



## Field Visit to Burlington Land Trust's Martha Brower Wildlife Sanctuary at Greer Rd in Burlington, CT

**Present Parties:** Paul Rochford (Land Trust President) and David Beers (Western District Service Forester) on 1/28/2022

### Stewardship Objectives

1. Maintain/improve forest health
2. Maintain/improve recreational opportunities



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## FOREST HISTORY

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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.

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 a few 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. 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.

In the 1934 air photo, almost the entire forest shows as forested. The 3-acre Stand 1A shows up as fields, most of which is the 2-acre Morenz property. The pond shows as a wetland in 1934. 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.

The original 41 acres was donated to the Land Trust by Mike Brower in honor of his late wife, Martha. While the blue trail went through the property prior to the donation, the red loop trail was added by the land trust after the donation. In 2011 an additional 2-acres was donated on the eastern edge by Art Morenz.





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## FOREST STANDS

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Stands are separate natural communities that are distinct from each other. Dividing a property into stands makes it possible to logically describe the property. Keep in mind that while stands are distinct, stand boundaries are often indistinct, where one stand melds into the next stand over the course of 100 to 200 feet. Even within a single stand, there is a tremendous amount of variation. Like most properties in Connecticut, your property could be divided into an almost unlimited number of stands due to the tremendous variety that forests inherently possess.

Within all stands, the lower slopes have moister, richer, and deeper soils. This gradual change in site quality with slope exists on every hillside and causes a change in tree species and size composition with hillside slope position. Upper slopes tend to have more oaks and hickories, and shorter/smaller trees.

Each description begins with two graphs. The first shows the relative abundance of each species by percent. Not all species found in a stand will be included in this graph because some of the less common species did not fall within a measurement point. The second graph shows the relative abundance of different tree sizes based on the diameter of the tree measured at 4.5 feet off the ground. Please keep in mind that all this information is based on a very **brief** inventory of your forest. **Please contact a consulting forester for a much more detailed and accurate forest stewardship plan that would include timber information and a much more precise stand delineation based on many more inventory points.**

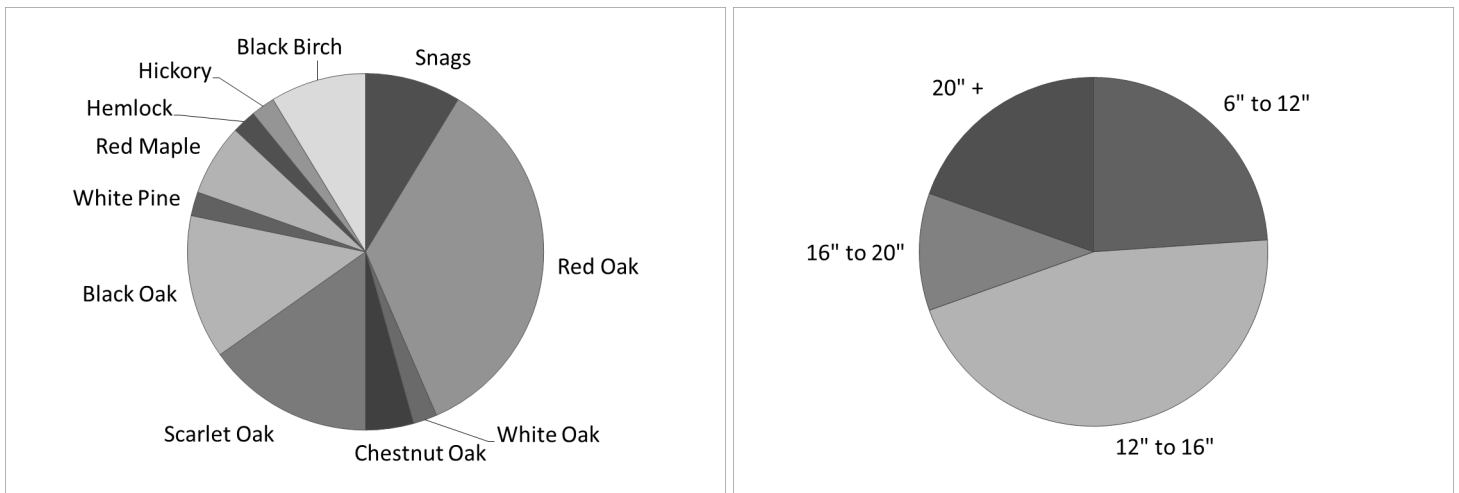
In addition to the two stands described below, are an 8-acre pond and a 2-acre western marsh. The pond has an old beaver lodge in the middle. The pond drains under the road with a long metal-caged culvert that drops the water into a weir box. The culvert has a wooden dock over its length so that the neighbor can walk on the dock to periodically clear the metal caged intake from beaver activity. The western grassland marsh has some patches of open water and a patch of invasive exotic phragmites reed.

