

Christiantown Woods Preserve and Arrowhead Farm

West Tisbury, Massachusetts
Management Plan



April 25, 2023

Approved by the Martha's Vineyard land bank West Tisbury Advisory Board (12/20/2022)
Approved by the Martha's Vineyard land bank commission (1/10/2023)
Approved by the Secretary of the Executive Office of Energy & Environmental Affairs
(April 25, 2023)

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Executive Summary

The Christiantown Woods Preserve and Arrowhead Farm complex is a 48.4-acre area of conservation land consisting of mixed deciduous woodland and agricultural fields. Christiantown North, the northern 7.5 acres, abuts the Wampanoag Chapel and burial grounds for the “praying Indians” of Christiantown. Christiantown South, a 7.3-acre disjunct portion of the preserve, is located several hundred feet to the south along Christiantown Road and connects by way of the “Old Road to James Cleveland’s” to conservation land to the northwest (Cedar Tree Neck Sanctuary owned by Sheriff’s Meadow Foundation) and Arrowhead Farm (33.6 acres) to the south.

The property contains three general natural communities: a mixed-deciduous woodland; stream with adjacent wetland vegetation; and agricultural fields.

Vegetation and wildlife inventories on the preserve uncovered two commonwealth-listed bat species, one -listed moth species, one -listed reptile species and one -listed plant species. The woodlands meet primary habitat needs of each of these rare species with the -listed reptile requiring additional agricultural fields for breeding.

This management plan proposes to create approximately 2,700’ of new trails including a trail to connect to the Sherrif’s Meadow Foundation’s Cedar Tree Neck Sanctuary; restoration of the Old Road to James Cleveland’s; and a loop trail around the agricultural fields of the Arrowhead Farm. The plan also proposes a 3-6-vehicle trailhead off Indian Hill Road on Arrowhead Farm; restoration of the root cellar area on Christiantown Woods Preserve near the chapel; installation of 240 feet of raised boardwalks over three different locations; leasing up to 4.5 acres of the westerly hayfield for hay production or similar crops and, after the conclusion of the life-estate of the grantors of Arrowhead Farm, leasing the entire farm premises to a proven farmer. In addition, the plan proposes to prohibit motorized vehicles outside of farm equipment operated by the farm lessee; prohibit hunting due to proximity of occupied dwellings; remove and manage invasive species on the property; and permit archery hunting subject to the life-estate caveats pertaining to the farm.

The final section of the management plan outlines in detail all planning goals, objectives, and strategies. To be implemented, this plan must be presented at a public hearing and approved by the land bank’s West Tisbury town advisory board, the Martha’s Vineyard Land Bank Commission and the secretary of the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA). Additionally, a notice of intent and Massachusetts Endangered Species Act (MESA) review will be filed with the West Tisbury Conservation Commission and Massachusetts Natural Heritage and Endangered Species Program (MA-NHESP) for activity proposed in estimated and priority habitat for rare species and activities proposed in and around wetland resource areas.

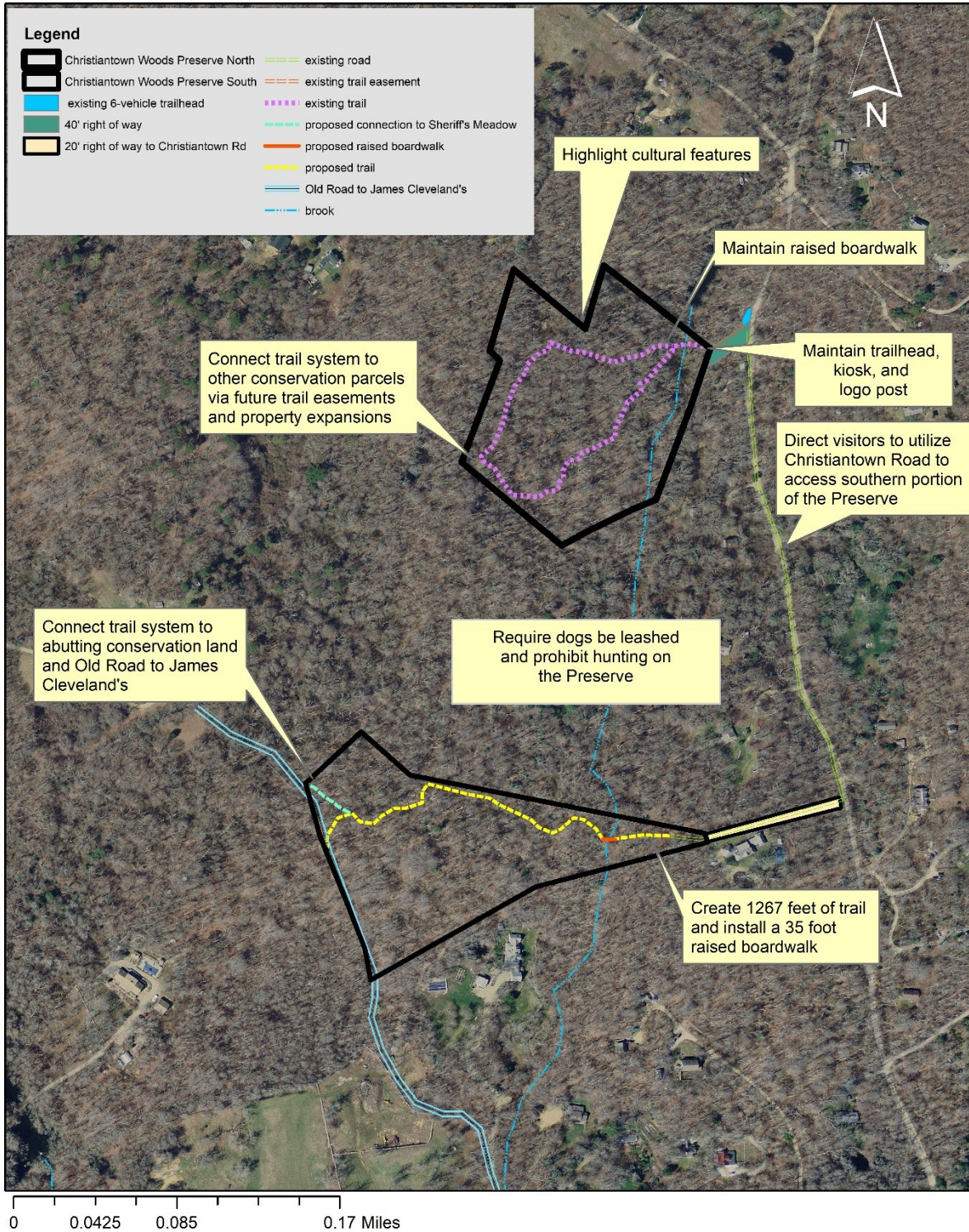
About the authors

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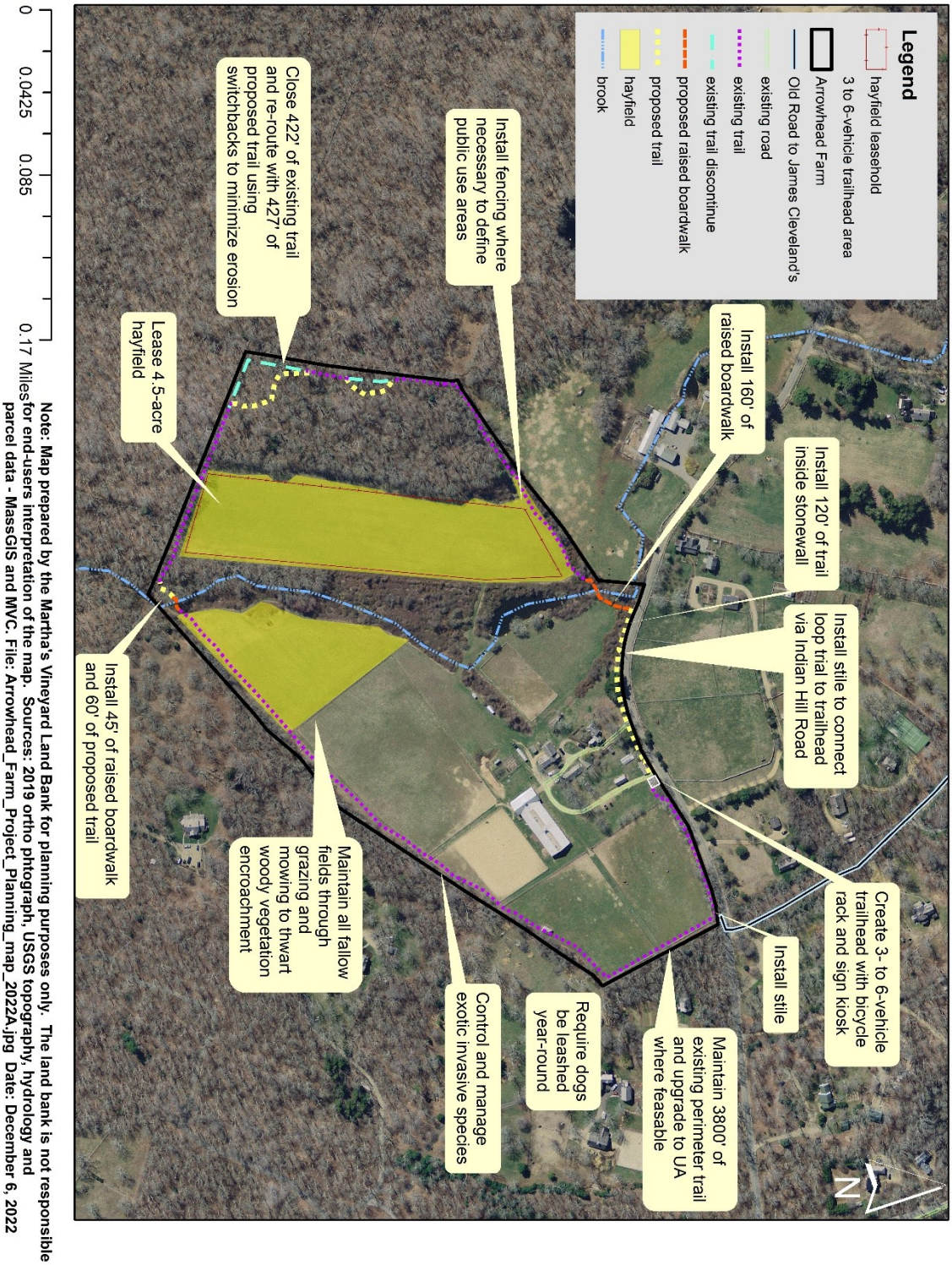
This plan is executed under the supervision of the Martha's Vineyard Land Bank land superintendent, Harrison Kisiel.

Proposed Project Planning Map Christiantown Woods Preserve, West Tisbury, MA



Note: Map prepared by the Martha's Vineyard Land Bank for planning purposes only. The land bank is not responsible for end-users interpretation of the map. Sources: 2019 ortho photograph, USGS topography, hydrology and parcel data - MassGIS and MVC. File: Christiantown_Project_Planning_map_2022.jpg Date: November 17th, 2022

Proposed Project Planning Map During Life-estate Arrowhead Farm, West Tisbury, MA



Proposed Project Planning Map Following Conclusion of Life-estate Arrowhead Farm, West Tisbury, MA

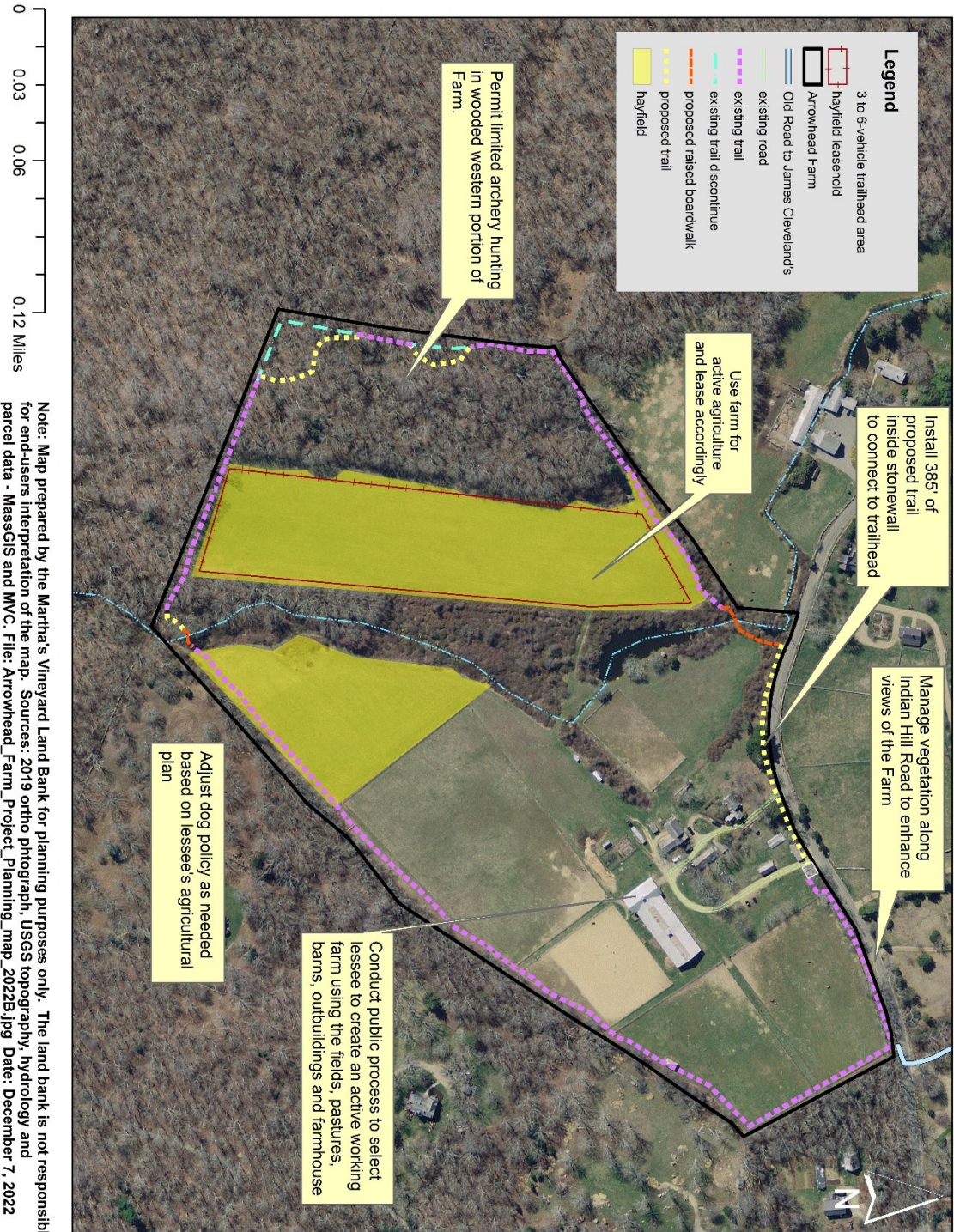


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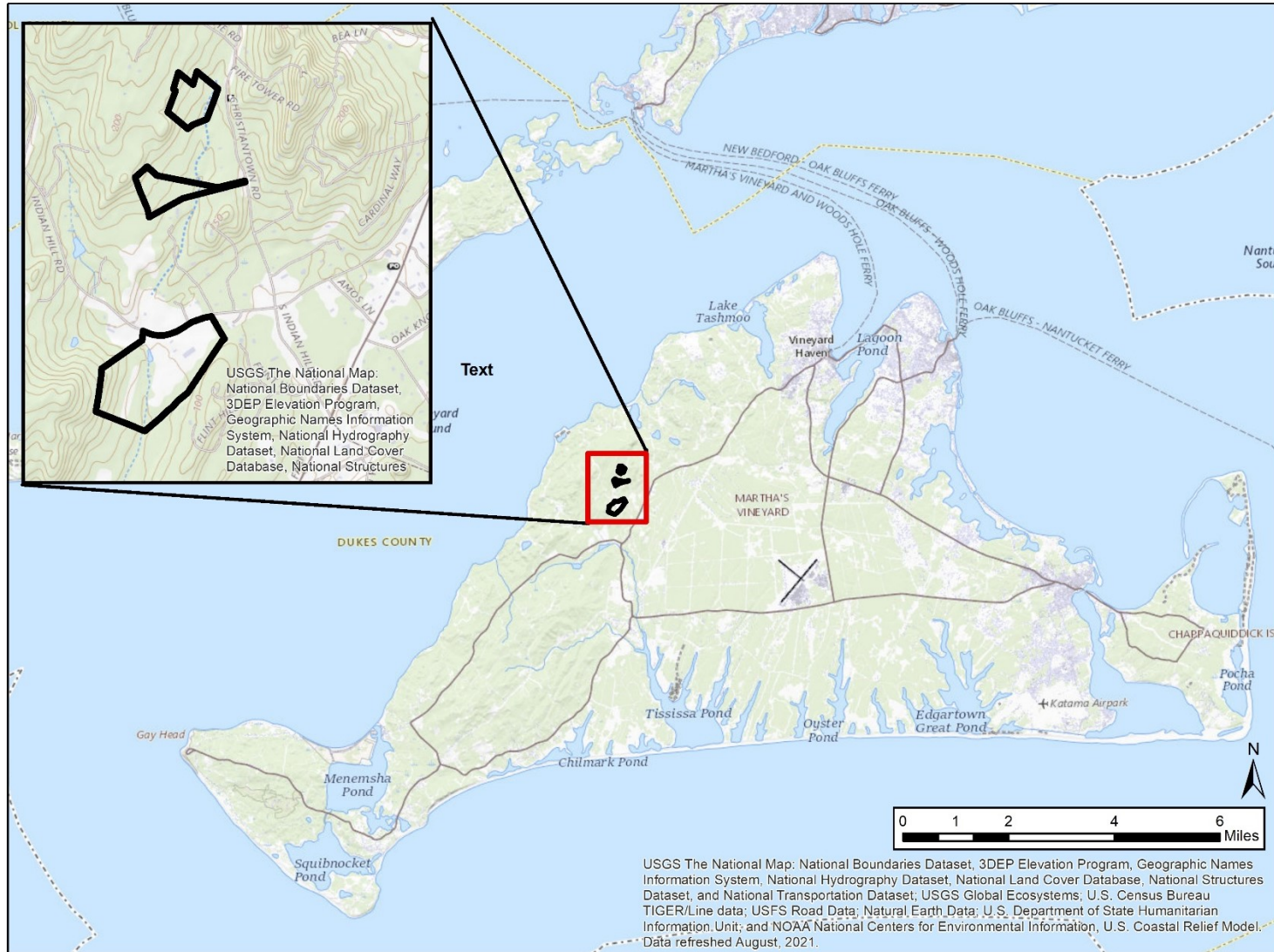
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Map 1: Locus Map of Christiantown Woods Preserve and Arrowhead Farm, West Tisbury, MA



I. Natural Resource Inventory

A. Physical Characteristics

1. Locus

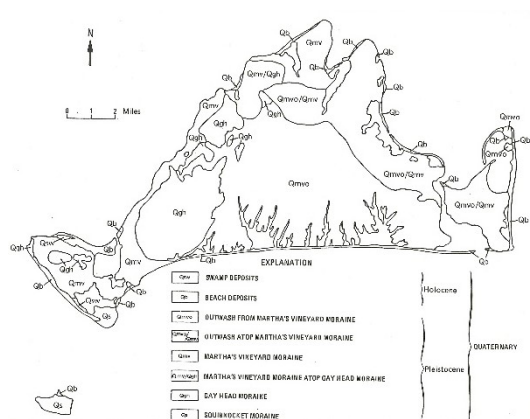
The Christiantown Woods Preserve and Arrowhead Farm are located at roughly 41° 25' 12.738" N, 70° 40' 43.1508"W in West Tisbury, Massachusetts. The property comprises three separate parcels amounting to 48.4 acres of woodland and farm fields. The Preserve and Farm are accessible by Indian Hill Road and Christiantown Road. See locus map above (**Map 1**, page 10) and aerial map (**Map 9**, page 46). The property is shown on West Tisbury tax maps: 15-13-1, 12-28, 12-29, 12-31, 12-32.

2. Survey Maps, Deeds and Preliminary Management Plan Goals

Larger copies of all surveys are on file at the land bank office and are available for inspection by appointment. Deeds, land bank preliminary management plan goals, and reduced copies of surveys are included in Appendix B.

3. Geology

Martha's Vineyard was formed during the most recent ice age. The convergence of the Cape Cod Bay lobe and Buzzards Bay lobe of the Laurentide formed the triangular shape of the island of Martha's Vineyard. The Laurentide ice sheet, a glacier over one-mile thick in places, grew and retreated over thousands of years, churning and depositing sediments on top of bedrock to form the region's landscape as it is viewed today. Movement of the ice eroded underlying substrates that were absorbed into the base of the ice sheet. The variable sized material called till either stuck to the surface of the advancing/retreating glacier or was deposited by glacial meltwater. Retreating glaciers left behind many features on the land: moraines (large heaps of unsorted sediments); glacial erratics (oversized boulders made of rock atypical for the region); and outwash plains (relatively flat, sandy and gravelly deposits from the meltwater of a glacier) (Oldale 1992).



Map 2: Generalized geological map of Martha's Vineyard

The Christiantown Woods Preserve and Arrowhead Farm compose lowland formed by meltwater in the Gay Head Moraine dating back to the Pleistocene (Fletcher and Roffinoli 1986; **Map 2**, page 11). Hills of till bedrock created by thrust moraine deposits reach heights greater than 200 feet and surround the lowland valley of the Preserve. The farm to the south of the



Preserve comprises coarse glacial stratified deposits. The entirety of the area reveals evidence of glacial till in the form of

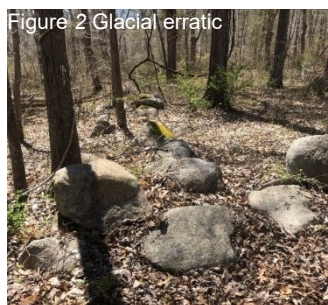


Figure 2: Glacial erratic

erratics and ubiquitous stonewalls (Figure 1, Figure 2). The smooth saddle-shape erratic near the trailhead for the Preserve reveals the grinding and polishing power of glacial meltwater (Figure 3).



Figure 3: Saddle-shape erratic

4. Soils

The General Soils Map (**Map 18**, Appendix C, page 86) depicts general classes of soils across Martha's Vineyard. The Preserve and Farm sit within the Eastchop-Chilmark-Nantucket complex that is characterized by "reworked glacial outwash, ice-thrusted coastal plain sediments, or glacial till; on moraines" (Fletcher and Roffinoli 1986).

Eastchop series dominates the complex at 57% and is most pronounced on Arrowhead Farm in the woodland and equestrian areas. A moderate swath of Pompton sandy loam on the Farm supports a pond, stream and abutting shrub swamp and Haven series soils support the hayfield. Chilmark series dominates the northern woodland of the Preserve apart from a band of Moshup loam that supports an intermittent stream and associated wetland vegetation. A detailed map and discussion of the soil types associated with the property, as described by Fletcher and Roffinoli (1986) can be found in Appendix C (**Map 20**, page 88).

5. Topography

Christiantown Woods and Arrowhead Farm are situated in a lowland area at the foothills of a large morainal ridge along the northwest edge of Martha's Vineyard. Fluctuations in elevation in the lowland are minimal and range between a 0.4- to 0.6-inch rise per foot except for a rise of 1.5 inches per foot in the northwest reaches of the Preserve and a steeper rise of 2.4 inches per foot in the woodland of the Farm. Indian Hill and the Lookout Tower Hill to the north of the preserve rise to heights over 200 feet. The farm fields are situated in an area of minimal elevation change and contain well-drained Eastchop and Haven soils, adding to the Farm's suitability for crops and pasturage.

A map of the topography in 10ft intervals is located in Appendix A (**Map 10**, page 47).

6. Hydrology

The entirety of Christiantown Woods Preserve and Arrowhead Farm fall within the northern limits of the 11,762-acre Tisbury Great Pond watershed and nearly the entirety within the Mill Brook 2,602-acre sub-watershed and Priester's Pond 613-acre sub-sub-watershed (Appendix A, **Map 11**, page 48). Hydric soils supporting surface wetlands in the form of intermittent streams and small ponds bring water south through the Preserve and Farm, ultimately contributing to the

Mill Brook by way of Priester's Pond. There are 13 acres of wetland resource area on the property including the 100-foot buffer zone from a bordering vegetated wetland along 1,909 feet of intermittent and non-intermittent stream and a 0.29-acre pond as well as an additional 5 acres of riverfront area, all of which are protected through the West Tisbury wetlands protection bylaw. A contiguous stretch of stream flows through the Farm and is bordered by shrub swamp.

The Preserve and Farm are over a mile from the coast and are situated well outside the 10-foot LiDAR sea-level projection in an area of minimal flood hazard (FEMA Flood Zones) (Appendix A, **Map 12**, page 50).

7. Ecological Processes

Ecosystems comprise the physical environment and all the living organisms (biotic components) in a defined area that interact with the abiotic components such as air, water, and mineral soil. Biological, physical, and chemical processes link abiotic and biotic components together. These ecological processes cycle water and nutrients, transfer carbon, produce oxygen, move nutrients, build soils, and enable reproduction. Ecosystems are impacted by external and internal factors over various temporal and spatial scales from seasonal changes in temperature to climate change and pesticide use to land use changes (EPA 2022).

Biophysical Habitats

Habitat complexity

Christiantown Woods Preserve and Arrowhead Farm represent a gradient of habitats from hayfields and woodlands to wetland complexes that support plant and wildlife biodiversity and subsequently increase ecosystem stability. Within each habitat is a complex structure of plant species. Woodland vegetation ranges from low-growing forbs such as Canada mayflower and pyrola to a full canopy of oak, American beech, and sassafras trees. Understory sapling trees are sparse and are dominated by sassafras and beech. Dead trees, if left standing, become snags that provide cavities for woodpeckers. Other long-lived trees growing in moist soils may develop trunk rot that forms cavities at the base of the tree and sometimes further up the trunk. Specific bryophyte and lichen species only occur on bark below a rot hole due to the increased pH resulting from cavity leakage (Butler et al. 2020). Epicormic shoots on the trunk sprouting from dormant buds under the bark support nests for small birds (Butler et al. 2020). Not all areas of woodland on the property share the same composition of structure. Depending on soil, slope, and light penetration some areas of woodland support hydric species such as beetlebung, high bush blueberry, and a variety of ferns.



Figure 4: Fallen logs increase habitat complexity

Natural and anthropogenic disturbance impacts habitat structure. The natural disturbance regime for northeastern deciduous woodlands typically includes fire, wind, and insect damage. Fire is a less frequent means of natural disturbance, as fire suppression is an active part of forest management. Wind remains an active force of nature, especially along the coast-facing northeast. Hurricanes, microbursts, and blizzards are familiar weather patterns on Martha's Vineyard and are associated with strong winds over 60 mph. Numerous fallen trees litter the woodland floor of the property creating microhabitats for fungi, moss and lichen (Figure 4). Multi-trunked trees on

the preserve indicate prior use of the woodland as a woodlot. Areas of open canopy resulting from tree falls and selective cutting are opportunities for new tree generations to grow and diversify low-growing communities of woodland forbs and grasses. Insect damage to oak species (particularly black oak) from winter and gypsy moths and cynipid gall wasps has successfully altered the woodlands in various areas of Martha's Vineyard. The woodland on the property was not significantly affected by these insects primarily due to the diversity of deciduous trees there. Areas of open canopy resulting from tree falls and selective cutting are opportunities for new tree generations to grow and diversify low-growing communities of woodland forbs and grasses.

Human-induced disturbance in the form of historic land clearing in the upland habitats, in addition to selective cutting as well as the lack of disturbance in the form of mowing and grazing, results in opportunities for different stages of the

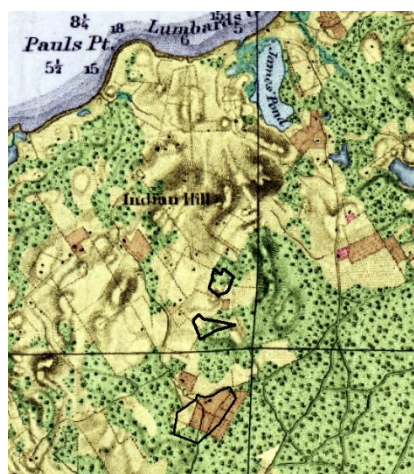


Figure 5: Whiting map of 1850

community to prosper over time. The Whiting map (Figure 514) from 1850 depicts 30% of the property in woodland and the remainder in agriculture with 21 acres in crops and 12 acres in pasture. Late 19th century topographic maps clearly outline the various stonewalls that defined agriculture land on the property. Grazing can increase biodiversity of grassland habitats by altering the physical structure through non-uniform use of plants and scale of grazing operation. An increase in plant species diversity often can translate into an increase in wildlife species in a habitat (Allison and Bender 2017).

Over the next century land use on the property changed as economic growth focused less on agriculture. Species such as the heath hen and grasshopper sparrow that came to depend on and prosper from open habitats during the 18th and 19th centuries have gone extinct or declined significantly. An additional

20% of the property converted from agricultural use to woodlands with a moderately closed canopy of deciduous trees with a substantial undergrowth of American holly. This hearty broadleaf evergreen can grow in a variety of soil conditions and is extremely shade-tolerant (Dirr 1990). Holly trees litter old farmland as they were protected from cutting for cultural and agricultural reasons. The holly trees are thought to bring good luck; the leaves are used for winter fodder due to their high caloric content and they make excellent stock-proof hedgerows and shelters for livestock (Hosking and Green 2011). The presence of hollies with their red berries increases biodiversity of the woodland by attracting a variety of songbirds, in particular thrushes, mockingbirds, blue jays, robins, catbirds, bluebirds, and thrashers. Hollies not only provide livestock shelter but also white-tailed deer, raccoons, skunks, and squirrels (Martin et al. 1961).

The Farm supports two hayfields (Figure 6) and various equestrian riding and grazing areas. Staggering spring mows in hayfields and using no-till seeding offers ground-nesting birds an opportunity to prosper (Majewski 2017, Ochterski 2006). Preserving open habitats for agriculture holds the door open for species that depend on the intermittent stages of conversion of land from open to wooded habitats.



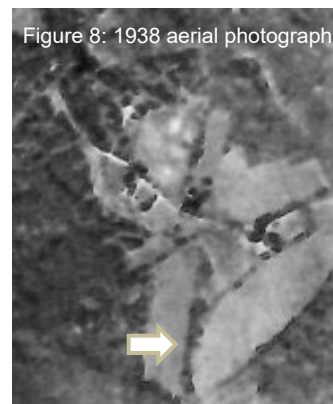
Figure 6: Hayfield at Arrowhead Farm

The structure of plant species in the wetland environs has evolved over the past few centuries into a more complex and stable habitat. The open land as shown abutting the stream that runs through the farm in the 1850 Whiting map is narrowly buffered by vegetation in the 1938 aerial photographs (Figure 5, page 14, Figure 8). The wetlands protection act of Massachusetts was enacted in 1972 and the narrow buffer alongside the stream has since doubled in size and comprises a dense tangle of non-native opportunistic species interspersed with a few native wetland shrubs (Figure 7). The increase in plant species diversity along the stream has a trickle-down affect into wildlife species, particularly avian fauna.

Figure 7: 2019 aerial photograph



Figure 8: 1938 aerial photograph



Hydrological Processes

Consideration of the impacts of vegetation communities on the ecosystem water cycle is important. Vegetation in general controls and sustains evapotranspiration (green water glow) and precipitation in the terrestrial water

cycle. Blue water flow consists of surface and groundwater runoff. Green water comes from root-zone soil moisture and supports terrestrial vegetation while blue water supplies recharge stream flow and aquifers that provide water for organisms to consume and societies to utilize (Falkenmark and Rockstrom 2004). Vegetation layers help catch water and aid in soil infiltration. Conversion of woodlands to croplands and pasture vegetation results in decreased evapotranspiration, precipitation, and water table depths and increased runoff by reducing soil infiltration, surface roughness, and root depth, increasing the ability of the surface to reflect sunlight (Bonan et al. 2002). The opposite affect is observed with afforestation (Nosettlo et al. 2005). Irrigation of agriculture and rerouting the natural flow of water can reduce groundwater and stream flow; lead to greater soil evaporation; change the ecosystem's resilience to flooding; and alter habitats. Removal of vegetation in wetlands increases temperatures in streams; this can ultimately alter the oxygen content and increase evaporation at the soil surface, resulting in the drying of hydric soils (Armentano 1980).

A significant portion of the Mill Brook tributary stream that traverses the Farm was rerouted using culverts and concrete channels and a small 0.17-acre pond was created as part of an irrigation system installed during Robert Elwell's ownership in the mid-1900's (Vineyard Gazette Nov., 23, 1951, Figure 9). The displacement and entrapment of water on the Farm disrupts the natural flow of surface water in the tributary, resulting in an intermittent

Figure 9: Arrowhead farm irrigation pond



stream until the tributary resurfaces, crosses under North Road and enters Priester's Pond (Personal communication Prudy Burt 2020). The replacement of native vegetation with invasive exotic species around the fields and wetlands of the farm could alter the soil water balance and resilience of the habitats to droughts and floods. Strategies to help protect the hydrological patterns of the ecosystem on the property include: minimizing soil disturbance and maintaining vegetative cover; using no-till seeding practices in the hayfields and converting the equestrian riding rings to crop or pasture land on the Farm; removing invasive species and restoring native vegetation; maintaining vegetative buffers around wetland habitats; restoring the natural flow of the Mill Brook tributary on the Farm; and maintaining a diverse structural ecosystem.

Primary Productivity

Primary production reflects the total organic matter produced as a result of photosynthesis and nutrient uptake from the soil (Egunjobi 1969). Organic matter is stored in large quantities in woodland systems as leaf litter. Nutrients are removed from soil by plants and through the biogeochemical cycle are returned to the soil to be reabsorbed into the inorganic-organic system. In

some woodland systems more nutrients return to the soil in leaf litter than are taken up by the woodland plants (Ovington 1965). In comparison, nutrients in pastures are returned to the soil in larger quantities through urine and feces than through the organic system. Movement of animals leads to movement of nutrients from one system to another (Egunjobi 1969). Biodiversity is often positively linked with primary productivity. However, in situations of competitive exclusion that occur when, for example, fertilizer application is stopped, biodiversity increases (Roy 2001). Human activities have major impacts on nutrient dynamics via fertilizers and land-use changes. Crop harvesting interrupts the return of nutrients back into the soil. Certain agricultural practices such as improper manure storage, incorrect application of fertilizers, and inadequate crop and pasture rotation practices can either enrich ground and surface water with nutrients or deplete nutrients in soils. Land-use that causes erosion in combination with fertilizer application can cause excess nutrients to enter watersheds resulting in eutrophication of downstream lakes, ponds, and estuaries. Eutrophication is a process in which nutrient additions cause an overabundance of algae; as the algae die, decomposing bacteria break down the material, decreasing oxygen levels. Low oxygen and acidification (due to excess carbon dioxide) are harmful to fish and other aquatic life (NOAA 2017). Vegetative buffers between open agricultural land and wetland resource areas help reduce nutrient transfer from soils to surface water.

Climatic Processes

Rising temperatures from global warming are resulting in longer growing seasons, earlier breeding seasons and subsequent shifts in vegetation composition and wildlife species that rely on specific habitats (Stenseth et al. 2002). Southern species of plants and subsequently animals are moving north as changing climates meet their needs. In some cases, the species additions increase biodiversity and in other situations the new arrivals are more aggressive and are habitat generalists, resulting in a decline in biodiversity. In woodlands, trees' natural ability to adapt to climate change is not responding as quickly as climatic changes are occurring. Climate change can increase tree vulnerability with the addition of invasive pests as is the case with beech bark disease. The disease is caused by a scale insect – fungus relationship. The scale predisposes the beech tree to a fungus attack and climate changes that results in wildly fluctuating drought and heavy precipitation periods can further exacerbate the impacts (Stephanson and Coe 2017). Additionally, climate change results in the expansion of invasive pest ranges as is the case in the spotted lanternfly. In 2021 the first breeding population of spotted lanternfly was discovered in Massachusetts. It is an invasive pest of agricultural crops, trees and shrubs that has been moving north from Pennsylvania since 2014 (Massachusetts Department of Agricultural Resources 2022). Monitoring for invasive species and managing their growth will help protect biodiversity on the property.

