Connecticut
Department of Energy &
Environmental Protection

Field Visit to the McClean Outdoor Education Preserve at 1080 Sheldon St in Suffield CT
Post Visit Report

Present Parties: Joseph Grimard (Suffield Land Conservancy - owner), Justin Kaput (Suffield High School) and David Beers (Western District Service Forester) on 1/18/2024 from 2:30 to 4:30

Stewardship Objectives

1. Educational use as part of an outdoor learning classroom
2. Improve forest health

PROPERTY OVERVIEW

The property has a narrow accessway from Sheldon Street. It is directly across the street from the Suffield High School. There is an official crosswalk here for students to access the property. It is surrounded by a mix of residential development, forest and farmland. No protected open space abuts the property. This is a mostly farming and residential landscape, with a few small blocks of forest.

This forest is part of a small core forest block having less than 250 acres of contiguous forest. Core forests are large tracts of unbroken forest that provide a much more stable home for plant and animal species, thereby protecting biodiversity. They are forested areas surrounded by more forested areas.

The CT DEEP Natural Diversity Database (NDDB) does have occurrences of threatened or endangered species in the southeast corner. Maps showing wetland and farmland soils, along with the NDDB area, are attached to this report. The property drains into Devine Brook. This is part of the Stony Brook watershed.

In the attached 1934 air photo map. About half of the property was fields then. The forested half was likely pastured over 100 years ago. The old fence lines and red cedar trees are evidence of pasturing. There are the remains of page fence along the boundary. Page fencing was typically used for sheep. Less expensive barb wire fencing was typically used for most other livestock but has no effect on sheep. The Suffield Land Conservancy acquired the property in 2018.

The property is entirely forested. There is a loop trail through the property with a stream bridge and sections of boardwalk through wet areas. It is marked with round blue metal arrow tags – see photo. Along the trail are 28 posts identifying trees with QR codes linking to more info about that tree species – see photo. Six more posts are planned to be added soon. Along the loop trail are some structures, including an entry kiosk, 3 lean-to classrooms, a swamp observation platform, and an elevated wildlife observation gazebo. With the property a short walk from the high school, many classes from the school use the property, including science, writing, film, Spanish and physical education. There are also many community events here, including an annual bio-blitz that the author will be taking part in.

Please see the attached appendix for more information about the history of your forest, the future of your forest and some general recommendations. An appendix of Latin names for the tree and shrub species is also attached.

Vernal Pool

Lean-to Classroom

Tree Cover

Most Common	Common	Uncommon
Red Maple	Red Oak	Pin Oak
	Scarlet Oak	Black Cherry
	White Oak	Beech
	Hickory	Apple
	Yellow Birch	Aspen
	Sassafras	White Ash (dead)
	White Pine	Black Birch
		Paper Birch
		Sugar Maple
		Tulip Poplar

This forest is dominated by pole-sized red maple trees growing in moist rich soils. Most of the soils are classified as both wetland and farmland. Throughout the forest are many vernal pools, a few of which I put on the map. The southeastern part of this forest has patches of older/larger trees (see 1934 air photo); along with more non-red maple trees. This area has some very distinct patches of large, tall white pine trees. While most of the forest is fully stocked, with full canopy closure in the overstory, there is an exception. There is a 5-acre block of younger forest (see map) where the tree cover is less dense and patchy. This area grows younger sapling-sized trees of cherry, hickory, red maple, black birch, sassafras and apple. It has many invasive exotic Russian olive shrubs, honeysuckle shrubs and bittersweet vines. The forest has no canopy midstory to speak of.

Understory
There are quite a few red maple, yellow birch, black cherry and white pine saplings in the understory. The understory also has some ironwood, high-bush blueberry, winterberry and spicebush shrubs.

Ground Cover
The leaf litter appeared healthy, with a good organic layer. There is a good amount of woody material throughout the forest floor. Princess pine and skunk cabbage are quite common.

Forest Health
Beech leaf disease has probably begun to infect some of your beech trees. This is a microscopic nematode from Asia that has recently begun to spread throughout the state, and it is still unclear the long-term prognosis for infected beech trees. Luckily beech is uncommon and mostly in the understory of your forest. The emerald ash borer has killed the ash trees within the past 10 years.

Your forest has both structural diversity of the canopy and species diversity making this forest more resilient to future disturbances (weather, climate, pests). On the other hand, the dominance of red maple trees is of concern and any opportunity to provide more growing space to non-red maple trees is a good thing, like oak, hickory and pine. The large deer herd in this part of Connecticut makes growing certain preferred browse of deer, like oak and hickory seedlings, difficult.

There are patches of exotic invasive vegetation growth in the understory, including barberry shrubs, multi-flora rose shrubs, Russian olive shrubs, honeysuckle shrubs and bittersweet vines. Some areas are thick with invasives, particularly the 5 acres of younger forest. Vines are thick in the younger forest block and much less common in the remainder of the woods. Please see the appendix for more information about exotic invasives and their control.