The CT DEEP Natural Diversity Database (NDDB) does **not** have occurrences of threatened or endangered species on or near this property. There are no farmland soils. The wetland soils are mapped as wetlands on the map.



Western Marsh

## STAND 1: OAK FOREST (33 ACRES)



Other Species (not measured)	Yellow birch, tulip poplar, sugar maple, aspen, sassafras; black gum in wetlands
Understory	A few maple, birch, hickory, hemlock and oak saplings Some witch hazel, hophornbeam and mountain laurel shrubs A few blueberry and huckleberry shrubs on the drier hilltops
Insect/Disease/Disturbance	Minor black birch canker (fungus) A few dead ash trees from the emerald ash borer
Exotic Invasives	A few barberry and honeysuckle shrubs in Stand 1A
Canopy Closure	90%
Unhealthy/Poor Form	20% (low)
History	Likely livestock pasture 150+ years ago Likely cleared for charcoal about 120 years Entirely forested in the 1934 air photo History different for Stand 1A – see below

This stand is dominated by large mature oak trees growing on rocky site conditions that vary with slope position. There are patches of understory hemlock trees and mountain laurel shrubs. There are some scattered large pine trees east of the pond.

The 3 acres of sub-stand 1A is younger, and hence smaller, than the remainder of Stand 1. In the 1934 air photo, this area was fields – likely livestock grazing. Within 20 years of the 1934 photo the fields reverted to young forest. It is now dominated by poletimber red maple and black birch, with few large oak trees. There are patches of thick tree-hanging grape vines.

Included within this stand are two vernal pools. They are the two small forested wetlands west of the pond. 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.

### Recommendations

While the landowner currently does not express interest in a timber harvest, this stand could certainly support a lucrative harvest in the future.

There are a significant number of grape vines in Stand 1A that are negatively affecting tree health. Simply cutting them at chest height with a hand saw or loppers would improve tree health.



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## GENERAL RECOMMENDATIONS

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### FOREST PROTECTION

The property is in a mostly forested area, with patchy residential development. Protected Bristol watershed property abuts to the south and west. This forest is part of a large core forest block having over 500 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.

Forest protection also includes fostering a healthy forest. 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 and heights. A healthy forest is resilient because it is better able to handle diseases, pests and extreme weather events.

### INVASIVES/VINES

There are some exotic invasive shrubs on the property – see stand descriptions. 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 need 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.

### 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 to communicate anything the landowner desires. It is also recommended that understory vegetation and debris be cleared from boundary lines such that they can be easily traversed for inspection. **The boundaries have land trust signs. The southern Bristol Water boundary has their signs, and their orange paint blazes.**

### WILDLIFE

Your forest, and the State of Connecticut in general, is lucky to have a significant and diverse component of mature oak trees. Oak trees are considered a wildlife keystone species because of the large amount and diversity of life they support. 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). 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 is able to 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, they 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 should be protected and perhaps even given more sunlight by cutting some of the surrounding trees.

### **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 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.

### **ACCESS**

An excellent trail system exists, and it is in good shape. There is a trailhead kiosk, with a good roadside parking lot. The trail system here is well-maintained, and for such a relatively small property, has a lot of interesting vistas and terrain. There are three maintained view clearings of the pond on the eastern red-blazed trail. The far eastern and western trails are red blazed, and the central older trail is blazed blue and yellow. It is a blue-blazed trail that is part of the Tunxis trail. To the south, this trail goes to the mile of ledges and then Tory Den on Bristol Water property. There are 25 tree ID signs along the trails.

### **MAPPING**

Attached to this report is a geo-referenced map that the landowner can use with the free smartphone app 'Avenza Maps'. 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 \(cteco.uconn.edu\)](http://cteco.uconn.edu).







