Hopkins Memorial Forest Land Acquisitions
S. 2. Hopkins Memorial Forest Topography and Permanent Plot System.
S. 4. Regional Significance of HMF Land Preservation.

David McGowan <dmcgowan@wrlf.org>  
Mon, May 13, 2019 4:52 PM  
to Hart@Williams.edu, Jim, Donald

Hi Hank-

Attached are a couple of draft sections/appendices for your proposal to WC re: Hopkins Forest. I wrote one and Donald and Jim prepared the other.

Please review them and let us know how we can improve them. We are happy to help any way we can.

Our next meeting of the Berkshire Taconic Regional Conservation Partnership is Wednesday....

Cheers, David

Regional Strategic Significance of HMF Land Protection
By: - Donald Campbell, Vermont Land Trust  
- Jim Bonesteel, Rensselaer Plateau Alliance

Due to many unique biological, geological, and cultural factors, the Berkshire and Taconic Mountain Range stretching from the Hudson Highlands to Lake Champlain have long been identified as a critical conservation target. The often rich Taconic soils not only support exceptional northern hardwood timber species, the range is also much more biologically diverse than many nearby ranges such as the Green Mountains and Adirondacks. Many consider the Taconics a reserve of biological diversity and critical ecological corridor for animal species as global climate change rapidly affects habitat. Although extensive State and Federal land purchases have protected significant portions of these mountains, not all land should be municipal and protection of private lands must be the priority. For this to be effective, local and regional land trusts look to thought leaders in the community to lead and inspire others; to permanently protect their lands to make overt the importance of conservation. An example of this is Merck Forest & Farmland Center in Rupert, Vermont. Although financially sound and ineligible for any tax benefits conservation might confer, this roughly 3,000-acre educational farm and forest recently chose to conserve their land to help inspire private landowners in the Taconics to do the same. When institutions that are financially stable and committed to education conserve their land, it validates what conservation-related science tells us and offers private landowners reassurance that protecting land is both manageable and important.

Because Hopkins Memorial Forest is uniquely located at the nexus of three states – an area that is split by state boundaries but not by ecological ones – it is a critical piece in a decades-long effort to protect the Taconics. Significant public and private investments have been made to conserve the mountains south, west, and north of the forest. Millions of dollars of public funds and thousands of hours of effort have gone into the effort to date, including the all-volunteer Taconic Crest Trail through New York, Massachusetts and Vermont. Land trusts from the three states would like to use a pledge to conserve Hopkins Forest as a catalyst to leverage other funding for adjacent projects and donations.
of land and conservation easements in support of fully protecting the land form where the states intersect. Williams College has the opportunity to inspire others, to leverage outside funding for regional conservation goal, to be part of a very long-term ambition to support our natural communities, and to let climate science and ecology be a guiding force in how we manage and enjoy the purple hills around us.

The Berkshire Taconic Regional Conservation Partnership (BTRCP) formed several years ago and brought together land trusts and other partners along the entire length of the Taconics from the Hudson Highlands to Lake Champlain in an effort to first envision the conservation of this region that is truly important to the ecological integrity of the entire northeast and then to move forward to make that vision reality. BCRCP is one of many RCPs in the northeast that are working to increase the pace and scale of land protection by working together. For detailed information about RCPs visit https://www.wildlandsandwoodlands.org/rcpnetwork.

BTRCP partners in the Williamstown area include The Rensselaer Plateau Alliance, Rensselaer Land Trust and Agricultural Stewardships Association in New York, the Vermont Land Trust in Vermont and the Williamstown Rural Lands Foundation and Berkshire Natural Resource Council in Massachusetts. The BTRCP not only serves to keep these and the other partners in close contact, meeting on a regular basis, but also lends more credibility in the eyes of state and federal agencies and other funders.
BERKSHIRE-TACONIC
REGIONAL CONSERVATION PARTNERSHIP
Instruments for Land Protection:
By: - David McGowan, Executive Director
Williamstown Rural Lands Foundation

Appendix XX. A description of potential protection instruments and funding sources for Hopkins Forest
Protection instruments. At present, Hopkins Forest is not legally conserved in any way. The college can
do whatever it wishes with the property, subject to site constraints and government regulations.
Indeed, the college has developed land that was once part of Hopkins Forest along Northwest Hill and
Forest roads.

In order to protect the property permanently, the college could elect to convey a conservation
easement (known statutorily as a Conservation Restriction in Massachusetts) to a governmental entity.
A conservation easement is a voluntary legal agreement between a landowner and a land trust or
government agency that permanently limits uses of the land in order to protect its conservation values.
Landowners retain many of their rights, including the right to own and use the land, and transfer it to
others.

An easement on Hopkins Forest would allow the college to continue to conduct forest research, build
and maintain trails, and offer academic classes/programs on the premises, but most development would
be prohibited. Existing buildings can be excluded from the restricted area. The easement could also
allow the college to enroll the property in Ecosystem Service Markets (carbon markets) if desired.
When a conservation easement is granted to a conservation organization, the value of the subject
property is diminished and the landowner is eligible for compensation. The landowner may choose to
donate the easement which may have tax benefits for some individuals or corporations. Otherwise, an
appraiser can determine the fair market value of the conservation easement by using the following
equation:
value of the land without the easement
minus
the value of the land as restricted by the easement
equals
the value of the conservation easement

Depending on the funding source, the easement can be conveyed to state or municipal government, or
to a local or regional land trust. The federal government does not typically hold conservation
easements.

Deed restrictions and time-limited (term) restrictions exist, but neither provides protection for the
property in perpetuity.

Funding Sources

Below is selection of potential funding sources that could be applied to the protection of Hopkins Forest.
Depending on the desired conservation objectives, some grants may be better suited than others to a
particular project. Some grant programs may be used in tandem with others. All grant sources are
competitive and can be challenging to obtain. A donation or bargain sale of an easement can greatly
enhance the prospect for a positive conservation outcome.

The staff at the Rensselaer Plateau Alliance, the Vermont Land Trust, and the Williamstown Rural Lands
Foundation have experience with many of these grants and can be consulted for additional information.

U.S. Forest Legacy Program – federal forest protection program that provides funding for states and
municipalities to acquire conservation easements. $60 million has been allocated nationally for the
program the past two years. Individual project maximum: $7 million. Program provides 75% of project costs; 25% must come from local cost-share. Hopkins Forest lies in designated Forest Legacy Areas in NY, MA, and VT.

**Landscape Partnership Grant Program** (MA) - This Massachusetts government program seeks to protect large blocks of conservation land. Local, state, and federal government agencies and non-profit groups can use this grant to work together to protect at least 500 acres of land. Individual project maximum: $1.25 million with a reimbursement rate of 50%. Only the Massachusetts portion of Hopkins Forest would be eligible for this grant.

**Acres for America** (Walmart/National Fish & Wildlife Foundation) – a public/private partnership grant program focused on conserving wildlife habitat and creating wildlife corridors. $3.6 million has been allocated for 2019 to support between four and eight projects. A 1:1 match is required, with competitive projects reaching a 5:1 match ratio.

**Sweet Water Trust** - Sweet Water Trust grants support land conservation that safeguards wild lands and waters, native wild flora and fauna, and living soils in Northern New York and New England. Funded project shall ensure permanent, forever wild protection through a conservation easement that sustains native plants and animals and ecosystem processes and prohibits development, subdivision, motorized uses, timber harvesting, agriculture, and mineral and gas extraction. Awards up to $1 million. Note: no timber harvesting is allowed under a Sweet Water-funded, Forever Wild easement.