Promoting management practices such as pasturing and haying that sequester

a large yield of carbon in the perennial grass root system can help slow the pace of global warming giving local species the opportunity to adapt to the changing climate (Silviera 2012). Adoption of pasture management strategies that improve plant productivity as well as promote soil carbon sequestration such as fertilizer, lime, grazing rotations, fire, and the addition of legumes are also desirable (Silviera 2012). The conservation of grasslands and subsequent use as pastureland and hayfields are essential pieces to the climate change mitigation puzzle, especially as development far outpaces conservation of open land on a global scale.

Biotic interactions

Biotic interactions require knowing the characteristics of individual species and the network within which interact. Species in a network are connected through processes like predation, competition, and mutualisms. Alterations of these biotic interactions through the introduction of exotic species, over-collection of a species and disease can cause sweeping cascades in the network depending on the nature and strength of interactions a specific species had within the community (Bennett et al. 2009, USGS 2012). Pollinators and exotic plants play both positive and negative roles, respectively, in biotic interactions of an ecosystem. Spraying pesticides and introducing exotic pollinators can impact other non-target pollinators, sometimes resulting in a major decrease in species diversity of plants that are reproductively dependent on native pollinators. Invasive species, for example, can outcompete native species due to some advantage in their life strategy and/or a lack of pests and predators. Asiatic bittersweet (*Celastrus orbiculatus*) is a good case study of these effects; this invasive species was introduced from China as early as 1860. This fast-growing vine can hurt native woody species by girdling trunks as it climbs and decreasing the amount of sunlight reaching native leaves. Infestations of this species can quickly alter the compositions and health of a forest stand.

Protecting species with high community importance values; removing exotic species before they have aggressively invaded; and implementing elastic management strategies that are modified in response to monitoring efforts are all strategies that can reduce effects on biotic interactions.

Population dynamics

Loss of a species can have many unseen effects on a community depending on the interactions that the species had in its environment. Species dispersion, recruitment, fertility, and mortality compose a species' population dynamics and, along with genetic diversity, play an important role in the success of a species (Ferris and Wilson 1987, USGS 2012). Small populations isolated by reduced habitat or habitat fragmentation are vulnerable to extinction, locally and globally. Other species are more widespread but occur in few numbers and are vulnerable due to low genetic diversity. Ecosystems are not static, and species require genetic diversity to adapt to their ever-changing world or risk extinction. It is not all doom and gloom for species when it comes to their

population dynamics. Population dynamics can be positively influenced as is the case for some terrestrial orchid species that are able to expand their ranges in response to climate change, resulting in long-term survival benefits of the species (Van der Meer et al. 2016). Conserving contiguous ecosystems and rare habitats, minimizing fragmentation, and taking special care to consider the effects management actions may have on population dynamics of species that occur on the property is important.

B. Biological Characteristics

1. Vegetation

Christiantown Woods Preserve and Arrowhead Farm comprise three general habitat communities – woodland, agricultural fields, and wetlands. They are described in detail and displayed on the Ecological Communities **Map 21** (Appendix D, page 95). Wetlands occur in the form of shrub swamps and red maple woodlands along intermittent and contiguous above-ground streams and ponds. Hayfields, riding rings, and pastures compose the agricultural fields on the Farm.

A total of 114 plant species is known to occur on the Preserve and Farm (Appendix D, Table 1, page 91). The property acreage is split nearly in half between the woodland and agricultural vegetation communities. However, woodland, comprising 22.5 acres is the largest uniform habitat on the property. Agriculture is divided among 8.6 acres of hayfields, 8.7 acres of pasture, 1-acre equestrian riding ring and 2.3 acres of agricultural buildings and development. A 4.8-acre shrub swamp and 0.2-acre pond occur along the stream that runs through the Farm.

One commonwealth-listed plant species is known to occur on the property in the woodland. Several exotic invasive plants – including but not limited to multiflora rose, barberry, Japanese honeysuckle, Asiatic bittersweet and Japanese holly – occur abutting the agricultural fields and stonewalls of the property.

2. Wildlife

Wildlife Surveys

Formal avian point-count surveys were performed during the winter of 1999-2000, summer of 2019 and summer of 1994. Three survey points were established on the northern 7.5 acres in 1994. Surveys utilizing the 1994 points were repeated in 1999, 2000 and 2019. Two additional points were added to the middle 7.3-acre area in 2019. All survey points were located in the woodland habitat as marked on **Map 22** (Appendix E, page 101).

Night flying moth community composition and abundance was assessed using black-light traps during the summer of 2019. One trap was placed over a period of five nights in the woodland between June 26 and September 3 (**Map 22**).

Bat species were surveyed in 2019 using an acoustic monitor from August 9-August 11 followed by mist netting on August 20, 2019.

Opportunistic observations of other wildlife (mammals, reptiles, amphibians, and invertebrates) took place while on the property. Direct and indirect (tracks and scat) sightings aided in creating a running inventory of species. The lists of these groups in **Table 2** (Appendix E, page 99) are not exhaustive but provide an assessment of common occupants of Christiantown Woods Preserve and Arrowhead Farm.

A. Birds

Twenty-three avian species were detected on Christiantown Woods Preserve and Arrowhead Farm during survey periods. A full list of species and their frequencies is included in **Table 4** (Appendix E, page 107).

B. Invertebrates

A total of 110 (including one listed species) lepidoptera species, belonging to eight families, was collected during the summer and fall of 2019. One species, *Dasylophia anguina*, was a new detection for land bank properties in 2019. A detailed list of Macrolepidoptera species observed on the property is included in **Table 3** (Appendix E, page 102). Additional three nuisance biting invertebrates were observed on the property and are included in **Table 2**, Appendix E.

C. Mammals

Ten mammal species were detected on the property through direct (sightings) or indirect (tracks, scat) observations. A full list of mammal species observed on the property is included in **Table 2**, Appendix E.

D. Reptiles and amphibians

Three reptile species and one amphibian species were observed on the property. A full list of these species is included in **Table 2**, Appendix E.

E. Fish

No fish were surveyed to compile this management plan.

3. Rare and Endangered Species

A significant portion of Christiantown Woods Preserve is designated as priority habitat for rare species by the Natural Heritage and Endangered Species Program (NHESP). The Farm is not considered priority or estimated habitat by NHESP (**Map 23**, Appendix F, page 109). Priority habitat is the geographic extent of commonwealth-listed plant/wildlife species that fall under Massachusetts endangered species act (MESA) rulings. Estimated habitat is the extent of listed wetland wildlife species alone and is protected by wetland protection act (WPA) and MESA rulings. Projects proposed within these habitats that are not exempt (e.g., agriculture, maintenance of existing roads, rare species habitat management) must be approved by NHESP and, in the case of wetland habitat, the West Tisbury conservation commission and NHESP to ensure that activities are not harming protected species or their

habitat.

Much of the property is wooded with a moderately closed canopy and sparse understory, resulting in filtered light through to the ground. The combination of light and moisture on the woodland floor creates more opportunities for seed germination, which can lead to increased plant species diversity. One commonwealth listed forb was observed in the mixed-deciduous woodland of the Preserve. Additionally, the woodland provides breeding and feeding habitat for various moth species. Many of these moth species are protected by the commonwealth Endangered Species Act. One such moth species was observed during 2019 lepidoptera trapping efforts in the woodland of the property. Two listed bat species that utilize the woodland for roosting habitat and foraging for insects were detected on the Preserve through acoustic monitoring in 2019. Finally, one listed reptile species associated with the area depends on both the agricultural and wooded components in the property.

Protecting the integrity of the woodlands on the property and promoting uneven stands and structural diversity are management goals that could benefit listed species associated with the property. Manipulating mowing regimes in fields to avoid nesting seasons (May 15-September 15) and implementing certain mowing techniques such as use of sickle-bar mowers, low gear mowing, 7-12" grass retention, creation of un-mowed buffer along woodland-field edge, and circular pattern mowing from center out to minimize impacts to animals are important components to consider in management of agricultural fields. Agricultural use goals and listed species management can conflict, and for this reason a flexible management style will be utilized.

C. Cultural Characteristics

1. Land History

The Christiantown Woods Preserve and Arrowhead Farm are in an area of the island known as Takemmy that was appealing for settlement by both Indigenous people and European settlers alike. Nearby hilltops offered good vantage points, woodlands were home to deer, Chilmark/Eastchop-dominated soils of 0-15% slope resulted in prime farmland (Marshall 2021), streams provided access to drinking water and shellfish-laden great ponds and the Vineyard Sound provided access to sustainable food. The northern reach of the Preserve abuts the Christiantown Meetinghouse – Mayhew Chapel (MACRIS #WTI-100, 1829) and nearby burial ground (MACRIS – #WTI-801). To the south, through Arrowhead Farm, runs a tributary to the Mill Brook. Both the preserve and farm are located within the boundary of Christiantown, the one-mile square area given by Sachem Josias (Keteannummin) in 1659 to four Wampanoag Christian converts – Pamick, Nonoussa, Tahquanum and Poxsin – in exchange for 20 shillings per year.

The informal agreement for a “praying town” was not long honored with payment by inhabitants and over a decade’s time was dissolved through “death

and removal” of the “praying Indians”. Territory disputes and complaints by Wampanoags of sachem Josias’s having sold their land to the European settlers resulted in a formal agreement for the mile-square township (Banks 1911, Silverman 2005). Sachem Josias declared that “the town Manettouwatootan in Taukeny shall remain in the possession of the praying men” in a paper signed and witnessed in 1670 (Dukes County Registry of Deeds (DCRD) 1: 378,). It was agreed in court that the land was not to be sold by the sachem without the consent of four trustees, Josias himself, and Governor Thomas Mayhew (Mayhew 2008).

Boundary lines were drawn and re-drawn on several occasions to reflect the ever-changing land ownership of Christiantown (1659, 1669, 1699 and 1709). It was not the custom of the indigenous people of Martha’s Vineyard to own land, rather to claim and use what they needed for their family, and when such a time arose that their family no longer needed the land it became available to others. However, that was not the way of the settlers. Land that was recorded in court did not revert to common land as expected by the “praying Indians”. Compromises were made and the “praying Indians” of Christiantown were offered money, goods, “sachem rights” (equivalent land elsewhere) and “planting rights” in exchange for uncontested land sales between the sachem Josias and the early settlers (Silverman 2005). The population in Christiantown dwindled by nearly half from 84 in 1698 to 53 in 1858, resulting from contagious illnesses and the lure of whaling. With the memory of the agreement faded and the lack of representation in numbers to protect their boundaries and contest land sales, the acreage of Christiantown was reduced by half, with the best agricultural land in the ownership of settlers (Banks 1911, Silverman 2005, Earle 1986). The property parcels nearby transferred through several families and generations, each with their own unique additions to the property and stories of the land. Detailed accounts can be found in Appendix G.

D. Property and Development Characteristics

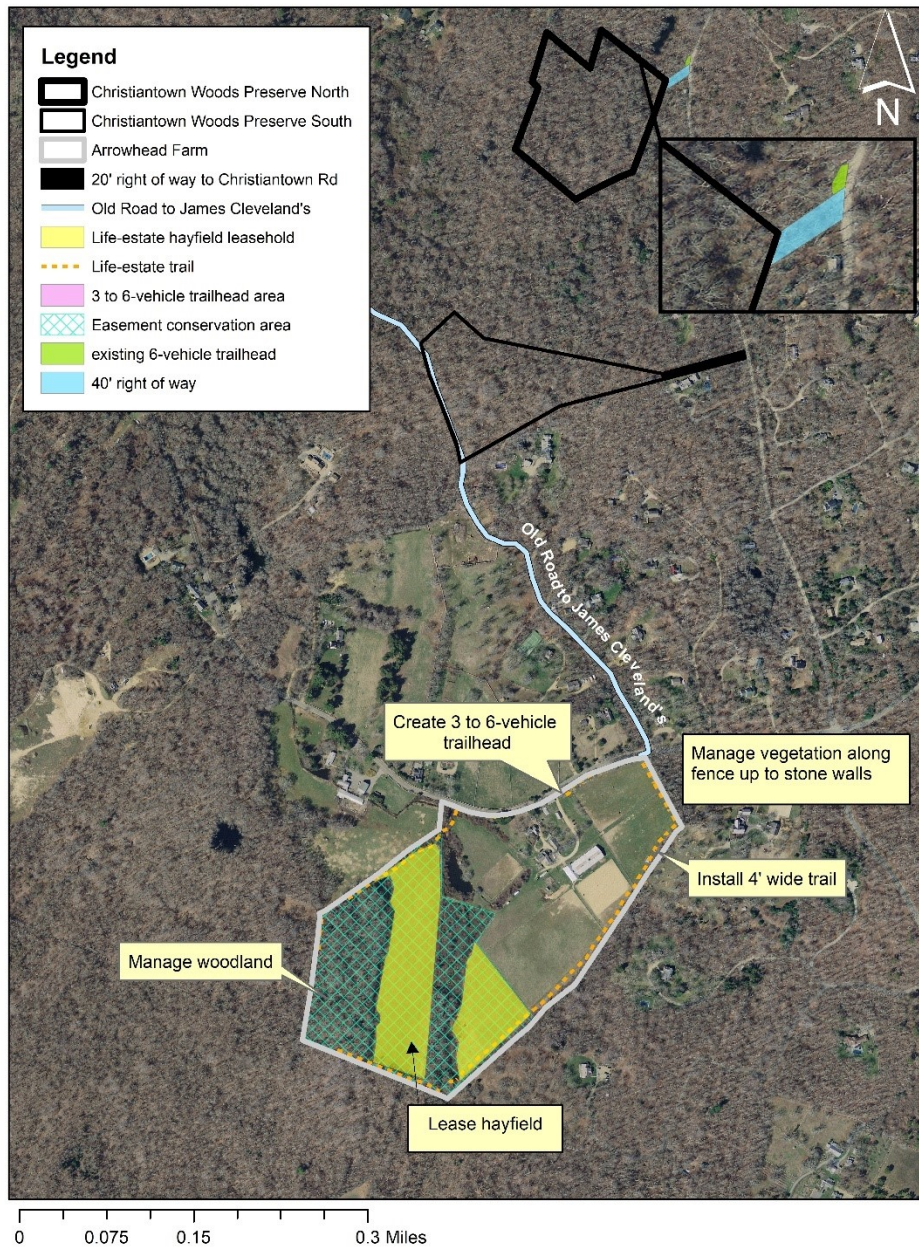
1. Planning Concerns

Easements, Rights and Restrictions

The Arrowhead Farm property is subject to a life-estate agreement with Charlene and Robert Douglas (DCRD, Land Court bk81:pg247, cert 14926). The life-estate restricts use of the Farm to the hayfields and woodlands and includes a circumferential trail around the entirety of the Farm. The hayfields on the Farm, containing 4.7 acres, are subject to a farmland lease between the land bank and Eric Glasgow for haying purposes only dating July 27, 2021 and ending on December 31, 2025. The land bank has parking privileges in the existing parking area for the Mayhew Chapel and a 40’ wide easement over Wampanoag Tribe land containing the Chapel that connects the trailhead to the Preserve (DCRD 465:186, 410:466). Additionally, the land bank has a 20’ right of way from Christiantown Road to Christiantown South, the southern parcel of the Preserve, and rights in the “Old Road to James Cleveland’s” that

travels from Indian Hill Road to the southern parcel of the Preserve via the partially renamed segment, Indian Hollow Road (DCRD, 1491:748). The locations of easements, rights and restrictions on the Preserve and Farm are depicted in **Map 3**, page 23.

Map 3: Easement, rights, restrictions maps of Christiantown Woods preserve and Arrowhead Farm, West Tisbury, MA



Note: Map prepared by the Martha's Vineyard Land Bank for planning purposes only. The land bank is not responsible for end-users interpretation of the map. Sources: 2019 ortho phtograph, USGS topography, hydrology and parcel data - MassGIS and MVC. File: Christiantown_ArrowheadFarm_Easement_map_2022.jpg Date: November 21st, 2022

Massachusetts Endangered Species Act

Prior to implementation of the management plan a Massachusetts Endangered Species Act application must be filed with NHESP for the entirety of the project proposed in Priority Habitat along with a Notice of Intent for work proposed in Estimated Habitat. There are approximately 11.6 acres of priority habitat, located in the woodlands of the Preserve, that account for 24% of the property. The MESA filing will include a detailed description of management actions proposed in this plan that mitigate any possible impacts to listed-species.

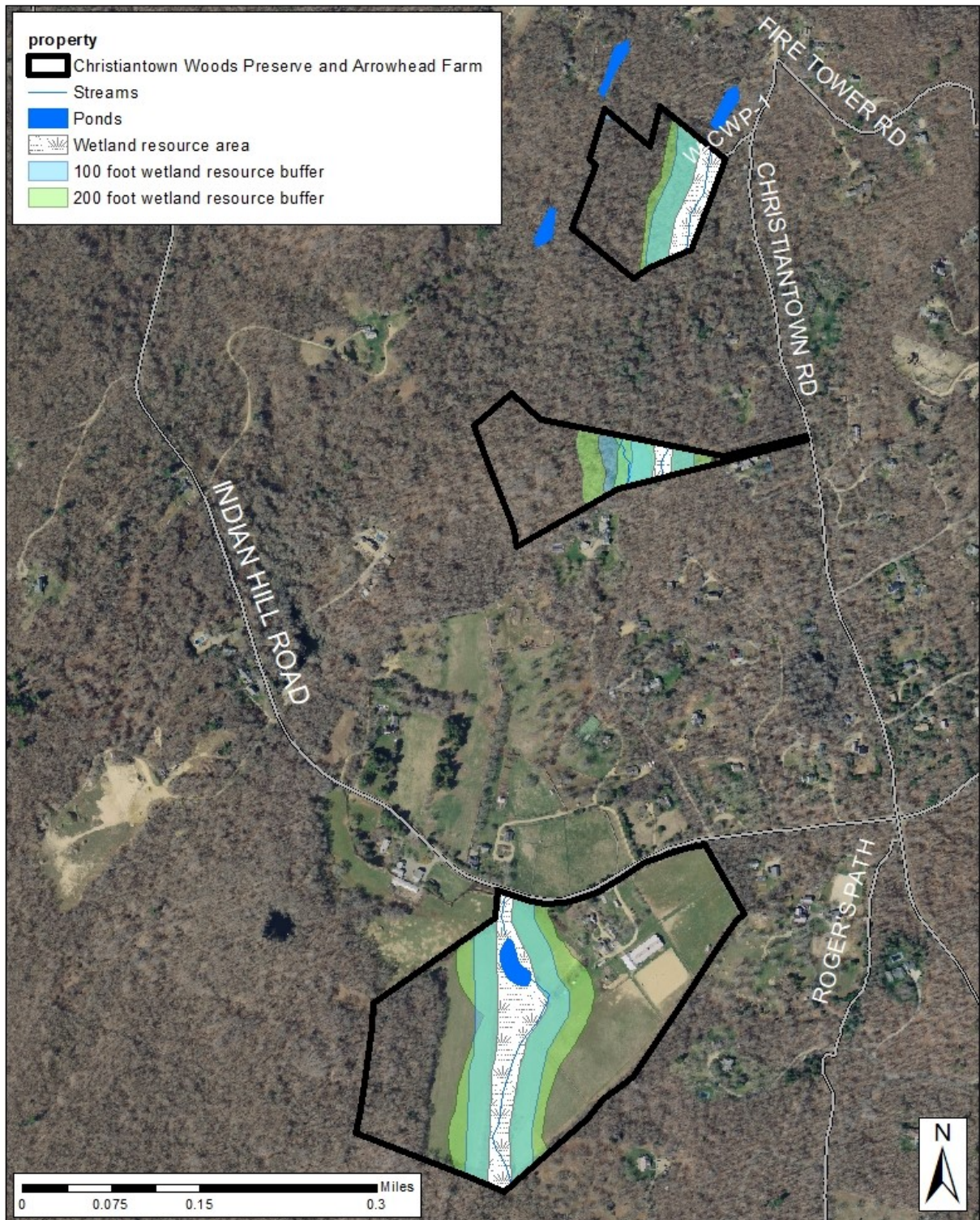
Wetland Protection Act

The intermittent stream, Mill Brook tributary, farm impoundment and their bordering vegetated wetlands are considered “wetland resource areas” under the West Tisbury Wetlands Bylaw and Massachusetts Wetlands Protection Act; see wetlands Map 8. The wetland resource areas that include their 100-foot buffer zone and a 200-foot buffer zone from streams and riverfronts are subject to the jurisdiction of the West Tisbury conservation commission (**Map 4**, page 25). Installing trails and boardwalks over these resource areas requires a filing for a Notice of Intent with the West Tisbury conservation commission and Massachusetts Department of Environmental Protection (MA DEP). A total of 0.65 acres of wetland resource/buffer is proposed to be impacted with the implementation of this plan.

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Christiantown Woods Preserve and Arrowhead Farm are not mapped in the presumed tidelands jurisdiction of MassDEP under M.G.L. c. 91 and the Waterways Regulations in 310 CMR 9.00.

Map 4: Wetland resource areas and buffer zones of Christiantown Woods Preserve and Arrowhead Farm.



Note: Map prepared by the Martha's Vineyard Land Bank for planning purposes only. The land bank is not responsible for end-users interpretation of the map. Sources: 2019 ortho photograph, U S G S topography, hydrology road, soil, and parcel data - MassGIS and MVC.

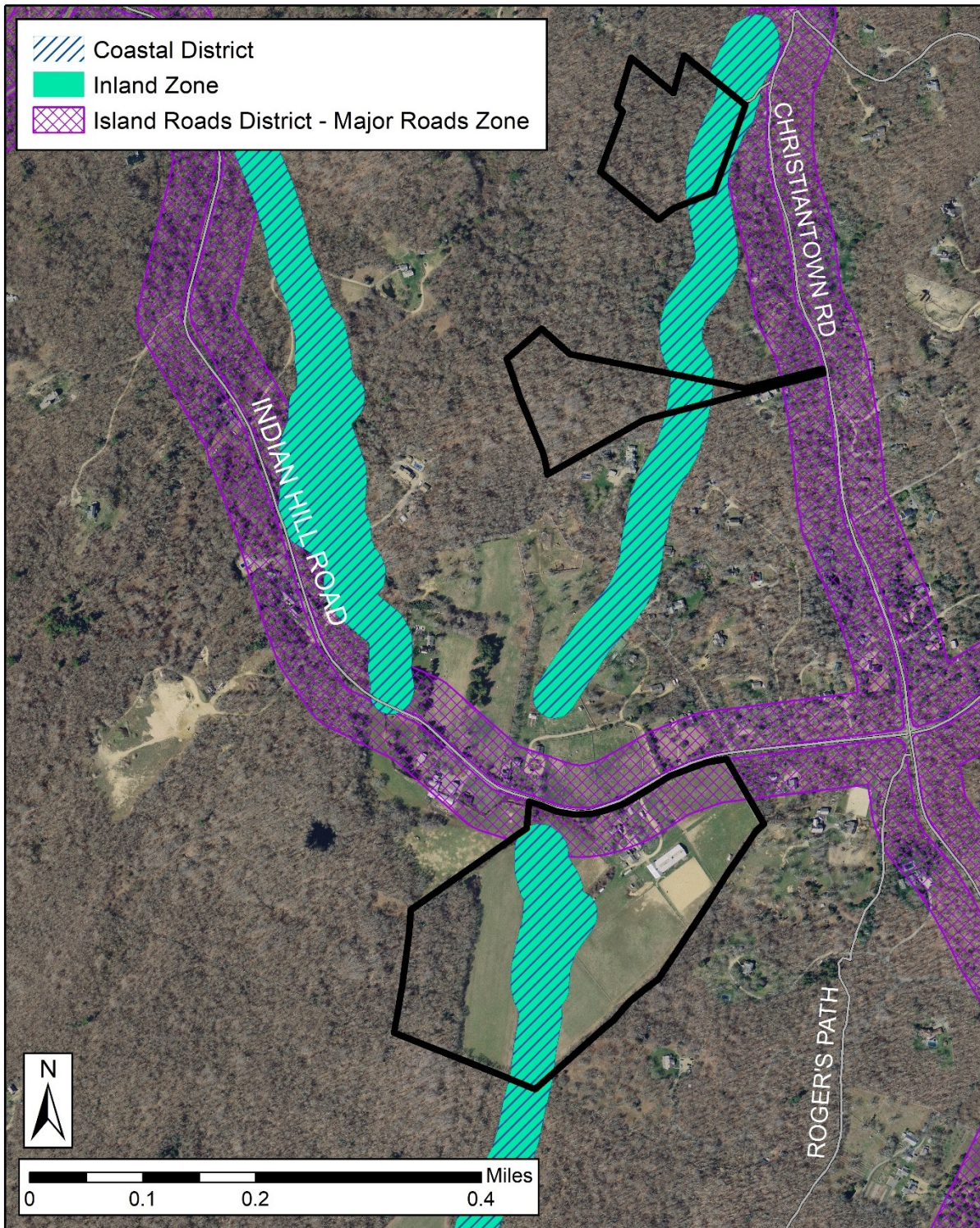
District of Critical Planning Concern and Overlay Districts

The Martha’s Vineyard Commission has the power to define and designate districts of planning concern (DCPC). The Preserve falls within two districts within the Town of West Tisbury: Coastal District (inland zone) and the Island Roads District (Major Roads Zone) (**Map 5**, page 27). The DCPCs and Overlay Districts are governed by West Tisbury Zoning Bylaws found in Article VI and are described as follows:

Coastal District: Within the Coastal District (Article VI 6.1) a special permit is required from the West Tisbury planning board review committee for any structure within 200 ft of a resource area, for vehicular access greater than 10 ft in width and for any alteration of existing stonewalls. In addition, a review by the Martha’s Vineyard Commission of parking areas that service more than 6 vehicles is required, but the proposed 3- to 6-vehicle trailhead is outside of the Coastal District.

Island Major Roads District: The Island Major Roads District is an area within 200 ft of the right of way of a major road—in this case Christiantown Road and Indian Hill Road. Regulations in this district limit the height of structures built within the zone, curb-cuts, roof pitch and protect cultural and historic resources.

Map 5: Districts of Critical Planning Concerns within West Tisbury. A) Coastal District (inland zone) and Island Roads District (Major Roads District).



Note: Map prepared by the Martha's Vineyard Land Bank for planning purposes only. The land bank is not responsible for end-users interpretation of the map. Sources: 2019 ortho photograph, USGS topography, hydrology road, soil, and parcel data - MassGIS and MVC.

2. Abutters

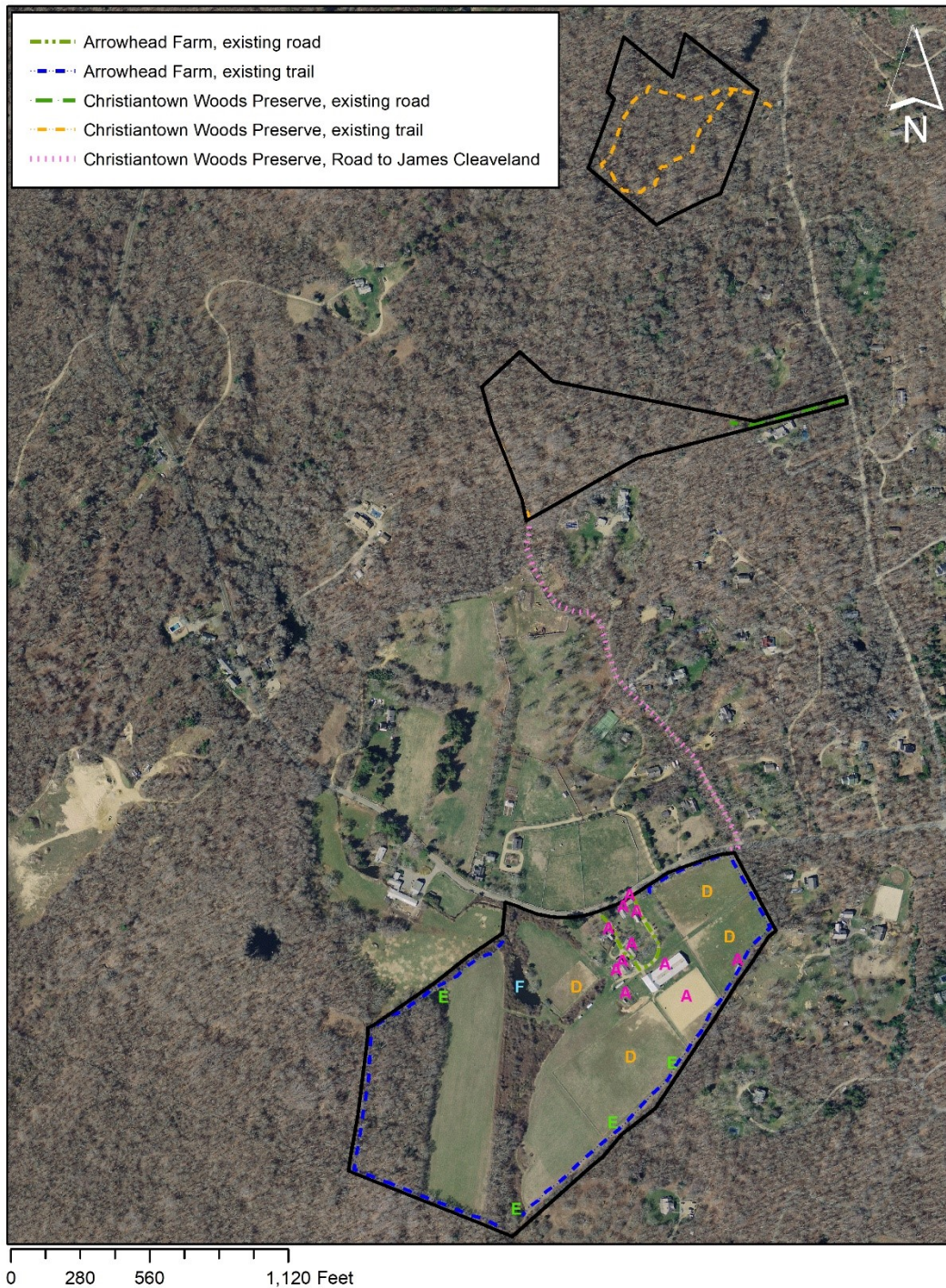
A list of those owning land abutting or within 200 ft of the Christiantown Woods Preserve and Arrowhead Farm was generated based on the West Tisbury 2021 Assessors Map as it appears in the AxisGIS program (**Map 24**, Appendix H, page 124). Abutters are included on the Abutters List in **Table 5**, Appendix H.

3. Existing Use and Infrastructure

Christiantown Woods Preserve and Arrowhead Farm are bounded by private open farmland, woodlands, and various private properties (**Map 24**: Map of abutters, Appendix H). This property is an aggregation of active-use farmland with a trail easement, and minimally-disturbed woodland. The following uses and infrastructure occurring on the property are listed below and depicted on **Map 6**: Existing infrastructure, page 29.

- A. **Structures:** There are 11 structures within Arrowhead Farm: two dwellings, three barns, a greenhouse, five shed/shelters, and an outdoor riding arena. All will remain in use by the grantors during their life-estate. There are no structures on the Christiantown properties.
- B. **Roads:** Arrowhead Farm has 653 ft of road, 476 ft of which will be used as a private drive for the farm, and 177 ft will be shared as an entrance to the trailhead. The 500 ft dirt access road at Christiantown South is proposed to be incorporated into the trail system. The “Old Road to James Cleveland’s” constitutes the western boundary of Christiantown South and connects to Arrowhead Farm.
- C. **Trails:** Approximately 1 mile of existing trails traverse the property. Arrowhead Farm has 4,196 feet of trail that wraps around the perimeter of the farm, most of which will continue to be maintained for hikers to enjoy the rest of the property. Christiantown North has 1,735 ft of trail that will be maintained, with no additions. Apart from the 500-foot dirt access road, Christiantown South currently has no existing trails.
- D. **Pastures:** There are four pastures in use on Arrowhead Farm that compose approximately 7 acres of the property; these will be used by the grantors during their life-estate and will not be available for public use during that time.
- E. **Hayfields:** There are two hayfields on Arrowhead Farm comprising 7.7 acres. A total of 4.7 acres are currently under a lease agreement.
- F. **Cross-country jumps:** The grantors of Arrowhead Farm have erected several jumps for cross-country training along the existing trail.
- G. **Pond:** A farm impoundment occurs on Arrowhead Farm and was created by diverting and damming the natural stream. It is surrounded by a mowed yard.

Map 6: Existing infrastructure of Christiantown Woods Preserve and Arrowhead Farm. See Section 1.D.3 for descriptions of these features.



Note: Map prepared by the Martha's Vineyard Land Bank for planning purposes only. The land bank is not responsible for end-users interpretation of the map. Sources: 2019 ortho photograph, USGS topography, hydrology and parcel data - MassGIS and MVC. File: Calebs_Pond_Project_map_2021.jpg Date: February 15, 2021.

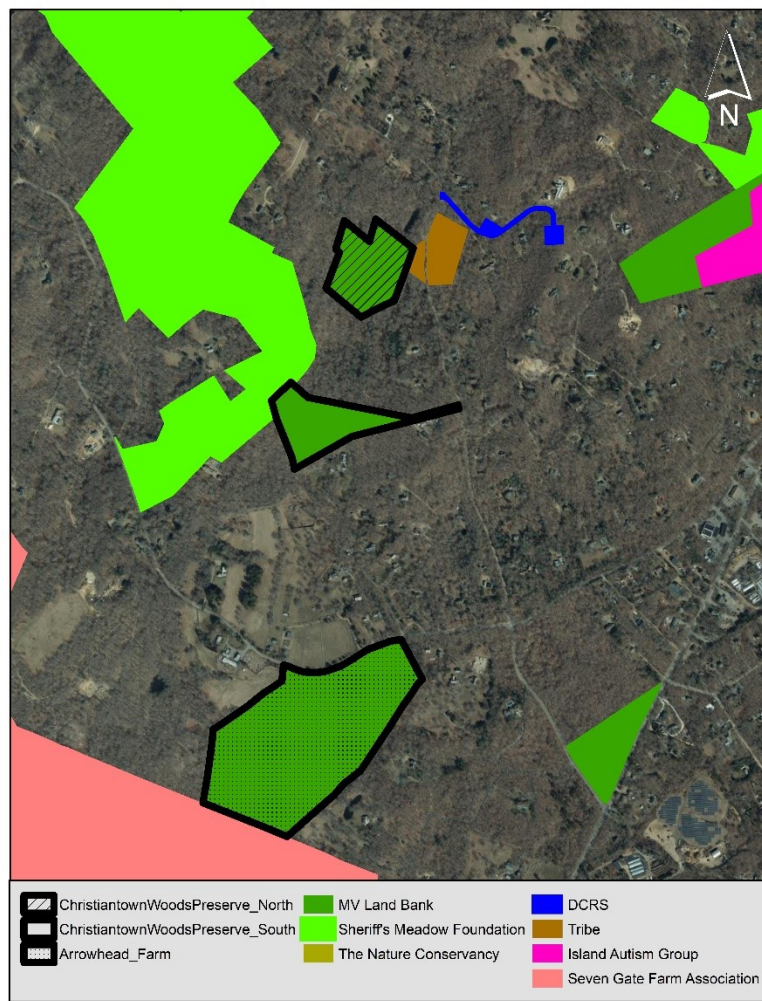
II. Inventory Analysis

A. Constraints & Issues

1. Ecological Context

The Preserve abuts Cedar Tree Neck Sanctuary, a 424-acre conservation property owned by the Sheriff's Meadow Foundation. Arrowhead Farm is one of a cluster of open agricultural lands straddling both sides of the Indian Hill Road in West Tisbury (Map 7).