Northern Viewpoint



Middle Viewpoint





Southern Viewpoint

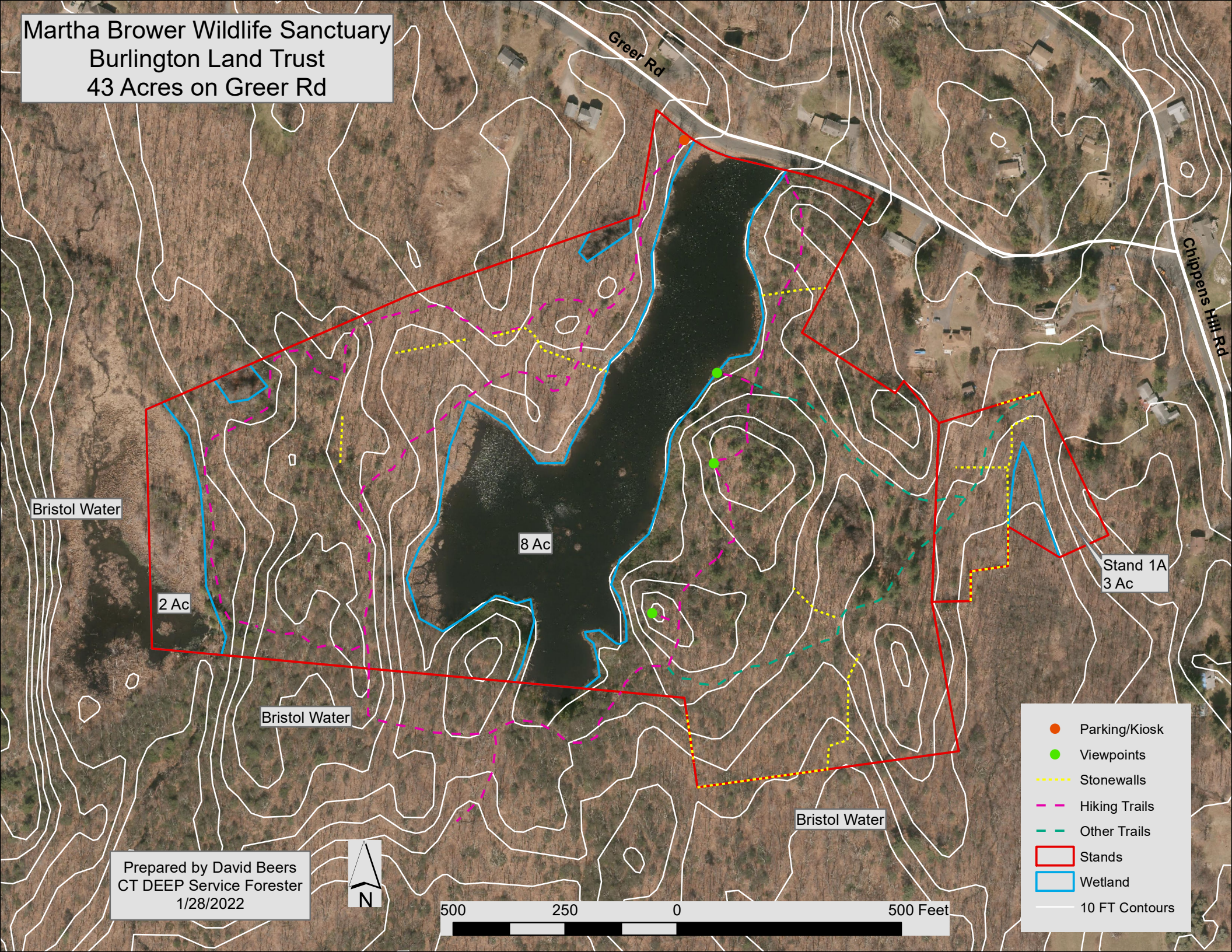








Martha Brower Wildlife Sanctuary  
Burlington Land Trust  
43 Acres on Greer Rd



Bristol Water

2 Ac

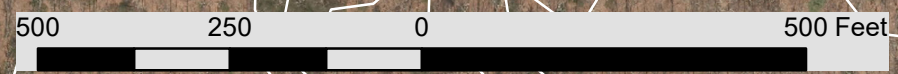
8 Ac

Bristol Water

Stand 1A  
3 Ac

Bristol Water

Prepared by David Beers  
CT DEEP Service Forester  
1/28/2022



- Parking/Kiosk
- Viewpoints
- ..... Stonewalls
- - - Hiking Trails
- - - Other Trails
- ▭ Stands
- ▭ Wetland
- 10 FT Contours



