

**Hopewell Valley Community Stewardship Plan
Friends of Hopewell Valley Open Space**

**Appendix 17.
Nayfield Preserve**

Acreage: 56.86

Block and Lot: B25, L3.01

Ownership: FoHVOS (73%) and NJDEP (27%)

Year(s) Purchased: 2006

Location & Access: Preserve is located on the north side of Route 518, 0.5 miles west of Route 579. Preserve entrance is a dirt road with a gravel three car parking area. Nearest street address: 312 Route 518/Lambertville-Hopewell Road, Lambertville, NJ 08530.

Structures: None.

Additional property information is summarized in Appendix W. The following Preserve maps are provided at the end of this document:

- Map 1 2007 Aerial Photography
- Map 2 1930 Aerial Photography
- Map 3 Topography
- Map 4 Bedrock Geology
- Map 5 Soils
- Map 6 Land Cover Types (2007)
- Map 7 Protected Lands
- Map 8 Deer Management
- Map 9 Invasive Plant Cover (Relative Infestation Severity for all species)

Website Description:

Nayfield Preserve was historically used for agriculture, including cropland and white pine plantation. However, the northeastern and northwestern corners were forested in 1930 and harbor an array of tree species, woodland wildflowers and shrubs such as American beech, toothwort, bloodroot, mayapple, witch hazel and maple leaf viburnum. A trail loops through the preserve's meadow and forest habitats. It is co-owned with the New Jersey Department of Environmental Protection.

BROAD PROPERTY DESCRIPTION

The Nayfield Preserve (see Map 1) is located at the north-central section of the township. The topography (see Map 3) is primarily flat at 90 feet above sea level.

Based upon analysis of NJDEP's 2007 Land Use/Land Cover dataset, the preserve contains eight broad plant communities: Coniferous Forest (> 50% canopy) - Upland, Deciduous Forest (> 50% canopy) - Upland, Coniferous Woodland (10-50% canopy) - Upland, Deciduous Woodland (10-50% canopy) - Upland, Shrubland (< 10% canopy, > 25% shrub cover) - Upland, Deciduous Forest (> 50% canopy) - Wetland, Agricultural Lands and Urban Lands. Land Use/Land Cover is summarized in Appendix X and illustrated in Map 6.

Historically, Nayfield preserve was primarily used for agriculture. The Preserve was purchased from the Hunt family by Ronald Nayfield in the late 1950's. Portions of the property were used, in rotation, for various agricultural crops including corn and hay. Cows were maintained on the property and were

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allowed to graze pastures. The current wet meadow had primarily been used as a hayfield in recent years. However, corn was attempted on this field within the recent past (< 10 years ago). Severe deer browse led to abandonment of this activity by a local farmer (Sansone).

The northeastern and northwestern corners were forested in 1930. These small areas are part of larger 1930s forested tracts of approximately 30 and 43 acres, respectively. These areas contain the highest density of native plant species with a canopy of beech and understory of witch hazel and maple leaf viburnum.

The younger forest patches consist of ash and red maple with an understory of shrubby honeysuckle, mayapple, blackhaw, autumn olive, multiflora rose, and Japanese barberry. Most recently established forests consist of red cedar, Asiatic bittersweet and autumn olive. The white pine plantation was an understory of ash seedlings and garlic mustard. The current white pine plantations were planted in the early 1960's on former corn fields. Forestry activities appear to have occurred within the last 10 years along the western boundary of the Preserve. Additional forestry activities are ongoing along the eastern Preserve boundary (numerous marked trees).

The meadow (Field 47, 4.1 acres) has been mowed annually for the last several years to minimize woody species. The species composition includes goldenrods, swamp rose, dogbane, purple loosestrife, boneset, elderberry, *Rubus* sp., and soft rush. Multiflora rose, autumn olive, shrub honeysuckle, red cedar, and blackhaw viburnum ring the meadow. The southeastern corner of the field is privately owned, and has not been mowed in several years.

The preserve has one type of bedrock geology--the Lockatong formation. See Map 4.

The preserve has five soil types (see Map 5) with Chalfont silt loam, 0 to 2 percent slopes; Doylestown and Reaville variant silt loams, 0 to 2 percent slopes; and Quakertown silt loam, 2 to 6 percent slopes being the three most common types. The preserve's soils are described in Appendix Y.

CONSERVATION VALUES

Based on Natural Heritage data, ENSP Landscape Project, 1930s forest presence/absence et al. the Preserve has the highest weighted Ecological Value at >75%. See Appendix A for a description of ranking factors.

Forest and Woodland Communities: The forest patch found on the Preserve and surrounding area is an important stop-over habitat (spring and fall resting and feeding) for migratory species. The fragmented nature of the forest and the lack of a woodland shrub layer reduces the chance of nesting and successful breeding.

The understory of this preserve shows a remarkable diversity and regeneration of native herbs and woody species. The deer-preferred maple leaf viburnum has been observed in flower on the preserve. However, woody understory vegetation and herbs remain far below desired levels.

Old forest: Based upon analysis of 1930 aerial photography, the northeastern and northwestern corners were forested in 1930. These small areas are part of larger 1930s forested tracts of approximately 30 and 43 acres, respectively. These areas contain the highest density of native plant species with a canopy of beech and understory of witch hazel and maple leaf viburnum. See Map 2.