Wildlife Habitat
The mature oak and hickory trees in your forest are a great wildlife habitat asset, especially the acorns and nuts they produce. Having a diversity of habitat types (younger, mature, wetlands) intimately mixed, like you have, is always a good thing. Your forest is somewhat lacking in species diversity in the canopy due to the dominance of red maple trees. The property is providing adequate food, water, shelter, cover and space for much of the wildlife in the area. Please see the appendix for more information about wildlife habitat.

Included within this forest are many vernal pools. Vernal pools are depressions that fill up with water in the spring that have

no stream outlet. Without an outlet, there are no predacious fish, which makes them perfect for amphibian eggs. Many amphibians rely on vernal pools exclusively for their egg and larval stages.

Carbon and Climate Resilience
This forest is storing a large amount of carbon while actively sequestering more. Any forest products you produce will help mitigate climate change (Shitake mushroom logs). There are some recommendations below to make forest more resilient and adaptive to climate change. There is more information about forest carbon and the forest's ecological services in the appendix.

Forest Vegetation Recommendations
The tree-hanging vines (mostly grape and invasive exotic bittersweet) reduce the vigor of the mature trees by shading and choking their upper canopy and perhaps even pulling down tree branches. I recommend cutting these vines with a handsaw or chainsaw. This cutting should be done during the growing season when the energy stores of the vines are above ground. Two cuts should be done at chest height about six inches apart to prevent vine reconnection. In shaded areas, I do not think that the cut vines will survive. To be extra sure, you can treat the freshly cut rooted end with an herbicide immediately after cutting – see photo of the buckthorn blaster in the appendix.

An area near the classroom in the younger forest could be cleared and planted to a pollinator garden to help pollinators and native insects. Insects and pollinators (bees, butterflies, moths, beetles, flies, wasps, hummingbirds), along with the many birds that depend on them, are in severe decline. For more information please visit:
Pollinator Pathway (pollinator-pathway.org)

As part of the school's agriscience program, shiitake mushrooms could be cultivated on the property, using the many red maple pole trees here. Included with this report is a shiitake cultivation book. Please keep in mind that conifers, black cherry and white ash wood does **not** produce these mushrooms.

5-Acre Younger Forest

CONCLUSION

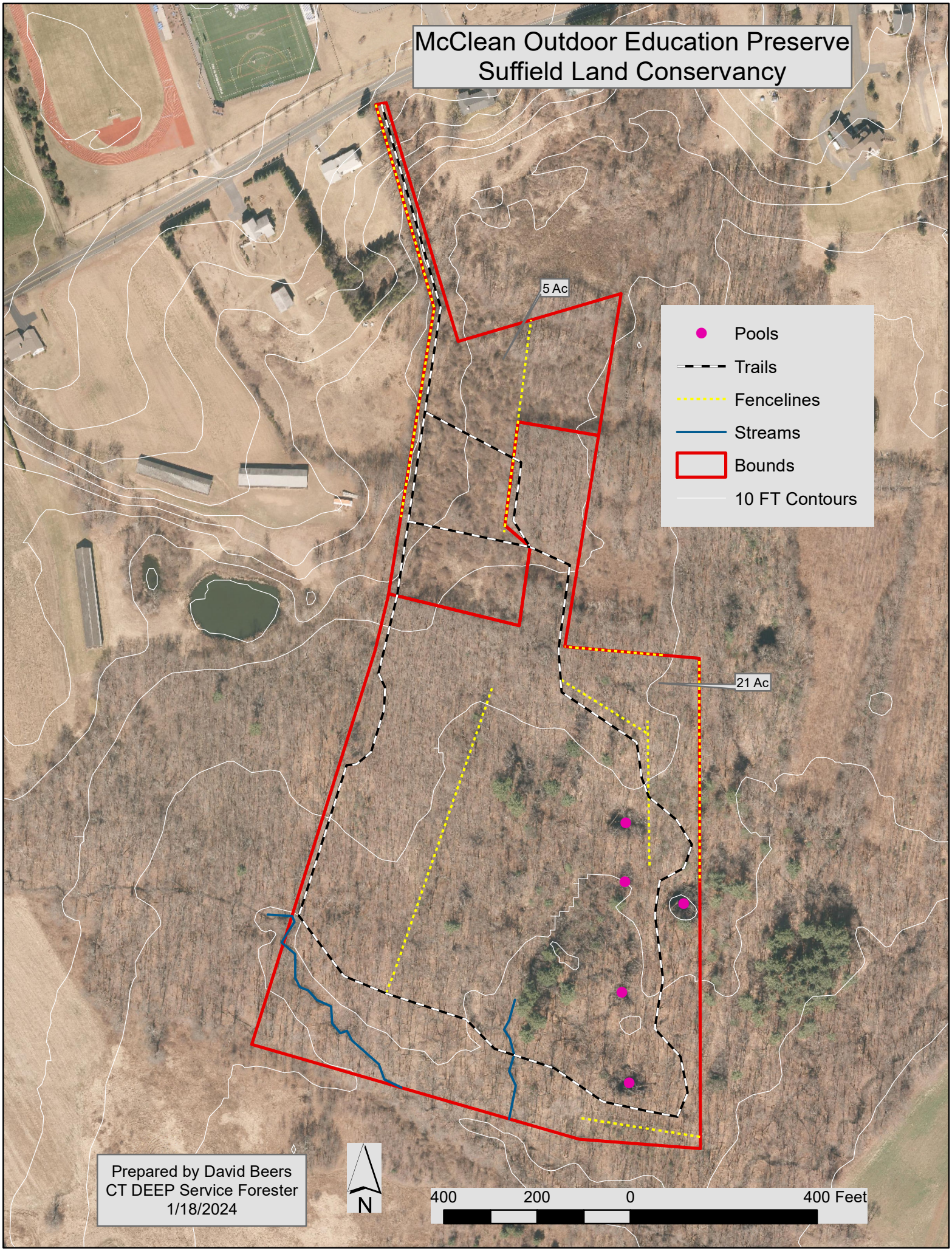
Here are some possibilities for your forest:

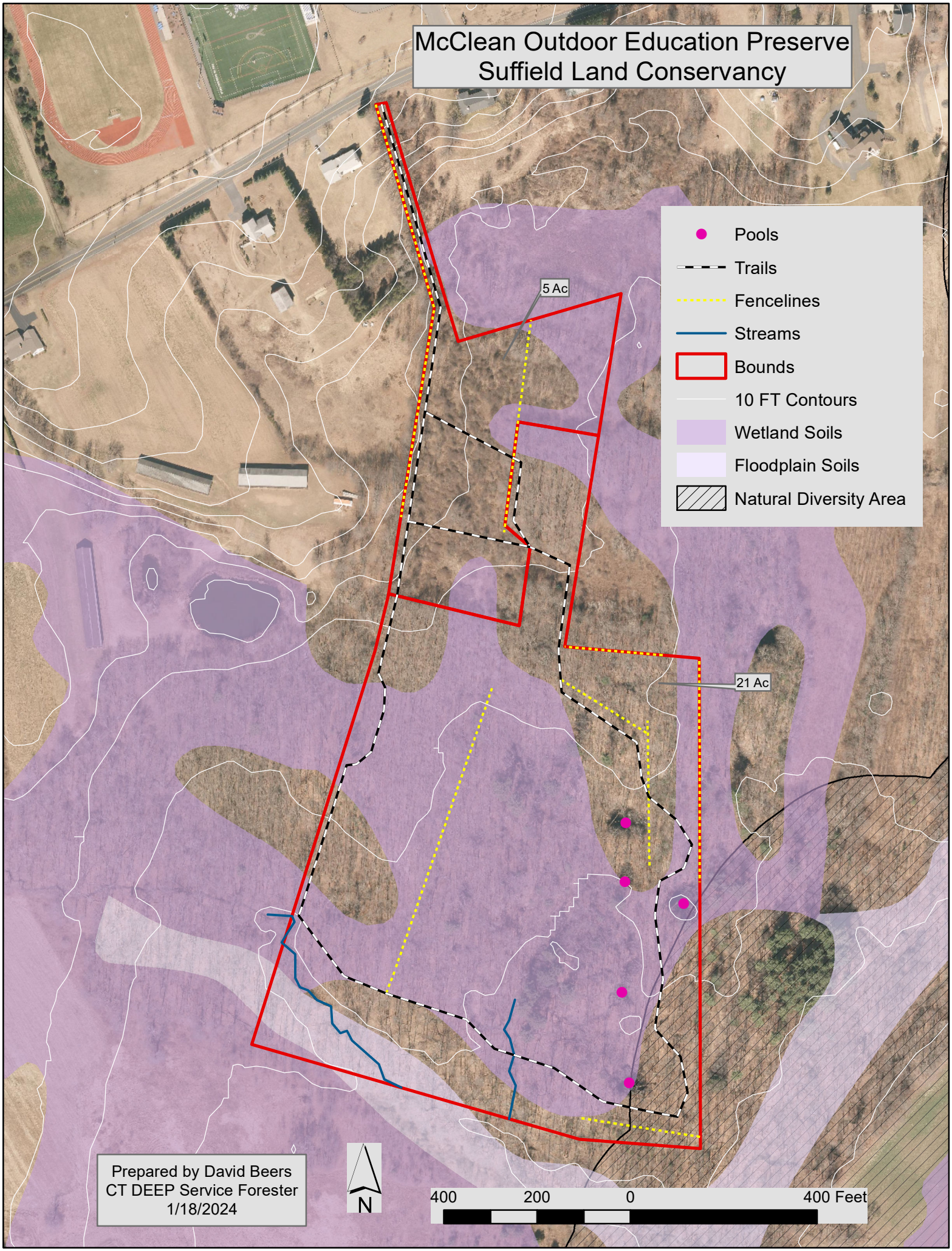
- Contact NRCS, CLCC and/or a private forester about doing a forest stewardship plan
- An annual property boundary inspection that includes ensuring signs about every 50 feet
- Cut and treat vines (grape and bittersweet)
- Potential to establish a pollinator garden in the younger forest near the classroom
- Potential to grow Shiitake mushrooms on the property as part of the agriscience program