Map 7: Private and public conservation land surrounding Christiantown Woods Preserve and Arrowhead Farm, West Tisbury, MA



Note: Map prepared by the Martha's Vineyard Land Bank for planning purposes only. The land bank is not responsible for end-users interpretation of the map. Sources: 2021 ortho photograph and parcel data - MassGIS and MVC. Projection: NAD_1983_StatePlane_Massachusetts_Mainland_FIPS_2001 File: CWR_AF_aerial_map_2022.jpg Date: June 17, 2022.

2. Natural and Cultural Resource Concerns

There are five main areas of concern at Christiantown Woods Preserve and Arrowhead Farm, each briefly addressed below and then in more detail in the land management section of the plan:

Commonwealth-listed rare species

Five commonwealth-listed plant and wildlife species have been determined to occur on the Preserve; continued protection of the woodland supports these species, as well as continued monitoring, and both are included in this management plan.

Erosion

Erosion of soil on trails is caused by the interaction of water with the substrate and can be influenced by slope, trail directional fluctuations, soil composition, vegetation, and use. Slopes between 2-5% are ideal for trail siting. In areas of less-than-ideal slope, grade reversals are necessary to exit water from the trail. The woodland on the farm has the steepest grades of the properties with a slope of 13%. The existing long straight runs of trail around the perimeter of the woodland on the farm exacerbate soil erosion as water momentum builds while traveling down the straight trail (U.S. Forest Service 2022). The wide mowed trail situated in open habitats of the farm helps maintain a vegetative surface that limits the rainwater and soil interactions. Boardwalks over streams and bordering vegetated wetlands mitigate the user impact of foot, bicycle and horse traffic.

Invasive species

Invasive species are a concern for any property. Exotic and/or invasive species outcompete and displace native species, altering the composition of natural vegetation communities (Somers 1996). Often without natural enemies, these seedlings compete for nutrients, water, and light with neighboring plants, or even directly kill native plants. Annual monitoring and quick control and removal of invasive species are important to maintain an ecological balance and the integrity of habitats on the Preserve and Farm. A list of invasive species impacting the property can be found in **Table 1**, page 91.

Cultural and Historic Features

Stonewalls, root cellars and cart paths are historical remnants of inhabitants that provide a glimpse into the past use of the Farm and Preserve. The nearby Christiantown Chapel and burial grounds are reminders of indigenous people's presence on the island and the influence that European colonization had over them.

3. Sociological Context

Christiantown Woods Preserve and Arrowhead Farm are positioned in the town of West Tisbury along Christiantown and Indian Hill Roads. The property is within one half mile of West Tisbury center and is surrounded by both private residences and conserved land. The area is admired for its cultural significance

and agricultural value.

4. Neighborhood Concerns

The land bank considers the concerns of neighbors as part of the planning process. All abutting property owners and the local conservation commission are sent written notice of a public hearing on the draft plan. All neighbors and all members of the public are invited to review the draft plan, attend the public hearing, and make written or oral comments. Anyone may also express concerns at any public meeting of the Martha's Vineyard land bank commission and West Tisbury town advisory board or may simply contact land bank staff. The land bank's West Tisbury town advisory board and the Martha's Vineyard Land Bank Commission review all comments and can change the draft plan if desired. Some general concerns already incorporated into this management plan include:

- Trespassing on private property.
- Protection of cultural features and artifacts.

B. Addressing Problems and Opportunities

1. Land bank mandate

In 1986, the voters of Martha's Vineyard created the land bank to acquire, hold, and manage land in a predominantly natural, scenic, or open condition. The land bank keeps open space open and allows modest public use. Its "shared-use" policy strives to provide a range of public benefits, from low-impact recreation and aesthetics to wildlife conservation and watershed protection. Protection of natural resources is the land bank's highest priority, yet "shared-use" demands balancing the public use of natural resources with protection of the same.

2. Goals at Purchase

The purchase of Christiantown Woods Preserve and Arrowhead Farm meets seven of the land bank's nine criteria for property acquisition: agricultural lands, forest land conservation; wetland conservation; protection of scenic vistas; wildlife habitat conservation; easements for trails and for publicly owned lands; and sites for passive recreation.

Preliminary management plans were adopted by the land bank commission and its West Tisbury advisory board (see Appendix B, page 55).

3. Opportunities

The 48.8 acres of Christiantown Woods Preserve and Arrowhead Farm provide several opportunities for the public to interact within these scenic landscapes. They are as follows:

- A. **Access:** A trailhead that accommodates approximately 6-8 vehicles located off Christiantown Road on Tribe land provides access to the

Preserve through an easement granted to the land bank by the Commissioners of the County of Dukes County in 1993 (DCRD 601:288, Appendix B). A 40' wide right-of-way easement connects the trailhead area to the Preserve (DCRD 410:465, Appendix B, page 55).

The Preserve abuts Cedar Tree Neck Sanctuary, a nature preserve owned by Sheriff's Meadow Foundation. A proposed trail from Cedar Tree Neck Sanctuary will provide additional foot-access to the Preserve.

A 3- to 6-vehicle trailhead is proposed for Arrowhead Farm off Indian Hill Road. A proposed trail on the Farm and the "Old Road to James Cleveland's" will connect the Farm trailhead northward to the Preserve. Another proposed trail will connect Christiantown Road to the "Old Road to James Cleveland's" utilizing an existing access road on the Christiantown South portion of the property.

- B. **Trails:** A 0.79-mile loop-trail skirts the edge of the fields on the Farm. Additional boardwalks are necessary to bridge two wetland crossings on the loop-trail and 709' of the loop-trail requires rerouting to minimize erosion. A 0.32-mile stretch of the "Old Road to James Cleveland's" abuts stretches of stonewall and connects the Farm northward. An additional 0.32-mile loop-trail on the Preserve links the trailhead to cultural features on the Preserve. Approximately 0.24 miles of proposed trail would join Christiantown Road to the "Old Road to James Cleveland" via a 500-foot existing access road, a 35' raised boardwalk and 0.24 miles of proposed new trail.
- C. **Views:** The Farm offers roadside and interior pastoral views while the Preserve provides a glimpse into the past through interior wooded views of various cultural features.
- D. **Passive recreation:** The Preserve is well-suited for passive recreational use such as hiking and birdwatching.
- E. **Farming:** There are 7.7 acres of hayfields and 10 acres of grazing land on the Farm that may provide food for livestock during and after the life-estate. The land was once used for vegetable crops and the potential for this use in the future remains.
- F. **Hunting and Fishing:** The proximity of the Farm and Preserve to residents and roads precludes deer hunting in all but a 13-acre area on the Farm and two smaller, less than 5-acre, areas on the Preserve (**Map 8**, page 33). The Preserve has historically been a no-hunting property since the adoption of the management plan for the Preserve in 1991.

Map 8: Hunttable area with a firearm on Christiantown Woods Preserve and Arrowhead

Farm and zone of no discharge of a firearm 500' from occupied dwellings. See Section B.3.F for descriptions of these features.



4. Universal Access (UA)

The minimal slope and readily accessible sweeping views from the loop-trail starting at the proposed trailhead on the Farm provide an ideal opportunity for creating future universal accessibility on the property. The life-estate agreement on the Farm does not preclude the installation of a universal access trail under 2. Rights of the Future Fee Holder (Appendix B). The varying topography and rooted, stony nature of the existing trail and trail easement at the trailhead off Christiantown Road limit the universal accessibility of that portion of the property.

The Preserve's ROS (Recreation Opportunities Spectrum) classification is "Semi-Primitive Non-motorized". Further details are included in Appendix I.

III. Land Management Planning

This final section of the management plan states goals for Christiantown Woods Preserve and Arrowhead Farm and outlines MVLB strategies for achieving them. The plan addresses five areas of planning concern: nature conservation; recreation and aesthetics; natural products; community interaction; and land administration. These goals and strategies are designed to fit within the social and ecological constraints defined previously and, apart from matters under the control of the NHESP, apply to members of the general public and not any private easement- or life-estate-holders.

A. Nature Conservation Goals

Provide long-term protection for plants, wildlife, and natural processes occurring at Christiantown Woods Preserve and Arrowhead Farm.

Objective 1: Protect and encourage rare and endangered species and habitats on the Preserve.

Strategies:

- A. Monitor the property for rare plants and wildlife during regular property checks; report new observations to the proper commonwealth authority.
- B. Develop and implement a strategy to protect any additional rare species observed on the property.
- C. Reroute or close trails if recreational use interferes with a rare species.
- D. Protect rare orchids from woodland management activities and public use through annual monitoring and avoid use in areas with observed or known populations.
- E. Protect breeding and hibernating rare turtle habitat following NHESP mowing Advisory Guidelines in Rare Turtle Habitat (NHESP 2009).
 - a. Avoid mowing fields during peak breeding periods (May 15-September 15).
 - b. Avoid flail mower heads with guide bars that ride along the ground.
 - c. Limit maximum mower height to no less than 12 inches and mow from the center out in a circular pattern if mowing during the breeding season.
 - d. Leave a 5' un-mowed buffer edge around fields until September 15th.
 - e. Avoid using heavy equipment in woodlands during the non-breeding season (Sept 16-May 14).
- F. Promote a healthy woodland in the existing locations for rare moth and bat habitats.
 - a. Protect woodlands from fire damage by creating buffers of managed vegetation.
 - b. Monitor bat activity using acoustic monitors and protect hibernacula if discovered on the property.
 - c. Retain old- or late-successional trees and snags for bat roosting

habitat.

- d. Utilize selective cutting to create small gaps in the woodland canopy in order to increase the complexity of the woodlands vertical structure.
- e. Avoid cutting trees in the woodland between May 15 and August 15 during the tree bat breeding season.
- f. Control significant pests of host tree species using methods that do not negatively impact rare moth species.

Objective 2: Reduce and control erosion on the Preserve and Farm.

Strategies:

- A. Utilize soil-retention techniques, such as steps and large stones at the base of boardwalks, as necessary.
- A. Site trails on appropriate grades as to minimize erosion.
 - a. Reroute trails as necessary.
- B. Prohibit use of motorized vehicles such as dirt bikes, electric bikes, and all-terrain vehicles on the trail system.
- A. Cover trails with appropriate materials if needed to manage unforeseen erosion issues and prevent further surface soil erosion.
- B. Install approximately 200' of raised light-penetrable boardwalk over four stream crossings.
- C. Explore alternative erosion control measures as such methods are discovered.

Objective 3: Protect the value of the Preserve and Farm as migratory and breeding habitat for wildlife species.

Strategies:

- A. Retain select snags in woodlands where these trees do not pose unacceptable safety or fire hazard.
- B. Maintain shrubland habitat along the Mill Brook to minimize thermal temperature impacts.
- C. Investigate rehabilitation of the natural flow of Mill Brook; consider off-premises impacts in the analysis.
- D. Monitor changes in vegetation cover during regular property checks and by updating ecological inventory in 2032.

Objective 4: Monitor for and control the spread of exotic and invasive species, such as Asiatic bittersweet, Japanese honeysuckle, and multiflora rose.

Strategies:

- A. Use appropriate methods such as hand-pulling, repeated in-season mowing and grazing, weed-wrench removal, and girdling as time and funding allow.
- B. Target heavily infested areas along the stone wall of the eastern boundary of the Farm.
- C. File with the West Tisbury Conservation Commission for planned treatments of exotic and invasive species that occur within wetland resource and buffer zones.

- D. File with NHESP for planned treatments that occur in priority habitats.
- E. Monitor for re-growth and continue to manage invasive/exotic species.
- F. Explore other control methods and implement if physical control methods fail.
- G. Dispose of invasive species following approved protocols.
- H. Clean maintenance equipment between properties to avoid the spread of invasive species.

Objective 5: Reduce forest-fire danger on the Preserve and Farm.

Strategies:

- A. Prohibit open fires on the property, including firepits.
- B. Follow the recommendation of the Martha's Vineyard Commission Community Wildfire Protection Plan, providing recommendations do not preclude attainment of natural conservation objectives.

Objective 6: Protect natural processes on the Preserve and Farm.

Strategies:

- A. Encourage native plants that support native pollinators.
 - a. Convert lawn areas, where appropriate, into native grassland and forb habitat after the life-rights expire
 - b. Use island-grown native plants and/or seed for any restoration or screening projects.
 - c. Implement mowing and grazing regime around flowering times of dominant vegetation.
- B. Wetland resource areas
 - a. Protect buffer zone of wetland resource areas.
 - b. Analyze removing the impoundment on Mill Brook to restore the natural flow to Mill Brook.
 - c. Utilize light-penetrating decking on all raised boardwalks.

Objective 7: Create and manage open habitats (see Project Map A).

Strategies:

- A. Lease approximately 4.5 acres of hayfield.
- B. Manage hayfields through annual mowing and grazing in the absence of a lessee.
- C. Highlight stonewalls and foundations by hand or through grazing when visible from a public trail, if feasible.

Objective 8: Plan for climate change adaptation

Strategies:

- A. Minimize soil disturbance property-wide.
- B. Promote carbon sequestration in management practices.

B. Recreation and Aesthetics

Allow limited, low-impact recreational use of the area and create and/or maintain attractive views and landscapes, provided that these uses do not preclude attainment of nature conservation objectives.

Objective 1: Maintain the property open for low-impact recreation.

Strategies:

- A. Open the property for hiking, birdwatching, non-motorized biking, and other passive uses (see project map).
 - a. Open Preserve and Farm between dawn and dusk except for stargazing.
- B. Install a bike rack to accommodate visitors arriving via bicycle at the Farm and the Preserve trailheads.
- C. Maintain a “carry in-carry out” litter policy.
- D. Monitor impact of passive recreational use on the property annually and manage accordingly.
- E. Use passive methods for assessing use such as trail counters and wildlife cameras.
- F. Protect the significant archaeological nature of the property.
 - a. Utilize surface coverings on trails to minimize exposure of artifacts.
 - b. Prohibit digging or disturbance of the surface, removal of any artifacts from the property, and metal detecting.

Objective 2: Manage existing roads and trails.

Strategies:

- A. Maintain approximately 2,250 linear feet of the existing “Old Road to James Cleveland’s”.
- B. Maintain approximately 3,774 feet of existing trail, located on the perimeter of the Farm and approximately 2,170 feet of existing trail located at Christiantown Woods including the raised boardwalk.

Objective 3: Create 3- to 6-vehicle trailhead at northern end of the Farm (See Project Map, Appendix A).

Strategies:

- A. Place trailhead near Indian Hill Road at the entrance to the Farm.
- B. Utilize existing curb cut into the Farm as vehicle access to the trailhead.
 - a. Incorporate existing driveways and cut new roadways as necessary.
- C. Create and designate one space for universal access.
 - a. Utilize an appropriate soil hardener and compaction tool.

Objective 4: Create new trails as shown on the Project Maps (Appendix A).

Strategies:

- A. Create approximately 2,700 linear feet of new trail (Map 12, Appendix A).
 - a. Make trail corridors eight feet wide with a maintained tread of 6 feet unless deed restricted.
 - b. Site trails so that they are as unobtrusive as possible to nearby homes and sensitive wildlife habitat.
 - c. Minimize the cutting of trees in the creation of trails.
 - d. Allow staff discretion to close or relocate trails or add new trails,

- such as spur trails for off-property trail connections.
- e. Use surface materials as needed to ensure proper tread.
- f. Close portion of existing trail in woodland of Farm and re-route using switchbacks to minimize erosion.
- g. Install 240 linear feet of raised boardwalk, use light-penetrating grating where feasible.
- h. Upgrade existing loop trail on Farm to be universally accessible where feasible.
- B. Direct visitors at Christiantown Woods Preserve trailhead to utilize Christiantown Road to access the southern portion of the Preserve (Christiantown South).
- C. Deter trespassing onto private abutting property, particularly along the Christiantown Woods Preserve (Christiantown South) right-of-way, and unauthorized trails
 - a. Use native plant screening in collaboration with abutters where feasible.
 - b. Install symbolic fencing such as split-rail sections to close or prevent unauthorized off-trail use.
 - c. Install signage as needed.
- D. Install stiles over stonewall along Indian Hill Road to make connection with "Old Road to James Cleveland's" and Indian Hill Road.
- E. Mark trails with directional signs.
- F. Close unauthorized trails and install fencing where necessary to define public use areas.
- G. Check and maintain trails monthly.
- H. Maintain existing trail system in good condition.

Objective 6: Highlight and maintain existing views; expand as fitting.

Strategies:

- A. Install rustic benches where appropriate.
- B. Maintain existing open space through mowing and grazing.
- C. Following the conclusion of the life-estate agreement, manage vegetation along Indian Hill Road to enhance views of the Farm.
- D. Repair all stonewalls, as needed.

Objective 7: Entertain possibilities for other trail links.

Strategies:

- A. Create new trails as necessary to connect the property to future conservation land and trail easements.
- B. Relocate trails if needed to connect to existing future trails and ways on abutting properties.

Objective 8: Manage dogs on Preserve and Farm.

Strategies:

- A. Permit leashed dogs year-round, providing there are no complaints. Enforce stricter dog policies, if needed.
- B. Post rules and educational signage regarding dogs and wildlife in appropriate locations.

- C. Encourage visitors to clean up after their pets; carry-out policy applies.

Objective 9: Prohibit camping

Strategies:

- A. Prohibit camping on the Preserve and Farm unless special permission is granted for scouting and like groups, and if in compliance with appropriate town bylaws.
- B. Monitor the Preserve for squatters and remove unauthorized campers promptly.

C. Natural Products

Objective 1: Allow limited archery hunting on the western portion of the Farm and prohibit hunting on the Preserve.

Strategies:

- A. Notify the public of the hunting policy and season dates on the Farm through the land bank website.
- B. Properly sign the Preserve and Farm boundaries.

Objective 2: Allow gathering of natural products

Strategies:

- A. Prohibit collecting of rare plants and wildlife on the Preserve and Farm.
- B. Suggest that gathering of non-rare materials occur within the immediate environs of the trail system, to avoid social trails and trampling of vegetation.

Objective 3: Create farmstead, following conclusion of life-estate

Strategies

- A. Conduct public competition to lease entire premises to farmer with proven skills and abilities in agriculture, natural resource management, mechanics, carpentry and the like.
- B. Use entirety of Farm for active agriculture.
- C. Mow or graze all open areas regularly, if not otherwise farmed, in order to forestall their conversion to shrubland or woodland.

D. Land Administration

Oversee the Preserve and Farm on a regular basis; develop and maintain good relationships with residential neighbors, members of the community, visitors, and the town of West Tisbury.

Objective 1: Help people find the property and avoid trespassing.

Strategies:

- A. Mark the property boundary on the land bank website and TrailsMV app.
- B. Install “end of public property” signs where appropriate.
- C. Install logo markers on property.
- D. Install gates or fencing as needed.
- E. Post map of property and trails on sign station and websites as they are updated.

Objective 2: Maintain good relations with abutters and neighbors.

Strategies:

- A. Continue working relations with life-estate holders of the Farm, neighbors, the town of West Tisbury, and its conservation commission.
- B. Monitor public use on the properties and address trespassing violations promptly.

Objective 3: Keep Preserve and Farm well-maintained.

Strategies:

- A. Clean up any litter which may occur.
- B. Promptly respond to problems reported by visitors or neighbors.
- C. Employ adequate staff to effectively implement land management goals.

Objective 4: Keep well-maintained boundaries.

Strategies:

- A. Locate, GPS, and mark corners of property.
- B. Install split-rail fence along southern boundary of Preserve.
- C. Walk boundaries annually.
- D. Post boundary flags where appropriate.
- E. Correct encroachments as they occur.

Objective 5: Keep good records of all land management activities and natural events.

Strategies:

- A. Record all significant events, natural or otherwise.
- B. Continue to update plant and wildlife inventories.
- C. Maintain photographic record of landscape appearance.

Objective 6: Comply with all applicable regulations and agreements.

Strategies:

- A. Comply with Massachusetts endangered species act.
- B. File with the Town of West Tisbury conservation commission for activities proposed within resource areas and buffer zones of wetlands and districts of special planning concern zones.
- C. Comply with wetlands protection act and town of West Tisbury wetland by-laws.
- D. Request recommendations from the Massachusetts historical commission regarding the proposed activities in the plan.

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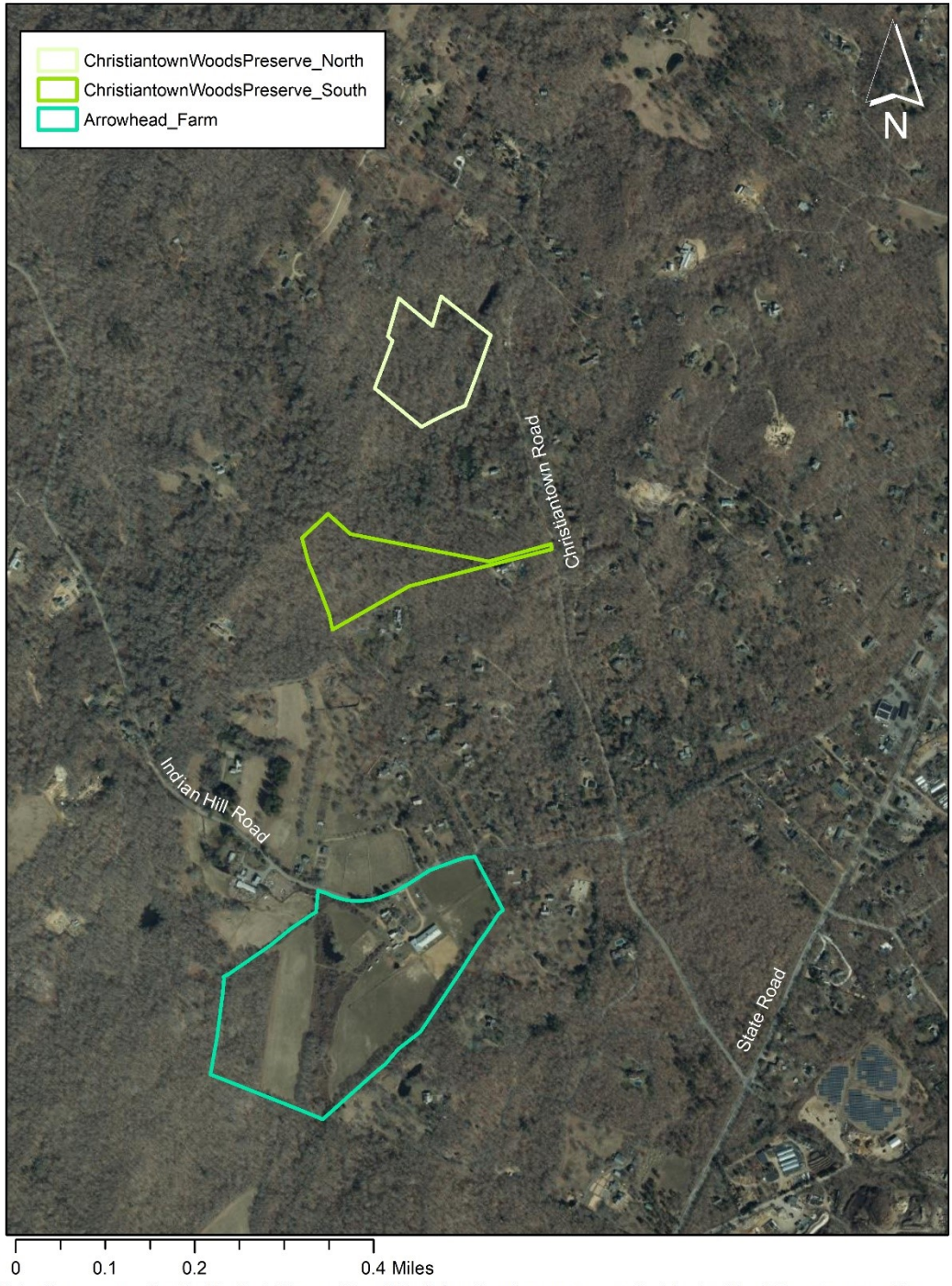
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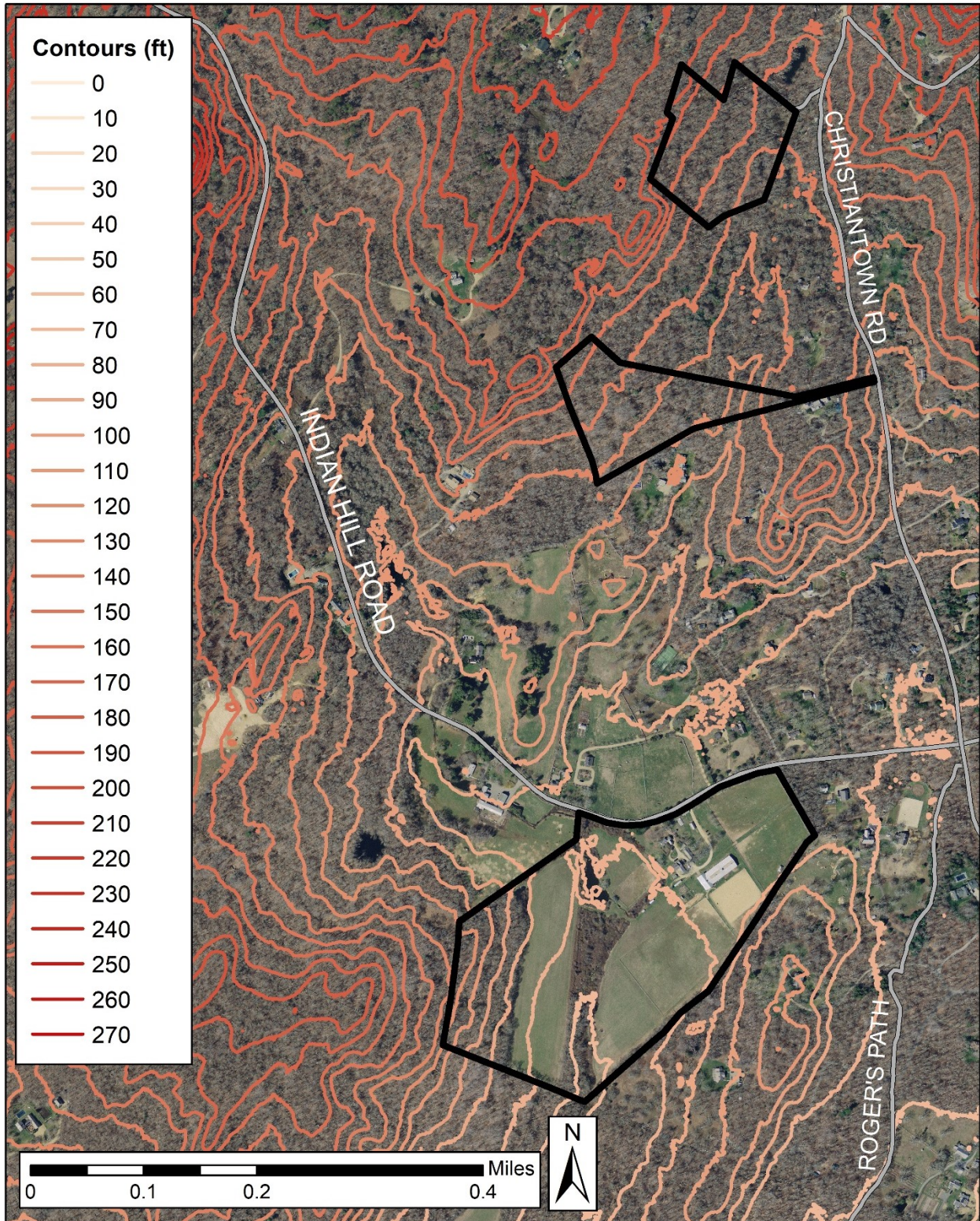
Appendix A: Locus, Topography and Site Management Maps

Map 9: Aerial image of Christiantown Woods Preserve and Arrowhead Farm.



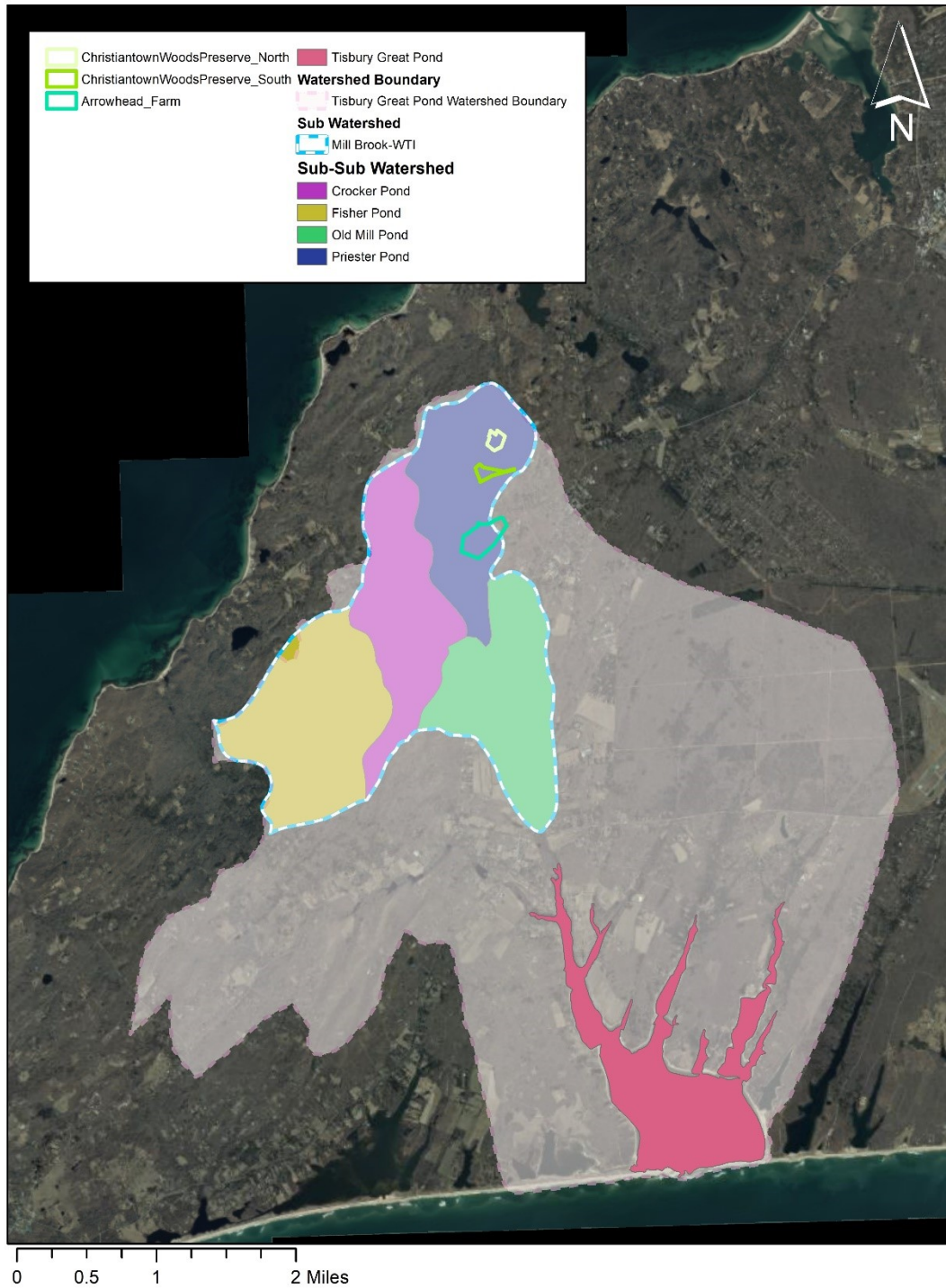
Note: Map prepared by the Martha's Vineyard Land Bank for planning purposes only. The land bank is not responsible for end-users interpretation of the map. Sources: 2021 ortho photograph and parcel data - MassGIS and MVC.
Projection: NAD_1983_StatePlane_Massachusetts_Mainland_FIPS_2001
File: CWR_AF_aerial_map_2022.jpg Date: June 17, 2022.

Map 10: Topographic map of Christiantown Woods Preserve and Arrowhead Farm, isolines in 10 ft intervals.



Note: Map prepared by the Martha's Vineyard Land Bank for planning purposes only. The land bank is not responsible for end-users interpretation of the map. Sources: 2019 ortho photograph, USGS topography, hydrology road, soil, and parcel data - MassGIS and MVC. File: G:\Data:\Maps001:Christiantown woods: master_Christiantown_2022.mxd

Map 11:Christiantown Woods Preserve and Arrowhead Farm in reference to watershed boundaries.



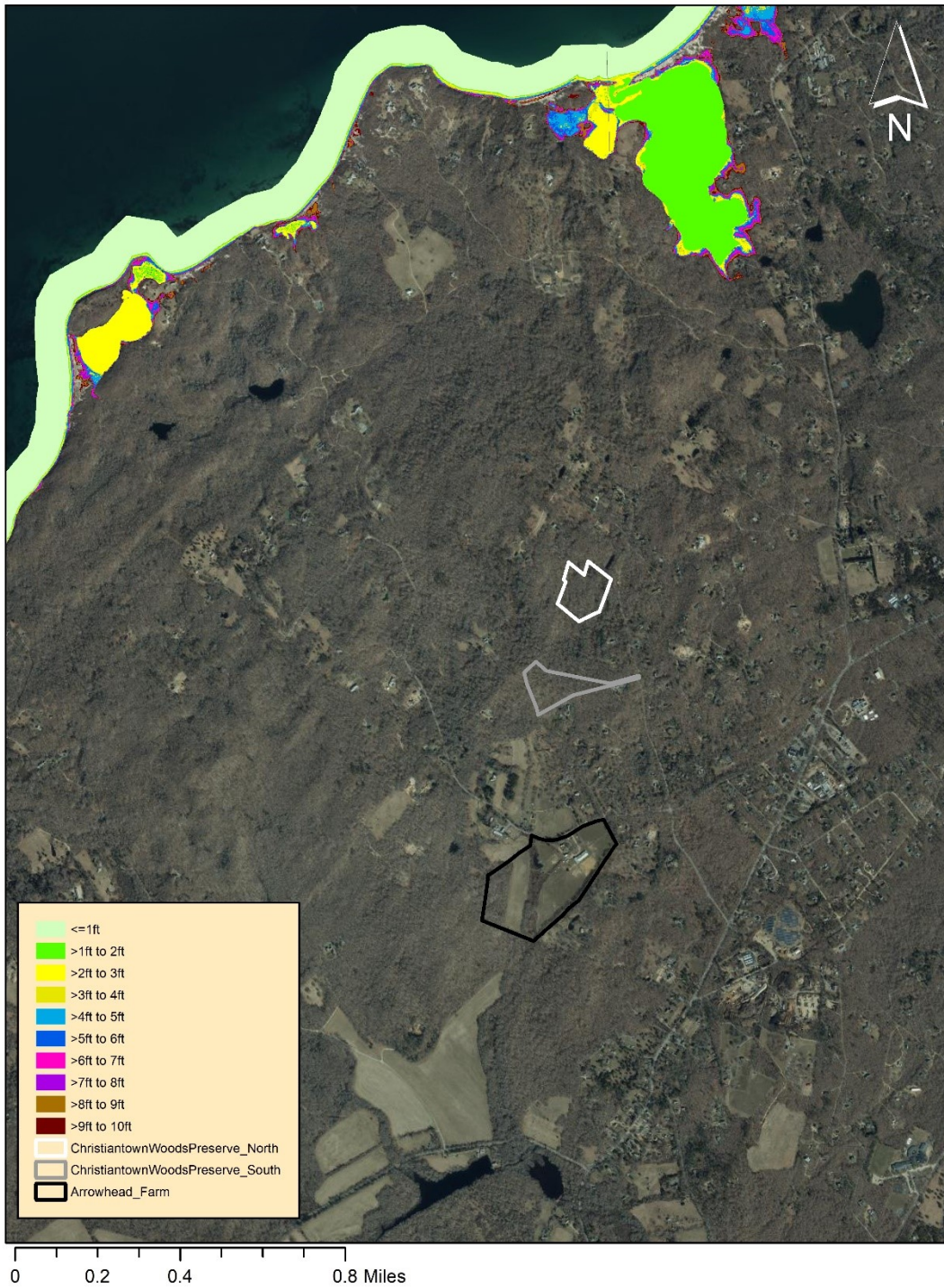
Note: Map prepared by the Martha's Vineyard Land Bank for planning purposes only. The land bank is not responsible for end-users interpretation of the map. Sources: 2021 ortho photograph, watershed and parcel data - MassGIS and MVC. Projection: NAD_1983_StatePlane_Massachusetts_Mainland_FIPS_2001 File: CWR_AF_watershed_map_2022.jpg Date: June 17, 2022.