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Early Successional Communities:

Shrublands: The shrubland is composed of invasive species.

Meadows/Grasslands: The meadow is diverse and includes goldenrods, asters, mountain mint, beardtongue, milkweed, blue vervain, ironweed, Indian grass, agrimony, ragwort and jewelweed. Blue winged warbler has identified by call during spring breeding/migration in the meadow's edge. Bluebird boxes have been installed in the field and have been occupied.

Waterbodies: A tributary of the Stony Brook flows northeast and roughly parallel to the entire length of the northern boundary of the Preserve. Very small feeder streams (unmapped) and overland flow join to initiate the tributary at Harbourton-Rocktown Road (County Route 579) approximately ¼ mile southwest of the Preserve boundary. After traveling through the Preserve, the tributary flows approximately ¾ mile northeast before reaching the main branch of the Stony Brook. The tributary flows seasonally and its bed consists of large, flat rocks with little fine material (indicating a history of strong flows removing small stones and loose sand/silt). It contains several small pools that remain filled during relatively dry periods. There is a much smaller tributary located south and east of the main tributary, which flows to the northeast and joins the larger tributary approximately 0.1 miles from the eastern Preserve boundary. This smaller tributary is fed by very small feeder streams and overland flow primarily from lands on the Preserve and adjacent properties to the west.

Wood frog activity has been observed in the former farm drainage ditches along the northern border of the meadow and in an undocumented vernal pool near the brook (accessible from the preserve's trail). Within the preserve is a possible vernal pool, in which wood frog eggs have been laid. Success of the eggs is unknown, as the pool seems to dry early.

Rare Species:

Rare Plants: None documented on the Preserve. Natural Heritage shows no species.

Rare Animals: The Landscape Project suggests habitat for State Special Concern species. The following species have been observed at the Preserve: box turtle (male), Water thrush (species not identified) browsing in the Stony Brook tributary, blue winged warbler was identified by call during spring breeding/migration in the meadow's edge, wood thrush observed on nest, while an additional wood thrush made alarm calls from a nearby tree.

See Appendix L for a list of species.

THREATS

Deer: White-tailed deer have suppressed much of the native community. However, parts of the preserve (excluding the plantation and young cedar forest) show promising recovery of the herbaceous and understory layer. Forest health monitoring was performed in 2006/2007 and 2010/2011 (See main plan, Table 9). Results suggest a significant decrease of deer browse on planted tree seedlings (from 62 to 18%) in recent years, but the woody understory remains relatively low across the Preserve (approximately 20%).

Invasive species: In 2008 staff began walk-through surveys for emerging invasive species on all preserves. Mapping documented each species and its population size. No species were detected. See www.njisst.org for the current status of emerging invasive species at the Preserve.

In 2011 staff completed surveys for invasive plant species on all preserves (see Map 9). Mapping documented each species found and its population size (See Table 1 below). The five species with the

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highest infestation scores include: Multiflora Rose, Japanese Stiltgrass, Japanese Honeysuckle, Wineberry, and Garlic Mustard.

Other: ATV trails were cut through portions of the preserve and adjacent private land. Letters were sent to neighbors and Township police were called. Trespass issues have ceased.

STRATEGIES and ACTIONS:

Forest and Woodland Habitat Stewardship: The forest offers an opportunity to preserve the rich native plant communities still present, but diminished, in the preserve's forest. To this end, annual surveys for and eradication of emerging invasive species should continue.

No action is recommended for widespread invasive species, except for winged burning bush and Asiatic bittersweet. All fruiting and flowering individuals should be treated with basal bark or cut stump (in the case of vines on trees) methods. Reduced deer density will allow the native plant communities to recover and compete with the widespread invasive species over time.

Early Successional Habitat Stewardship: A biannual winter mowing or burning regime is recommended to maintain early successional habitat and remove invasive woody plants. Selective control of invasive species is recommended (See Table 1 below).

The mowing regime coupled with the presence of the purple loosestrife biocontrol (beetle already present upon release of additional beetles by Phillip Alampi Beneficial Insect Rearing Laboratory in 2009) should improve the species composition over time. Intensive restoration activities are unnecessary, considering the existing native species composition.

Presence of native woody plants such as swamp rose, elderberry, and blackhaw viburnum support the presence of edge nesting birds like the blue-winged warbler.

For habitat goals and maintenance schedule see Appendix T & U.

Deer Management: The preserve is enrolled in the DMP with bow and gun hunting. See Map 8 for delineations of the 150' and 450' safety zones and hunting status.

Rare Species Management: All native plant communities should be maintained to provide habitat. Determine breeding status of species present.

Neighboring Lands: See Map 7 for adjacent protected lands.

Waterbodies Management: The tributary of the Stony Brook within the Preserve is too short to merit restoration efforts.

Undesirable Activities Management: An unknown Preserve visitor appears to run dogs through the Preserve ahead of peak hunting activities in December. Special monitoring of the Preserve is recommended, especially on Sundays in December, to prevent this activity, which only temporarily moves deer off the Preserve and prevents harvesting that will improve forest health.

Scientific Research Assessment: The Preserve is available for scientific research.