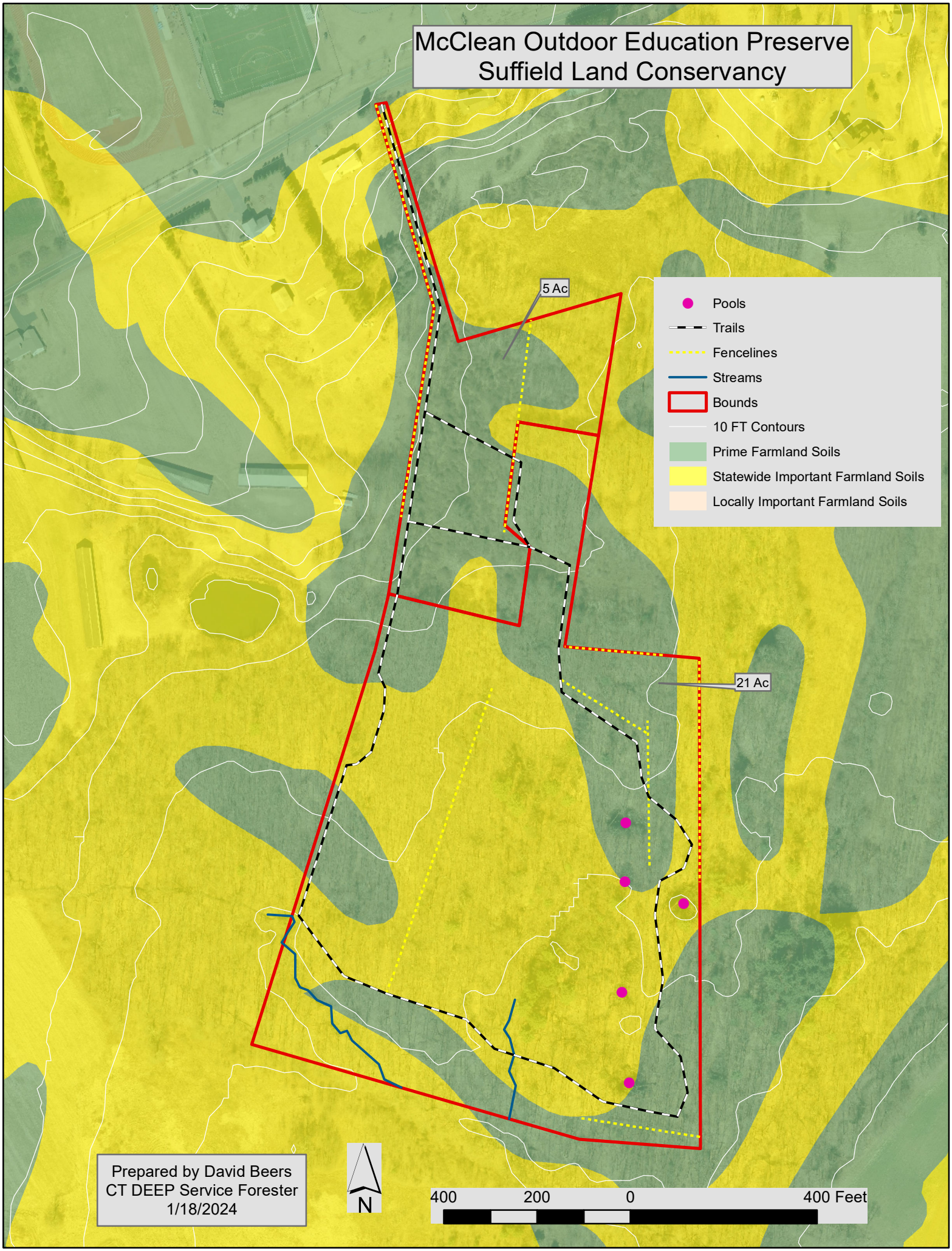
Please consider hiring a forester to help you implement any of the recommendations in this report. I highly recommend you contact the Climate Smart Land Stewardship Grant Program - Connecticut Land Conservation Council - CLCC (ctconservation.org). Ricky Bentley is the coordinator: rbentley@ctconservation.org. There might be funding for projects on your land trust property available. There might be cost-share monies through the Natural Resource Conservation Service (NRCS). Please contact Todd Bobowick at **475-355-3864**.