Map 12: Flood zones (FEMA 2016) of Christiantown Woods Preserve and Arrowhead Farm, West Tisbury.



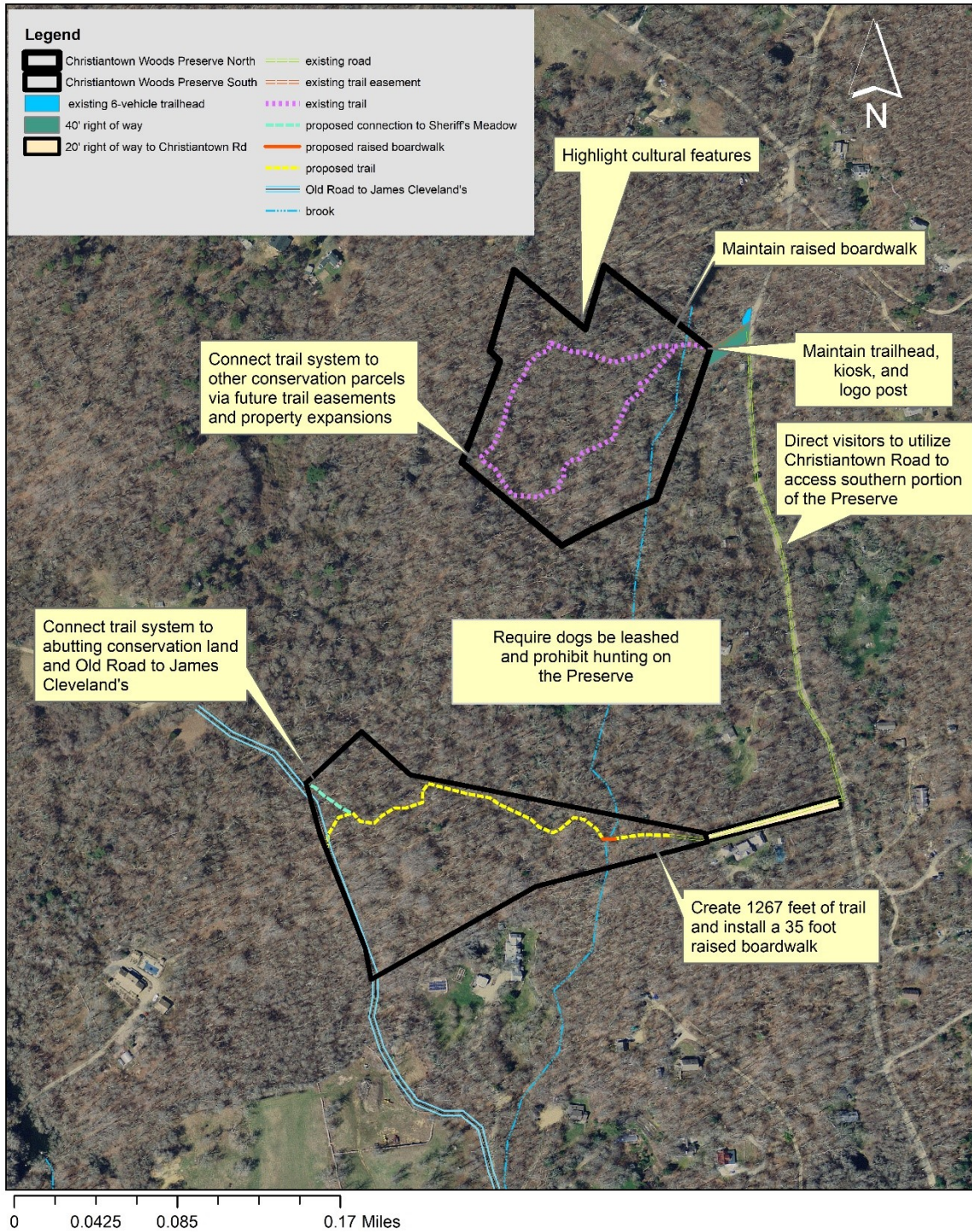
Note: Map prepared by the Martha's Vineyard Land Bank for planning purposes only. The land bank is not responsible for end-users interpretation of the map. Sources: 2019 ortho photograph, USGS topography, hydrology road, soil, and parcel data - MassGIS and MVC.

Map 13: Sea level rise scenarios and the resulting impact zones of Christiantown Woods Preserve and Arrowhead Farm.



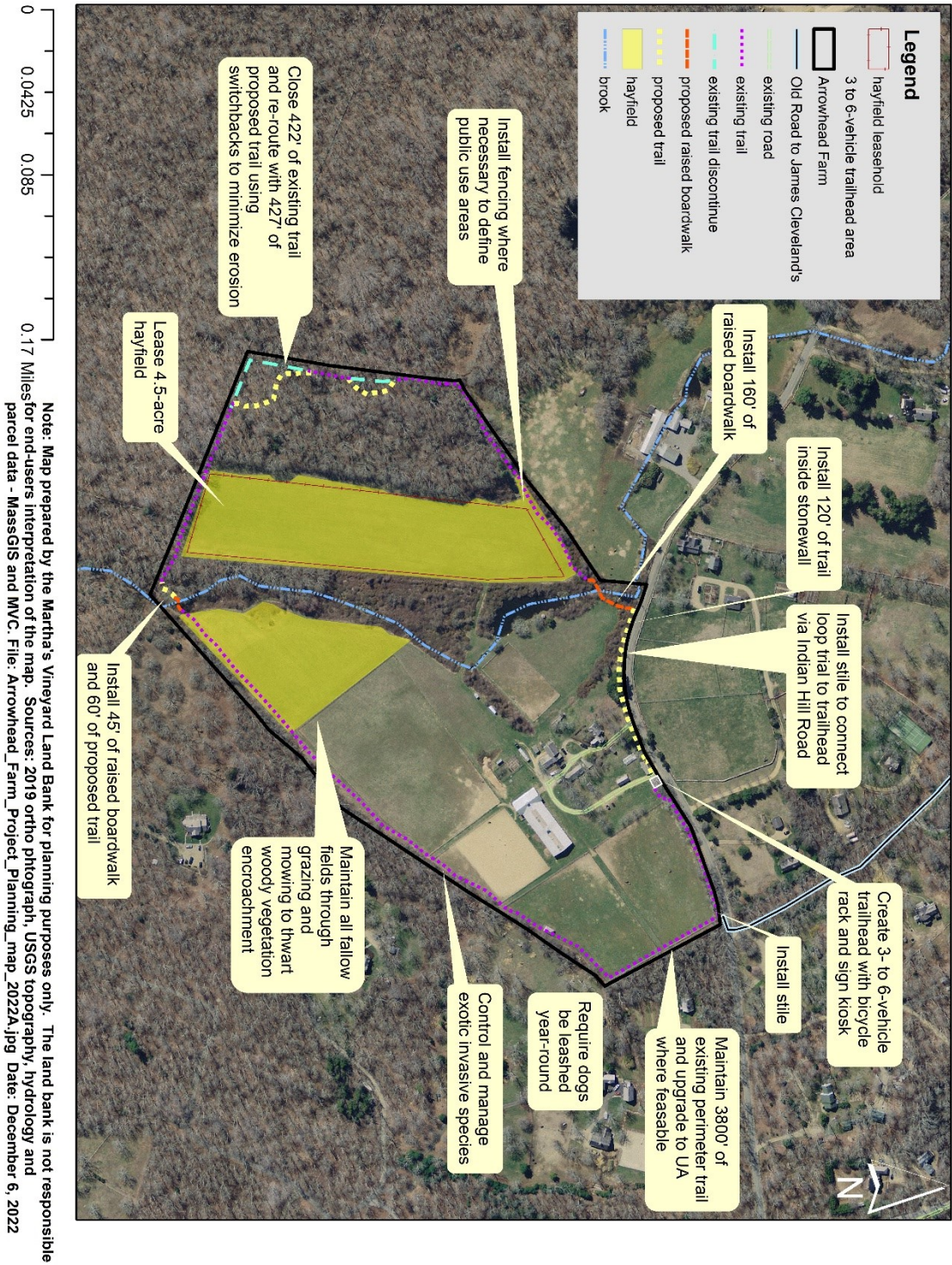
Note: Map prepared by the Martha's Vineyard Land Bank for planning purposes only. The land bank is not responsible for end-users interpretation of the map. Sources: 2021 ortho photograph, LiDAR Elevation and parcel data - MassGIS and MVC. Projection: NAD_1983_StatePlane_Massachusetts_Mainland_FIPS_2001 File: CWR_AF_liDARElev_map_2022.jpg Date: June 17, 2022.

Map 14: Proposed project planning map of Christiantown Woods Preserve, West Tisbury.

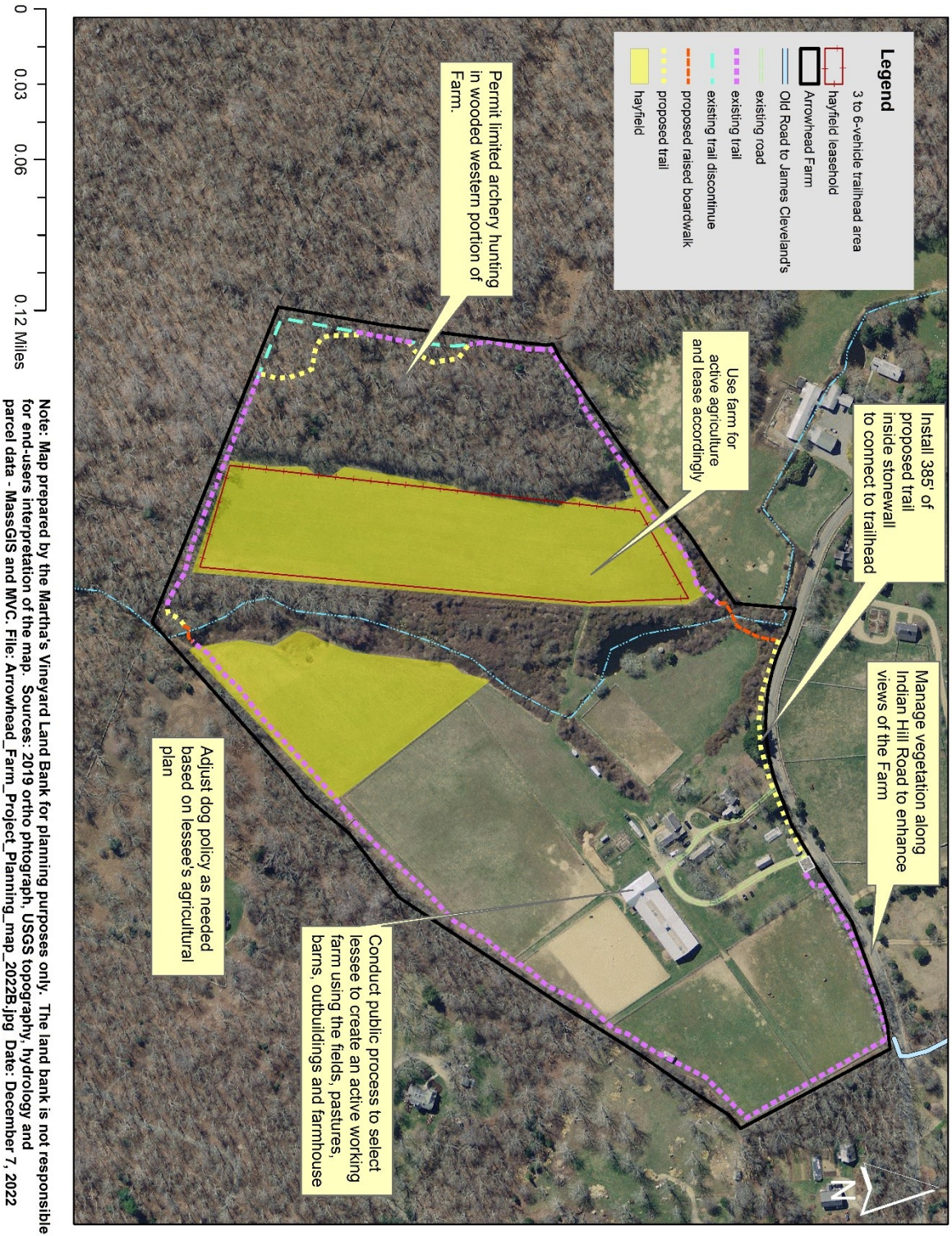


Note: Map prepared by the Martha's Vineyard Land Bank for planning purposes only. The land bank is not responsible for end-users interpretation of the map. Sources: 2019 ortho photograph, USGS topography, hydrology and parcel data - MassGIS and MVC. File: Christiantown_Project_Planning_map_2022.jpg Date: November 17th, 2022

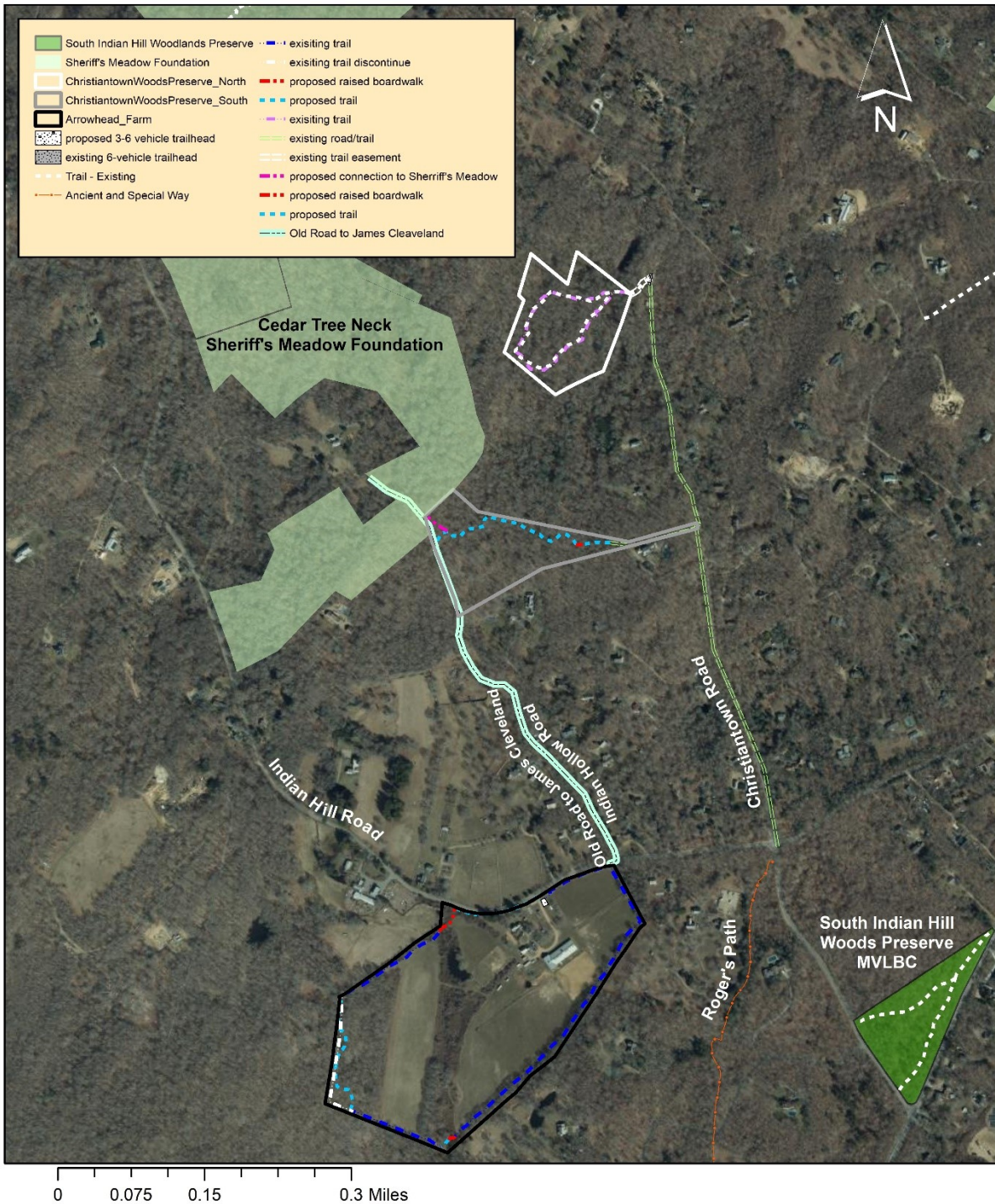
Map 15: Proposed project planning map of Arrowhead Farm, West Tisbury during life-estate.

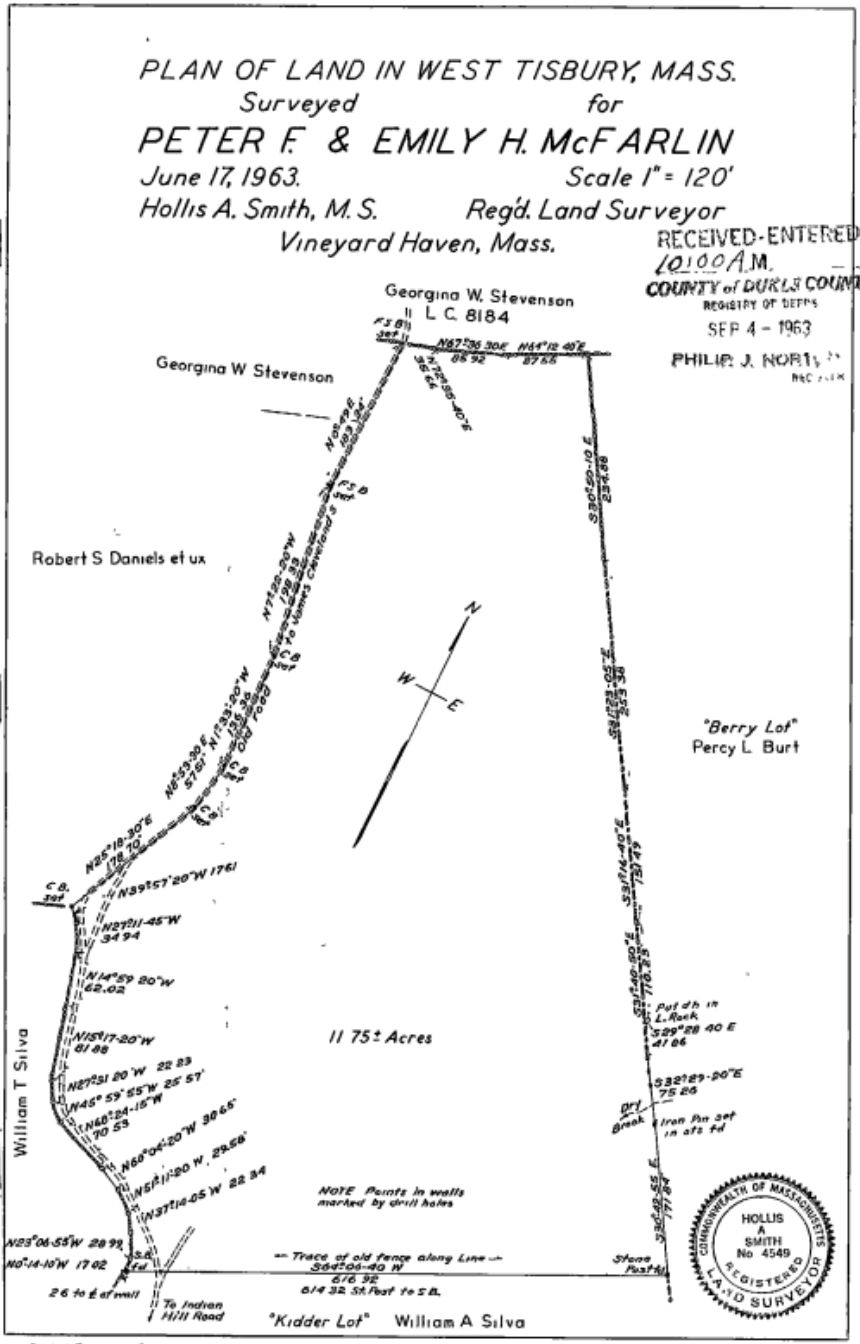


Map 16: Proposed project planning map of Arrowhead Farm, West Tisbury following conclusion of life-estate.

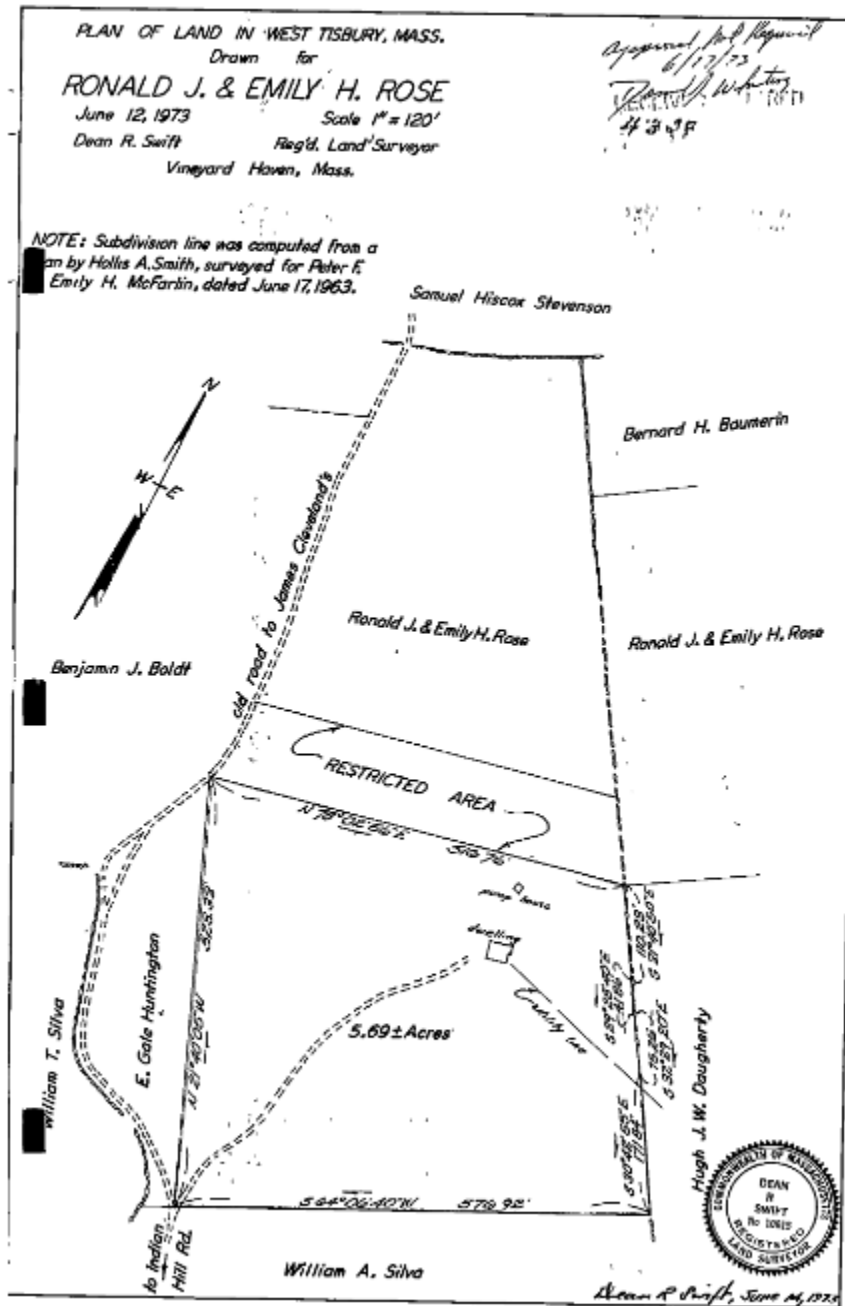


Map 17: Proposed trail planning map of Christiantown Woods Preserve, Arrowhead Farm and surrounding conservation land and ancient ways in West Tisbury, MA.



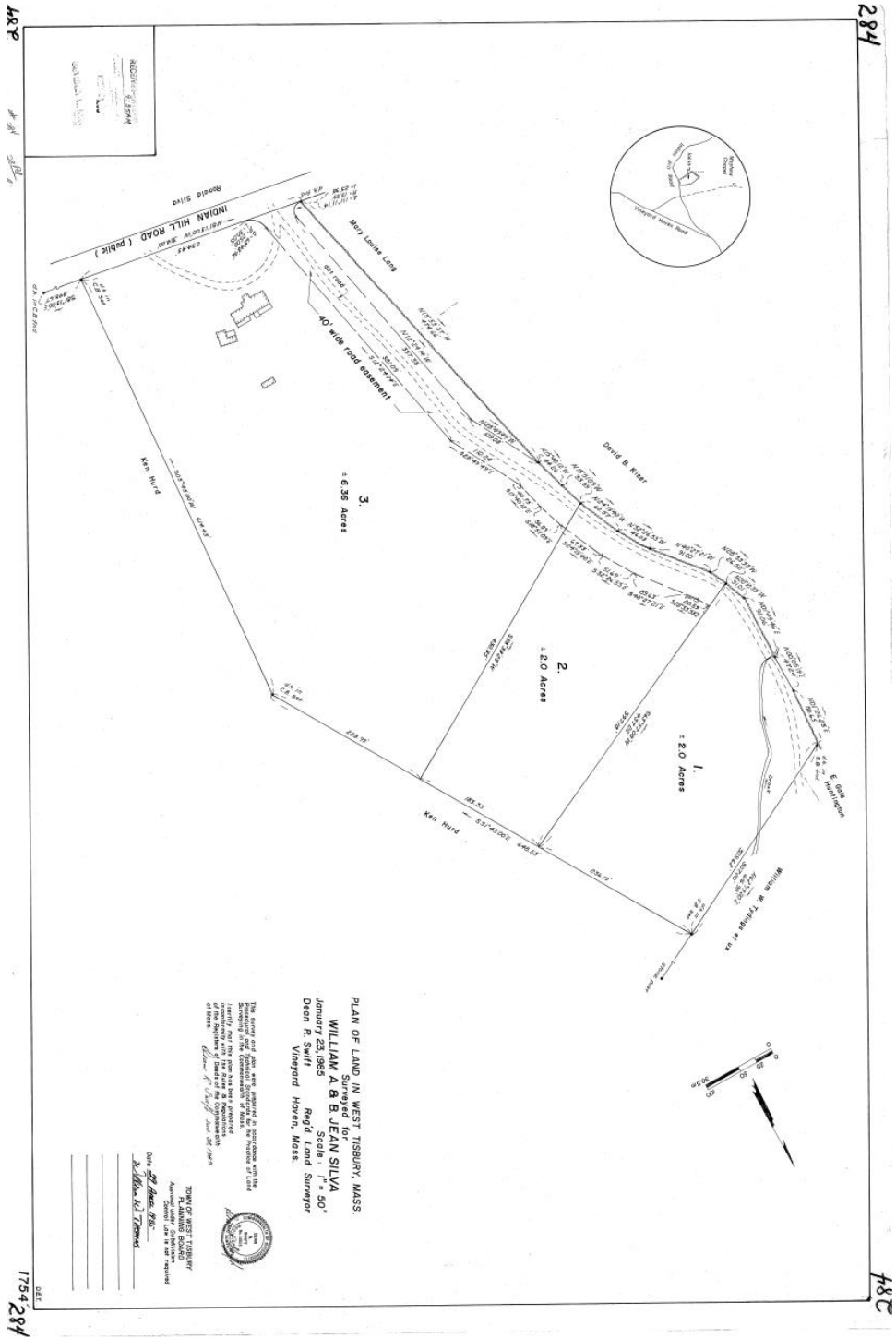


218-304



GD 269 - PG 130

Link between Christiantown Woods Preserve and Arrowhead Farm



Deeds

The complete deeds to Christiantown Woods Preserve and Arrowhead Farm are found below. These deeds can also be found in the Dukes County office of Recorded and Registered Lands (<https://www.masslandrecords.com/Dukes/>).

December 30, 1986

4650186

DEED

I, CRISEYDE S. JONES of West Tisbury, Massachusetts, in consideration of ONE HUNDRED SIXTY THOUSAND (\$160,000.00) DOLLARS, grant to the MARTHA'S VINEYARD LAND BANK COMMISSION, a body politic and corporate with a principal place of business in Edgartown, Massachusetts and having a mailing address of P. O. Box 1417, Edgartown, Massachusetts 02539, with quitclaim covenants, the land in Edgartown, Massachusetts, more particularly described on Exhibit A attached hereto.

EXECUTED as a sealed instrument this 30th day of December, 1986.

Criseyde S. Jones

Criseyde S. Jones

COMMONWEALTH OF MASSACHUSETTS

Dukes County, ss.

December 30, 1986

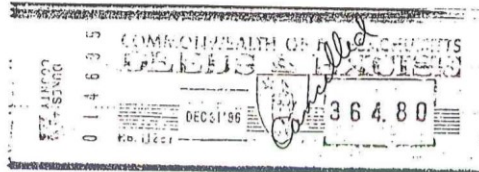
Then personally appeared the above named Criseyde S. Jones and acknowledged the foregoing instrument to be her free act and deed, before me

James F. Reynolds

Notary Public

My commission expires: December 19, 1991

MARTHA'S VINEYARD LAND BANK FEE
 PAID: \$ _____
 EXEMPT: \$ A
160 / 12/31/86 / [Signature]
NO. DATE CERTIFICATION



24650187

EXHIBIT "A"

Two certain parcels of land with the buildings thereon situated at Christiantown, West Tisbury, Massachusetts, more particularly bounded and described as follows:

PARCEL ONE

Beginning at a point which is 183 feet South-Southwesterly from the east corner of land formerly of Allan Miller and Bonnie P. Miller and now or formerly of Bonnie P. Miller and the grantee:

thence NORTHWESTERLY along a stone wall 590 feet, more or less, to the center of a cellar hole;
thence SOUTH-SOUTHWESTERLY 330 feet, more or less, along a wall to a corner in the wall;
thence EASTERLY 40 feet, more or less, along a wall to a corner in the wall;
thence SOUTH-SOUTHWESTERLY 500 feet, more or less, along a wall to an intersection;
thence SOUTHERLY 90 feet, more or less, along a stone wall to a point in the wall;
thence EASTERLY 320 feet, more or less, along a straight line to a bend in a stone wall;
thence NORTHEASTERLY 460 feet, more or less, along a stone wall to a bend in the wall;
thence NORTH-NORTHEASTERLY 260 feet, more or less, along a stone wall to an intersection at the point of beginning.

Together with all appurtenant easements.

Being the premises conveyed to the Seller by deed of Allan P. Miller, et ux, dated August 11, 1966, recorded in Book 263, Page 36 in the Dukes County Registry of Deeds; and by deed of Kenneth M. Jones dated June 23, 1978, recorded in Book 358, Page 168 in said registry.

PARCEL TWO

Beginning at the Easterly corner of land now or formerly of Allan Miller and Bonnie P. Miller;

thence NORTHWESTERLY by a stone wall three hundred sixty-five (365) feet, more or less, to an intersection in said wall;

BK 465 PG 188

Exhibit "A", Parcel Two continued

thence SOUTH-SOUTHWEST one hundred sixty-five (165) feet, more or less, by a stone wall to another stone wall;
thence SOUTHEASTERLY by a stone wall three hundred fifty (350) feet, more or less, to an intersection in the wall;
thence NORTH-NORTHEAST one hundred eighty-three (183) feet, more or less, to the point of beginning.

Together with all appurtenant easements.

Being the premises conveyed to the Seller by deed of Bernice Phillips dated August 11, 1966, recorded in Book 263, Page 35 in said registry and by deed of Bonnie P. Miller, dated July 18, 1967, recorded in Book 267, Page 341 in said registry.

The premises to be conveyed hereunder shall be conveyed together with the appurtenant right of way and easement as set forth in an instrument dated January 18, 1984, recorded in Book 410, Page 466 in said registry, said right of way and easement is shown on a plan recorded in Book 410, Page 465.

MARTHA'S VINEYARD LAND BANK FEE
 PAID \$ _____
 EXEMPT \$ A
59957 3/26/19 MH
NO. DATE CERTIFICATION



2019 00001522
Bk: 1491 Pg: 748 Doc: DEED
Page: 1 of 3 03/26/2019 12:40 PM

QUITCLAIM DEED

ROSE FAMILY LIMITED PARTNERSHIP, a Massachusetts Limited Partnership with offices at 105 Hines Point Road, Vineyard Haven, MA 02568, and **JONATHAN J. ROSE**, individually, of 105 Hines Point Road, Vineyard Haven, MA 02568,

in consideration of **FIVE HUNDRED FIFTY THOUSAND AND NO/100 DOLLARS (\$550,000.00)**

grant to **MARTHA'S VINEYARD LAND BANK COMMISSION**, a corporate body politic with offices at **P.O. Box 2057, Edgartown, MA 02539**,

with *quitclaim covenants*

PARCEL 1

The land in West Tisbury, Dukes County, Commonwealth of Massachusetts, bounded and described as follows:

Beginning at an iron pipe bound in the remains of a stone wall at other land now or formerly of Bernard H. Baumrin, said bound marking the northwesterly corner of land now or formerly of one Daugherty; thence N 33° 00' W by the remains of said wall and land now or formerly of Bernard H. Baumrin 475 feet, more or less, to an intersection of a stone wall; thence southeasterly by said stone wall 400 feet, more or less, to a right angle intersection with another stone wall, and continuing in the same course 460 feet, more or less, to a point at land now or formerly of Daugherty aforesaid, said point being 325 feet, more or less, due westerly from the westerly sideline of Christiantown Road; then westerly by said Daugherty land 500 feet, more or less, to an iron pipe bound at the point or place of beginning. Being a triangular parcel of land containing three acres, more or less.

Together with a 20 foot right of way, in common with others now or hereinafter entitled thereto, from the above described premises to Christiantown Road, said right of way to be bounded and described as follows: Beginning at an iron pipe bound on the westerly side of Christiantown Road at land now or formerly of Daugherty aforesaid; thence westerly by said Daugherty land 325 feet, more or less, to the above-described premises; thence northwesterly by the above described premises 20 feet more or less to a point; thence

Property Address: 68 & 72 Christiantown Road, West Tisbury, MA

easterly on a straight line and parallel to and 20 feet distant from the first mentioned line to the westerly side of Christiantown Road; thence southerly by Christiantown Road to the point of beginning.

The above described premises are conveyed subject to and with the benefit of all easements, restrictions and reservations of record.

Meaning and intending to convey the premises conveyed by deed of Emily H. Rose, Trustee of Stephjon Realty Trust, dated September 15, 1987, recorded with the Dukes County Registry of Deeds on Book 491, Page 127. Also see a deed from Ronald J. Rose, dated July 27, 1998, recorded with the Dukes County Registry of Deeds in Book 803, Page 191.

PARCEL 2


The land in West Tisbury, County of Dukes, Commonwealth of Massachusetts, bounded and described as follows:

Beginning at an iron pipe bound in the remains of a stone wall, said bound marking the northwesterly corner bound of land now or formerly of one Daugherty, the northeasterly corner bound of land conveyed to William W. Tydings, Jr. et ux by deed recorded with Dukes County Deeds in Book 313, Page 338 and the southeasterly corner of the premises herein described, thence S. 78° 02' 56" W by land of said Tydings 516.76 feet to a cement bound set in the Old Road to James Cleveland's, so called, said bound marking the northerly bound of land conveyed to E. Gale Huntington by deed recorded with Dukes County Deeds in Book 270, Page 124; thence by said Old Road to James Cleveland's northerly, by various courses, a total of 575.44 feet to a field stone bound at land now or formerly of Georgina W. Stevenson; thence northeasterly by said Stevenson land by various courses a total of 209.13 feet to land formerly of Percy L. Burt and now or formerly of Bernard H. Baumrin; thence southeasterly by said land of Baumrin and other land now or formerly of Ronald J. Rose and Emily H. Rose described in a deed from said Baumrin recorded with Dukes County Deeds in Book 281, Page 548, by various courses a total of 639.75 feet to the iron pipe at the place of beginning.


