# *MANAGEMENT PLAN*

## *APPLETON 1 (BLOCK 6, LOT 11.02)*
## *TOWNSHIP OF HARDING*

*Harding Open Space Trust*

*February 13, 2024*

Block 6, Lot 11.02

Setting/Historic land use/Current land use

The 3.8-acre subject property is located at 540 Van Beuren Road in Harding Township, Morris County, New Jersey. It consists of vacant, undeveloped land with open field, scrub/shrub thickets and mature woodlands. The Great Brook flows along western/southwestern wooded edge of the property. The neighboring properties are rural, single-family residential and agricultural (Fig. 1).

The property includes remnant stone foundations and a shallow stone-laid well as evidence of small residential structures that were demolished between 1930 and 1957 (PK Environmental). A bridle path enters the property near the Great Brook bridge on Van Beuren Road. It travels in a roughly north-south direction through the woodlands bordering Great Brook, before turning to cross the field in an east-west direction, south of the lot line between 11.02 and 11.03 (Fig. 2). It appears that the bridle trail has been mowed in various configurations in the past.

Geology and Soils

The property is moderately to steeply sloping, adjacent to the Great Brook, a HUC-14 subwatershed located within the Upper Passaic River HUC-11 watershed. The property is situated within the New Jersey Piedmont Physiographic Province, where it is underlain by sandstone, siltstone, mudstone, and fine-medium grained calcareous silt stone associated with the Towaco Formation (NJDEP, GeoWeb).

The preservation of prime farmland is essential for ensuring food security, protecting the environment, supporting rural economies, and preserving cultural heritage. This property is not classified as Prime farmland but does contain some soils of local importance. The United States Department of Agriculture (USDA) Natural Resources Conservation Service defines Prime Farmland as land with soils from Land Capability Class I and selected soils from USDA Land Capability Class II. Class I soils have slight limitations that restrict their use. Class II soils have moderate limitations that reduce the choice of plants or require moderate limitations that reduce the choice of plants or require moderate conservation practices. Class III soils have more severe limitations that reduce the choice of plants or require special conservation practices, or both. These soils can economically produce high yields of crops when treated and managed according to acceptable farming methods.

USDA Class III soils are present on this property. The USDA Web Soil Survey identifies 24.7% of soils on the property consist of Penn channery silt loam (PeoC 8-15% slope) and 43.5% as Reaville deep variant channery silt loam (RerB7, 0-6% slope). Class III soils, although they do not meet the criteria for Prime Farmland classification, are identified as soils of statewide importance. Farmlands of statewide importance include those soils in land capability Class II and III that do not meet the criteria as Prime Farmland; however, these soils can economically produce high yields of crops when treated and managed according to acceptable farming methods, and may produce yields as high as Prime Farmland if conditions are favorable.

The Web Soil Survey (Fig. 3) identifies 26.6% of the property as Parsippany silt loam, sandy loam substrarum (PbphAT, 0-3% slope). This is a class IV soil of local importance. The remaining 5.3% of the property is Penn-Klinesville channery silt loams (PgmD, 12-18% slope), which has no agricultural importance according to the NRCS (Fig. 3).

Water Resources

Great Brook serves as the western-southwestern boundary of the property. It is classified by the NJDEP Surface Water quality Standards as FW2NT "slightly impaired". Great Brook originates in areas that are suburbanized, where it is subject to non-point pollutants and continuous development pressures.

Great Brook is one of five streams that flow into the nearby Great Swamp National Wildlife Refuge (GSNWR). The 2014 United States Fish and Wildlife Service GSNWR Comprehensive Conservation Plan states that the preservation, protection and restoration of the upper reaches of this brook are critical for the ecological integrity of the refuge.

In September 2019, A Freshwater Wetlands Letter of Interpretation: Line Verification File No. and Activity No. 1413-11-0001.1 FWW190001 was prepared to verify the boundary of the freshwater wetlands on Block 6, Lots 11.02 and 11.03. This line is provided on a map entitled: NJDEP Permit Plan (Freshwater Wetlands Letter of Interpretation – Line Verification) Block 6, Lots 11.02 & 11.03 528 & 538 Van Beuren Road Township of Harding Morris County NJ, consisting of one sheet, dated March 29, 2019, last revised August 29, 2019, and prepared by Thomas P. Mendola, P.L.S.

In addition, the NJDEP Division of Land Use Regulation has determined that the resource value and the standard transition area or buffer required adjacent to the delineated wetland are Exceptional (150' wetland buffer) and State Open Water: LS-21 through LS-27 and within wetlands (no wetland buffer). The finding of exceptional resource value is based on a finding that the wetland is documented habitat for threatened and endangered species that maintains suitable use for breeding, resting or feeding by such species.