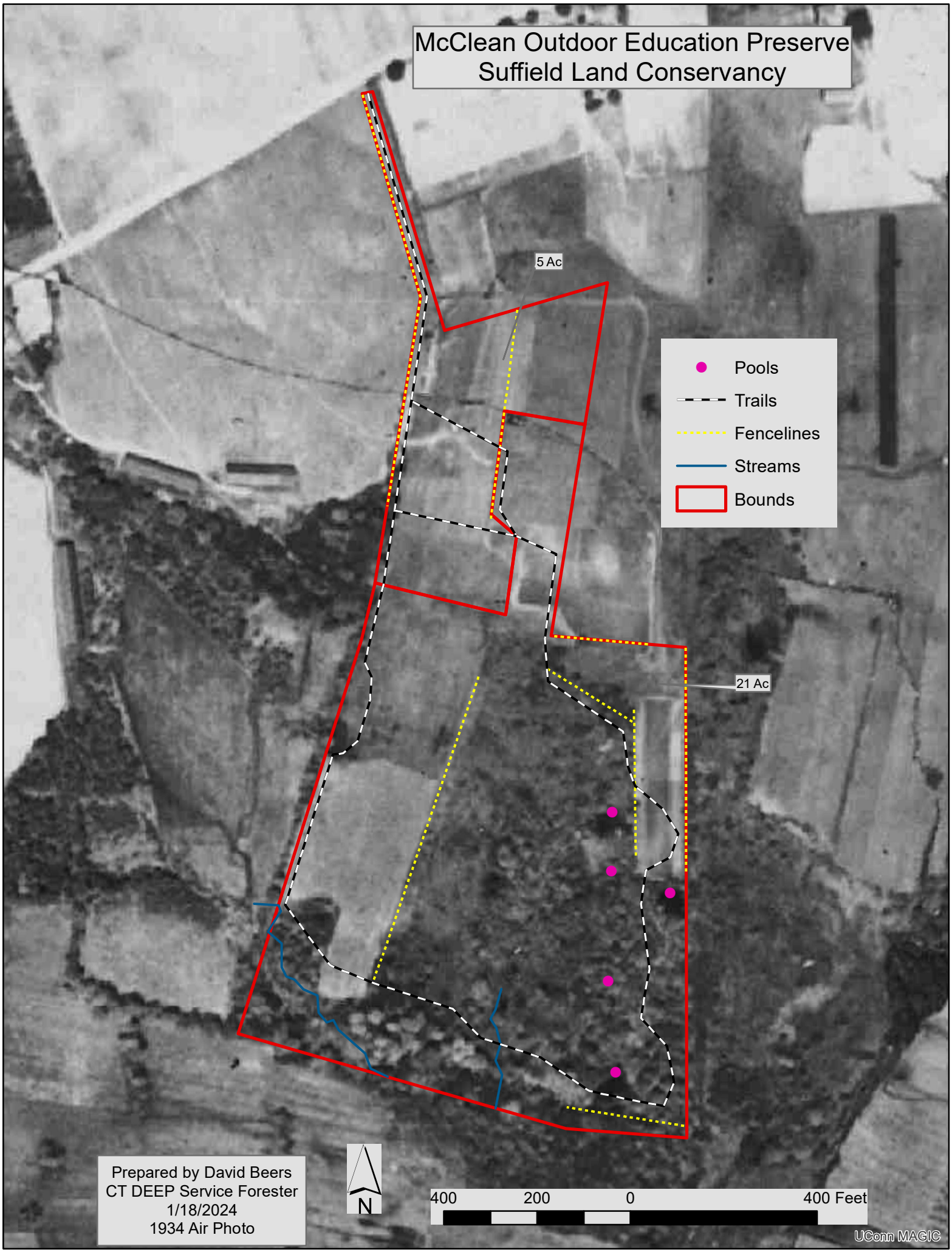
Please feel free to share this report.