Subject to and with the benefit of all easements, restrictions and reservations of record, and specifically together with all grantor's rights, title and interest in and to the so-called "Old Road to James Cleveland's".

Meaning and intending and hereby conveying the same premises conveyed by Emily H. Rose, Trustee, to Rose Family Limited Partnership, by deed dated July 27, 1998 and recorded with the Dukes County Registry of Deeds in Book 803, Page 193. For Jonatha J. Rose's title, see deed of Emily H. Rose, Trustee dated June 13, 1995 and recorded in Dukes County Registry of Deeds in Book 656, Page 432.

EXECUTED as a sealed instrument this 26 day of March 2019.


Jonathan J. Rose

Rose Family Limited Partnership

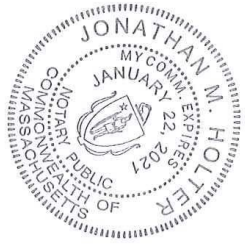
By: 
Jonathan J. Rose, its General Partner

COMMONWEALTH OF MASSACHUSETTS

Dukes County, ss.

On this 26th day of March, 2019, before me, the undersigned notary public, personally appeared **Jonathan J. Rose, Individually and as General Partner as aforesaid**, proved to me through satisfactory evidence of identification, were personal knowledge / driver's license / passport / other: _____ (circle one), to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purpose, for himself and on behalf of Rose Family Limited Partnership, and swore or affirmed to me that the contents of the document are truthful and accurate to the best of his knowledge and belief


Notary Public
My Commission Expires: 1/22/21



ATTEST: Paulo C. DeOliveira, Register
Dukes County Registry of Deeds

MARTHA'S VINEYARD LAND BANK FEE
 PAID \$ _____
 EXEMPTS \$ A
62226 NO. 10/23/20 DATE MH CERTIFICATION

Quitclaim Deed



CHARLENE L. DOUGLAS, Trustee of the CLD Realty Trust, under a Declaration of Trust dated June 3, 1994, which trust is filed and registered with the Dukes County Registry of the Land Court, Document Number 35052, and shown on Certificate Number 10722, and having a mailing address of P.O. Box 429, Vineyard Haven, Massachusetts 02568, Grantor,

In Consideration of \$ 4,435,186 (Four Million, Four Hundred Thirty-Five Thousand, One Hundred Eighty-Six Dollars), paid

Hereby grants, subject to a life estate for the lives of life tenants Robert S. Douglas and Charlene L. Douglas, jointly and severally, in conformance with the terms of a Life Estate Agreement entered into at the time of this conveyance.

To the **MARTHA'S VINEYARD LAND BANK COMMISSION**, a Massachusetts body politic and corporate, of 167 Main Street, Edgartown, Massachusetts 02539, and having a mailing address of PO Box 2057, Edgartown, MA 02539

with *QUITCLAIM COVENANTS*:

That certain parcel of land with the buildings and improvements thereon, situated in West Tisbury, in the County of Dukes, and said Commonwealth, bounded and described as follows:

- NORTHERLY: by Indian Hill Road (variable width), nine hundred eighty-six and 72/100 (986.72) feet;
- EASTERLY: by Lot 2 on the hereinafter mentioned plan, three hundred sixty-seven and 86/100 (367.86) feet;
- SOUTHEASTERLY: by land now or formerly of Robert R. White on said plan, one thousand six hundred sixty-four and 24/100 (1,664.24) feet,
- SOUTHWESTERLY: by land now or formerly of Seven Gates Farm Corporation on said plan, six hundred ninety-eight and 36/100 (698.36) feet;
- WESTERLY: by land now or formerly of Seven Gates Farm Corporation on said plan, five hundred eighty-six and 27/100 (586.27) feet;
- NORTHWESTERLY: by land now or formerly of Harold D. Rogers, et al, on said plan, six hundred seventy and 11/100 (670.11) feet; and
- WESTERLY: by land now or formerly of Harold D. Rogers, et al, on said plan, one hundred twenty-one and 89 / 100 (121 .89) feet.

174 Indian Hill Road, West Tisbury MA 02575

All said boundaries are determined by the Court to be located as shown on a plan drawn by Schofield Brothers, Inc., Professional Engineers and Land Surveyors, dated October 3, 1977 as modified and approved by the Land Court, filed in the Land Registration Office, a copy of a portion of which is filed with the County of Dukes County District of the Land Court as Plan No. 20288B and is shown as Lot No. 1 on said plan. Said plan is filed with Certificate of Title 4263, Book 22, Page 45.

The land hereby registered is subject to the terms of an indenture between Seven Gates Farm Corporation and William Tavas Silva, dated May 1, 1925, duly recorded in the Registry of Deeds for Dukes County, Book 167, Page 70, so far as in force and applicable at date of original decree.

The above described land is subject to the flow of an ancient water course running through the same and shown on said plan as a Brook, as affected by the terms of said indenture between Seven Gates Farm Corporation and William Tavas Silva, dated May 1, 1925, duly recorded with Dukes County Registry of Deeds in Book 167, Page 70.

The Grantor hereby releases any and all rights of homestead of the property conveyed herein as set forth in M.G.L. Chapter 188, and further certifies under the pains and penalties of perjury that no other individual has homestead rights in the subject property.

The above-described parcel is also conveyed subject to and with the benefit of all further rights, rights of way, easements, reservations and restrictions of record, if any there be and insofar as they are of legal force and in effect.

EXECUTED as a sealed instrument under the pains and penalties of perjury this 22nd day of October, 2020.

Charlene L. Douglas

Charlene L. Douglas, Trustee

COMMONWEALTH OF MASSACHUSETTS

County of Dukes County, ss.

On this 22nd day of October, 2020, before me, the undersigned notary public, personally appeared Charlene L. Douglas, Trustee of the CLD Realty Trust, proved to me to be the person whose name is signed on the preceding or attached document, through satisfactory evidence of identification, namely, a driver's license issued by the State of Massachusetts bearing the photographic image of the face and signature of Charlene L. Douglas and acknowledged to me that she signed it voluntarily for its stated purpose.

[Signature]
Notary Public

(SEAL)

My commission expires:

05-14-2021



THOMAS M. SAWYER
Notary Public
Commonwealth of Massachusetts
My Commission Expires
May 14, 2021

LIFE ESTATE AGREEMENT

This **AGREEMENT** is made as of this 23rd day of October, 2020 among **CHARLENE L. DOUGLAS, Trustee of CLD REALTY TRUST**, u/d/t dated June 3, 1994, registered in Dukes County Registry District Office of the Land Court as Document No. 35052, having a mailing address of PO Box 429, Vineyard Haven, MA 02568 (the "Current Fee Holder"), the **MARTHA'S VINEYARD LAND BANK COMMISSION**, a corporate body politic, having a mailing address of PO Box 2057, Edgartown, MA 02539 (the "Future Fee Holder" or "MVLB"), and **CHARLENE L. DOUGLAS and ROBERT S. DOUGLAS**, having a mailing address of PO Box 429, Vineyard Haven, MA 02568 (the contemplated "Estate Holders". The term "Estate Holders" shall be deemed to include each Estate Holder individually, as well as the two Estate Holders, jointly).

WITNESSETH

WHEREAS, the CLD Realty Trust, by its trustee, Charlene L. Douglas, has entered into a contract to sell the fee interest in certain real property known as Arrowhead Farm and located at 174 Indian Hill Road, in West Tisbury, Dukes County, Massachusetts, this real property being also that described in a deed to the CLD Realty Trust dated December 28, 2005 recorded in Dukes County Registry District Office of the Land Court as Document No. 64339, together with the buildings and improvements located thereon (the "premises"), and

WHEREAS, the described sale contract provides that the above described fee interest shall be transferred subject to a life estate in the premises for the benefit of Charlene L. Douglas and Robert S. Douglas, natural persons, individually and jointly, and

WHEREAS the parties wish to set forth their agreement regarding the respective obligations, responsibilities and rights upon the transfer of the described property and during the term of the described life estate,

NOW, THEREFORE, in consideration of the mutual covenants and agreements herein contained, the parties hereby agree as follows:

1. Rights and Obligations of Estate Holders. The Estate Holders shall be entitled to the possession, use, and enjoyment of the Premises during their natural lifetimes, subject to the Future Fee Holder's rights set forth in Paragraph 2, below, and subject to the following terms and conditions, which terms and conditions are agreed to by both the Estate Holders and the Future Fee Holder:

(a) The Estate Holders shall use the premises in the same manner they have used them heretofore, as their residence and as an equestrian facility.

(b) The Estate Holders shall not construct any buildings or other

structures or improvements on the premises without the prior written consent of the Future Fee Holder.

The Estate Holders are hereby authorized to construct a "laundry room" addition to the dwelling house.

(c) The Estate Holders shall retain all rights of use and occupancy to live in the residence located on the Premises, and to use the outbuildings at the premises.

(d) The Estate Holders shall retain the rights to use the Pastures and Fences on the premises, and may operate a "horse farm" in the manner they heretofore have.

(e) The Future Fee Holder shall have the right, from time to time, upon reasonable advance notice, to enter the residence for the purpose of inspecting the structure.

(f) The Premises shall not, in whole or in part, be leased, licensed, or made subject to any occupancy rights in favor of any third party.

The foregoing prohibition notwithstanding, the Estate Holders may permit and consent to the use of the premises by others in the manner they have heretofore. Family and friends may visit. People who do the real work of maintaining the property, looking after horses and the like, may enjoy the same relationships to the property and presence they have since the Estate Holders first came to it. Boarding or riding or other similar arrangements according to which a third party keeps a horse, or rides a horse, or otherwise uses the premises in a way consistent with and comparable to the uses the Estate Holders have made of the premises prior to this transaction shall not be deemed an assignment under the terms of this agreement.

Any such arrangement shall have been permitted by the Estate Holders, and for a time period not to exceed the life estate.

(g) The Estate Holders shall not convey, transfer, grant, or assign in title, mortgage, encumber or pledge to any party the whole or any part of the Premises or the Life Estate.

2. Rights of the Future Fee Holder. Throughout the term of this Life Estate Agreement, the Future Fee Holder shall have the right to create and implement a Management Plan which includes:

(i) the use of the eastern entrance to the Premises by Future Fee Holder, its agents, representatives, and employees, as well as MVLB farm lessees and members of the public, without restrictions other than those that may now or in the future exist in the law of the United States, the Commonwealth of Massachusetts or its political subdivisions.

(ii) the installation of a "Trailhead" parking lot in the area shown on **Exhibit A-2** (attached to the purchase and sale agreement and to this agreement) designed to accommodate three (3) standard motor vehicles, with the right to expand, if demand requires, to a maximum of six (6) standard motor vehicles;

(iii) the installation and maintenance of a trail four feet wide in the location

2/1/16
CLD
BR
** together with the right for the farmer(s) to travel, by vehicle and with due caution, back and forth between the eastern entrance and the leasehold.

indicated on **Exhibit A-2** (attached to the purchase and sale agreement and to this agreement) (the "Trail"), and the right of members of the public to travel on the Trail between sunrise and sunset.

In establishing the trail, the Future Fee Holder (Land Bank) shall have the right to cut vegetation outside the paddock fences and within and to the perimeter stone wall. The cutting shall preserve any "specimen trees" as that term is reasonably understood. The trail and cutting may clear the stone wall of any and all "nuisance" or "all too common" vegetation and any and all noxious opportunistic vegetation, such as "poison ivy" and "bullbriar" (catbriar) and "bittersweet" vines. To any extent possible, consistent with proper trail installation, the vegetated "difference" shall be left on the "paddock side" of the trail in order to afford distance from the fence (that would, for example, make climbing on or over the fence less inviting). The parties to this agreement agree to treat each other's interests with consideration and respect and reasonably to inform each other and consult in matters concerning trail location and cutting.

(vi) the exclusive right to lease the "Hay Field" shown on **Exhibit A-2** (attached to the purchase and sale agreement and to this agreement) to a farmer or farmers to farm hay and similar crops, being fodder (excluding crucifers and root vegetables); **

(v) the use and management of the "Woods" shown on **Exhibit A-2** (attached to the purchase and sale agreement and to this agreement) for purposes of conservation and passive recreation. (The Estate Holders have asked that the "Woods" area not be used for hunting until after the conclusion of the life estate.)

The above described management plan will conform to the principles and guidelines of the Massachusetts Department of Conservation and Recreation and the MVLB Enabling Act,

3. Insurance. The Estate Holders shall maintain in effect at all times, at Estate Holders' cost, a policy of all-risk casualty insurance covering the Premises, which policy shall cover one hundred percent (100%) of the full replacement cost of the insurable improvements on the Premises and shall name the Future Fee Holder as an additional insured.

The Estate Holders shall procure, keep in force, and pay for liability insurance indemnifying the Future Fee Holder and Estate Holders from and against all claims and demands for injury to or death of persons or damage to property which may be claimed to have occurred in or on those parts of the Premises in the ambit and control of the Estate Holders. This liability insurance shall be carried in amounts consistent with such insurance as is normally carried by homeowners.

Insurance shall be provided by insurers qualified to do business in Massachusetts and in good standing. The Estate Holders shall provide from time to time evidence of insurance to Future Fee Holder upon Future Fee Holder's request without unreasonable delay.

4. Damage to or Destruction of the Property. If any of the improvements are damaged or destroyed by casualty, the Estate Holders shall repair, replace or reconstruct the portion of the improvements so damaged or destroyed, and the proceeds of the casualty insurance described in paragraph 3 above ("Insurance.") shall be applied

to such repair or reconstruction. Unless the Fee Holder is legally liable for injury to them, the Fee Holder shall not be responsible for repair, replacement or reconstruction of improvements damaged or destroyed that are subjects of the life tenancy, or the cost thereof.

5. Maintenance - Structural and Utility Systems. The Estate Holders shall at their expense maintain, repair and renew (as necessary) all mechanical and utility systems servicing the Premises, including electrical, plumbing and heating, in a manner similar and comparable to the manner to which they have maintained the premises over the last forty years during which they have lived there. The Estate Holders shall also be responsible for all structural and exterior repairs to the dwelling and the barn and for keeping the landscaping and lawn area in good repair, order and condition at their own expense.

6. Surrender of Life Estate / Termination of Life Estate. The Estate Holders shall have all of the rights afforded them under the laws of the Commonwealth of Massachusetts to surrender the life estate they hold to the fee holder of the property.

The life estate shall terminate either when both of the life tenants are no longer living, or shall terminate when neither of the life tenants is able to occupy the premises as his or her residence and has no prospect ever to return.

7. Remedies for Breach. Each party to this agreement shall have all of the remedies at law and in equity provided to that party by the laws of the Commonwealth of Massachusetts.

8. Notices. All notices and communications under this Agreement shall be in writing and shall be given by (a) hand-delivery, (b) first class mail (postage prepaid), or (c) reliable overnight commercial courier (charges prepaid) to the addresses set forth above.

Notice shall be deemed to have been given and received: (i) if by hand delivery, upon delivery; (ii) if by mail, three (3) calendar days after the date first deposited in the United States mail; and (iii) if by overnight courier, on the date scheduled for delivery. A party may change its address by giving written notice to the other party as specified herein.

9. Successors and Assigns. This Agreement (a) is binding upon and shall inure to the benefit of Future Fee Holder and its successors and assigns and (b) shall inure to the benefit of Estate Holders and be binding upon Estate Holders and their heirs, executors and other personal representatives.

10. Life Estate Holders' Lives. Robert Douglas first came to West Chop, Tisbury, Martha's Vineyard as a young boy, and has lived all of his adult life on the Vineyard. He has had built and re-built and been captain of two square-rigged sailing vessels, "Shenandoah" and "Alabama", that have graced Vineyard Haven Harbor for decades and by their appearance proposed to visitors arriving by ferry that this place

might have more to it, salt and song and heart, than just beach sand or sunny days in July. Vineyard schoolchildren were for many years the first week trip on Shenandoah to begin the season. Thousands of people have sailed with him and multiple generations of crew have learned together to trim the braces, gaining a kind of knowledge invaluable also in their later lives even as land surveyors or building contractors or executives or in working on town committees.

Charlene Douglas has been, from dressage to "pony camp", the "godmother" of a comparable set of opportunities on horseback on land. She has taught and hosted people who have not seen a living horse before, actors who without experience have taken roles inexorably requiring they persuade a movie audience of their equitation, and people whose long ago memories of the excitements of horse camp have been renewed.

The parties to this agreement share a deep regard for the land of Martha's Vineyard and aspire to treat it well. They also recognize the benefits of treating the people of this place and each other with deserved respect. Land can be alive a long time. People – not so long. This agreement ends, or nearly, at the end of lives. Considerate treatment at the end of life is hereby acknowledged also as its object.

11. Miscellaneous Provisions.

(a) This agreement shall be governed by and construed in accordance with the laws of the Commonwealth of Massachusetts.

(b) The failure of a party to insist upon the strict performance of any provision of this agreement shall not be deemed a waiver of that provision or any other provision contained in this Agreement.

(c) This agreement may only be modified by a lawful instrument in writing duly executed by both of the parties to this agreement, or by representatives of the parties duly appointed according to the laws of the Commonwealth of Massachusetts. If this agreement has been recorded in the Dukes County Registry of Deeds, all instruments modifying this agreement shall also be of record.

(d) The parties further specifically agree that this agreement may not be modified, discharged or terminated orally, nor by any form of implication derived from anything other than a further lawful written agreement duly executed by both parties.

(e) In the event that any one or more of the provisions contained in this Agreement shall for any reason be held to be invalid, illegal or unenforceable to any extent, such invalidity, illegality or unenforceability shall not affect any other provision of this Agreement (or the provision in question to the extent not invalid, illegal or unenforceable), and this Agreement shall be enforceable to the fullest extent permitted by law.

(f) This Agreement embodies the entire agreement between the parties regarding the subject matter hereof. Either party, at its own expense, shall be entitled to record this agreement or cause a memorandum or notice of this agreement to be

recorded in the Dukes County Registry District Office of the Land Court.

IN WITNESS WHEREOF this Agreement has been duly executed by the parties as of the day and year first above written.

Witnessed by:

Sarah Pallattoni
[Signature]

ESTATE HOLDERS

Robert S. Douglas
Robert S. Douglas
Charlene L. Douglas
Charlene L. Douglas

Witnessed by

Sarah Pallattoni

CURRENT FEE HOLDER

CLD Realty Trust

By: Charlene L. Douglas
Charlene L. Douglas, Trustee

FUTURE FEE HOLDER

Martha's Vineyard Land Bank
Commission

By: _____
Sarah Thulin, Chairman

County Registry District Office of the Land Court.

IN WITNESS WHEREOF this Agreement has been duly executed by the parties as of the day and year first above written.

Witnessed by:



ESTATE HOLDERS

Robert S. Douglas

Charlene L. Douglas

CURRENT FEE HOLDER

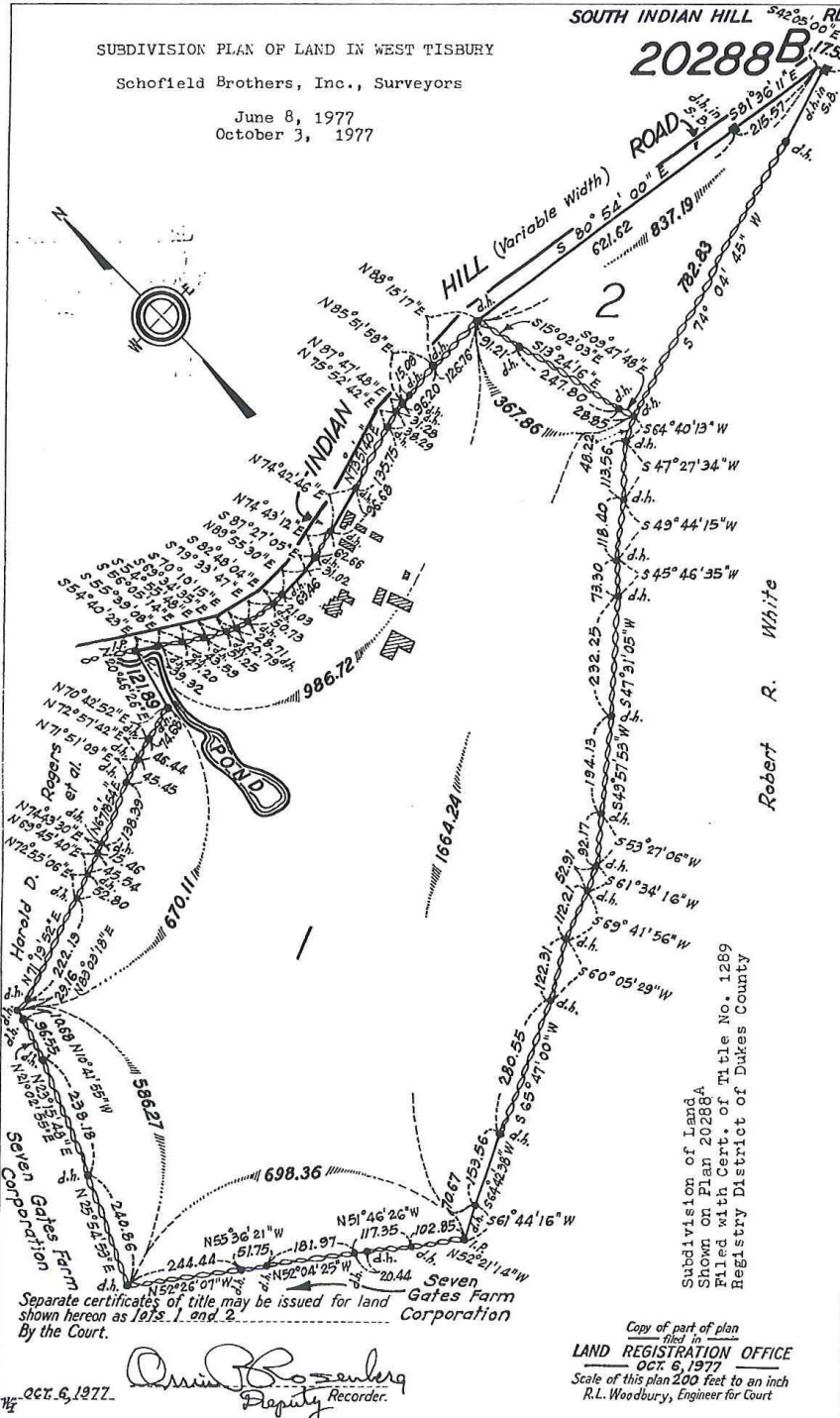
CLD Realty Trust

By: _____
Charlene L. Douglas, Trustee

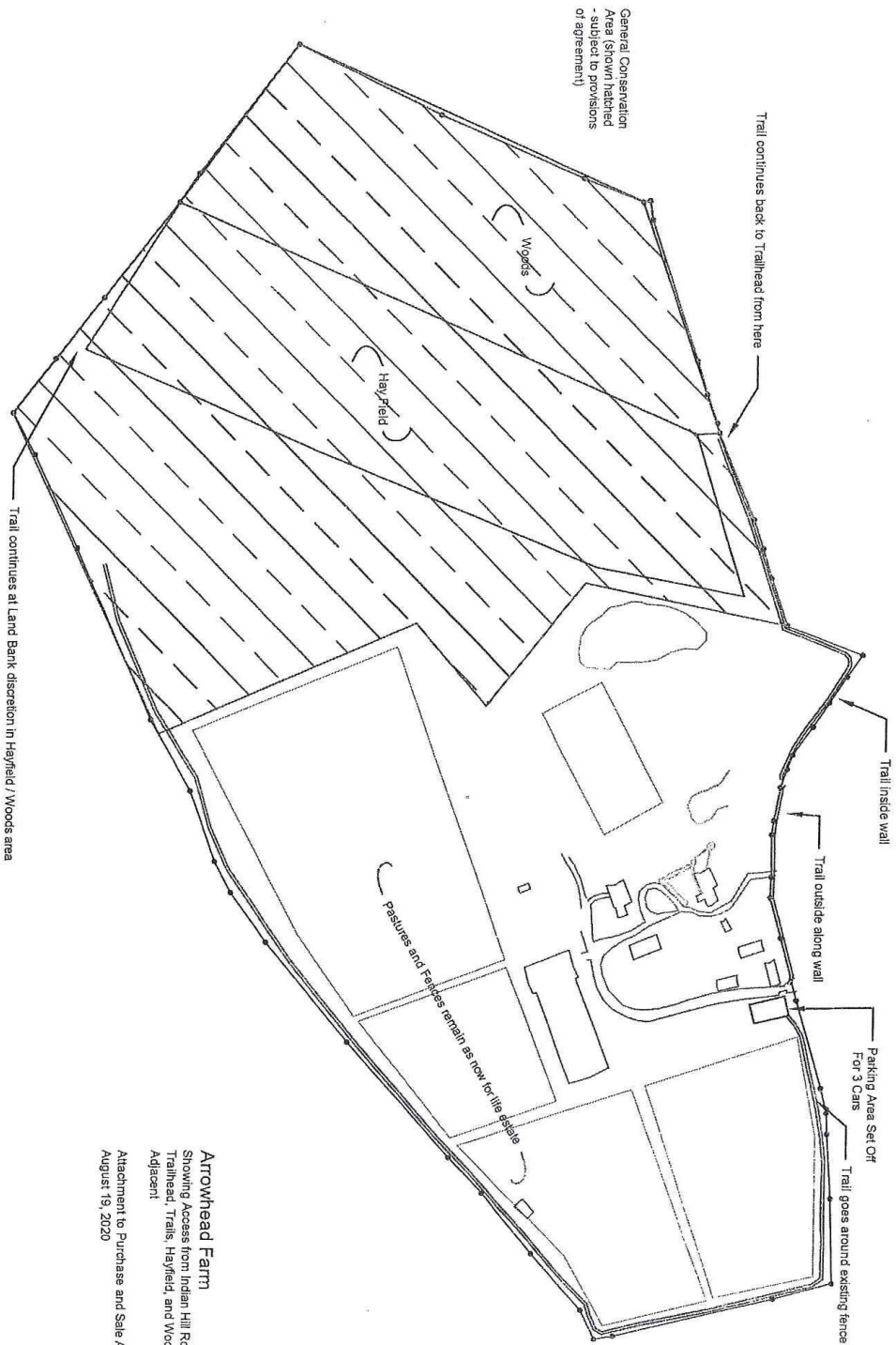
FUTURE FEE HOLDER

Martha's Vineyard Land Bank
Commission

By: 
Sarah Thulin, Chairman



Appendix "A-1"



Arrowhead Farm
 Showing Access from Indian Hill Road,
 Trailhead, Trails, Hayfield, and Woodland
 Adjacent
 Attachment to Purchase and Sale Agreement
 August 19, 2020

Preliminary Management Plan goals:

The Preliminary Management Plan Goals approved by the Martha's Vineyard land bank commission and West Tisbury land bank advisory board are provided below. There are separate management plan goals for each position of the property.

October 16, 1991




Martha's Vineyard Land Bank Commission

Christiantown Woods Preserve *Management Plan*

<i>acreage</i>	8.6 acres
<i>conservation significance and reason for acquisition</i>	<ol style="list-style-type: none">(1) forest land(2) freshwater marshes and other wetlands(3) scenic vistas(4) wildlife preserves(5) passive recreational use
<i>special features</i>	<ol style="list-style-type: none">(1) Tract surrounds the historic Christiantown Chapel, a Wampanoag Indian house of worship maintained by Dukes County. Acquisition of the Christiantown Woods Preserve ensures that the solemn and rustic qualities of the land around the church will be maintained, and, in recognition of this, the Commonwealth of Massachusetts in 1988 declared this area one of the "Special Places of Massachusetts."(2) Property hosts the ruins of several ancient buildings' foundations, their owners' stone boundary walls, and a cave-like stone structure.(3) Location of the "Saddle Rock," a large boulder worn into the shape of a horse saddle.(4) Domestic vegetation throughout the tract indicates human habitation back as far as the nineteenth century.
<i>limitations and restrictions</i>	<p>The West Tisbury Conservation Commission has jurisdiction through the Wetlands Protection Act over any alterations of the wetlands and associated resource areas.</p> <p>No use shall be permitted which compromises the Chapel's aesthetic and spiritual qualities.</p>
<i>abutters</i>	<ol style="list-style-type: none">(1) Dukes County(2) Robert Henry(3) Bernard Baumrin

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<i>vehicular access and parking</i>	<p>An automobile clearing is provided beyond the Chapel off of Christiantown Road by agreement with Dukes County.</p> <p>No motorized vehicles shall be permitted beyond the designated parking area, with the exception of Land Bank Commission maintenance vehicles.</p>
<i>bicycle racks</i>	<p>A bicycle rack is provided adjacent to the automobile clearing.</p>
<i>trails</i>	<p>A series of looping trails is provided across the preserve and shall be maintained as necessary.</p>
<i>fencing</i>	<p>None. Existing stone walls mark most of the preserve's boundaries and shall be maintained as necessary. The Land Bank Commission shall consult with any abutters who post "no trespassing" signs along their boundary with the preserve and shall offer to install either (or both) split-rail fencing or boundary markers, as necessary, as an alternative to the signs.</p>
<i>vegetation</i>	<p>Much of the property is wooded, and the species are relatively unusual for the Vineyard: beech, maple, and hickory, among others.</p> <p>Flower beds have been planted around the adjacent Chapel by the Martha's Vineyard Garden Club; the Club may construct a well on the Christiantown Woods Preserve to service these beds provided that the Club absorbs all expenses associated with its installation and maintenance and provided further that the well is handsomely constructed and is an asset to the area.</p>
<i>fields</i>	<p>None exist, nor are any proposed.</p>
<i>stone walls</i>	<p>Overgrown vegetation on, and any minor vegetation within ten feet of, the stone walls visible from either current or future trails on this property shall be cleared to expose the stones. Care shall be taken not to remove any rare or unusual species.</p> <p>Any collapsed or partially-collapsed stone walls shall be reconstructed.</p>
<i>signs</i>	<p>The land bank logo sign erected adjacent to the parking clearing shall be maintained, as shall boundary markers throughout the preserve. Additional boundary markers shall be installed as necessary.</p>

<i>trash</i>	No trash removal services shall be provided; Land Bank Commission property management staff shall regularly inspect the preserve and remove any trash found.
<i>hunting</i>	No hunting shall be permitted on this property, in accordance with the Land Bank Commission's adopted hunting policy.
<i>on-going actions</i>	<ul style="list-style-type: none"> (1) Develop a species inventory. (2) Maintain and continually update a base map. (3) Impose conservation restriction over entire tract (4) Connect property trails with adjacent conservation holdings, most notably the Sheriff Meadow Foundation's Cedar Tree Neck Preserve.
<i>distribution of management expenses</i>	All expenses associated with the management of this property shall be absorbed by the Central Fund.

approved by vote of the West Tisbury Town Advisory Board: July 25, 1991

approved by vote of the Land Bank Commission: August 26, 1991

approved by the secretary of environmental affairs: October 16, 1991



January 31, 2019

Martha's Vineyard Land Bank Commission

Christiantown Woods Preserve [expansion] preliminary management plan

<i>acreage</i>	7.3 acres
<i>tax parcel nos.</i>	12-31 and 12-32
<i>nature conservation goals</i>	<ul style="list-style-type: none"> (1) conduct biological survey to serve as base for formulation of management objectives (2) identify rare and endangered species, if any, and create plan to protect their populations; manage any exotic and/or invasive species
<i>natural products goals</i>	(1) allow archery hunting only, unless otherwise recommended by the land bank hunting subcommittee
<i>scenic goals</i>	(1) highlight stonewalls, streams and like interesting features of locus
<i>recreational goals</i>	<ul style="list-style-type: none"> (1) site trails that connect the public road(s) with the Sheriff's Meadow Foundation's Cedar Tree Neck Sanctuary (2) decline to site on-premises trailhead; direct visitors instead to use existing land bank trailhead adjacent to the Mayhew Chapel
<i>administrative goals</i>	(1) oversee and police land on regular basis in order to maintain property as an attractive conservation area

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approved by vote of the West Tisbury town advisory board: January 31, 2019

approved by vote of the land bank commission: January 28, 2019

Arrowhead Farm

acreage 33.6 acres
tax parcel no. 15-3.1

preliminary management plan, in operation during life-estate

- | | | |
|----------------------------------|-----|---|
| <i>nature conservation goals</i> | (1) | manage invasive and/or exotic species |
| <i>natural products goals</i> | (1) | lease 5.0-acre westerly field for haying or crops |
| <i>scenic goals</i> | (1) | regularly mow or graze any fallow fields, to forestall their conversion to shrubland or woodland |
| <i>recreational goals</i> | (1) | install and mark trailhead off the existing driveway, accommodating three, and up to six, spaces |
| | (2) | install and mark perimeter trail, commencing at trailhead and exiting where the brook meets the Indian Hill Road; install fencing where appropriate so as clearly to separate public and private uses |
| | (3) | require leashing of dogs, to the extent necessary to accommodate livestock |
| <i>administrative goals</i> | (1) | oversee and police land on regular basis in order to maintain property as an attractive conservation area |

preliminary management plan, in operation following termination of life-estate

- | | |
|----------------------------------|--|
| <i>nature conservation goals</i> | <ul style="list-style-type: none"> (1) conduct biological survey to serve as base for formulation of management objectives (2) identify rare and endangered species, if any, and create plan to protect their habitat and populations; develop plan to reverse, to the extent reasonable, penetration by invasive and/or exotic species |
| <i>natural products goals</i> | <ul style="list-style-type: none"> (1) conduct public competition to lease entire premises to farmer with proven skills and abilities in agriculture, natural resource management, mechanics, carpentry and the like (2) mow or graze all open areas regularly, if not otherwise farmed, in order to forestall their conversion to shrubland or woodland (3) study suitability of property for hunting — with a predisposition to allowing all types permitted in land bank hunting policy — by seeking a recommendation from the land bank hunting subcommittee (4) discontinue or, if not possible, greatly scale back existing public equestrian business [a] in favor of agricultural production and [b] depending in part on lessee's plan for premises |
| <i>scenic goals</i> | <ul style="list-style-type: none"> (1) expose, for public view, as much of property as is reasonable from the Indian Hill Road |
| <i>recreational goals</i> | <ul style="list-style-type: none"> (1) continue use of trail system, including trailhead, and expand into areas not consecrated to agricultural goals |