There is a long history of recreational fishing occurring in Great Brook near the Van Beuren Road bridge. Although parking is prohibited, there is a pull-off area adjacent to the roadway and a path that leads a short distance to the stream.

Habitat

The property includes multiple habitats including open water (Great Brook), a small area of freshwater marsh adjacent to the Brook (near Van Beuren Road), deciduous forest, riparian forest, shrub/scrub edge/transition habitat and open field. There is a gently sloping streambank from the forest to the emergent marsh at Great Brook near the bridge on Van Beuren Road, however the streambank becomes very steep as one approaches the interior portions of the property.

The open field is composed of a variety of warm season grasses such as Little Bluestem, Indiangrass, Switchgrass and Deer-tongue. Native forbs are found among the grasses such as aster, milkweed, and goldenrod. Warm season grasses provide habitat for a variety of wildlife, including butterflies and pollinators, small mammals, white-tailed deer, songbirds, bats and raptors as well as wide variety of amphibians such as green snake and box turtle. The clumping nature of these plants typically results in bare ground between individual plants, which enables herbs, forbs and broadleaf plants to become established as well as provides spaces which serve as travel corridors for birds, amphibians and small mammals. Warm-season grasses do not mat down easily under winter snows. Therefore, they provide excellent winter escape cover and nesting cover the following spring (Dickerson et al., 1998).

The subject property has several areas dominated by dense shrub thicket, which in total composes approximately 25% of the property. These areas include a variety of shrubs, vines, young trees and herbaceous habitats. They serve as important food and cover for songbirds and small mammals, butterflies and pollinators. Many of these areas are dominated by invasive plant species including Tree of Heaven/*Ailanthus*, Multiflora Rose, Porcelain Berry, Japanese Honeysuckle and Asiatic Bittersweet. Multiflora Rose is the dominant shrub in the scrub/shrub area in the north edge of the property bordering Van Beuren Road. This 15-20' wide stand continues into the northwest corner bordering the forest edge near the former homestead.

Multiflora Rose produces dense monocultures that are impenetrable to humans and wildlife. This species outcompetes native species and reduces overall native species diversity (Snyder and Kaufman, 2004). Porcelain Berry also occurs in this edge area and is creeping into the adjacent open field. In addition, Japanese Honeysuckle and Asiatic Bittersweet are also present in the forest edge and present a threat to native vegetation and trees. These invasive plants diminish habitat quality and can cause extensive damage if not controlled.

Threatened and Endangered Species

The areas of deciduous forest with greater than 50% crown cover, have been identified as suitable habitat for the Indiana Bat (*Myotis sodalist*). This State and Federally-listed Endangered species, utilizes riparian corridors near and within the Great Swamp National Wildlife Refuge for foraging and warm season roosting. Indiana Bat populations have been impacted throughout their range from White Nose Syndrome (WNS), a devastating fungal disease. This disease disrupts the bats' hibernation patterns, causing them to wake up more frequently and deplete their fat reserves, ultimately leading to starvation and death (Blehert et al., 2009). In New Jersey, WNS has had a profound impact on bat populations, including the endangered Indiana bat (Frick et al., 2010). The spread of WNS has led to significant declines in Indiana bat populations throughout the state, exacerbating existing conservation concerns (Frick et al., 2010). Efforts to mitigate the impacts of WNS on Indiana bats in New Jersey include habitat protection, monitoring, and research into potential treatments or management strategies to support their recovery.

The subject property has been characterized as active season sighting, potential maternity colonies and roost sites for the Indiana Bat by The New Jersey Natural Heritage Database (NJDEP). Primary roost sites may be found within a variety of forested habitats, including

wetlands and riparian areas, and primarily include snags with nearly dead trees with peeling or exfoliating bark. They are typically large trees, of a size greater than 22" diameter at breast height, in open areas with high exposure to sunlight. Alternative roost sites typically are found within the forest interior in trees of similar sizes. (Kitchell 2008). Maternal roosts are typically established in agricultural areas with fragmented forests. The subject property, with riparian forest, stream corridor, and associated open fields provides suitable conditions for roost sites and foraging.

Foraging for the Indiana Bat can occur in and around upland and wetland mixed oak forested habitats (Butchkoski and Hassinger 2002; Gardner et al., 1991; Humphrey et al., 1977; Murray and Kurta 2004; Romme et al., 2002, Sparks et al., 2005). Pregnant or lactating bats primarily forage within wooded or riparian corridors, streams and floodplain forests, and impounded waterways. They will also use hedgerows, upland forest, early successional field and along cropland. (Kitchell 2008).