Martha Brower Wildlife Sanctuary  
Burlington Land Trust  
43 Acres on Greer Rd  
1934 Air Photo



Prepared by David Beers  
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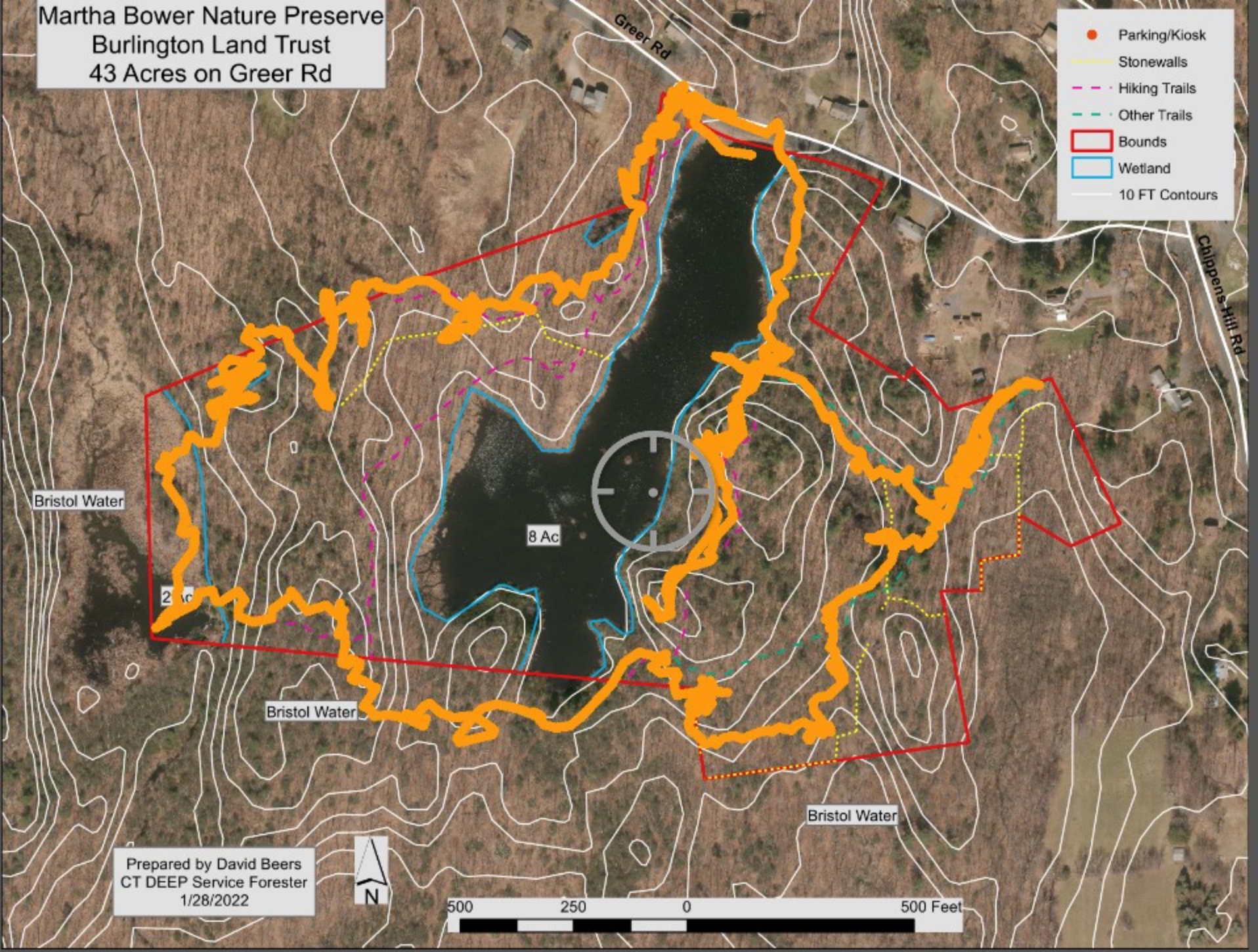


500 250 0 500 Feet



Martha Bower Nature Preserve  
Burlington Land Trust  
43 Acres on Greer Rd

- Parking/Kiosk
- Stonewalls
- - - Hiking Trails
- - - Other Trails
- ▭ Bounds
- ▭ Wetland
- 10 FT Contours



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