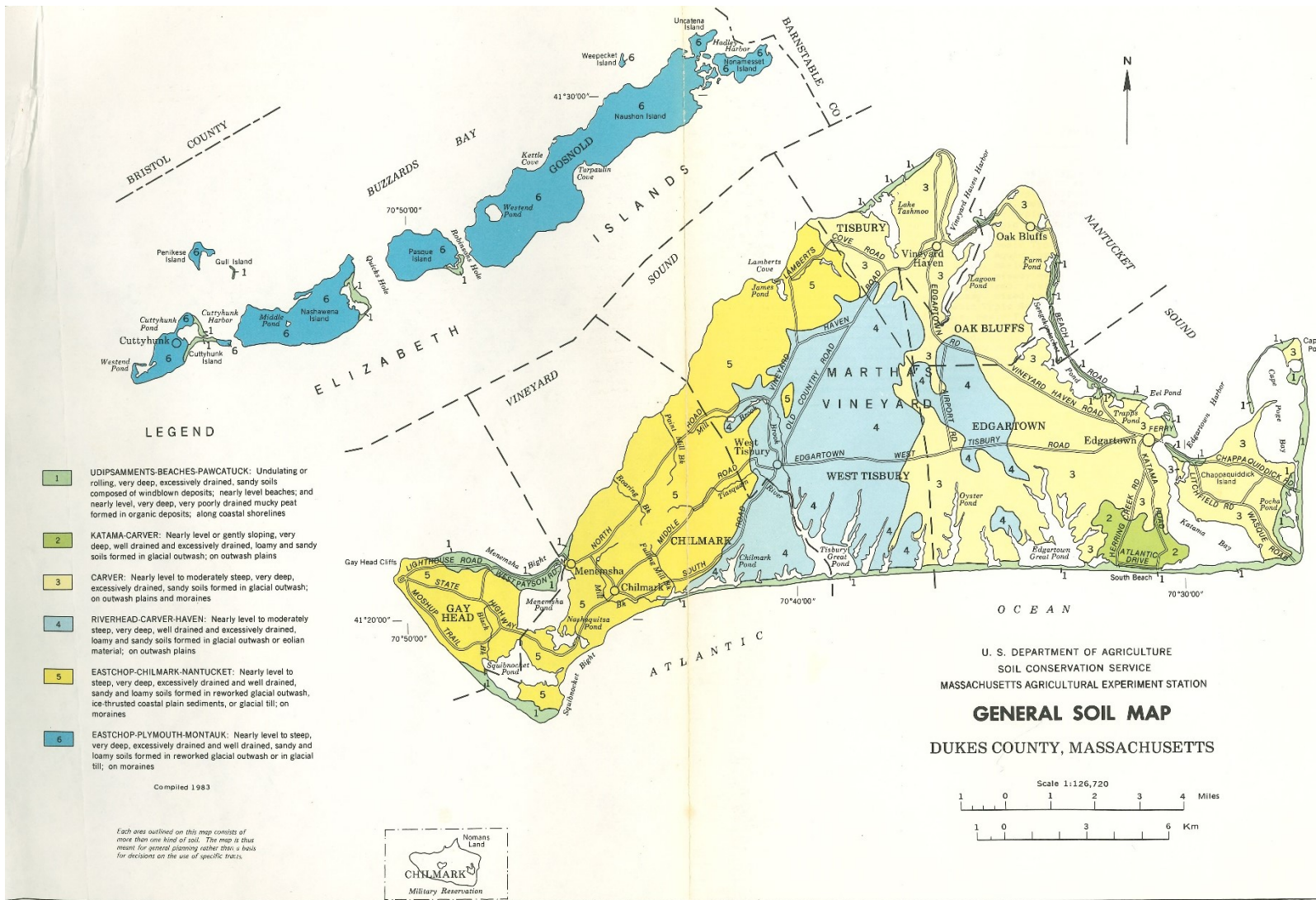
- administrative goals*
- (2) determine dog policy based on planned leasehold goals
 - (1) oversee and police land on regular basis in order to maintain property as an attractive conservation area
 - (2) develop plan for building maintenance that appropriately allocates duties between lessor and lessee
 - (3) seek to connect on-premises trails with nearby ancient ways and other trails

approved by vote of the West Tisbury town advisory board: June 17, 2020

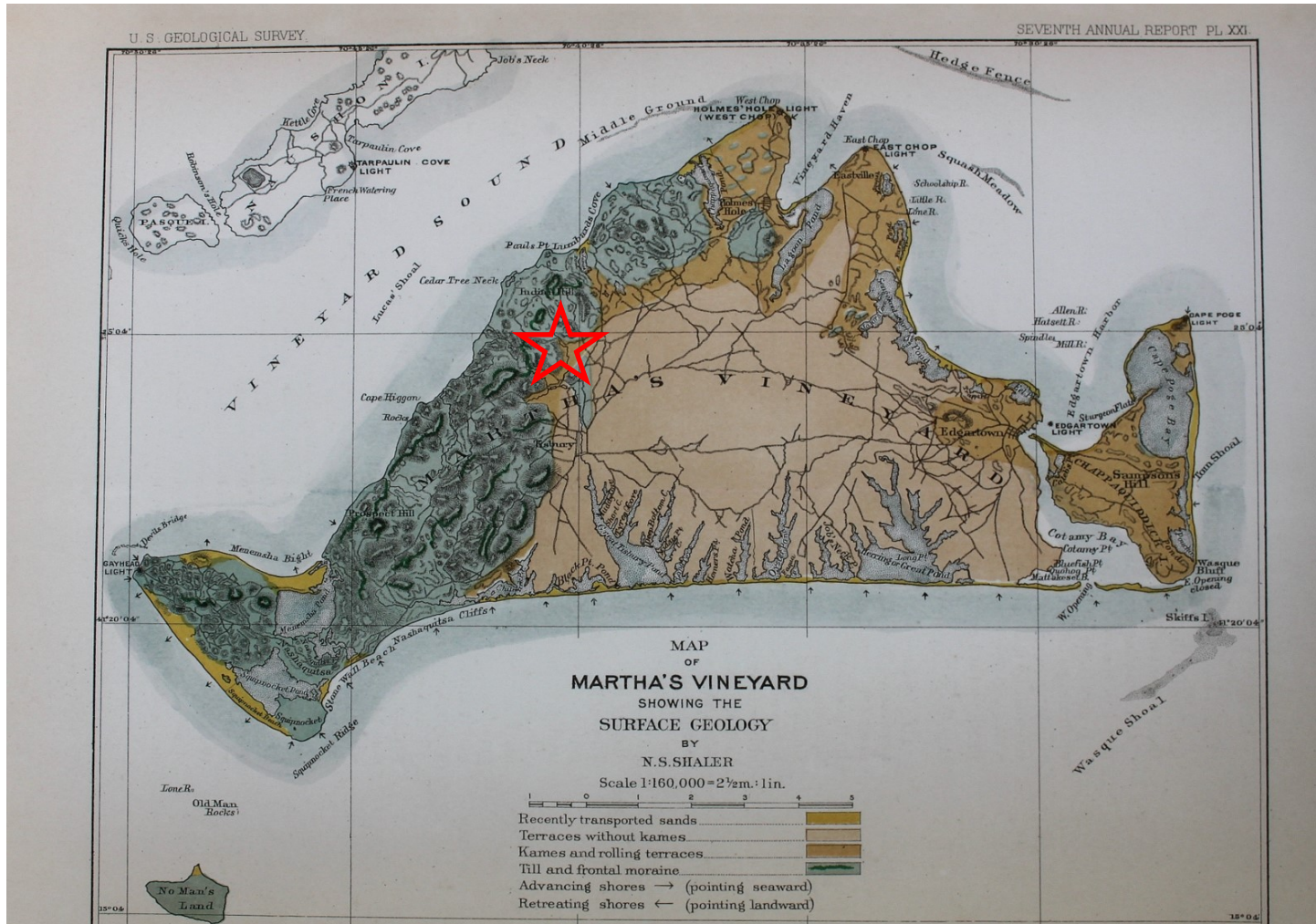
approved by vote of the land bank commission: May 27, 2020

Appendix C. Soils Maps and Descriptions

Map 18: General Soil Map of Martha's Vineyard

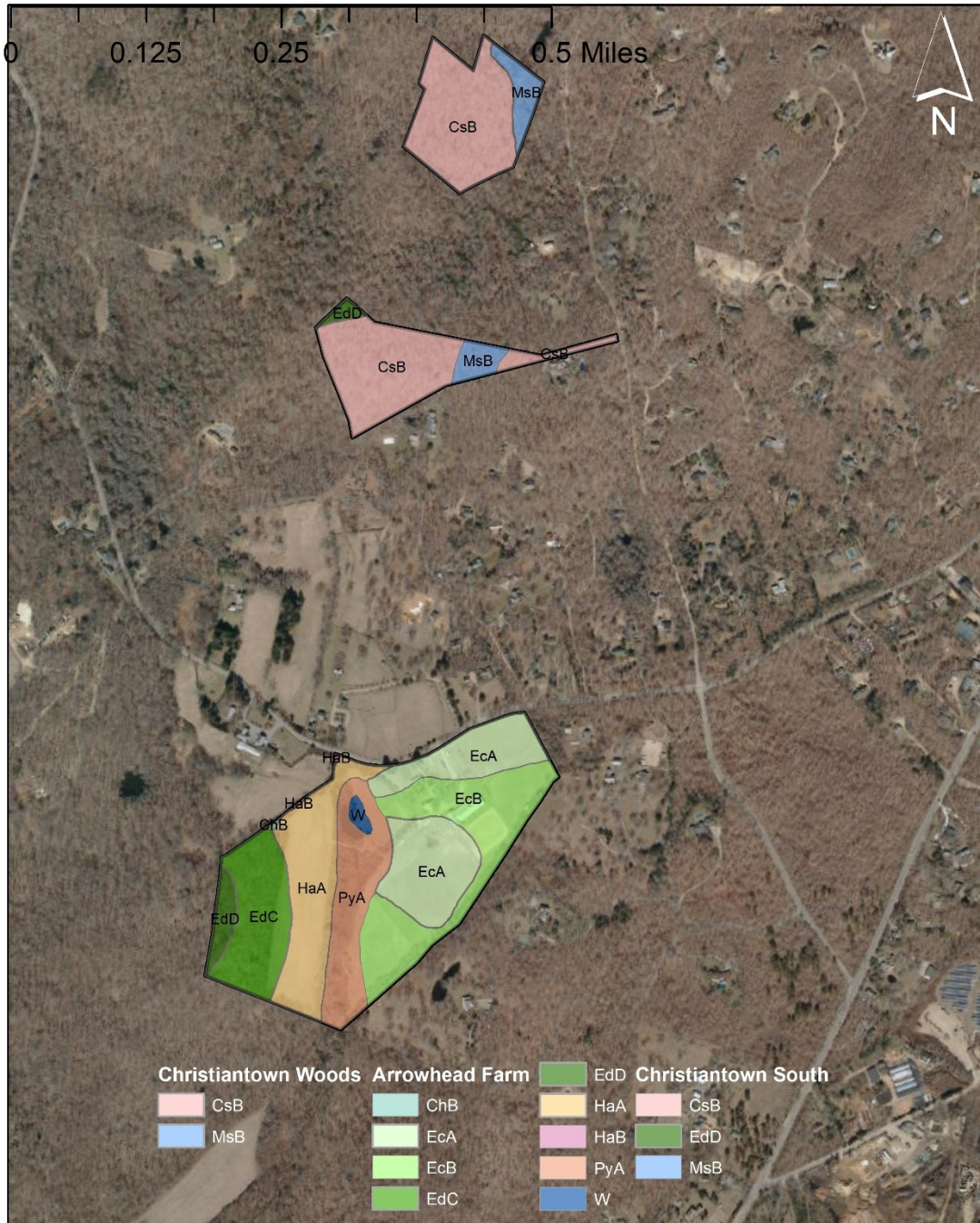


Map 19: Surface geology of Martha's Vineyard; star indicates location of Christiantown Woods Preserve and Arrowhead Farm



Map 20: Soil types of Christiantown Woods Preserve and Arrowhead Farm.

**Christiantown Woods Preserve and Arrowhead Farm
West Tisbury, MA, 48.4 acres
Soils Map**



Note: Map prepared by the Martha's Vineyard Land Bank for planning purposes only. The land bank is not responsible for end-users interpretation of the map.

Sources: Surficial Geology from U.S. Geological Survey atop 1:250,000, Color-ortho 2019: MassGIS
Coordinate System : State Plain, Mass Mainland, Meters, NAD83
File: CWP_AHF_GeologyMap_2022.jpg Date: January 25, 2022.

Soil Type Descriptions

The soils found in the Christiantown Woods Preserve and Arrowhead Farm include Eastchop sandy loam, Chilmark sandy loam, Haven very fine sandy loam, Moshup loam, and Pompton sandy loam. The following summaries of each soil type are derived from Fletcher & Roffinoli (1986) Dukes County Soil Surveys.

Eastchop loamy sands (EcA, EcB, EcC, EcD)

EcA - This type of soil is generally flat (0-3%), deep, and very well-drained and is found in the outwash plains of Martha's Vineyard. This soil tends to be drought-prone with low water holding capacity and not well-suited for cultivated crops. Although, it has been found that with the addition of manure to retain moisture, this soil can successfully be used for crops or pastures. Areas that are without additives tend to be in low-productivity woodlands. This soil is well suited for low density housing.

EcB - This soil can be found on the western part of Martha's Vineyard and is deep, gently sloping (3-8% slopes), very stony, and well-drained—indicating a low water capacity. Woodlands often cover this soil type with low productivity due to droughtiness. While not especially good for crops, amendments can be made to this soil to increase yield. This soil is suitable for low density housing.

EcC - This soil is similar to the other Eastchop sandy loams described above but is more strongly sloped at 8-15%. Its rapid permeability and low water capacity. Areas with this soil are often wooded with relatively low productivity. Erosion management is a particular concern of this soil due to its steep slope. The slope of this soil also makes it a poor choice for building.

EcD - This soil tends to be especially deep and strongly sloped (15-35%), similarly to the other Eastchop loamy sands it tends to be prone to drought. These factors make this soil unsuited for buildings or agriculture. With this soil, erosion is a top concern. The most common species in these areas are pines and oaks.

Chilmark sandy loam (CsB, ChB)

CsB - This soil type can be found in the western part of Martha's Vineyard. It is typically deep, well-drained, and gently sloped (3-8%). Most of the soil supports woodlands on the island, as is the case with the Christiantown Preserve. This soil tends to be unsuitable for crops and builders due to its rocky nature but is commonly used for livestock pasture.

ChB - This soil is on the north-western edge of Arrowhead Farm. It tends to be deep with a gentle slope (3-8%). This soil is optimal for cultivated crops and pasture. It can occasionally be found in woodlands. This soil is at risk of erosion.

Haven very fine sandy loam (HaA, HaB)

HaA - This soil can be found in the outwash plains of central and southern Martha's Vineyard and is characterized by deep, well-drained and nearly level (0-3% slope) sediments. This soil is well suited for crops, hay, and pasture. Although not common in woodlands, with seedling management this soil can facilitate high woodland productivity.

HaB - This soil is very deep with a gentle slope (3-8%). Although this soil is primarily found in woodlands, it can be well suited for crops, hay, pasture, and building sites. It is at risk of erosion, use of cover crops in areas with low tree density can be recommended.

Moshup loam (MsB)

MsB - This very deep and moderately well drained soil has a 0-8% slope and is very stony. Farming and haying are not suited for this soil due to the large stones and boulders at the surface, but areas may be suitable for pasture. This soil is best suited for woodland productivity and thinning. Slow percolation through the soil and wetness makes this soil type unfit for building and septic systems.

Pompton sandy loam (PyA)

PyA - This soil is deep, flat, and has poor drainage. This soil is commonly found near swamps and drainageways. Most of these areas are in wooded or shrubby ecosystems with low productivity. This soil could be suited for crops with appropriate management of the seasonal high water table through increased drainage methods. This soil is poorly suited for buildings due to the high risk of flooding and moisture damage.

Appendix D: Vegetation**Survey Methods**

During the spring and summer of 2022, formal vegetation surveys were conducted in woodland habitats of Christiantown Woods Preserve. Random point locations were generated using ArcGIS Map 10.8 for the woodland and grassland surveys.

In the woodlands, 5 points were inventoried using a point sampling method as described by Avery and Burkhart (2002). This method captures tree species composition, canopy density, and diameter at breast height (DBH) of trees within the plot. In addition to canopy measurements, 3m² circular plots were used to inventory the understory at each woodland point. Density and percent cover of understory vegetation was recorded for all plots.

Species diversity

A total of 114 plant species was observed within Christiantown Woods Preserve. A full list of flora can be found in Table 1 with proper nomenclature according to GoBotany.NativePlantTrust.org (2022).

Table 1: Flora of Christiantown Woods Preserve.

	Scientific name	Common name	Morph	Survey*
1	<i>Acer rubrum</i>	Red maple	tree	1, 3, 4
2	<i>Achillea millefolium</i>	Common yarrow	herb	6
3	<i>Agrimonia gryposepala</i>	Tall hairy agrimony	shrub	5
4	<i>Amelanchier sp.</i>	Shadbush sp.	tree	5, 6
5	<i>Anemone quinquefolia</i>	Wood anemone	herb	5, 6
6	<i>Antennaria neglecta</i>	Field pussytoes	shrub	5
7	<i>Anthoxanthum odoratum</i>	Sweet vernal grass	graminoid	6
8	<i>Aralia nudicaulis</i>	Wild sarsaparilla	shrub	3, 4
9	<i>Arctium minus</i>	Common burdock	herb	6
10	<i>Aster species</i>	Aster species	herb	1
11	<i>Athyrium angustum</i>	Northern lady fern	fern	5
12	<i>Berberis thunbergii</i>	Japanese barberry	shrub	5
13	<i>Bethamidia florida</i>	Flowering dogwood	tree	1
14	<i>Betula populifolia</i>	Gray birch	tree	5
15	<i>Betula pumila</i>	Swamp birch	tree	1
16	<i>Carex pensylvanica</i>	Pennsylvania sedge	graminoid	3, 4
17	<i>Carex rosea</i>	Rosy sedge	graminoid	5
18	<i>Carya glabra</i>	Pignut hickory	tree	3, 4, 6
19	<i>Carya tomentosa</i>	Mockernut hickory	tree	6
20	<i>Celastrus orbiculatus</i>	Asiatic bittersweet	vine	5
21	<i>Cerastium fontanum</i>	Mouse-ear chickweed	herb	6
22	<i>Chimaphila maculata</i>	Spotted wintergreen	herb	6
23	<i>Cirsium vulgare</i>	Common thistle	herb	6
24	<i>Clethra alnifolia</i>	Sweet pepperbush	shrub	4, 5
25	<i>Crataegus sp.</i>	Hawthorn species	shrub	5
26	<i>Daucus carota</i>	Wild carrot	herb	6
27	<i>Dendrolycopodium obscurum</i>	Flat-branched tree-clubmoss	clubmoss	1, 5
28	<i>Dennstaedtia punctilobula</i>	Eastern hay-scented fern	fern	1, 5
29	<i>Dicanthelium clandestinum</i>	Deer-tongue rosette-panicgrass	graminoid	6
30	<i>Dichanthelium dichotomum</i>	Forked rosette-panicgrass	graminoid	5
31	<i>Elaeagnus umbellata</i>	Autumn olive	shrub	6
32	<i>Epifagus virginiana</i>	Beechdrops	herb	5
33	<i>Eurybia species</i>	Wood-aster species	herb	6
34	<i>Fagus grandifolia</i>	American beech	tree	1, 3, 4, 5, 6
35	<i>Fragaria virginiana</i>	Common strawberry	herb	6

36	<i>Galium mollugo</i>	Whorled bedstraw	herb	6
37	<i>Galium odoratum</i>	Sweet woodruff	shrub	1, 5
38	<i>Gaultheria procumbens</i>	Wintergreen	shrub	4, 5
39	<i>Gaylussacia baccata</i>	Black huckleberry	shrub	4, 5
40	<i>Hamamelis virginiana</i>	Common witch-hazel	shrub	3
41	<i>Hedera helix</i>	English-ivy	vine	6
42	<i>Hemerocallis fulva</i>	Day-lily	herb	1
43	<i>Holcus lanatus</i>	Common velvet grass	graminoid	6
44	<i>Ilex opaca</i>	American holly	tree	1, 5, 6
45	<i>Ilex verticillata</i>	Common winterberry	shrub	4
46	<i>Iris species</i>	Iris species	herb	6
47	<i>Juncus tenuis</i>	Path rush	graminoid	2
48	<i>Juniperus virginiana</i>	Eastern red cedar	tree	6
49	<i>Lamium purpureum</i>	Red henbit	herb	6
50	<i>Lilium lancifolium</i>	Lance-leaved tiger lily	herb	1
51	<i>Lilium philadelphicum</i>	Wood lily	herb	1
52	<i>Lonicera japonica</i>	Japanese honeysuckle	vine	5, 6
53	<i>Lycopodium clavatum</i>	Running ground pine	clubmoss	1
54	<i>Lycopus americanus</i>	American water-horehound	herb	2
55	<i>Maianthemum canadense</i>	Canada mayflower	herb	1, 3
56	<i>Malus pumila</i>	Cultivated apple	tree	1, 6
57	<i>Mentha canadensis</i>	American wild mint	herb	1
58	<i>Monotropa uniflora</i>	One-flowered indian-pipe	fungus	1
59	<i>Morus alba</i>	White mulberry	shrub	1, 5
60	<i>Narcissus pseudonarcissus</i>	Common daffodil	herb	6
61	<i>Nyssa sylvatica</i>	"Beetlebung"	tree	1
62	<i>Onoclea sensibilis</i>	Sensitive fern	fern	1, 5
63	<i>Osmundastrum cinnamomeum</i>	Cinnamon fern	fern	5
64	<i>Parathelypteris noveboracensis</i>	New York fern	fern	3, 5
65	<i>Parthenocissus quinquefolia</i>	Virginia creeper	vine	4, 5
66	<i>Phytolacca americana</i>	American pokeweed	herb	1
67	<i>Picea abies</i>	Norway Spruce	Tree	5
68	<i>Plantago major</i>	Common plantain	herb	6
69	<i>Platanus occidentalis</i>	American sycamore	tree	6
70	<i>Podophyllum peltatum</i>	May-apple	herb	1
71	<i>Polygonatum species</i>	Solomon's seal species	herb	1
72	<i>Potentilla canadensis</i>	Dwarf cinquefoil	herb	6
73	<i>Potentilla simplex</i>	Common cinquefoil	herb	5
74	<i>Prunella vulgaris</i>	Common selfheal	herb	6
75	<i>Prunus serotina</i>	Black cherry	tree	1, 3, 5, 6

76	<i>Pteridium aquilinum</i>	Bracken fern	fern	4, 5
77	<i>Pyrola americana</i>	American wintergreen	herb	6
78	<i>Pyrola elliptica</i>	Elliptic-leaved shinleaf	herb	1
79	<i>Quercus alba</i>	Eastern white oak	tree	1, 3, 4, 5, 6
80	<i>Quercus velutina</i>	Black oak	tree	1, 3, 4, 5, 6
81	<i>Ranunculus abortivus</i>	Little-leaf buttercup	shrub	5
82	<i>Ranunculus bulbosus</i>	Bulbous buttercup	herb	6
83	<i>Rosa carolina</i>	Carolina rose	shrub	6
84	<i>Rosa multiflora</i>	Multi-flora Rose	shrub	5, 6
85	<i>Rosa virginiana</i>	Virginia rose	shrub	4, 5
86	<i>Rubus allegheniensis</i>	Common blackberry	vine	3, 4, 5, 6
87	<i>Rubus flagellaris</i>	Dewberry	vine	3, 4
88	<i>Rubus hispidus</i>	Bristly blackberry	vine	6
89	<i>Sambucus nigra</i>	Elderberry	shrub	3
90	<i>Sassafras albidum</i>	Sassafras	tree	1, 3, 4, 5
91	<i>Schizachyrium scoparium</i>	Little bluestem	graminoid	6
92	<i>Smilacina recemosa</i>	Feathery false Solomon's-seal	herb	2
93	<i>Smilax rotundifolia</i>	Roundleaf greenbrier	vine	2, 3, 4, 5, 6
94	<i>Solidago latissimifolia</i>	Elliott's goldenrod	herb	4, 5
95	<i>Solidago rugosa</i>	Common wrinkle-leaved goldenrod	herb	3
96	<i>Symphyotrichum lateriflorum</i>	Calico American aster	herb	6
97	<i>Thelypteris palustris</i>	Marsh fern	fern	5
98	<i>Tilia americana</i>	American basswood	tree	3
99	<i>Toxicodendron radicans</i>	Poison ivy	vine	1, 4, 3, 6
100	<i>Tridens flavus</i>	Purpletop tridens	graminoid	6
101	<i>Uvularia sessilifolia</i>	Sessile-leaved bellwort	herb	1, 4
102	<i>Vaccinium angustifolium</i>	Common lowbush blueberry	shrub	6
103	<i>Vaccinium corymbosum</i>	Highbush blueberry	shrub	3, 4, 5, 6
104	<i>Verbascum thapsus</i>	Common mullein	herb	6
105	<i>Veronica officinalis</i>	Common speedwell	herb	6
106	<i>Veronica serpyllifolia</i>	Thyme-leaved speedwell	herb	6
107	<i>Viburnum dentatum</i>	Smooth arrowwood	shrub	2, 3, 4, 5
108	<i>Vicia sativa</i>	Common vetch	herb	6
109	<i>Viola palmata</i>	Wood violet	herb	6
110	<i>Viola sagittata</i>	Arrowhead violet	herb	6
111	<i>Viola species</i>	Violet species	herb	1, 5
112	<i>Vitis species</i>	Grape species	vine	1, 2, 5
113	<i>Woodwardia areolata</i>	Netted chain fern	fern	5

* Survey:

1=1990-91 Plant inventory by MVLBC (HV)

2=1993 Spring and Summer plant inventory by MVLBC (MD, JP)

3= 1994 Summer plant inventory by MVLBC (WM)

4= 2019 Summer woodland survey by MVLBC (JR)

5= 2021 Summer plant inventory by MVLBC (JR)

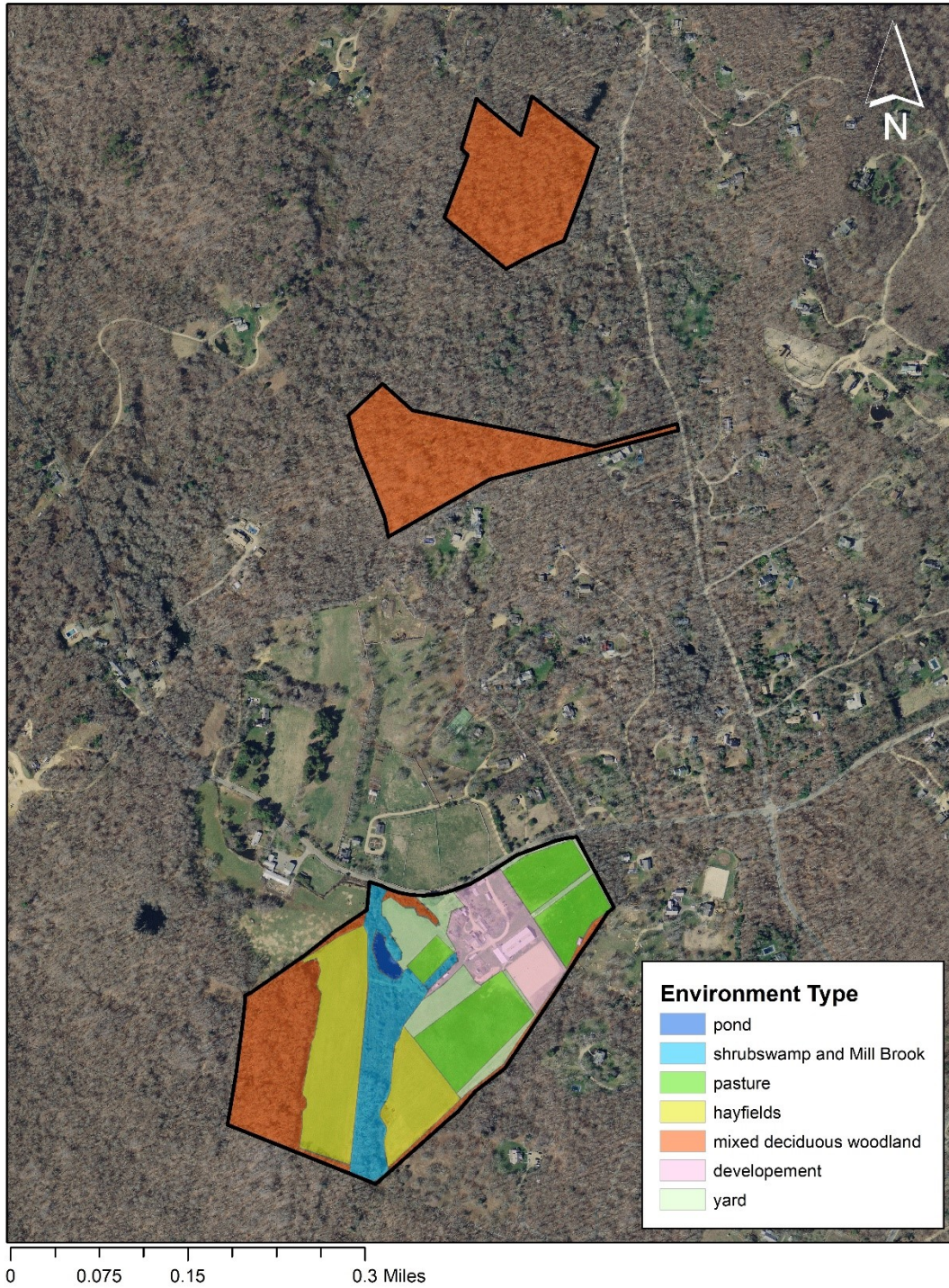
6= 2022 Spring and Summer inventory by MVLBC (JR)

HV = Harold VanDoren, JP = John Potter, MD = Matthew Dix, WM = Wendy Malpass, JR=Julie Russell

Natural Community Descriptions

There are four different natural communities within the Christiantown Woods Preserve and Arrowhead Farm complex. Classification of habitat types was made for the property using the Classification of the Natural Communities of Massachusetts by Swain (2020), in parallel with standardized vegetation surveying methods. A map of the designated habitats can be seen in **Map 21** (Appendix D, page 95).

Map 21: Ecological communities of Christiantown Woods and Arrowhead Farm.



Note: Map prepared by the Martha's Vineyard Land Bank for planning purposes only. The land bank is not responsible for end-users interpretation of the map. Sources: 2019 ortho phtograph, USGS topography, hydrology and parcel data - MassGIS and MVC. File: EcoMap_2022.jpg Date: October 31, 2022.

A. Mixed Deciduous Woodland - Preserve

Figure 10 : Mesic woodland.



The mesic woodland (**Figure 10**) is the dominant ecological community on the Christiantown Woods Preserve, totaling 14.8 acres of mixed oaks, beech, sassafras, red maple, and pignut hickory. The woodland overstory is mixed but primarily dominated by black oak, American beech, and white oak which account for approximately 29%, 20%, and 19%, respectively, in sample areas. Several old growth trees are found scattered throughout the woodland, offering habitat to local wildlife. These larger trees may reach 27 inches in diameter at breast height (“dbh”), although



Figure 11 : old growth.

the average diameter of the stand is 11.9 inches (**Figure 11**). The average height of trees in the woodland is 50.4 feet and the basal area is 172 square feet per acre. A noticeable number of downed trees litter the woodland floor on the Preserve resulting from off-season hurricanes, micro-bursts, and blizzards. These downed trees create complex structural habitats for woodland wildlife.

The understory of the mesic woodland is relatively open, with a percent ground

Figure 12 : Downed trees.



cover of 19.2% that is dominated primarily by species of creeping vines, tree saplings, and short herbaceous plants and shrubs. Snags and downed trees can be found throughout the stand (**Figure 12**). Northern dewberry dominates the understory, occurring in 66.7% of random plots with the greatest importance value of the species surveyed. Virginia creeper is the second most important species in the understory and occurs in 50% of sample areas. Notable understory shrub species include common blackberry, arrowwood viburnum, common greenbrier, and highbush blueberry. Herbaceous species such as Pennsylvania sedge and wild oats were also

found at a lower frequency of occurrence.

B. Mixed Deciduous Woodland - Farm



Figure 13 :Mixed deciduous woodland.

The mixed woodland (**Figure 13**) ecological community covers approximately 5.7 acres of the Arrowhead Farm portion of the Preserve and the overstory comprises mixed oaks, beech, hickory, flowering dogwood, and red maple. Black oak is the dominant tree species, accounting for 42% of trees and occurring in all 5 surveyed areas. This stand comprises 25% white oak and is interspersed with American beech and hickories. The average dbh of the stand is 12.9 inches with an average height of 63.4 feet. The basal area of the stand is 108 square feet per acre.

The understory of the mixed woodland is open and sparsely populated. Where there is vegetation, common

greenbrier dominates the understory, occurring in 100% of random plots and with the greatest importance value of the species surveyed. Species such as common blackberry, Virginia creeper, and arrowwood viburnum are distributed throughout the greenbrier thicket, in addition to black and white oak tree saplings and sedges.

C. Shrub Swamp, streams and ponds:



Figure 14 : Impoundment

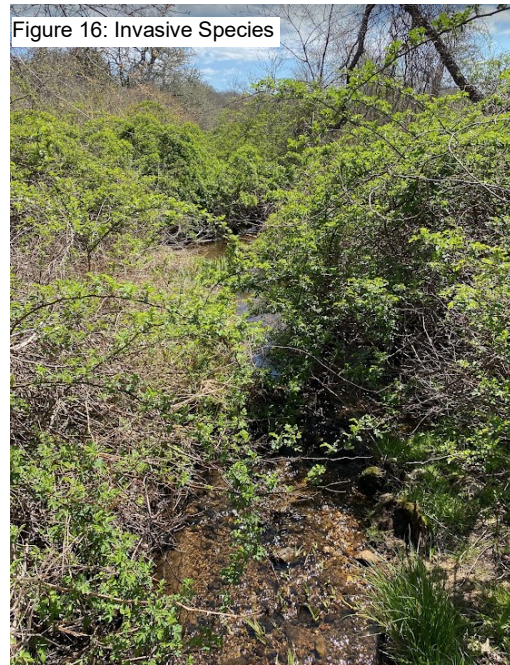
The shrub swamp occurs along the Mill Brook and impoundment pond area of Arrowhead Farm (**Figure 14 and 15**). The banks of the streams and pond are vegetated with a mix of native shrubs such as viburnum, vaccinium and clethra and invasive species such as multiflora rose, Japanese honeysuckle, and

asiatic bittersweet (**Figure 16**).

Figure 15 : Mill Brook



Figure 16: Invasive Species



D. Agricultural fields:

The agricultural fields include the hayfields, pasture, and grassland areas of Arrowhead Farm (**Figure 17**). Trees such as mockernut hickory, black cherry, and eastern red cedar occur sparsely and near the edges of these open spaces, with the dominant ground cover being herbaceous plants and sedges. Velvet grass, wild strawberry, shadbush, and Queen Anne's lace are a few of many species identified in these fields.

Figure 18 : Hayfield



Common invasive species such as multiflora rose, bull thistle, and Asiatic bittersweet were also found around the edges of the fields (**Figure 18**).

Figure 17 : Fenceline



Wildlife Habitat Descriptions

Figure 19: Bird nest



Christiantown Woods Preserve and Arrowhead Farm are excellent habitats for a variety of bird and mammal species. The dense thicket along the wetland resource areas provides nesting habitat for a variety of birds (**Figure 19**). The wetland resource areas themselves offer habitat for aquatic invertebrates, amphibians, and reptiles in addition to providing a water source for terrestrial wildlife species. Invertebrates in turn are food for many species of bats. The woodlands of the Preserve and Farm are dominated by mast-bearing trees that support a variety of wildlife species including deer and turkey. Additionally, deer and deer fawn may use shrubs and dense vegetation for shelter.

Grasslands are important habitats for pollinators and other invertebrate communities. The mixture of grasses and flowering plants along the edges of the fields creates diverse options for shelter, forage, and pollen/nectar sources. The insects as well as the seeds of the plants in turn support birds and small mammals. Furthermore, the open structure is conducive to hunting for raptor species. Edge habitats between grasslands and woodlands support species, such as the eastern towhee, that prefer this transition zone.