The subject property may also be used by the Brown Thrasher (*Toxostoma rufum*), a Species of Special Concern, as reported by Conserve Wildlife Foundation of New Jersey. This large, brown songbird, nests in thickets, fields with scrub and woodland borders. It feeds on insects, berries, nuts, and seeds as well as earthworms, snails, lizards, and frogs (PGC Wildlife Notes, 2021).

**Management Strategies**

Active management of open space properties is needed to ensure that these resources will be available for the multitude of species that depend upon them well into the future. In addition, public benefits in terms of access and visibility are also desired. There are a number of Federal and State incentive programs that can provide technical assistance and financial resources to meet management goals. Management goals should be revisited periodically to evaluate previous priorities and identify and address new concerns as they arise.

Goal 1: Maintain and improve habitat for Indiana Bat and Brown Thrasher. The subject property contains suitable habitat for both the Indiana Bat and Brown Thrasher and a goal for the management of this property includes maintaining the diverse array of habitats on the property while taking measures, when feasible, to improve habitat for these species.

Strategy 1: Manage open field to encourage a combination of grasses with dispersed native flowering plants, and a native shrub border. Although a variety of human induced disturbances can be used to maintain warm season grasslands, the small size of the property and surrounding residential development would favor mowing as the most effective treatment. Mowing should occur every 3-4 years and timing is crucial for wildlife management. Heavy bush-hogging should be avoided, as it may result in considerable nest and habitat loss and bird mortality (Oehler 2006). Consideration should be given to the foraging and roosting activities of the Indiana Bat and nesting birds, meaning activities should be limited to mid-November through early March. If mowing creates extensive clippings, remove to avoid buildup of thatch.

Strategy 2: Maintain areas of shrub/scrub edge habitats to create a softer ecotonal transition between mature forest and grassland. While invasive species management is an important goal, it should be balanced with the need to support conditions for essential food and cover for wildlife. Selective removal of invasive plants in the property's interior can provide conditions for native species to thrive while continuing to provide essential wildlife habitat.

Strategy 3: Conduct invasive species management by removing multiflora rose where it is producing dense monocultures. This is a potential management conflict in that the habitat structure and cover is highly beneficial to many species. However, long term benefits can be realized with eradication and replanting taking place during the late fall and early spring. These dense thickets prevent the growth of native shrubs and herbs and may be detrimental to nesting of native birds. They also obstruct the scenic viewshed and public access to the property from Van Beuren Road. Vegetation removal and management should occur during the winter months (ideally November – March) to prevent disturbance to nesting birds, Indiana Bat activity and other wildlife.

Strategy 4: The spread of *Ailanthus* should be controlled in forested areas. Consider girdling *Ailanthus* to maintain standing dead trees and minimize the spread of this species. Root and stump sprouts can be common and should be monitored.

Strategy 5: There are a number of standing dead trees in the northwestern corner of the property. Continue to allow dead trees and snags to persist (i.e., no cutting or removal), which will provide additional microhabitats (e.g., natural cavities) for various wildlife species, including bats, woodpeckers, owls, and other wildlife.

Goal 2: Maintain healthy streambanks and riparian zone adjacent to Great Brook.

Strategy 1. Maintain forest cover and other riparian vegetation that provides shade and ensures healthy water temperatures for fish and other aquatic life. Leaves and small twigs falling from surrounding vegetation into the brook are vital and contribute to aquatic food webs. There are several large trees with eroded and exposed root systems that are in danger of falling into the stream. The bare soil conditions left behind may contribute to erosion that will deposit fine sediments that impact water clarity and can damage stream bottom habitat.

Goal 3: Manage public access to the property.

Strategy 1: Ensure that the bridle trail connections to adjacent properties are intact and well maintained. It appears that the bridle trail has been mowed in various configurations in the past. Continue periodic monitoring of the bridle path on the property to identify potential areas of erosion or extensive soil compaction. Monitor bridle path access on adjacent properties and remove obstructions when they occur.

Strategy 2: Configure preferred bridle trail location, particularly where it crosses the open field near the lot lines separating Lot 11.02 and 11.03. Trampling and seed

dispersal from equestrian activity should be minimized., therefore it is recommended that the trail remain within or adjacent to the wooded areas when possible. Install bridle trail markers to clearly demark the trail location and minimize encroachment into surrounding areas.

Strategy 3: Install property boundary signs to deter encroachment from neighboring lots.

Strategy 4: Monitor stream access near Van Beuren Road and include measures to avoid erosion to streambank and trampling in marsh habitat.