Recreational Opportunities Assessment: This property currently has a 1.5 mile loop trail and parking. Currently, there are no opportunities to connect to a regional trail system—none yet exist

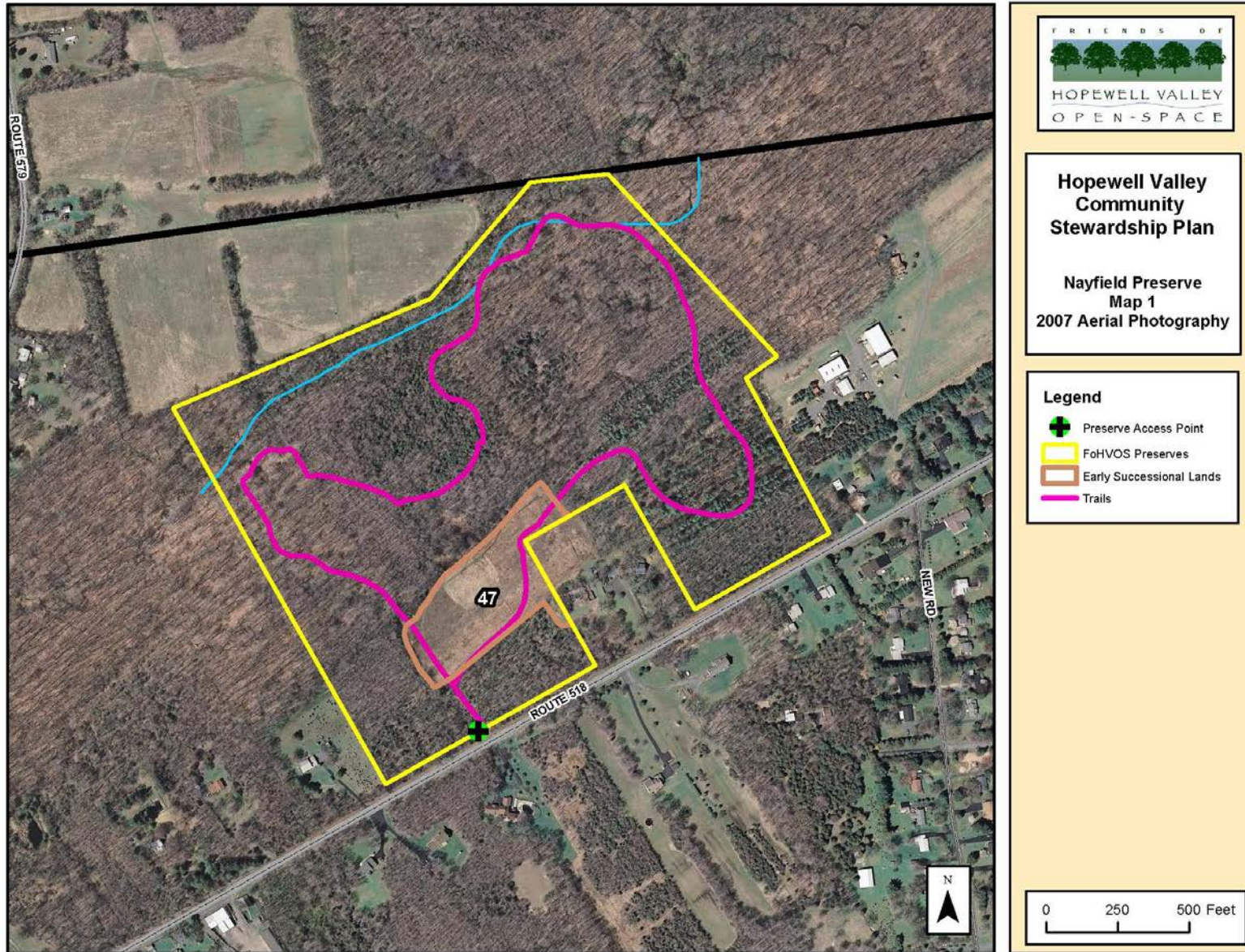
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Table 1. Invasive Plants – Species Abundance and Treatment Recommendations