Wildlife Surveys Results

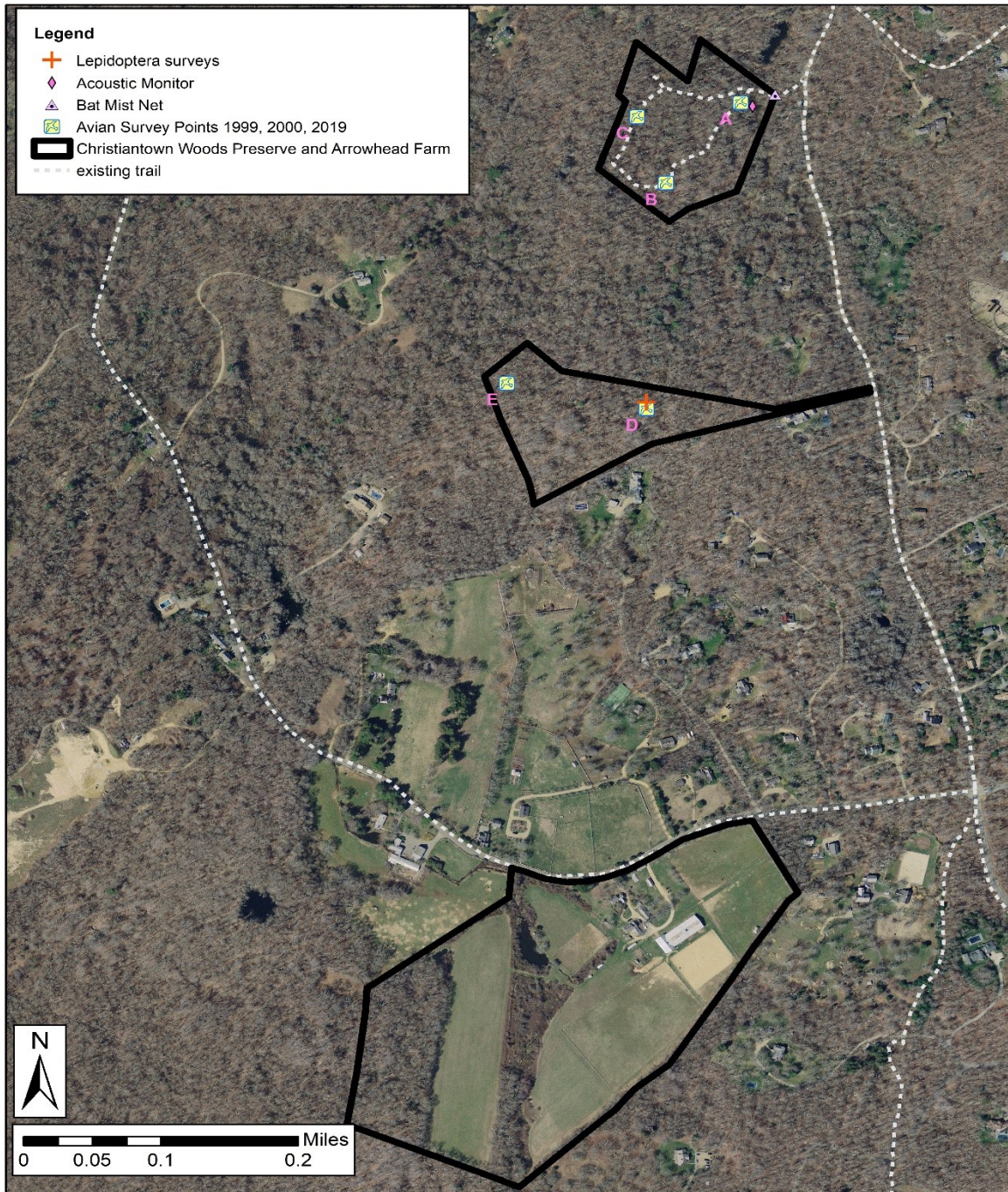
Formal avian point count surveys, lepidoptera black-light trap surveys, acoustic bat survey and bat mist net surveys were conducted on the property (Map 20, page 96). Incidental observations of additional wildlife species were made while conducting formal wildlife surveys. Wildlife species observed on the property are listed in **Table 2**, **Table 3**, and **Table 4**.

Table 2: Wildlife observations in Christiantown Woods Preserve and Arrowhead Farm, West Tisbury, MA.

Scientific Name	Common Name	Habitat
Class Amphibia		
Order Anura		
Family Ranidae		
<i>Pseudacris crucifer</i>	Spring peeper	Woodland
Class Insecta		
Order Lepidoptera		
Family Culicidae		
<i>Culex pipiens</i>	Common mosquito	Grassland
Class Arachnida		

Order Araneae		
Family Ixodidae		
<i>Dermacentor variabilis</i>	American Dog Tick	Woodland/shrubland/grassland
<i>Ixodes scapularis</i>	Deer tick	Shrubland
Class Mammalia		
Order Artiodactyla		
Family Cervidae		
<i>Odocoileus virginianus</i>	White-tailed deer	Woodland/shrubland/grassland
Order Carnivora		
Family Mephitidae		
<i>Mephitis mephitis</i>	Striped skunk	Woodland
Family Procyonidae		
<i>Procyon lotor</i>	Raccoon	Woodland
Order Rodentia		
<i>Sciurus carolinensis</i>	Gray squirrel	Woodland
<i>Tamias striatus</i>	Eastern chipmunk	Woodland
Family Chiroptera		
<i>Lasiurus cinereus</i>	Silver-haired bat	Woodland
<i>Eptesicus fuscus</i>	Big brown bat	Woodland
<i>Lasiurus borealis</i>	Eastern red bat	Woodland
<i>Lasionycteris noctivagans</i>	Hoary bat	Woodland
<i>Perimyotis subflavus</i>	Tricolored bat	Woodland
<i>Myotis sp.</i>	Listed species	Woodland
<i>Myotis sp.</i>	Listed species	Woodland
Class Reptilia		
Order Squamata		
Family Colubridae		
<i>Lampropeltis triangulum</i>	Eastern milk snake	Woodland
<i>Thamnophis sirtalis</i>	Common garter snake	Woodland
Order Testudines		
Family Chelydridae		
<i>Chelydra serpentina</i>	Common snapping turtle	Pond

Map 22: Wildlife survey locations at Christiantown Woods Preserve and Arrowhead Farm, West Tisbury, MA.



Note: Map prepared by the Martha's Vineyard Land Bank for planning purposes only. The land bank is not responsible for end-users interpretation of the map. Sources: 2019 ortho photograph, USGS topography, hydrology road, soil, and parcel data - MassGIS and MVC. File: G:\Data\Maps001:Christiantown woods: master_Christiantown_2022.mxd

Lepidoptera

Although not often seen, moths play a vital role in the environment as pollinators and as a food source for nocturnal birds and bats. In addition, caterpillars are an important source of food for diurnal birds.

Nocturnal moth species were surveyed using a stainless-steel rigid vein 18-24 in “letrap” with a 32–40-Watt quantum black light. Traps were set using a photoelectric switch from dusk to dawn on 5 nights from June 26th, 2019 to September 3rd, 2019. Species were collected, processed, and sent to Mark Mello, an entomologist with the Lloyd Center for the environment, in New Bedford, MA for positive identification. A total of 110 species was observed across all trap sites (**Table 3**); for the purpose of the management plan, MESA-listed species have been omitted from the table.

110 species of moths were observed on the Preserve during surveying in the summer of 2019, including one species that is MESA-listed as threatened and one species, *Dasylophia anguina*, that was a new detection for land bank properties.

Table 3: Summary of macrolepidoptera species recorded from Christiantown Woods Preserve, West Tisbury, MA.

MONA #	ZOOK. #	Species	CW
GEOMETRIDAE			
Ennominae			
6273		<i>Speranza pustularia</i>	2
6326		<i>Macaria aemulitaria</i>	1
6342		<i>Macaria bisignata</i>	1
6353		<i>Macaria multilineata</i>	1
6386		<i>Digrammia ocellinata</i>	1
6449		<i>Glena cribrataria</i>	1
6583		<i>Iridopsis ephyraria</i>	1
6588		<i>Iridopsis larvaria</i>	1
6597		<i>Ectropis crepuscularia</i>	2
6598		<i>Protoboarmia porcelaria</i>	2
6654		<i>Hypagyrtis unipunctata</i>	2
6720		<i>Lytrosis unitaria</i>	1
6725		<i>Euchlaena muzaria</i>	1
6739		<i>Euchlaena irraria</i>	2
6754		<i>Pero ancetaria</i>	2
6755		<i>Pero morrisonaria</i>	2
6763		<i>Phaeoura quernaria</i>	1
6798		<i>Ennomos subsignaria</i>	1

6812		<i>Homochlodes fritillaria</i>	2
6815		<i>Gueneria similaria</i>	2
6823		<i>Metarranthis angularia</i>	1
6826		<i>Metarranthis hypochraria</i>	2
6827		<i>Metarranthis refractaria (indeclinata?)</i>	1
6843		<i>Plagodis fervidaria</i>	1
6963		<i>Tetracis crocallata</i>	1
6982		<i>Prochoerodes lineola</i>	2
6987		<i>Antepione thiosaria</i>	1
7009		<i>Nematocampa resistaria</i>	1
Geometrinae			
7048		<i>Nemoria mimosaria</i>	1
Sterrhinae			
7159		<i>Scopula limboundata</i>	2
Larentiinae			
7196		<i>Eulithis diversilineata</i>	1
7197		<i>Eulithis gracilineata</i>	1
7206		<i>Eulithis explanata</i>	1
7399		<i>Euphya unangulata</i>	1
7416		<i>Costaconvexa centrostrigaria</i>	2
		<i>Eupithecia spp.</i>	2
7625		<i>Pasiphila rectangulata</i>	2
MIMALLONIDAE			
7659		<i>Lacosoma chiridota</i>	2
LASIOCAMPIDAE			
Macromphalinae			
7701		<i>Malacosoma americanum</i>	1
SATURNIIDAE			
Ceratocampinae			
7715		<i>Dryocampa rubicunda</i>	2
Hemileucinae			
7746		<i>Automeris io</i>	2
SPHINGIDAE			
Sphinginae			
7784		<i>Dolba hyloeus</i>	1
Smerinthinae			
7824		<i>Paonias excaecata</i>	2
NOTODONTIDAE			
Phalerinae			

7903		<i>Datana angusii</i>	4
7904	930035	<i>Datana drexelii</i>	2
7906	930037	<i>Datana contracta</i>	3
7915	930046	<i>Nadata gibbosa</i>	2
7920	930049	<i>Peridea angulosa</i>	2
Heterocampinae			
7983	930075	<i>Heterocampa obliqua</i>	2
7990	930082	<i>Heterocampa umbrata</i>	2
8006	930099	<i>Schizura badia</i>	1
8011	930104	<i>Schizura leptinoides</i>	2
8017	930110	<i>Oligocentria lignicolor</i>	2
Nystaleinae			
7951	930127	<i>Symmerista albifrons</i>	1
7957	930133	<i>Dasylophia anguina</i>	1
7958	930134	<i>Dasylophia thyatiroides</i>	1
EREBIDAE			
Lymantriinae			
8318	930141	<i>Lymantria dispar</i>	2
8302	930154	<i>Dasychira obliquata</i>	2
Arctiinae			
8045.1	930219	<i>Crambidia pallida</i>	1
8171	930280	<i>Apantesis nais</i>	1
8118	930297	<i>Virbia opella</i>	3
8134	930309	<i>Spilosoma congrua</i>	2
8137	930316	<i>Spilosoma virginica</i>	2
8146	930323	<i>Hypercompe scribonia</i>	1
8129	930335	<i>Pyrrharctia isabella</i>	1
8203	930360	<i>Halysidota tessellaris</i>	3
8211	930370	<i>Lophocampa caryae</i>	1
Herminiinae			
8322	930469	<i>Idia americalis</i>	2
8323	930471	<i>Idia aemula</i>	1
8326	930474	<i>Idia rotundalis</i>	1
8334	930482	<i>Idia lubricalis</i>	1
8340	930489	<i>Zanclognatha literalis</i>	1
8341	930490	<i>Zanclognatha theralis</i>	2
8355	930502	<i>Chytolita morbidalis</i>	1
8356	930503	<i>Chytolita petrealis</i>	1
8378	930529	<i>Renia salusalis</i>	1

8381	930532	<i>Renia discoloralis</i>	1
8386	930538	<i>Renia adspersgillus</i>	1
8393	930547	<i>Lascoria ambigualis</i>	1
Pangraptinae			
8490	930559	<i>Pangrapta decoralis</i>	2
Erebinae			
8790	930780	<i>Catocala dejecta</i>	2
8795	930784	<i>Catocala palaeogamma</i>	1
8801	930792	<i>Catocala ilia</i>	1
8689	931023	<i>Zale lunata</i>	1
8717	931053	<i>Zale horrida</i>	3
Eulepidotinae			
8587	931089	<i>Panopoda rufimargo</i>	1
NOCTUIDAE			
Plusiinae			
8904	931186	<i>Chrysanympha formosa</i>	1
Acronictinae			
9200	931421	<i>Acronicta americana</i>	1
9281	931442	<i>Acronicta fallax</i>	1
9238	931455	<i>Acronicta lobeliae</i>	1
9244	931465	<i>Acronicta modica</i>	1
9245	931466	<i>Acronicta haesitata</i>	2
9249	931467	<i>Acronicta increta</i> ("inclara")	1
9257	931474	<i>Acronicta impleta</i>	1
9259	931476	<i>Acronicta noctivaga</i>	2
9266	931480	<i>Acronicta lithospila</i>	1
9285	931497	<i>Polygrammate hebraeicum</i>	1
9286	931498	<i>Harrisimemna trisignata</i>	2
Condicinae			
9065	932026	<i>Leuconycta diphtheroides</i>	1
Noctuinae			
9678	932228	<i>Elaphria versicolor</i>	1
9650	932269	<i>Athetis tarda</i>	1
9404	932378	" <i>Oligia</i> " <i>modica</i>	1
9556	932713	<i>Chytonix palliatricula</i>	1
10301	932883	<i>Spiramater lutra</i>	1
10587	933138	<i>Orthodes cynica</i>	2
10288	933146	<i>Orthodes detracta</i>	1
10911	933212	<i>Anicla infecta</i>	1

10663	933528	<i>Agrotis ipsilon</i>	1
11010	933547	<i>Lycophotia phyllophora</i>	1
11012.2	933551	<i>Noctua pronuba</i>	1
11029	933680	<i>Abagrotis alternata</i>	1
		Total # species	110

Avian

Land bank staff conducted seasonal 5-minute point count surveys of birds at Christiantown Woods Preserve and Arrowhead Farm in the summer of 1994 (n=1), winter of 1999-2000 (n=2) and summer of 2019 (n=2). The presence of occasional migrant and resident birds throughout the winter season and summer breeding season was recorded during a total of one visit to three sites (A-C) in 1994, 2 visits to 3 sites (A-C) in 1999-2000 and two visits at 5 sites (A-E) in 2019. All birds seen or heard during a 5-minute period were recorded. Birds seen or heard outside of the count period were noted as present on the property but were not included in quantitative analyses. Surveys were conducted in the morning so nocturnal species were not likely to be detected.

Bird species on the Preserve are seasonally dependent. Some birds occur in more than one survey point and during more than one season. Total species counts do not include multiple sightings of an individual species and dominant species varied among seasons. Summer breeding season yields the greatest richness of bird species on the Preserve (**Table 4**). The majority of birds that occur on the Preserve during the breeding season are tree/shrub nesters though some are cavity-nesters and ground nesting species.

Observations of breeding, nesting, and rearing young— such as adults carrying nesting materials or food, carrying fecal sacs from a nest, or attending hatchlings – were not recorded, therefore it cannot be confirmed if any observed species was breeding on the property.

Table 4: Bird species observed in Christiantown Woods Preserve and Arrowhead Farm during the summer of 1994, winter of 1999-2000, and the summer of 2019. O=Occasional; U= Uncommon; C=Common; P=Present. PO=Possible breeding; CO=Confirmed breeding; PR=Probably breeding.

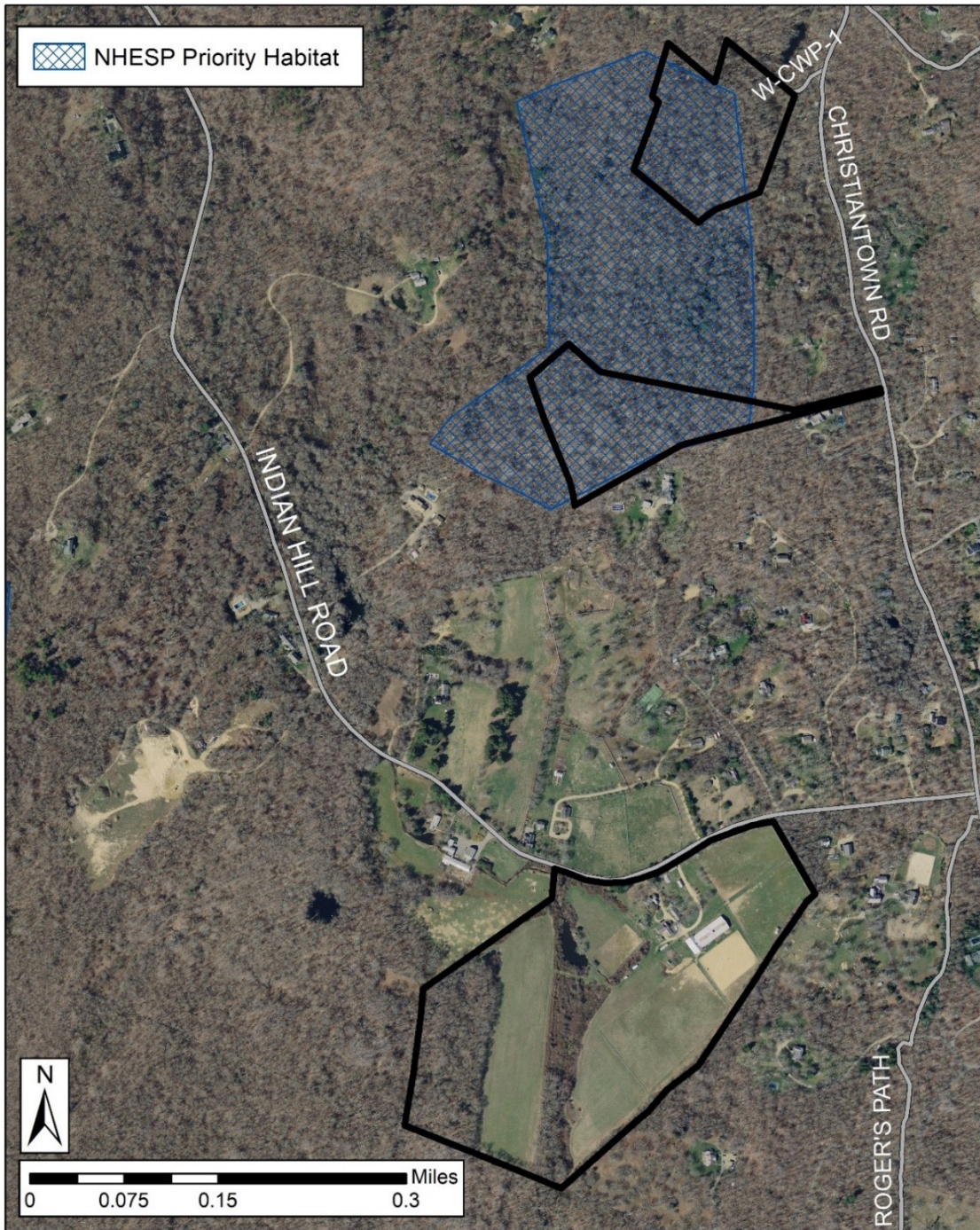
Species 1994 Summer, n=1	Mixed Deciduous Woodland			
	Point A	Point B	Point C	Data Combined
Year-round				
American goldfinch		X		
American Robin	X			
Black-capped Chickadee	X	X	X	
Blue jay		X		
Downy Woodpecker			X	
Eastern wood-pewee	X			
Eastern towhee	X	X		
Grey catbird	X	X		
Northern Cardinal	X			
Northern flicker		X		
Red-bellied woodpecker		X		
Red-eyed vireo		X		
White-breasted Nuthatch		X	X	
Wood thrush	X			
Species ^b 1999-2000 Winter n=2	Mixed Deciduous Woodland			
	Point A	Point B	Point C	Data Combined
Year-round				
American crow	C		O	O
American Robin	O			U
Black-capped Chickadee	P	C	O	O
Blue jay	O		O	O
Carolina Wren			O	U
Common Flicker	O			U
Downy Woodpecker	P	O	O	O
Grey catbird	O			U
Northern Cardinal	O	O		O
Red-breasted Nuthatch	O			U
White-breasted Nuthatch	P	O	O	O
Non-Breeding				
Dark-eyed Junco	P			

Species ^b 2019 summer n=2	Mixed Deciduous Woodland					
	Point A	Point B	Point C	Point D	Point E	Data Combined
Year-round						
Black-capped Chickadee		C		C	C	C
Blue jay				O		U
Downy Woodpecker	O	O	O		O	O
Grey catbird	O	O	C	C	O	C
Northern Cardinal				O	O	U
Red-eyed Vireo	C	C	C			C
Tufted Titmouse		O	C	O	C	C
Unknown Hawk	O				O	U
Breeding						
American Redstart	O					U
Common Yellowthroat	O					U
Eastern Pewee	O	O				U
Eastern Towhee	O	O	C	O	O	C
Great Crested Flycatcher				O		U
Prairie Warbler	O					U
Ruby-throated Hummingbird	O					U

Appendix F. Endangered Species

Portions of Christiantown Woods Preserve and Arrowhead Farm fall within Priority Habitat of Rare species, as established by the Natural Heritage and Endangered Species Program (**Map 23**). This plan includes management goals that balance the needs of rare species on the Preserve and Farm. There are 5 MESA-listed woodland species that have been detected within the Preserve and reported to NHESP. If major management changes occur, repeat surveys will be conducted to understand effects on these species and a plan will be proposed to NHESP to mitigate any harm.

Map 23: NHESP priority habitat and estimated habitat in Christiantown Woods Preserve and Arrowhead Farm.



Note: Map prepared by the Martha's Vineyard Land Bank for planning purposes only. The land bank is not responsible for end-users interpretation of the map. Sources: 2019 ortho photograph, USGS topography, hydrology road, soil, and parcel data - MassGIS and MVC.

Appendix G. Land Use History in Detail

Christiantown Woods Preserve and Arrowhead Farm are situated in the northern portion of Takemmy in an area called Christiantown that is in the vicinity of Cedar Tree Neck and James Pond in West Tisbury, formerly Tisbury. The numerous Wampanoag names in the vicinity of the Preserve and Farm that survived to be included in Banks' History of Martha's Vineyard volume II (1911) indicate a significant native people's presence in the area prior to European contact in 1600's. In Banks' (1911, vol II) writings on West Tisbury names that indicate locations of water or reference agricultural qualities such as *Animtisewokset*, "the bad mowing place" or possible "scattered rocks" that described where William Rogers purchased 20 acres from Sachem Josias in 1679 within the bounds of Christiantown (DCRD 3:288, Dukes County, Massachusetts, Genealogy and History, 2006), *Commaquatom*, the name for the small pond in the northwest corner of Christiantown (DCRD 3:293, 6:240), *Maanette*, the land composing the southern boundary of Christiantown and meaning "where there is a gathering together", *Mack-kon-net-chas-qua*, alluding to woods within Christiantown in a deed between Josias and Isaac Chase in 1682 (DCRD 1:281) and meaning "a plain field of grass", *Mattapaquattonooke*, name of a pond and its adjoining land in the northwest corner of Christiantown and meaning "bad, broken up land" to be interpreted as planted and dug over (Superior Judicial Court ((SPC) files 72, 789, Dukes County, Massachusetts, Genealogy and History 2006), *Nepissa*, pond demarking the northwest bound of Christiantown and meaning "a little pond", describe features, land regions and boundaries within and surrounding the Preserve and Farm (Banks 1911). Prior to Christian worship the "*dancing field*", located at the base of the grandest hill in the area, Indian Hill, was used as a place of ceremonial dances to prepare for war and the chase (Hine and Hine 1908, Banks 1911 Vol II). Additionally, the rich woodlands and streams of the Preserve and Farm provided habitat for huntable mammals and birds as evidenced by the volume of arrowheads retrieved from the Farm over the years (Burt, Dick personal communication 2021).

Thomas Mayhew arrived on the shores of Martha's Vineyard in 1641 from Watertown, Massachusetts after having purchased the royal patent to Martha's Vineyard, Elizabeth Islands and Nantucket to govern, bargain for territory from Indigenous people and collect rents from colonists. Arriving on Mayhew's coattails was his son and preacher Thomas Mayhew Jr. (Silverman 2005, Banks 1911). Hiacoones, an indigenous person of Martha's Vineyard, befriended Mayhew Jr. and for several years they exchanged knowledge. Hiacoones learned to read, and Mayhew Jr. learned to speak Wampanoag. The indigenous people were initially apprehensive about Christianity and worshiping one God. However, two severe infectious disease outbreaks in 1643 and 1645 caused fear and doubt to spread through the remaining half of the indigenous population on the island. With the encouragement of sachem Tawanquatuck of Nunnepog and the fear of death from within more indigenous people began to follow in the ways of Christianity in hopes of salvation; not only of their spirit but their body as well (Silverman 2005). In 1659, Mayhew Jr. reported on an area in Takemmy inhabited by four "praying Indians" – Tequannum, Poxsin, Nohnosso and Papamick – as "Toikiming praying town" (Massachusetts historical Commission (MHC) 1987). The sachem Keteannummin, alias Josias, ruled over the area of Takemmy. According to Banks (1911) and others the land of the "praying Indians" was theirs to occupy without threat of European settlement

encroachments. However, Josias enraged the indigenous people of the area when he sold a large tract of land to Thomas Mayhew in 1664 (DCRD 1:58). To appease his tribal members, Josias gave the “praying Indians” of his sachemship a one-mile square tract of land between Great James Pond and Cedar Tree Neck. Josias named the area *Manitouwatoan* which translates to “God’s town” and was referred to as Christiantown by the settlers (Silverman 2005). Josias’ sachemship contained prime agricultural land in the valleys and flat lands where freshwater streams were abundant; the Christian township was by and large not among the prized farmland acres in the sachemship (Silverman 2005, Banks 1911). John Milton Earle describes the village of Christiantown in his report on the Indians of the commonwealth as “situated in the group of hills which skirt the shores of the vineyard sound on the northwest side of Martha’s Vineyard” (Earle 1861).

Christiantown was originally laid out to include both the western and eastern sides of James Pond and depicted in a map annotated by Joseph Quannowill Mingo (oldest indigenous person in Christiantown circa 1900) and drawn by Banks circa 1900 (Figure 20: 2012.035.013 Dukes County Historical Society).



The four “praying Indians” were to pay Keteannummin twenty shillings every year for the land (Mayhew 1959, Banks 1911). Governor Thomas Mayhew described the tract of land as the “north sid of the Lland bounded by the land called Ichpoquassett and soo to the pond called Matta Paquattonooke & into the Lland so far Papamakes fields where he planted & now plants or soos: it is as broad in the woods as by the sea side” (DCRD 1: 378).

The gift was one of tongue, not pen and paper. Concern grew among the indigenous people of Takemmy that the Christian township boundaries would not be honored by their sachem after Keteannummin sold another large parcel of Taekemmy known as the “First Purchase” to five settlers in 1669 (DCRD 1:33). Mayhew mediated the situation, resulting in 1) an agreement that the sachem of Takemmy would not sell more land to the English without consent of designated trustees and 2) a statement and written documents that confirmed Keteannummin gave the four “praying Indians” a one-mile tract for a township (Mayhew 1959). However, as time passed various events led to a very different result for the bounds of Christiantown and the surrounding land under Sachem Josias’ jurisdiction.

In 1671, the town charters for Tisbury and Edgartown were secured. Additionally, Thomas Mayhew and grandson Matthew Mayhew secured a third grant to themselves, the "Manor of Tisbury", that included various lands in Chilmark, Elizabeth Islands and Chickemoo (meaning place of fish weir in Wampanoag) (Banks 1911, Figure 22:2012.036.001 Dukes County Historical Society). The boundaries of Chickemoo were vague leading to confusion and opportunity for settlers to purchase land directly from the sachem Josias instead of the proprietors (Swift and Cleveland 1903). Additionally, the payments of 20 schillings from the four "praying Indians" of Christiantown did not come to fruition, Thomas Mayhew Sr. died, Keteanummin had mounting debts and eventually the town of Tisbury lifted the previous ban on the unsanctioned purchases of native land resulting in various sales in Takemmy. In exchange for 20 lbs of sheep wool, one hat, 4 sheep, 4 goats, 4 kids and a few other bits and bobs Josias broke his promise and sold land in the southeast corner of Christiantown to Simon Athearn in 1674 (DCRD 1:302). Josias sold a large tract to William Rogers in 1679 (DCRD

Figure 22:2012.036.001

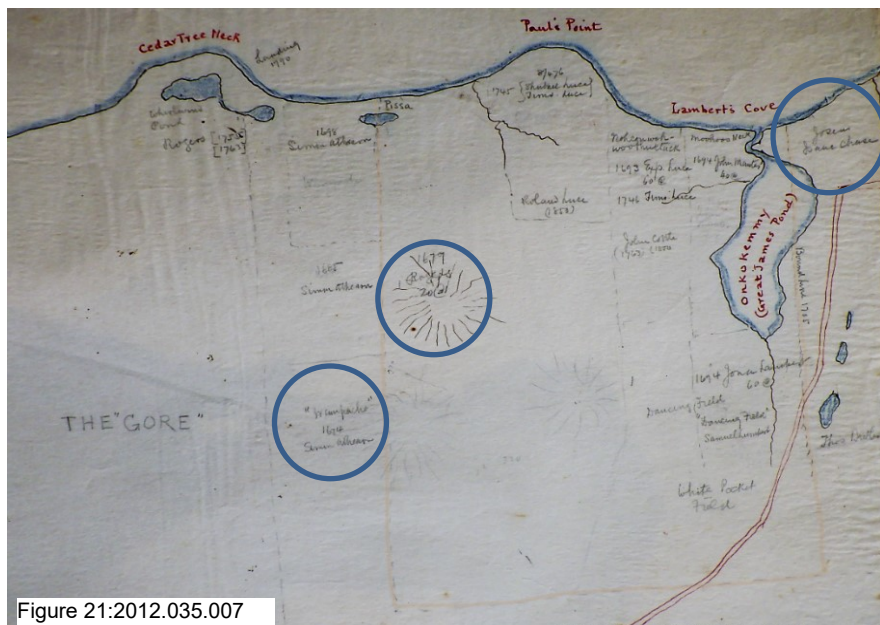
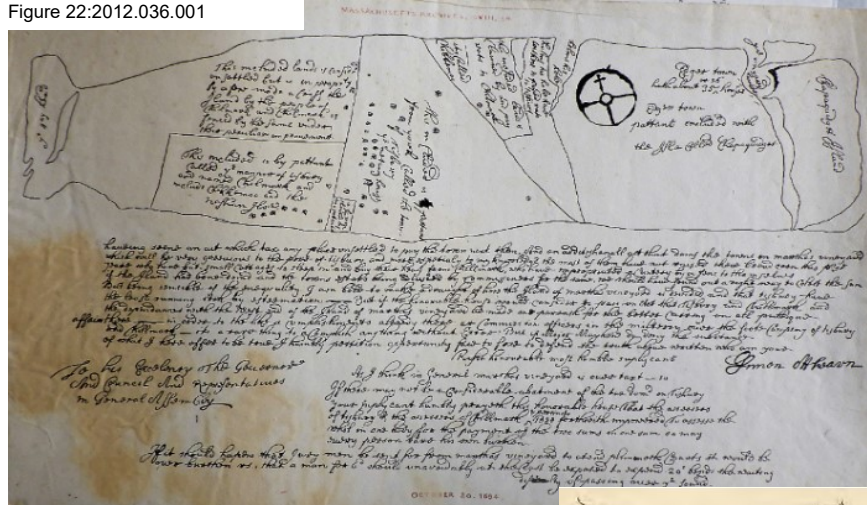
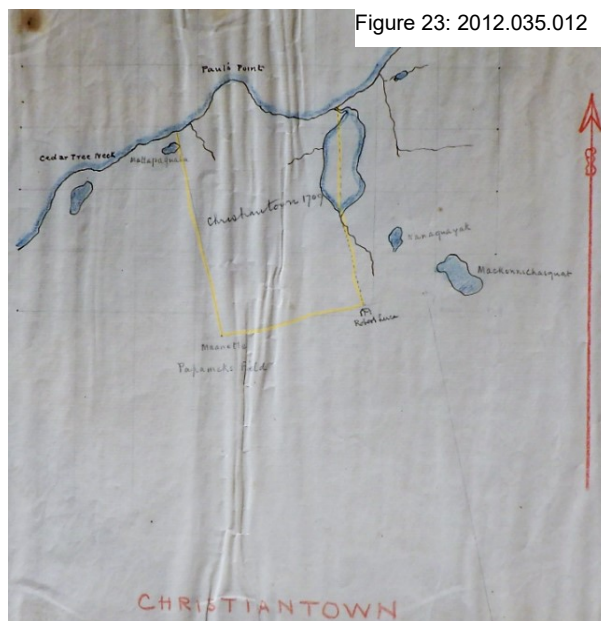


Figure 21:2012.035.007

3:288) and, among other acreages, a portion of Christiantown between Black Brook and James Pond in 1682 to Isaac Chase (DCRD 1:281) (Figure 21, pencil sketch by Charles

Banks, *Dukes County Historical Society* 2012.035.007). Land sales around Tisbury/West Tisbury or Middletown, as it was once known, were escalating with 120 Europeans settled in 40-acre homestead lots (Banks 1911, MHC1984). It was speculated by Banks (1911) that the declaration of Christiantown was but a wolf in sheep's clothing. However, the designation of Christiantown formalized a place of worship for "praying Indians" and in 1680 the first meeting house was built in or around the area of the present Mayhew chapel that abuts the Christiantown Woods Preserve (Mayhew 1956).

The boundary lines of Christiantown first described in writing by Mayhew were vague and not steeped in detail resulting in a metamorphosis of the boundaries of the mile-square township (Figure 20). The rendition of Christiantown drawn by Banks (1911) reflecting the 1705 boundary line depicts the eastern boundary running along land of Isaac Chase on the eastern side of James Pond with land inside the bounds of Christiantown in the ownership of Experience Luce (60 acres - 1693) John Manter (40 acres - 1694), John Lambert (60 acres - 1694), and William Rogers (20 acres - 1679). The western boundary of Christiantown is shared with Simon Athaern (1674, 1685, 1698) and the southwestern boundary is marked by *Pakeameks Field* (Figure 21: DCHS 2012.035.007). Four years later, a 1709 version of the boundaries of Christiantown has the eastern boundary line bisecting James Pond; Robert Luce's house marks the southeastern corner, and a rock marks the southwestern corner. Land of Benori Swain, 1753 purchased from Benjamin and Sarah Toby and Zachariah Papamick is located to the east of Pissa Pond (Figure 23: *Dukes County Historical Society* Charles Banks circa 1900, 2012.035.012).



The farming boom that lasted over a century was just getting started on the Vineyard in the early 1700's. Records list produce being shipped by the vessel-load and not by the pound (Mayhew 1959). Land for pasture and crops and the wood for fencing said pastures and crops were in high demand. A second chapel/meeting house was built in the place of the first in 1695 for the approximately 80 residents of Christiantown. The building was used for the first Christiantown school in 1714. Classes for fewer than a dozen students were offered 3-5 months of the year (Mayhew 2008). The Christiantown inhabitants still lived in traditional wigwams as only one English-built house is recorded for Christiantown in 1714 (MHC 1984). Many of the older deeds between Josias and the settlers used piles of stone, "old stone walls", and watering places as descriptions of the land bounds. It was clear that the land had been fenced and farmed extensively by the "praying Indians" prior to these sales. However, it was difficult to make an adequate living off the land in this area and many men of Christiantown turned to the sea for additional means (MHC 1987). In a little over a half century the Christiantown tribe dwindled to half

its size with 54 inhabitants of Christiantown reported in 1762 (Banks 1911); 39 natives (15 male, 24 female) reported for all of Tisbury which Christiantown was a part of in 1765 (MHC 1984) and 40 reported for Christiantown in 1790 (Banks 1911). Fortunately, the low male-to-female ratio did not impede continuous land occupation among “praying Indians” at Christiantown. The tradition of holding lands in common provided women with the ability to work a parcel of land free from the traditional European inheritance that passes through the male line in a family (Mayhew 1956 and MHC 1984). In addition, the “praying Indians” were able to bring their land grievances to court. In one such case the agents of Christiantown sued Ebenzer Rogers, William Rogers’s son, in 1717 for building and living in a house on 20 acres at *amimtesawohqussuk* bounded to the south- and northwest by the fields of Isaac Ompany, Job Soomannan and Ned Chamick of Christiantown. Ned Chamick’s son, Solomon Ned alias Chamuck of Takemmy was married first to Alice Chaomog and second to Bethiah Abel alias Zekel who taught school in Christiantown between 1736-1748. They had three daughters, Anna Lot, Sarah Francis and Jane Skeetup (Pierce and Segal 2016). Land records trace the southern portion of Christiantown Woods Preserve (Christiantown South) to the Ned sisters who sold land to John Davis in 1805 and 1809 (DCRD 15:257, 17:170). Sara Francis with the help of her attorney, John Hancock, sold 14 acres that are 6 rods “north of Sketups swamp” to John Davis’ sons, John Jr and William in 1815 (19:242). In a little over 60 years the proximity of European settlers influenced an abandonment of traditional wigwags for “English built “houses at Christiantown in 1777. Solomon and his first wife Alice were even paid for the use of their house for worship between 1729-1731 (Pierce and Segal 2016).