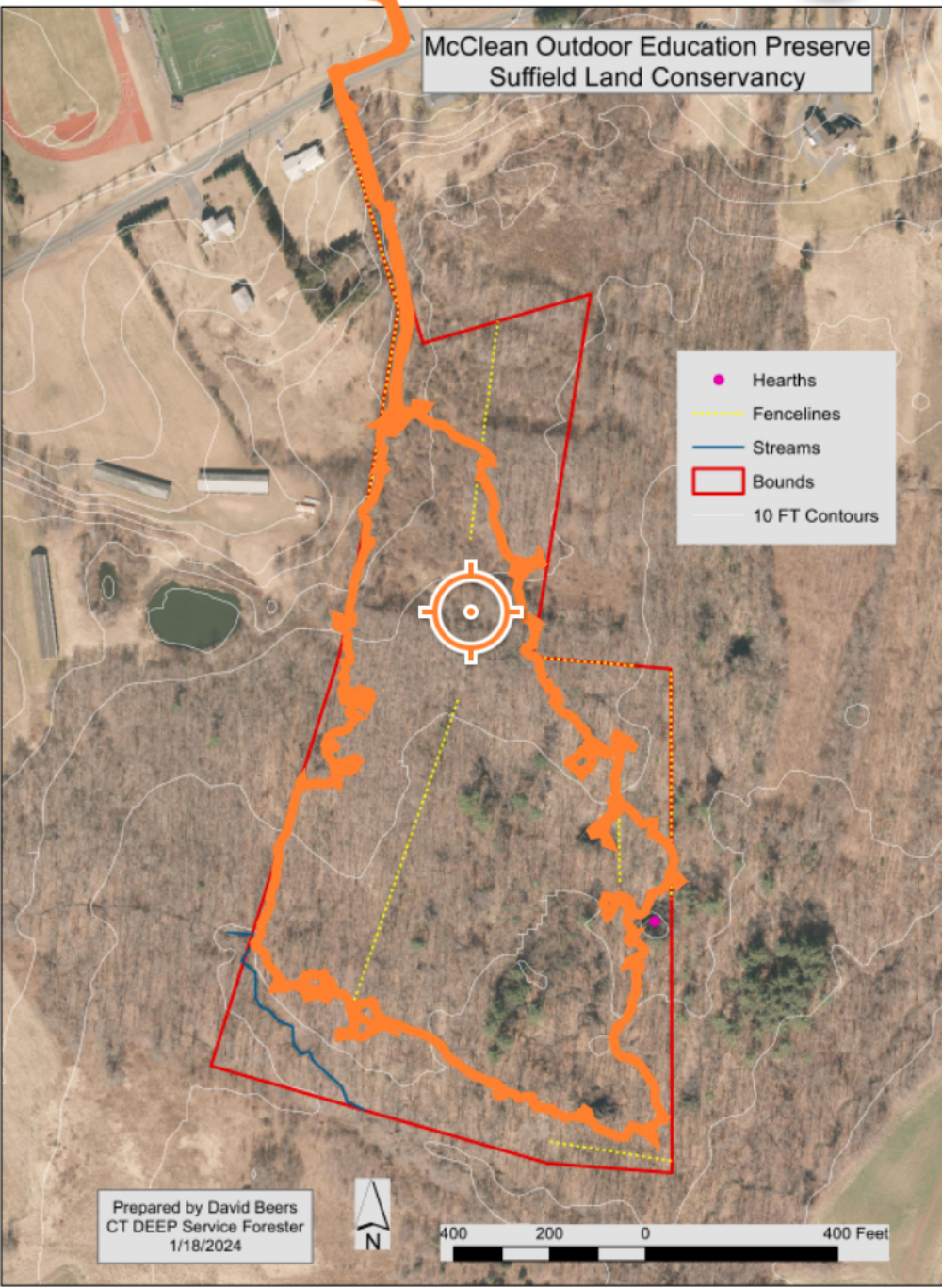
IN THE END, WE WILL CONSERVE ONLY WHAT WE LOVE AND WE LOVE ONLY WHAT WE UNDERSTAND -BABA DIOUM


McClean Outdoor Education Preserve
Suffield Land Conservancy
5 Ac
21 Ac
Pools
Trails
Fencelines
Streams
Bounds
10 FT Contours
Prepared by David Beers
CT DEEP Service Forester
1/18/2024
N
400
200
0
400 Feet


McClean Outdoor Education Preserve
Suffield Land Conservancy
Pools
Trails
Fencelines
Streams
Bounds
10 FT Contours
Wetland Soils
Floodplain Soils
Natural Diversity Area
5 Ac
21 Ac
Prepared by David Beers
CT DEEP Service Forester
1/18/2024
N
400
200
0
400 Feet


McClean Outdoor Education Preserve
Suffield Land Conservancy
5 Ac
21 Ac
Pools
Trails
Fencelines
Streams
Bounds
10 FT Contours
Prime Farmland Soils
Statewide Important Farmland Soils
Locally Important Farmland Soils
Prepared by David Beers
CT DEEP Service Forester
1/18/2024
N
400
200
0
400 Feet


McClean Outdoor Education Preserve
Suffield Land Conservancy
5 Ac
21 Ac
Pools
Trails
Fencelines
Streams
Bounds
Prepared by David Beers
CT DEEP Service Forester
1/18/2024
1934 Air Photo
N
400
200
0
400 Feet
UConn MAGIC


McClean Outdoor Education Preserve
Suffield Land Conservancy
Hearths
Fencelines
Streams
Bounds
10 FT Contours
Prepared by David Beers
CT DEEP Service Forester
1/18/2024
N
400
200
0
400 Feet

Connecticut
Department of Energy &
Environmental Protection

APPENDIX

FOREST HISTORY

Between eighteenth century colonial settlement and the mid-nineteenth century, most of western Connecticut was cleared for farming, with only a few small patches of forest remaining by the mid-nineteenth century. Only 25% of Connecticut was forested then. Under these conditions, the biggest animal left in the woods was a muskrat. Turkeys, deer, bobcat, beaver, and bear were either rare or entirely gone. Most of the land was used for livestock pasture, with only the best soils used for hay or tilled crops. Imagine a very open agrarian landscape.