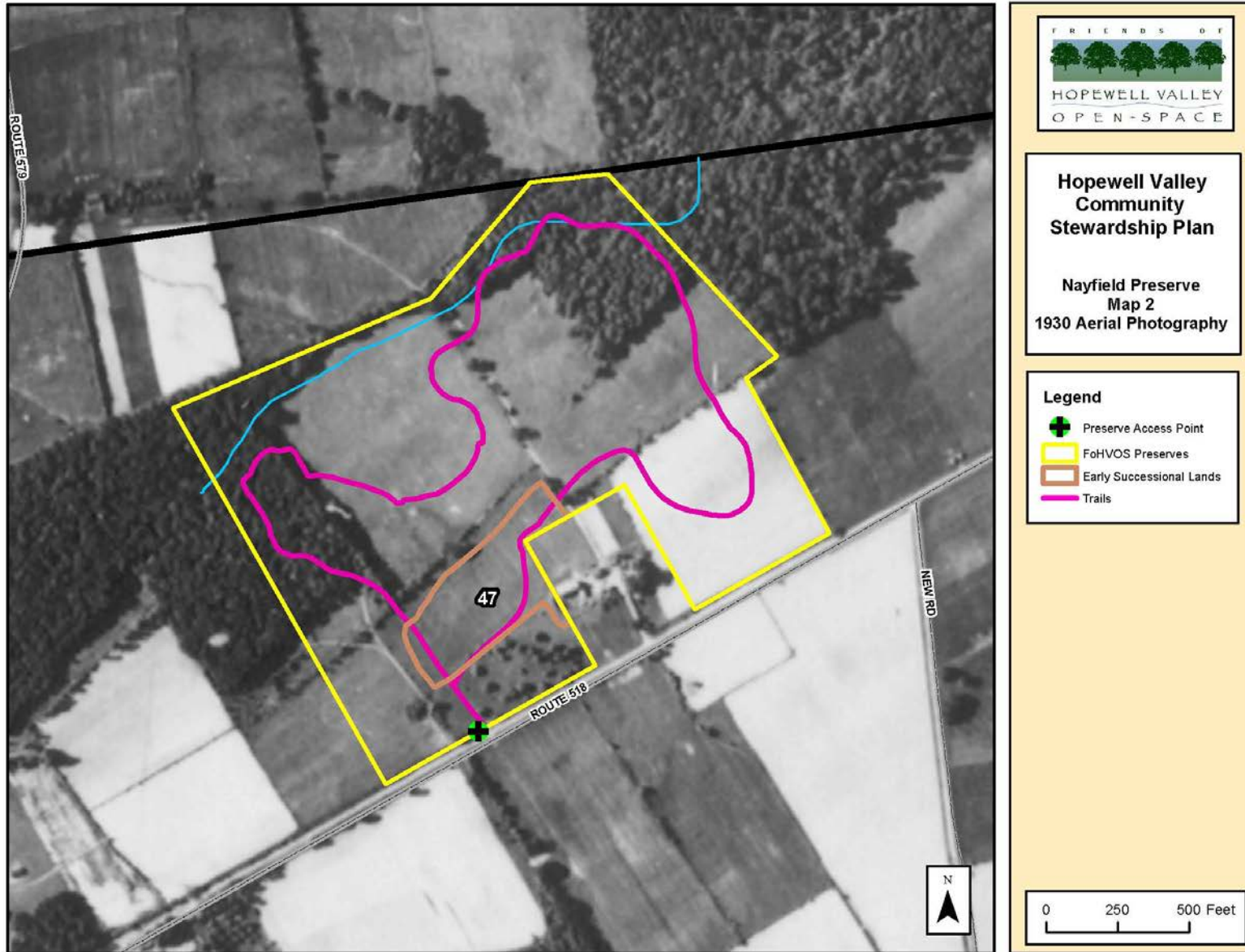
Scientific Name	Common Name	Infestation Index Score ¹	Total Acres Present	Percent of Preserve Area Present	Treatment Recommendation	LOE Estimate (Hours)	Acreage by Percent Ground Cover Categories						
							Category 0: 0%	Category: Trace	Category 1: 1-10%	Category 2: 10-25%	Category 3: 25-50%	Category 4: 50-75%	Category 5: 75-100%
<i>Acer palmatum</i>	Japanese Maple	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Acer platanoides</i>	Norway Maple	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.00	0.0	0.00	0.0
<i>Ailanthus altissima</i>	Tree-of-Heaven	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Alliaria petiolata</i>	Garlic Mustard	16.4	12.8	22.4	None		44.13	2.0	8.0	0.0	2.8	0.0	0.0
<i>Artemisia vulgaris</i>	Common Mugwort	4.0	4.0	7.0	Control - Field Maintenance	Strategy 3B	52.93	0.0	4.0	0.0	0.0	0.0	0.0
<i>Arthraxon hispidus</i>	Small Carpgrass	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Berberis thunbergii</i>	Japanese Barberry	3.3	6.4	11.3	None		50.48	3.2	3.3	0.0	0.0	0.0	0.0
<i>Cardamine impatiens</i>	Narrow-leaved Bittercress	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Catalpa bignonioides</i>	Northern Catalpa	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Celastrus orbiculatus</i>	Asiatic Bittersweet	0.0	5.2	9.1	Control - Treat Fruiting Plants	5	51.72	5.2	0.0	0.0	0.00	0.0	0.0
<i>Centurea sp.</i>	Knapweed sp.	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Cirsium arvense</i>	Canada Thistle	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dipsacus sylvestris</i>	Teasel	0.0	0.0	0.0	N/A		56.90	0.0	0.00	0.0	0.0	0.0	0.0
<i>Eleagnus umbellata</i>	Autumn Olive	3.7	12.1	21.2	Control - Field Maintenance	Strategy 3B	44.84	8.8	3.2	0.0	0.0	0.0	0.1
<i>Euonymus alata</i>	Winged Burning Bush	2.8	17.6	30.9	Control - Treat Fruiting Plants	15	39.29	14.8	2.8	0.0	0.0	0.0	0.00
<i>Iris pseudoacris</i>	Yellow Iris	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Lespedeza cuneata</i>	Chinese Bushclover	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Ligustrum obtusifolium</i>	Border Privet	2.4	8.1	14.2	None		48.81	5.7	2.38	0.0	0.0	0.0	0.0
<i>Lonicera japonica</i>	Japanese Honeysuckle	59.1	35.7	62.7	None		21.24	3.6	11.7	13.6	6.7	0.0	0.0
<i>Lonicera maackii</i>	Amur Honeysuckle	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Lonicera morrowii</i>	Morrow's Honeysuckle	14.6	16.5	29.1	None		40.37	4.3	9.8	2.4	0.00	0.0	0.0
<i>Lysimachia nummularia</i>	Moneywort	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Lythrum salicaria</i>	Purple Loosestrife	7.9	4.0	7.0	None - Check for biocontrol agent		52.93	0.0	0.0	4.0	0.0	0.0	0.0
<i>Malus toringo</i>	Toringo Crabapple	2.1	2.1	3.7	Control - Field Maintenance	Strategy 3B	54.80	0.0	2.1	0.0	0.0	0.0	0.0
<i>Microstegium vimineum</i>	Japanese Stiltgrass	118.9	56.8	99.8	None		0.10	3.5	24.3	7.9	9.5	7.7	3.9
N/A	Non-native, cool season grass	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Phalaris arundinacea</i>	Reed Canary Grass	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Phragmites australis</i>	Common Reed	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Polygonum cuspidatum</i>	Japanese Knotweed	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Polygonum perforatum</i>	Mile-a-Minute	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Pyrus calleryana</i>	Callery Pear	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Ranunculus ficaria</i>	Lesser Celandine	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Robinia pseudoacacia</i>	Black Locust	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Rosa multiflora</i>	Multiflora Rose	155.9	55.4	97.3	Control - Field Maintenance	Strategy 3B	1.54	7.6	13.0	3.6	8.3	3.4	19.4
<i>Rubus pheonculusius</i>	Wineberry	18.3	16.0	28.0	Control - Field Maintenance	Strategy 3B	40.95	0.0	13.6	2.4	0.0	0.0	0.0
<i>Securigera varia</i>	Crowfoot	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Viburnum dilatatum</i>	Linden Viburnum	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Viburnum sieboldii</i>	Siebold's Viburnum	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
<i>Wisteria floribunda</i>	Japanese Wisteria	0.0	0.0	0.0	N/A		56.90	0.0	0.0	0.0	0.0	0.0	0.0
Total LOE						20							