A sketch by Joseph Quannowill Mingo, circa 1900, reflects the land sales to Chase and Luce in the east that resulted in a restructuring of the eastern boundary of Christiantown. The location of Christiantown is well to the west of James Pond, is no longer square and excludes any decent agricultural land that was once within the bounds of the township (Figure 24: 2012.035.014 Dukes County Historical Society). Mingo made notes of the surnames of natives with homesteads in Christiantown at this time to include DeGrass, James, Mingo, Peters and Weeks. This is also the first map that notes “Davis Town” which includes present day Arrowhead Farm. It is not a newcomer to the area as indicated by the description of the map for land of “old John Davis”. The original Davis house was built by others in 1685 (West Tisbury Assessors). The Davis descendants arrived on the Vineyard during the mid-eighteenth



Figure 24:2012.035.014

century. David Davis married Sarah Cousins from Eastville in 1750 and Col. Melatiah Davis, Esq., who was married to Jemima Dunham, arrived on the Vineyard shores from Falmouth in around 1740 and welcomed his first son John in 1744. Col. Davis was many things: a cordwainer, yeoman, gentleman and husbandman. He moved to West Tisbury from Edgartown in 1778 and performed many years of civic service in town hall (Banks 1911 and Walters 2013). Indian Hill Road, also known as Davistown Road, represent the “relic of an old and flourishing community of North Shore dwellers” (Mayhew 1956).

Based on the location of stonewalls depicted on the Mingo map the location of the northern portion of Christiantown Preserve (Christiantown North), is situated between land of Recall DeGrass and Samuel Mingo. Recall DeGrass was one of three children born in 1779 to Joseph DeGrass of Cape Verde and Rode Sauwamog (mixed race). Recall married Abiah Paul in 1803. Recall was a whaler and was registered on several sailings between 1806 and 1832 when the Indian guardian, Leavitt Thaxter, petitioned for support for Recall due to his incapacitating asthma. Abiah died in 1811 and Recall married Love Weeks in 1814. Recall had three additional children with Love, James, W. Caroline L and George W. Caroline married Nathaniel Tillman, a farmer, in 1868. It was Caroline and Nathaniel who sold to Sanderson Mayhew in 1886 the land that would comprise Christiantown North.

Having the remaining 389 acres of land in common ownership at Christiantown continued until 1828 when the General Court passed an act to divide the remaining land amongst the 45 descendants of the "praying Indians" that were living in Christiantown at that time – Francis Peters 48.25 acres, George Peters and Johnson Simpson 47.25 acres, Recall DeGrass 31.75 acres plus a 15.5-acre lot of woodland, Samuel Mingo 25 acres, Diedamy



Figure 25:DCRD 23:313



Figure 26:2012.035.025

Howwassinee 8 acres, Thomas James 42.5 acres and Solomon Weeks 73 acres. Additional lots included a 4.5-acre lot set aside for the meetinghouse and burying ground, 10.75-acre common lot and 75 acres of woodland that is the present location of the land bank's South Indian Hill Woodlands Preserve. Lastly a 20.5-acre lot was set aside for support of the poor (Banks 1911, DCRD 23:306-316, 313, Figure 25: DCRD and 26: 2012.035.025 Dukes County Historical Commission). The boundaries of these lots continue to be defined by "old stone walls", "heap of stones", "watering places", small ponds and springs as they were a century ago. Divisions were made by three commissioners based on birth right, possession and improvements, and number of family members (Mayhew 2008). The document protected access to all lots by granting that "all roads, carts or passageways shall ever be used in their usual manner or in the same manner as



Figure 27: Mayhew Chapel

Fig 8 <https://www.digitalcommonwealth.org/search/commonwealth.z890s049v>

here to for practiced by the inhabitants thereof" (DCRD 23:313). Thirteen houses are marked on the tracing in ink map by Jeremiah Pease (undated) (Figure 26). A chapel/school was built the following year in 1829 to replace the prior one that burned (Figure 27). Approximately 300 graves abut the chapel in the burial grounds. Each stone marks the head of an individual sitting upright with knees tucked in, arms wrapped, and head bowed (County of Dukes County Information Bureau 1860, Figure 28). A guardian by the name of Hon Leavitt Thaxter was appointed to oversee the Christiantown tribe including land sales (Mayhew 1956).

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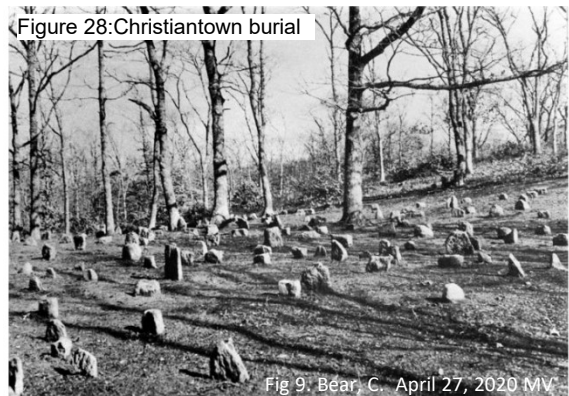


Figure 28: Christiantown burial

Fig 9. Béar, C. April 27, 2020 MV

Figure 29: Well pump



During the next decade from 1835 to 1845 whaling was at its peak. Although some Christiantown men went to sea many continued with agricultural pursuits. The Briggs report of 1849 on the "condition of the Indians in Massachusetts" indicated that 9 of the 49 inhabitants were at sea. The population remained relatively static, gaining and losing equal numbers in a span of 20 years (Briggs 1849). There were catastrophic family deaths over the 20-year period that annihilated entire families or nearly so (Earle 1861). The 11 families subsisted primarily on agriculture despite the hard and difficult to cultivate stony soils. Lands are described as well-fenced with stone walls. Livestock living on Christiantown

at the time consisted of 2 horses, 17 horned cattle, 11 swine and 56 birds. That is an additional 8 swine and 13 cows compared to 1828 (Briggs 1849). Wood sales were used as a means of making profit. In 1856 470 cords of wood were harvested from Tisbury (Briggs 1849, Vineyard Gazette June 20, 1856). The report stated that meetings were held in the chapel but not school or sermons. The inhabitants were said to be living comfortably in houses with sauce gardens, corn, and potatoes (Mayhew 2008). A hand pump near the Chapel is a remnant of former inhabitants (Figure 29). The root cellar on the Preserve would have housed such goods at one time for a family (Figure 30).

Figure 30: Root cellar

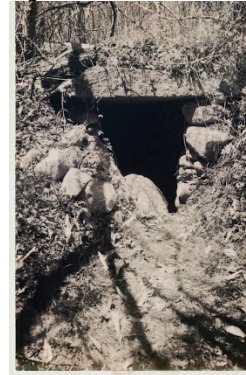
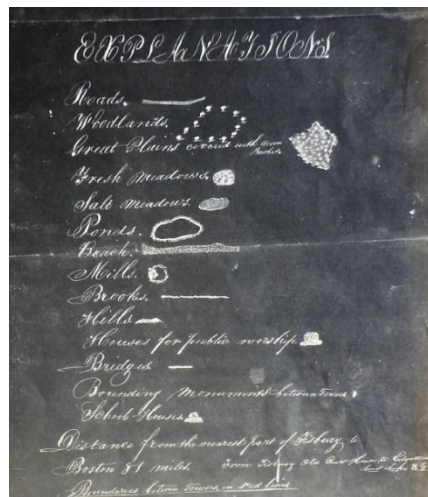


Figure 32: Thomas Dunham 1831 plan



According to a plan of Tisbury/West Tisbury in 1831 by Thomas Dunham, the land of Christiantown contains hills and some areas of fresh meadows; any significant woodlands are located to the west of the township (Figure 31:



2012.036 Dukes County Historical Commission). The Whiting map of 1850 depicts the same open landscape for Christiantown as the Dunham map of 1831 Christiantown

(Figure 31). Those farming in during the 1800's were James DeGrass, Sarah Francis, Thomas, Charles and Geroge

James, Samuel and Joseph Mingo, and Asa Peters. Saunders, Spencer, William James and George DeGrass are listed as Mariners in the Earle's report of 1861.

Figure 31: Whiting map of 1850



Farms compose much of Tisbury and West Tisbury in the nineteenth century. There were 125 farms in this part of the Vineyard in 1865 (MHC 1984). William H. Davis, a yeoman of Davistown sells to Samuel Kidder the land that is Arrowhead Farm in 1866 (DCRD 42:454). Samuel,

unlike William, was a farmer. He was 31 when he purchased the land from Davis and created the Kidder Farm. He was married to Ann Kidder, and they had two boys, Samuel and Willie, who both reported as farm laborers in the 1880 census (Swan 1998).

The set-off lots of Christiantown were re-defined in 1869 and divided further among 57 people from 26 families (DCRD 65:1-55). The Massachusetts Enfranchisement Act of 1869 removed the guardians from their role as overseers and the indigenous people of Christiantown and elsewhere were granted the right to vote and hold land in fee-simple in addition to paying state taxes (Bloom 2020). The sketch in pencil by Charles Banks depicts the island in 1880 with landowners, dates, and significant landmarks (Figure 22: 2012.035.007 Dukes County historical Commission). West Tisbury was established approximately 10 years later in 1892 (Banks 1966).

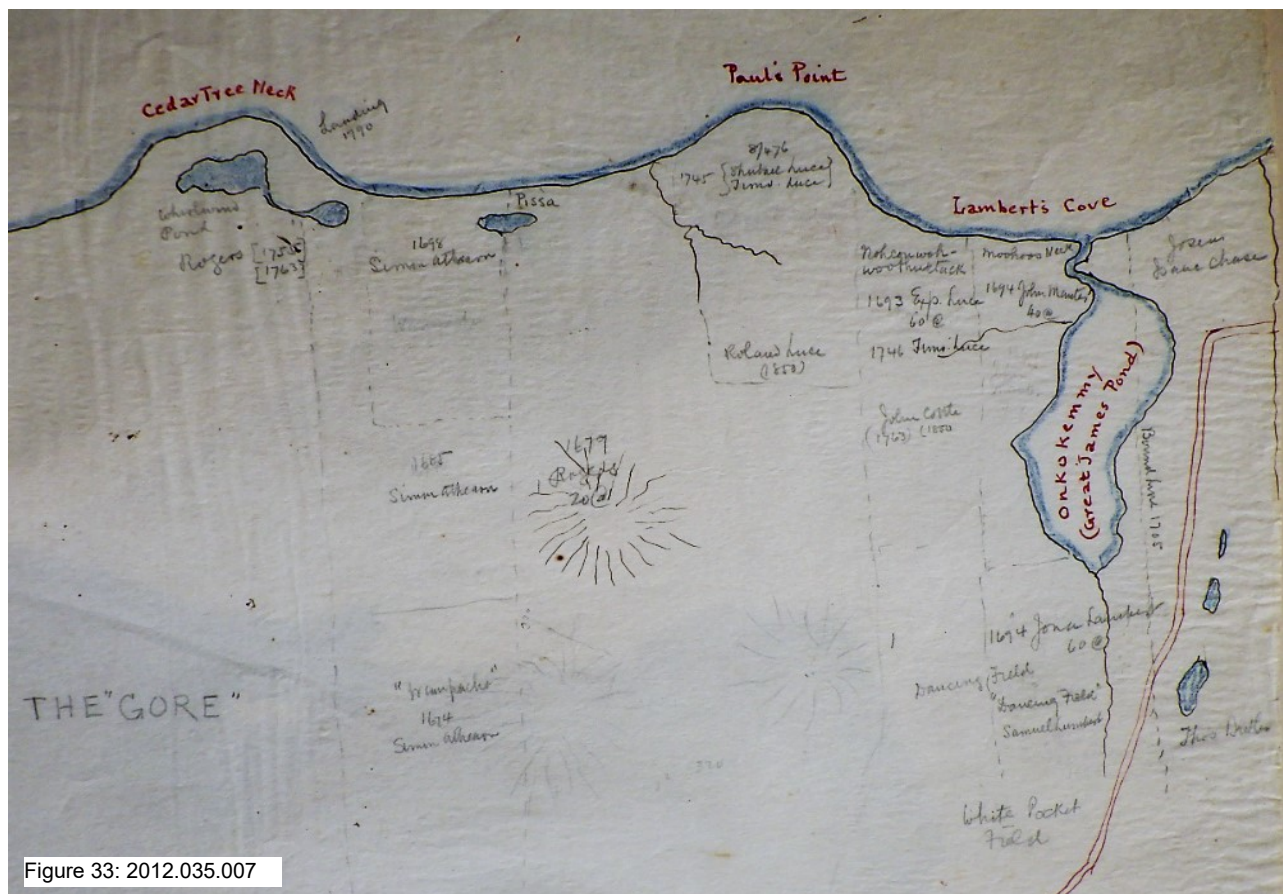
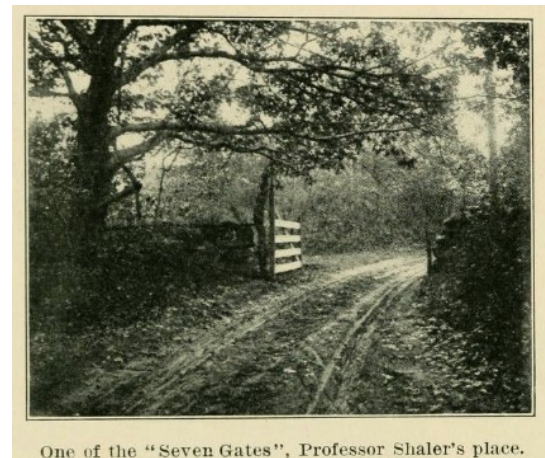


Figure 33: 2012.035.007

The northern portion of the Christiantown Woods Preserve (Christiantown North) comprises land owned by Joseph Mingo and Sanderson Mayhew. Joseph Quonwell Mingo was a seaman and farmer with a homestead of 8 acres or so, 3 cows and one pig. He is known as the last living "Indian" in Christiantown and was responsible for relaying much information to Charles Banks and others regarding historical events at Christiantown (Pierce and Segel 2016). His son, Sammy George Mingo, continued with

the Mingo tradition and took to the sea at age 16 in 1876. The Mingo family lived on a hilltop among other close neighbors with orchards, pasture, meadows and fields stretching away on all sides (Meisner 2009). In 1896, Joseph Q. Mingo sold a portion of his land to Clofus Gonyon and Mayhew sold a lot with the buildings on it to Gonyon as well in 1900 (DCRD 133:184, 118:411). Clofus Gonyon and Milton Welch's grandfather would come from Maine in the summer with their horses on a train to New Bedford then drive them to Woods Hole for the ferry ride to the Vineyard so that they could pull the trolley cars in Oak Bluffs for the summer (Baer 2012). North of the Preserve lived Joseph Mingo until he died in 1913. He was a farmer with 8 acres of land that contained 3 cows and one pig. Further south down the dirt road of Christiantown Emeline Davis, an old woman, lived with Dennis and Sophronia Baxter (Swan 1998). Emeline transferred her land interests to Sophronia Baxter in 1901 two years before her death in 1903 (DCRD: 105:68).

Figure 34: Seven Gates Farm Entrance



In the area of the Kidder Farm, Nathaniel Shaler, a geology professor at Harvard, began Seven Gates Farm with the 90-acre purchase of the Chase Farm in 1887. Shaller grew the Farm to roughly 2000 acres over 52 purchases with the original entrance off Indian Hill Road (Figure34: Hine and Hine 1908). Approximately 50.3% of the Vineyard is in farming in 1920 (MacKenzie 1997). In 1906, after the death of Nathaniel Shaller, his daughter Gabriella and husband Willoughby Webb took over Seven Gates Farm. Webb expanded the Farm with the purchase of the Kidder Farm shortly after Samuel Kidder died and the Goerge Maury lot in 1912 (DCRD: 132:398, 130:386, 132:298).

Webb was an inovative farmer who turned Seven Gates Farm into a productive dairy farm with modern milking equiment and, at its peak, 60 cows (MacKenzie 1997). Milking would commence early in the morning to accommodate the 7 am delivery of fresh milk made by Otis Burt to the hotels for breakfast time. The dairy farm had its heyday and in 1919 the trials and tributations of a depleted labor market and increasing wages caused the Farm to shut its doors. The prized Jersey cows were sold to local farmers for pennies on the dollar and Seven Gates Farm Corporation was formed and headed by Webb until he died in 1937 (MacKenzie 1997). The pastoral views were maintained by the superintendent Francis Reed. Otis Burt took over as superintendent of Seven Gates Farm in 1925. His son Percy Burt followed in his footsteps and was superintendent of the Farm from 1945 to 1967. Percy bought the "Kidder woodlot" and Geroge Maury Lot" that comprise the old Kidder Farm from Seven Gates Farm Corporation in 1940 (202:433).

Percy also purchased a lot near the Mayhew Chapel (DCRD 243:48, 235:256). Percy had a vegetable truck farm and a stand off Indian Hill Road. He also raised cows, chickens and pigs on what is presently Arrowhead Farm (Levine 2016). Percy Burt would hire local kids to pick stones from the fields and make piles. The soil was good for growing hay. Twice a fire almost burned down the house. In 1946, Robert and Mary Elwell purchased the Farm and named it Arrowhead Farm for the numerous points found on the Farm over the years (DCRD: 210:388). The Farm consisted of 15 acres of cultivated crop and 23 acres of woodland. Elwell used an irrigation and pre-packaging system to grow high-quality produce with quality control of the vegetables throughout the transport process. He built a vegetable-washing shed and a loading platform, suggesting business was doing well (Vineyard Gazette 1948, 1950, 1951). The Elwells sold the Farm in 1952 to Clement and Mildred Ferguson who grew vegetables and flowers on the Farm that they sold through a farm stand on Indian Hill Road (DCRD LC:10:5 #1665). The Fergusons ran the Farm for over a decade until they sold it to Ron and Sue Silva who raised vegetables, flowers, cows, chickens and pigs on the Farm (DCRD LC:16:55 #2906, Silva personal communication 2021). The Arrowhead Farm changed hands to the Douglas family in 1977 with focus of the farm moving from vegetables and livestock to equestrian uses (DCRD LC: 22:451 #10126). Ron and Sue Silva retained an abutting 3.3-acres of land and became neighbors of the farm. In 2020, the Douglas family sold the Farm to the land bank but retained life rights. The land bank may install trails, utilize the hayfields and create a trailhead on the Farm during the term of the life-estate contract (DCRD LC: 81:247 #14926).

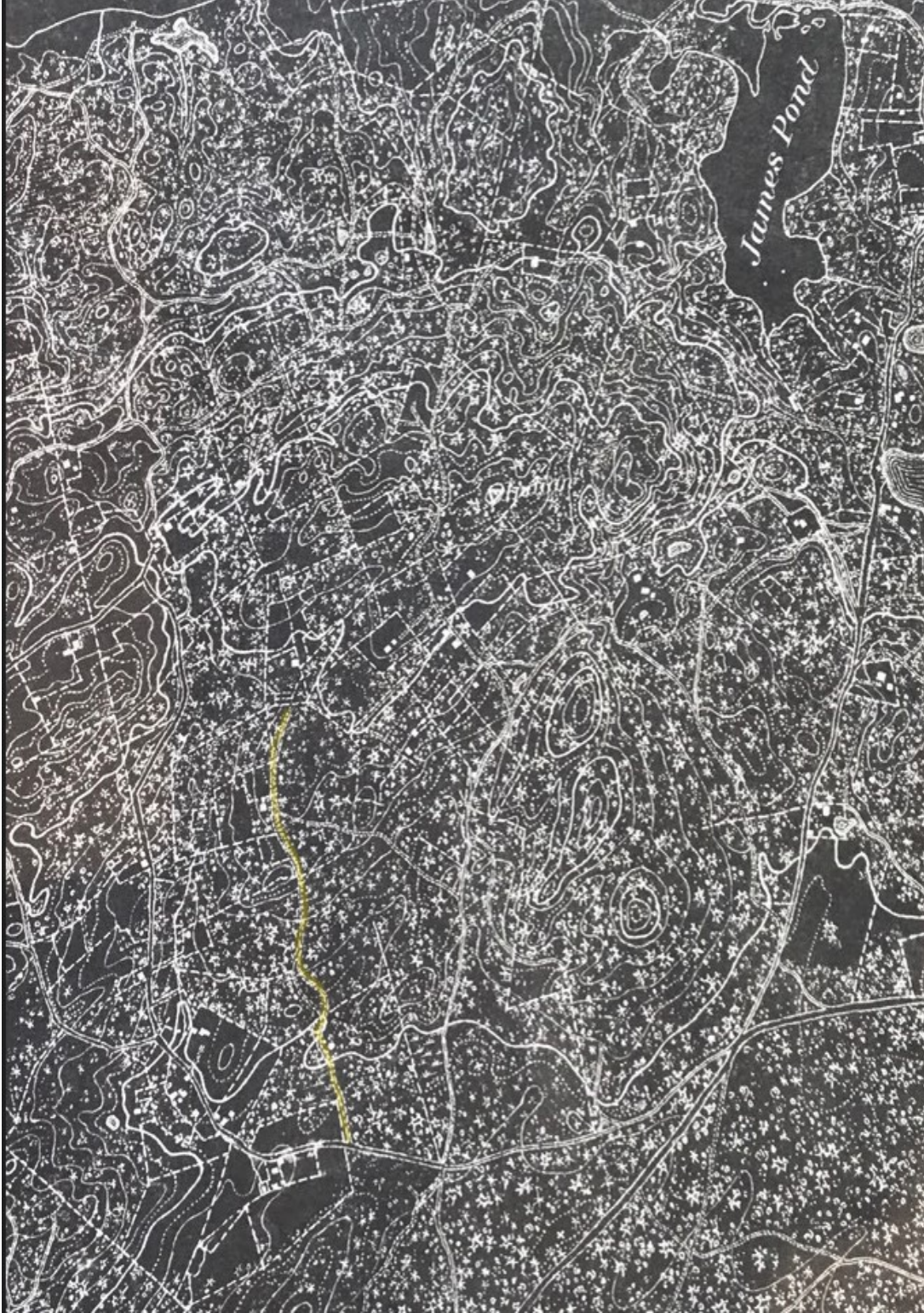
The northern portion of Christiantown Woods Preserve (Christiantown North) was purchased by Francis and Gertrude Cournoyer in 1959 from Annie Gonyon along with the right to pipe water from Joseph Mingo land (DCRD: 238:186-188). A portion of the Gonyon land that included the Mayhew Chapel and burial ground was taken by eminent domain by the County of Dukes County in 1939 and later given to the Wampanoag tribe in 1993 (County of Dukes County Information Bureau 2021, Sigelman 2012). The land that is the Preserve passed through the ownership of Allen and Bonnie Miller and in 1966 went to Kenneth and Crisyde Jones as the final owner of the land prior to its sale to the land bank (DCRD 261:387, 358:168). In 1986, the land bank purchased the 8.6-acre parcel that is Christiantown Woods Preserve from Mrs. Jones and a 40' right-of-way easement and parking privileges in the existing parking area from Dukes County in 1993 (DCRD 465:186, 410:465). The county took the land upon which the "indian chapel" and burial ground sit in 1939 by eminent domain for the purpose of historical preservation (DCRD 199:496). The chapel and burial land reverted back to Wampanoag Tribe in 1993 (DCRD 619:176).

The 7.5-acre parcels of the Preserve that are due south of the original purchase in 1986 owned by Sophronia Baxter and Percy Burt in the mid 1900's sifted through a number of owners before landing with the Rose family in 1960, followed by the land bank in 2019 (DCRD 248:304, 281:548, 656:432). One of the owners in 1952 was Gale Huntington who owned additional land farther south that is described as being "by" Cleveland Road and is subject to the right to use the way known as "Old Road to James Cleveland's" with all others now or hereafter entitles thereto" (DCRD 270:124). Gale Huntington purchased the property from Thomas and Dorothy Havard who acquired the land from Bessie Francis (DCRD 220:440). Peter and Emily McFarlin purchased land from Gale Huntington in 1963 as well as an easement from William Silva to access the McFarlin land from Indian Hill Road "to be located along the lines to the road as now traveled (DCRD 248:304, 543, Appendix B, page 58). Emily McFarlin and her second husband Ronald Rose create a 5.69-acre parcel from their 11.75-acre parcel. The western boundary is the Old Road to James Cleveland's (DCRD 269:130, Appendix B, page 57). The "Old Road to James Cleveland's" that connects Indian Hill Road to the James Cleveland house (Figure 35, <https://mhc-macris.net/#!/details?mhcid=WTI.101>) to the north and runs along the western boundary of the Christiantown Woods Preserve southern section is depicted in the US Coast and Geodactic Survey Map of 1897 (Figure 36, Dukes County Historical Commission 2012.035.019).



Figure 35:Cleveland House 1760

Figure 36:US Coast and Geodactic Survey 1897



There were not many roads in the area of Tisbury/West Tisbury between 1675 and 1775. The Mill Path, School House Path, Scotchman's Bridge Road, Holmes Hole Path, Meeting House Way, Back Road Pow-wow Hill way and Lambert's Cove Road were all created during this period. The Old Road to James Cleveland's would have been the primary means for traveling to the home from Homes Hole via the Holmes Hole Path and Lambert's Cove Road. The remains of this well-worn lane are quite visible in the woodland of today and are the ancient connection that binds Christiantown Woods Preserve with Arrowhead Farm (Figure 37).

Figure 37: "Old Road to James Cleveland's"



Appendix H. Abutters

Map 24: Map of abutters to Christiantown Woods Preserve within 200ft of property boundary.

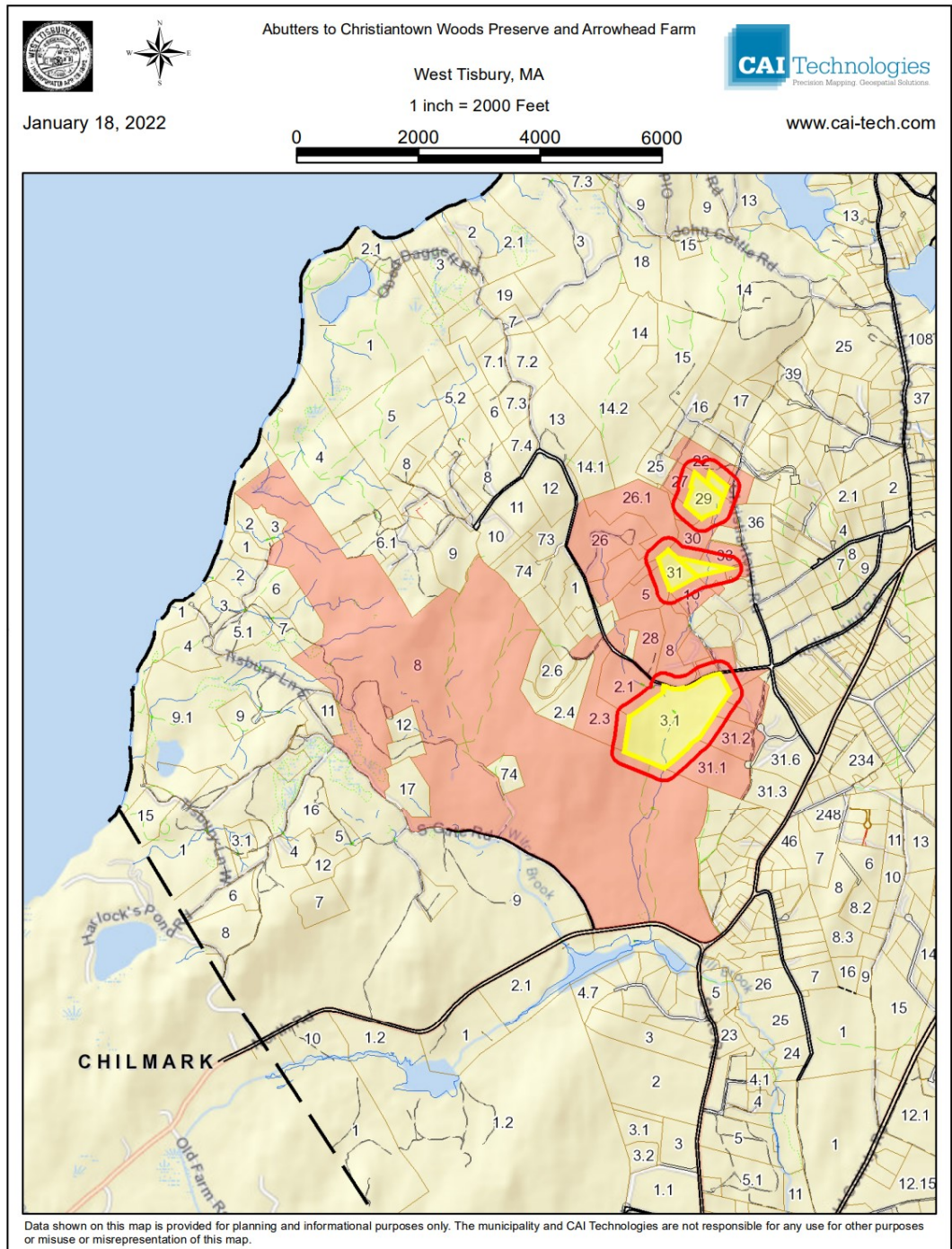


Table 5: List of Abutters that are within 200 ft of the Christiantown Woods Preserve and Arrowhead Farm boundary.

Parcel/ GIS/ Cama Number	Property Address	Owner Name	Co-Owner Name	Owner Address	Owner City	Owner State	Owner Zip
12-24 12-37	115 And 120 Christiantown Rd	Wampanoag Tribe of Gay Head	Aquinnah)	20 Black Brook Rd	Aquinnah	MA	02535
12-26	299 Indian Hill Rd	Stevenson Samuel Hiscox-Tr	C/O Scott Stevenson	145 Pine Mist Dr	Mooreville	NC	28117- 3522
12-26-1 15-4	0 And 275 Indian Hill Rd	Sheriffs Meadow Foundation Inc		Po Box1088	Vineyard Haven	MA	02568
12-30	82 Christiantown Rd	Baumrin Bernard H		590 West End Avenue	New York	NY	10024
12-33	76 Christiantown Rd	Baumrin Michael A		577 4th St	Brooklyn	NY	11215
12-35	106 Christiantown Rd	Henry Sarah		330 W 28th St, #20f	New York	NY	10001- 4785
12-48	64 Christiantown Rd	Russell Edward H &	Ling Deirdre A	Po Box 819	West Tisbury	MA	02575
12-66 12-27 12-22	40 Wampeche Rd 112 And 136 Christiantown Rd	Baumrin Bernard H &	Baumrin Judith A -Tr	590 West End Avenue	New York	NY	10024
14-8	301 South Gate Rd	Seven Gates Farm Corp.		301 South Gate Rd	Vineyard Haven	MA	02568
15-10	60 Indian Hollow Rd	Levett Bruce L-Trs	Bruce L Levett Declaration Of	Po Box 846	West Tisbury	MA	02575
15-11	46 Indian Hollow Rd	Borggaard Howard K		13 Brookdale Cir	Shrewsbury	MA	01545
15-12	159 Indian Hill Rd	Irwin James M	Buckmaster- Irwin Lynn	Po Box 839	West Tisbury	MA	02575
15-13-2 15-13-3	54 And 56 Christiantown Rd	Poldoian David-Tr	Christiantown Homeowner Assoc	710 South Hanley Rd #17b	St Louis	MO	63105

Parcel/ GIS/ Cama Number	Property Address	Owner Name	Co-Owner Name	Owner Address	Owner City	Owner State	Owner Zip
15-2-1 15-2-3	0 And 204 Indian Hill Rd	Cournoyer Me & Rj-Trs	Meadow Brook Farm Nominee Trus	Po Box 984	West Tisbury	MA	02575
15-26-1	141 Indian Hill Rd	Tocik Raymond J &	Tocik Darlene L	Po Box 114	West Tisbury	MA	02575
15-28	219 Indian Hill Rd	Borggaard Llc		13 Brookdale Circle	Shrewsbury	MA	01545
15-31-1	44 Flint Hill	Smith Robert C & Tracey S- Trs	Rts Realty Trust	Box 513	West Tisbury	MA	02575
15-31-2	24 Flint Hill	Baumhofer Mark &	Baumhofer Kimberly C	24 Flint Hill	Vineyard Haven	MA	02568
15-31-4	22 Flint Hill	Bermudes Scott F &	Cornwell Cynthia L	Po Box 728	West Tisbury	MA	02575
15-31-7	26 Flint Hill	Weagle, David	Weagle, Linley	P.O. Box 2724	Edgartown	MA	02539
15-3-2	122 Indian Hill Rd	Silva Ronald D & Susan S		Po Box 442	West Tisbury	MA	02575
15-5	271 Indian Hill Rd	Snapwood Farm Llc	C/O Middletown Properties Llc	Po Box 907	West Tisbury	MA	02575
15-8	163 Indian Hill Rd	Borggaard Jeanne I		13 Brookdale Cir	Shrewsbury	MA	01545
15-8-1	161 Indian Hill Rd	Aubrey Steve Rh &	Aubrey Elsie O'Brien	32 Clevelandtown Rd	Edgartown	MA	02539
15-26-11	37 Indian Hollow Road	Spillman, Richard R- TR		300 Old Barn Cir	Phoenixville	PA	19460
15-26-12	29 Indian Hollow Road	Wiley, Charles	Wiley, Christine	P.O. Box 550	West Tisbury	MA	02575
15-26-13	23 Indian Hollow Road	Spear, Jeffrey	Spear, Gale	P.O. Box 966	West Tisbury	MA	02575

Appendix I. Universal Access

The Recreational Opportunities Spectrum (ROS) classification for Christiantown Woods Preserve and Arrowhead Farm is “Semi-Primitive Non-motorized”. The ROS is a model designed and used by the U.S.D.A. Forest Service to categorize conservation areas or universal access planning. The land bank framework for describing the accessibility of its properties is applied to the Preserve and Farm as follows.

Property Name:	Christiantown Woods Preserve
Size:	15.9 acres
Primary activities:	Hiking, wildlife viewing
Primary elements:	Sign station cellar hole and stone walls
Primary spaces:	Woodlands
Obstacles that limit accessibility:	Wetlands and distance from trailhead
Existing or potential alternatives:	South Indian Hill Woodlands Preserve
Proposed ROS classification:	Semi-primitive non-motorized
Proposed expectation of accessibility:	none

Property Name:	Arrowhead Farm
Size:	33.6 acres
Primary activities:	Hiking, wildlife viewing, agriculture
Primary elements:	Bench, sign station
Primary spaces:	Agricultural fields, woodlands,
Obstacles that limit accessibility:	Distance from trailhead, wetlands, topography
Existing or potential alternatives:	South Indian Hill Woodlands Preserve
Proposed ROS classification:	semi-primitive non-motorized
Proposed expectation of accessibility:	300' of trail with views of the agricultural fields

For all less-developed land bank, the Universal Access Plan states the following (Potter 1997):

Use outdoor recreation access routes to link primary elements and primary spaces within one-quarter mile of a trailhead or drop-off and use accessible recreation trails to connect other primary elements and primary spaces on all less-developed land bank conservation areas, but only if modifications are minimal, will provide continuous barrier-free access, do not require a fundamental alteration of the setting, and are not in conflict with natural and scenic resource protection goals.

Universal access is feasible for Arrowhead Farm from the trailhead along the stone wall north to the corner of the property. Due to distance from trailhead, wetlands, topography, substrate, sensitive habitats and archaeology, the

remainder of the Preserve and Farm are not suitable for Universal Access. The land bank will pursue potential for expanded universal access in the future.