It was during this farming period that the stonewalls were built to keep livestock out of crops and the neighbor's property. Most of these walls were topped off with piled wood and stumps to make them taller. Stonewalls were also a depository for rocks removed from cultivated land. A stonewall with many fist-sized rocks means that one side of that wall had tilled crops, where the winter freeze of bare ground would push rocks to the surface. After barbed wire became widely available in 1875, many of these walls were supplemented with wire. Barbed wire was used to corral cows and goats, but not sheep (barbs did not hurt the sheep). Sheep pasture used smooth-wired rectangular page fencing.

Most of the western CT hill farms were abandoned between the mid-nineteenth century and early twentieth century. The farmers either moved west for better farming soils or headed to the cities for industrial work. Immediately after this farm abandonment, the forest began to take over again. Much of the young forestlands were then cut down to make charcoal that was used in metal blast furnaces and by blacksmiths.

For charcoal making, small young trees were cut into 4' lengths and carried by hand to make a circular pile about 30' wide and 10' high. A ditch was dug around the circumference of the pile and the soil from the ditch covered the pile to limit the amount of oxygen in the smoldering pile. Once the low-oxygen burn was completed in two weeks, the almost pure carbon charcoal was removed for transport to market. Charcoal produces the hot fire needed for metal working.

While this charcoal making process had occurred since settlement, it came to a crescendo between 1880 and 1920. At that time, much of the landscape was cut multiple times, with patches of smoke rising from active charcoal mounds across the hills. By about 1925, less expensive coal ended charcoal making and the forest once again began growing back. The repetitive cutting of young trees for charcoal encouraged the proliferation of oak trees. Of all the tree species, oak responded best to the repetitive cutting. This, along with frequent wildfires, helped give rise to the oak dominated forest we see today.

The 1934 map is attached. Please keep in mind that you need to mentally adjust the map because the map scale projection does not exactly match what we use today. To see what ancestral homeland existed on your property before settlement, please visit Native-Land.ca, and type in your address.

FOREST FUTURE

Active forest management can nudge a forest in different directions by manipulating which trees continue to grow and how much the forest floor is exposed to sunlight by creating canopy openings of different sizes and shapes. For example, we can nudge the future forest towards oak by leaving oaks to grow and produce acorns, creating canopy openings of sufficient size to bring in the sunlight young oaks need to grow, and hunting the deer that like to eat young oak trees. Without these manipulations, and without significant natural disturbances (wind, ice, pests); the forest will gradually transition to shade tolerant trees that are not eaten by deer (hemlock, beech, black birch and red maple).

GENERAL RECOMMENDATIONS

Diversity

A healthy forest has a large diversity of native plant species, particularly trees, that supports a diverse array of fungi and wildlife (animals, insects, microbes). A healthy forest also has multiple layers of native vegetation to maximize biodiversity and structural complexity. This means having trees of different ages, diameters, and heights. A healthy forest has both standing dead trees (snags) and dead downed wood as important habitat elements and to hold moisture during droughts. A healthy forest is resilient because it is better able to handle diseases, pests, and extreme weather events. Increasing species and structural diversity of this forest provides multiple pathways of recovery from disturbance.

Invasives/vines

Invasive species are typically from another part of the world and when established here they have no native enemies to hold their population in check. When left uncontrolled, they spread into natural landscapes and replace what would grow there naturally, including tree regeneration and other native understory vegetation. Native understory growth has many more native insects and arthropods that wildlife needs to forage on. Exotic invasive understory growth can provide better habitat for ticks and associated pathogens while greatly reducing biodiversity.

Control methods include mechanical and chemical methods. In a shady forest, cutting a vine is enough to kill it. Invasive shrubs are not so easy. Pulling the invasives out by the roots can be effective, but extremely difficult and labor intensive. Yearly cutting back of the aboveground stems, during the growing season, will keep the invasives under control, and perhaps kill them after a few years. The most effective control method is to apply an herbicide to the green foliage, and to cut the larger invasive shrubs and treat stumps with a herbicide to prevent resprouting.

Buckthorn Blaster herbicide applicator for vine and invasive shrub eradication

Boundaries

Boundaries need to be well marked to protect the property from trespass and encroachment. Painted blazes are typically used to mark property boundaries. A blaze is a hand-sized shallow scrape in the bark. This scrape will last for decades and does not harm the tree if done properly. When painted, this blaze is quite visible and long lasting. Trees within arm's length of the boundaries are blazed, with the blazes facing the boundary line. Use only paint marks, without blazes, on the neighbor's side of the line. The blazes should be given a new coat of paint at least every 10 years. Custom signs can also be hung about every 100 feet. Understory vegetation and debris can be cleared from boundary lines such that the lines can be easily traversed for inspection.