¹The Infestation Index Score combines the extent of acreage infested and the intensity of the infestation. It was derived by multiplying the cover class number by the number of acres within each cover class.

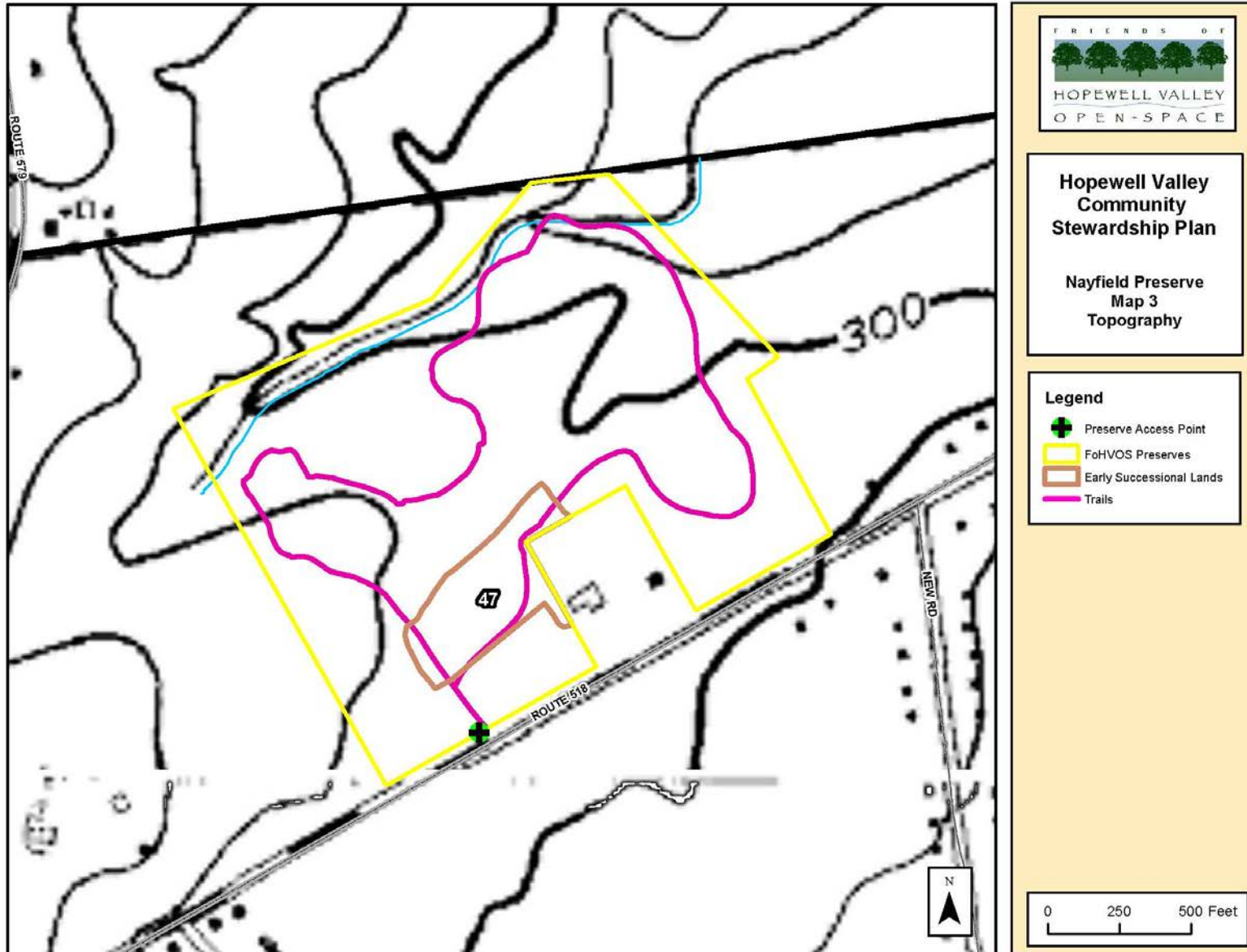
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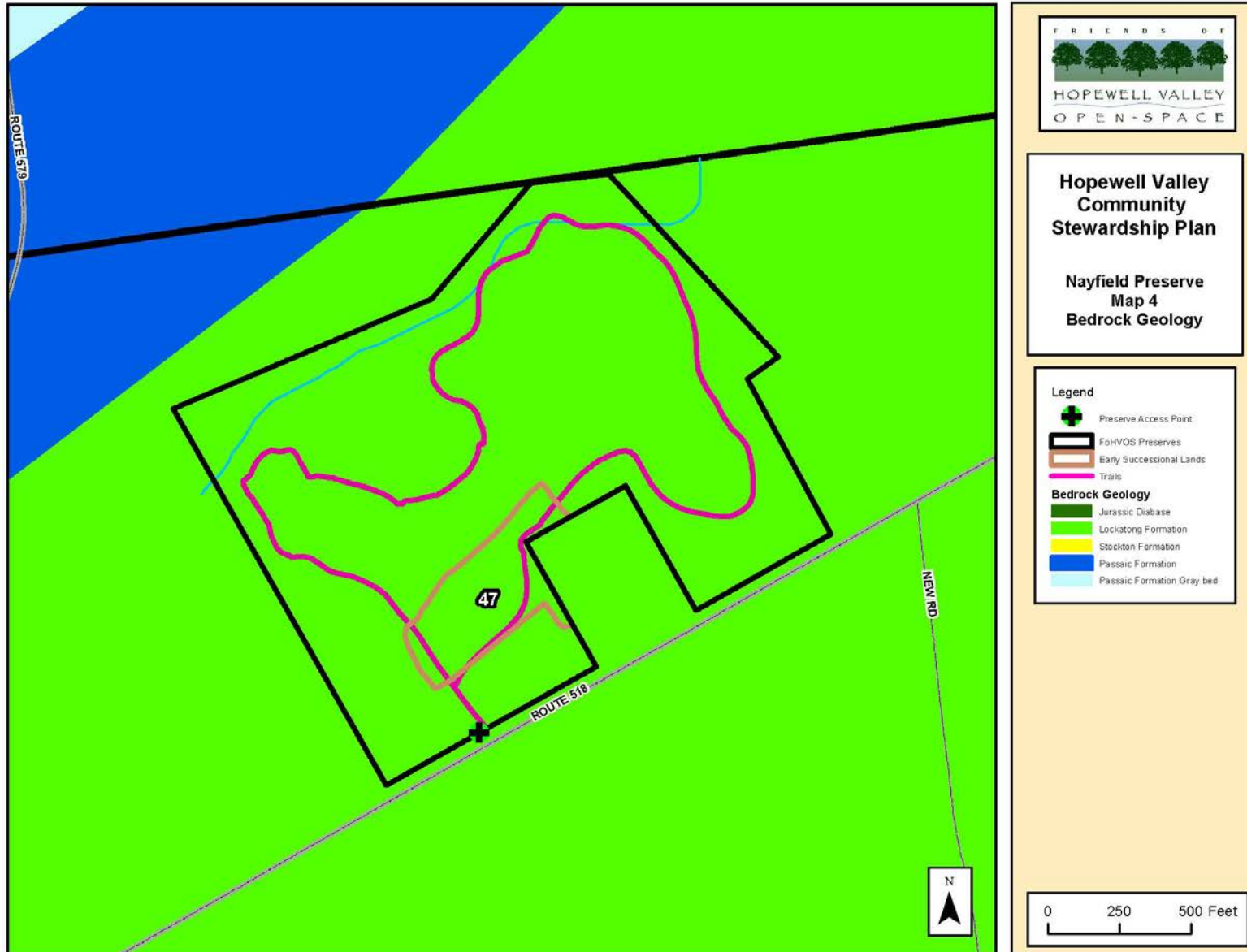