Citations

Blehert, D. S., Hicks, A. C., Behr, M., Meteyer, C. U., Berlowski-Zier, B. M., Buckles, E. L., ... & Turner, G. G. (2009). Bat white-nose syndrome: an emerging fungal pathogen? Science, 323(5911), 227-227.

Butchkoski, C. M., & Hassinger, J. D. (2002). Ecology of a maternity colony roosting in a building. The Indiana bat: biology and management of an endangered species, 130-142.

Frick, W. F., Pollock, J. F., Hicks, A. C., Langwig, K. E., Reynolds, D. S., Turner, G. G., ... & Kunz, T. H. (2010). An emerging disease causes regional population collapse of a common North American bat species. Science, 329(5992), 679-682.

Humphrey, S. R., Richter, A. R., & Cope, J. B. (1977). Summer habitat and ecology of the endangered Indiana bat, Myotis sodalis. Journal of Mammalogy, 58(3), 334-346.

Kitchell, M. E. (2008). Roost selection and landscape movements of female Indiana bats at the Great Swamp National Wildlife Refuge, New Jersey (Doctoral dissertation, William Paterson University).

Murray, S. W., & Kurta, A. (2004). Nocturnal activity of the endangered Indiana bat (Myotis sodalis). Journal of Zoology, 262(2), 197-206.

NJDEP-Division of Water Monitoring and Standards. (2022). Official Site of the State of New Jersey. Retrieved from www.state.nj.us/dep/wms/bears/swqs.htm

NJDEP-Database of Rare Biodiversity, Office of Natural Lands Management. (n.d.). Official Site of the State of New Jersey. Retrieved from nj.gov/dep/parksandforests/natural/heritage/database.html

Oehler, J. D., et al. (2006). Managing grasslands, shrublands, and young forest habitats for wildlife: guide for the northeast. The Northeast Upland Habitat Technical Committee and Massachusetts Division of Fisheries & Wildlife.

Pennsylvania Game Commission, Bureau of Information and Education. (2021). Wildlife Notes #64, Brown Thrasher, Revised 02/21.

Romme, R., Henry, A., King, R., Glueck, T., & Tyrell, K. (2002). Home range near hibernacula in spring and autumn. In A. Kurta & J. Kennedy (Eds.), The Indiana Bat: Biology and Management of an Endangered Species (pp. 153-164). Bat Conservation International.

Snyder, D., & Kaufman, S. R. (2004). An overview of nonindigenous plant species in New Jersey. New Jersey Department of Environmental Protection, Division of Parks and Forestry, Office of Natural Lands Management, Trenton, NJ.

Sparks, D. W., Brack Jr, V., & Ruffner, M. G. (2005). Foraging habitat of the Indiana bat (Myotis sodalis) at an urban-rural interface. Journal of Mammalogy, 86(4), 713-718.

United States Department of Agriculture, Natural Resource Conservation Service. (2022). New Jersey Important Farmlands Inventory.

United States Department of Agriculture, Natural Resources Conservation Service. (2019). New Jersey Fact Sheet: Forest Management and Indiana Bats.

United States Department of Agriculture, Natural Resources Conservation Service. Web Soil Survey. Available online. Accessed September 7, 2023.

Figure 1: Property Location
Township of Harding, Block 6 Lot 11.02

1/31/2024, 4:41:27 PM

County Boundaries

Parcels Data (Block and Lot)

1:9,028

0 0.05 0.1 0.2 mi

0 0.07 0.15 0.3 km

Esri Community Maps Contributors, Somerset County, NJ, New Jersey Office of GIS, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph,

New Jersey Department of Environmental Protection

Esri Community Maps Contributors, Somerset County, NJ, New Jersey Office of GIS, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS | NJDEP | NJ