Wildlife

Your forest, and the State of Connecticut in general, is lucky to have a significant and diverse component of mature oak trees (mature trees have reached maximum height). Oak trees are considered a wildlife keystone species because of the large amount and diversity of life they support – more than any other tree. Acorns, especially white oak acorns, provide the most nutritious plant-based protein for almost 90 species of wildlife. Oaks overwhelmingly host the most species of moth and butterfly caterpillars (over 500), which in turn anchor a biodiverse food web. Oak forests have more bird abundance and diversity compared to other forest types. Oaks also produce the thickest, most ecologically beneficial, and longest lasting leaf litter; that has the most abundant and diverse soil biology. This top-of-the-line leaf litter can keep out invasive exotic stilt grass and jumping worms. It also purifies and holds the most water. For these reasons, it is important to preserve and encourage oak growth and health in your forest.

Parts of this forest have legacy trees, also known as old field trees or wolf trees. These trees were growing in open pasture, as a source of shade for livestock before the current forest started growing. They are much older than the surrounding forest.

Because they used to be open grown, they have large spreading crowns and large branches low on the trunk. When the pastures were abandoned, they became a significant seed source for the present forest. These large old trees are structurally complex, with many cavities, hollows, fat branches, and thick, rough bark. They are also prolific seed producers, including acorns and nuts. This structural complexity and prolific seed production attracts an enormous number and diversity of insects, birds, and mammals. Underground, the old trees are also the hub and source of the complex fungal soil mycorrhizal growth that all trees depend on for water and nutrients. To make them healthier and more vigorous, such legacy trees could be protected and perhaps even given more sunlight by cutting some of the surrounding trees. These agrarian vestiges have become the ecological hubs in your forest. They are also great source of future large snags and large dead downed wood.

Ecological Services

Forests remove carbon dioxide from the atmosphere (called sequestration), create oxygen, and remove many pollutants from the air and water. Forests absorb heavy rains and release that water to streams and underground aquifers during droughts. Your forest contributes to these valuable services with carbon stored in the below-ground roots/soil and in the above ground vegetation, dead wood, and fallen leaves. These services are enhanced by having a diverse mix of native tree species of different sizes and varied arrangements. Sustainable, scientifically based forest management to remove forest products and promote young forests or regeneration of desired species has no long-term negative effect on your forest's ability to provide these vital ecological services. When trees are young and growing fast, they sequester carbon at high rates and once they are large (over 18" diameter, and often older) they store the most carbon. Whether you choose to actively manage your forest or not, your forest does a great service to our planet's health just by being a healthy forest.

Forests store carbon in different pools, and the amount of carbon in these pools changes over time. The pools are the live aboveground (trees, shrubs and other plants), live belowground (roots and fungi), deadwood (standing dead trees [snags] and downed logs, litter (leaves, needles and small branches) and soil organic matter. Sequestration is the process by which forests remove carbon dioxide from the atmosphere, primarily via tree photosynthesis. A younger forest (10-60 years old) stores relatively little carbon, but it is likely at or near its peak sequestration rate. An older more mature forest (60+ years old) stores more carbon, with a gradually slowing sequestration rate. A mix of sequestration and storage found in multi-aged forests create a resilient carbon profile.

Mapping

Attached to this report is a geo-referenced map that the landowner can use with mapping apps. This map shows the landowner where they are on the property. The landowner can also record tracks and waypoints on the property. These phone mapping features allows the landowner to locate/map property boundaries and trails. To get map layers and to view maps, please visit CT ECO Home (cteco.uconn.edu).

Connecticut
Department of Energy &
Environmental Protection

APPENDIX OF LATIN NAMES

TREES

Red Oak	Quercus rubra	Quaking Aspen	Populus tremulodes
Tulip Poplar	Lirodendron tulipifera	Yellow Birch	Betula alleghaniensis
Red Maple	Acer rubrum	Black Cherry	Prunus serotina
Black Birch	Betula lenta	Sassafras	Sassafras albidum
White Oak	Quercus alba	White Pine	Pinus strobus
Hickory	Carya Sp.	Apple	Malus Sp.
Scarlet Oak	Quercus coccinea	Pin Oak	Quercus palustris
American Beech	Fagus grandifolia	White Ash	Fraxinus America
Sugar Maple	Acer saccharum	Paper Birch	Betula papyrifera

NATIVE UNDERSTORY

Ironwood	Ostrya virginiana	Spicebush	Lindera benzoin
Highbush blueberry	Vaccinium corymbosum	Winterberry	Ilex verticillata

EXOTIC INVASIVES

Barberry	Berberis Sp.	Russian olive	Elaeagnus angustifolia
Multi-flora Rose	Rosa multiflora	Bittersweet	Celastrus orbiculatus
Honeysuckle	Amur honeysuckle		