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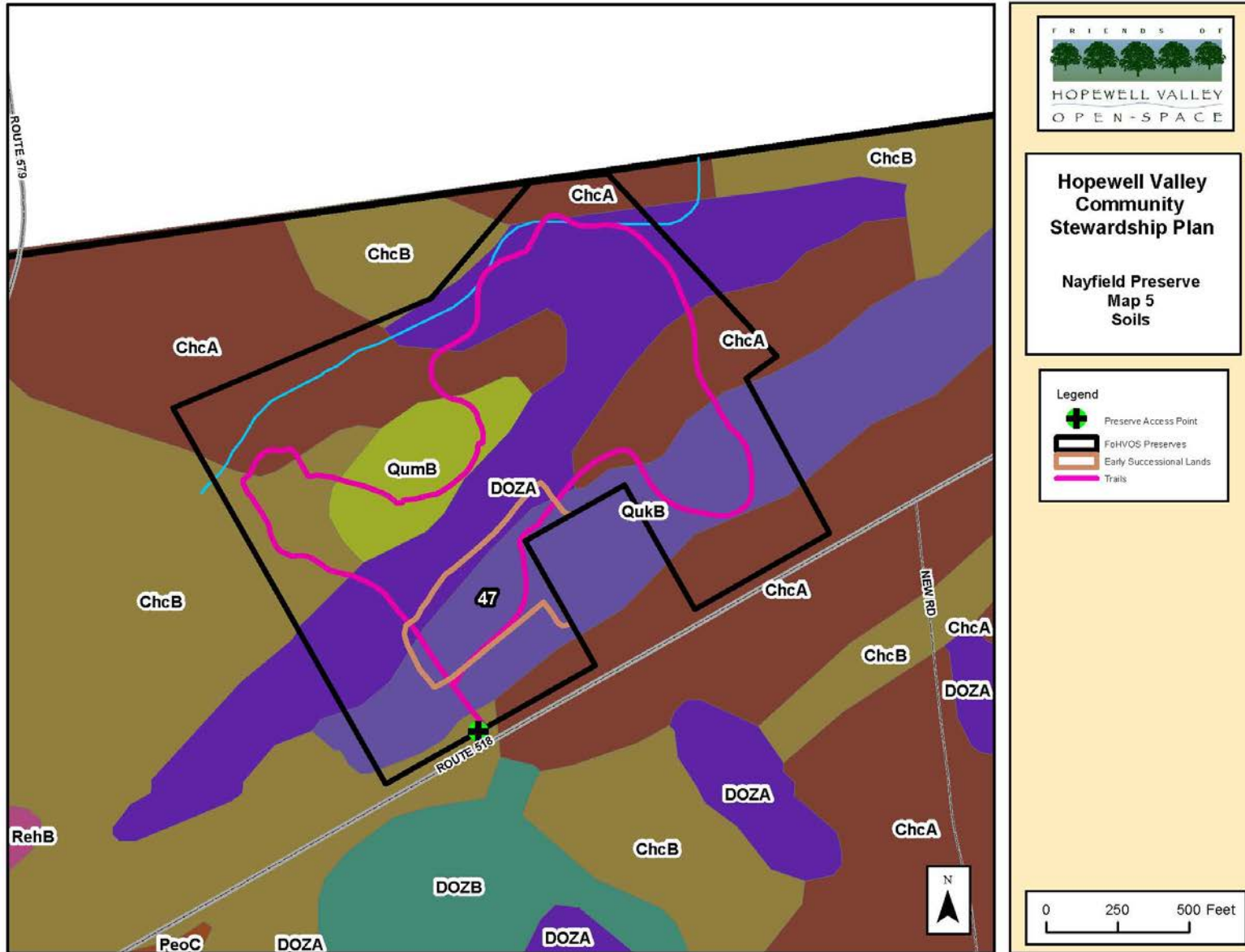
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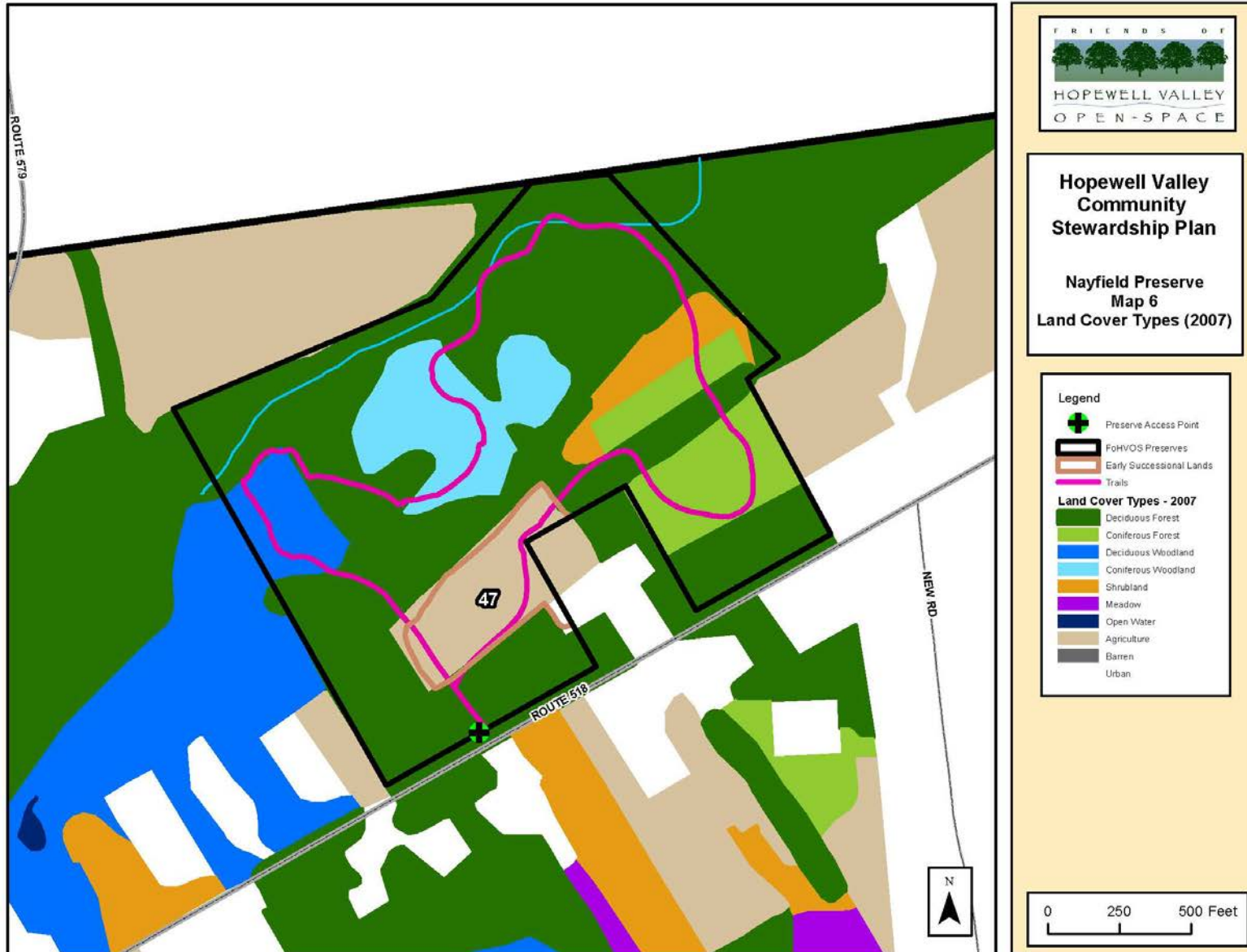