Figure 2: Soil Types
Township of Harding, Block 6 Lot 11.02

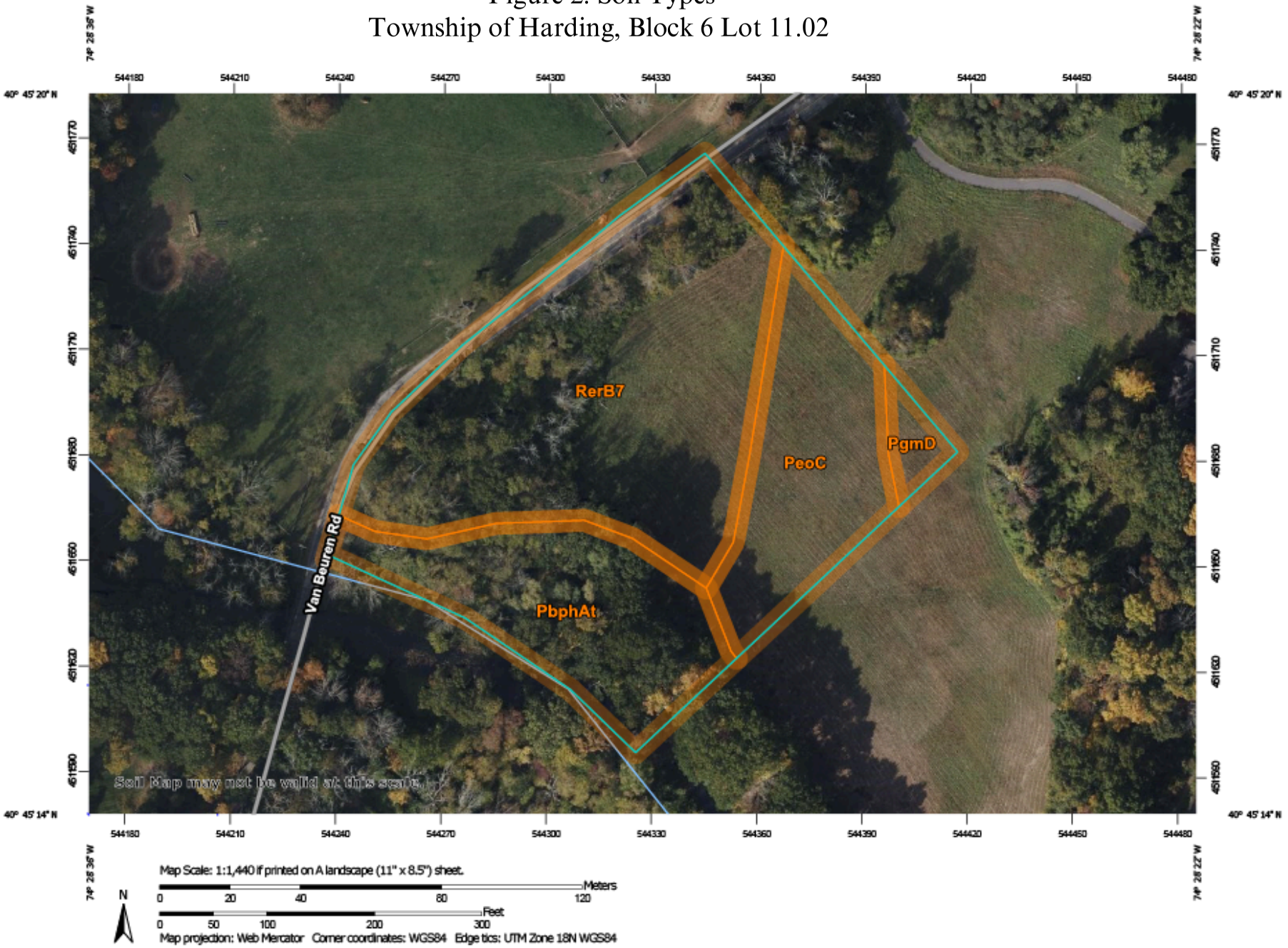

Figure 2: Bridle Trail
Township of Harding, Block 6 Lot 11.02

10/24/2023, 5:40:42 PM

1:4,514
0 0.03 0.06 0.11 mi
0 0.04 0.09 0.18 km

Esri Community Maps Contributors, Somerset County, NJ, New Jersey Office of GIS, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph,

New Jersey Department of Environmental Protection

Esri Community Maps Contributors, Somerset County, NJ, New Jersey Office of GIS, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA | NJDEP | NJ Department of

Table 1
Management Summary

| Management Target | Appleton 1 (Lot 11.02) | Appleton 2 (Lot 11.03) |
|---|---|---|
| Invasive Species Clearing and Viewshed Creation | Area adjacent to Van Beuren Road (Nov – March) | Flagstaff area of lot (Nov – March) |
| Open Field Mowing | Mow to 6-8", Remove Excess clippings if necessary (Nov – March) | |
| Bridle Trail | Identify permanent trail location<br>Install trail markers (summer 2024) | |
| Property Boundary | Install permanent boundary signs (summer 2024)<br>Install permanent open space sign along Van Beuren Rd. (fall 2024) | |
| Forested Areas of Properties | Girdle Ailanthus (summer 2025) | Keep trail clear of debris (ongoing) |
| Stream Access | Ensure safe access for fishing (ongoing) | Watch for signs of excessive streambank erosion (ongoing) |