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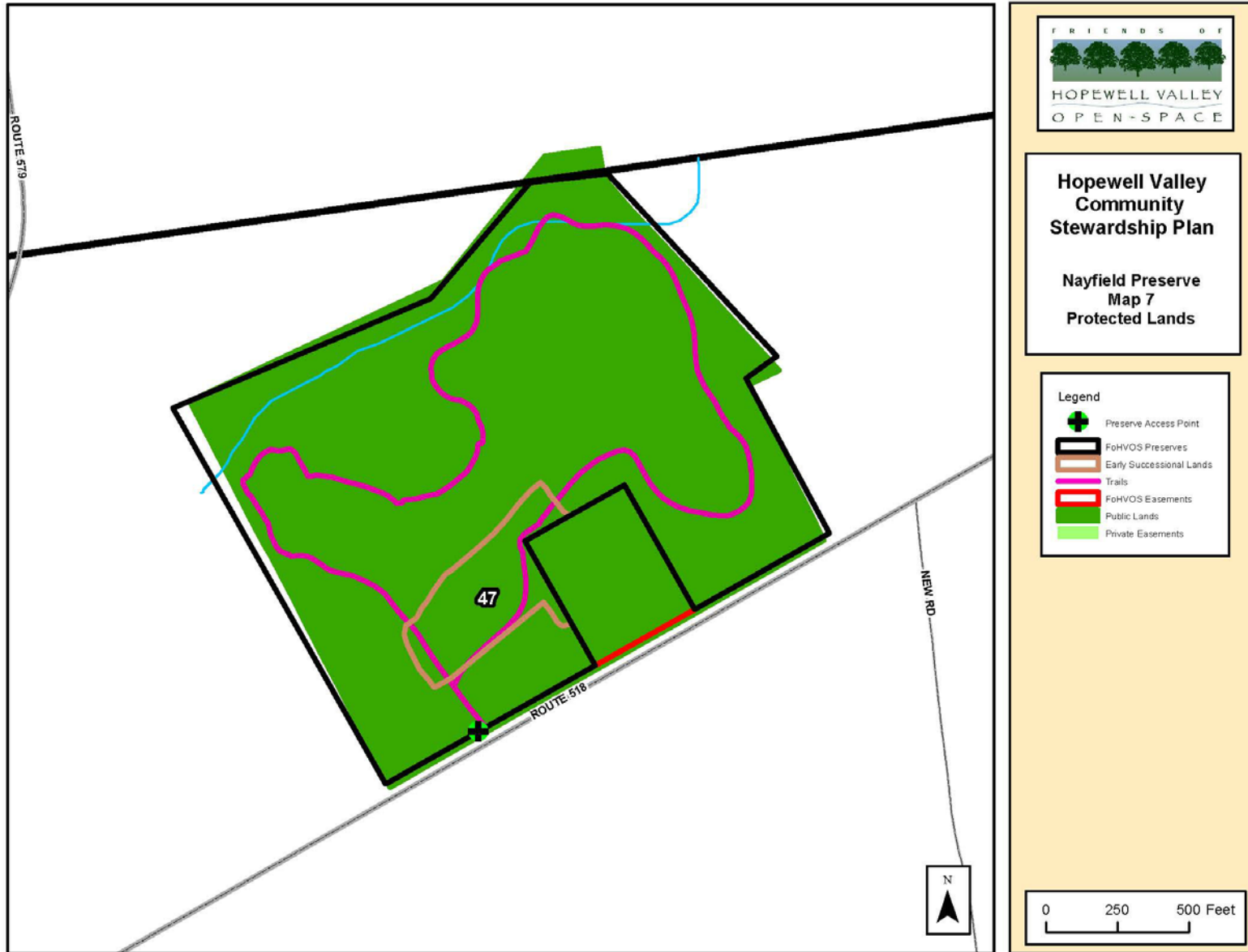
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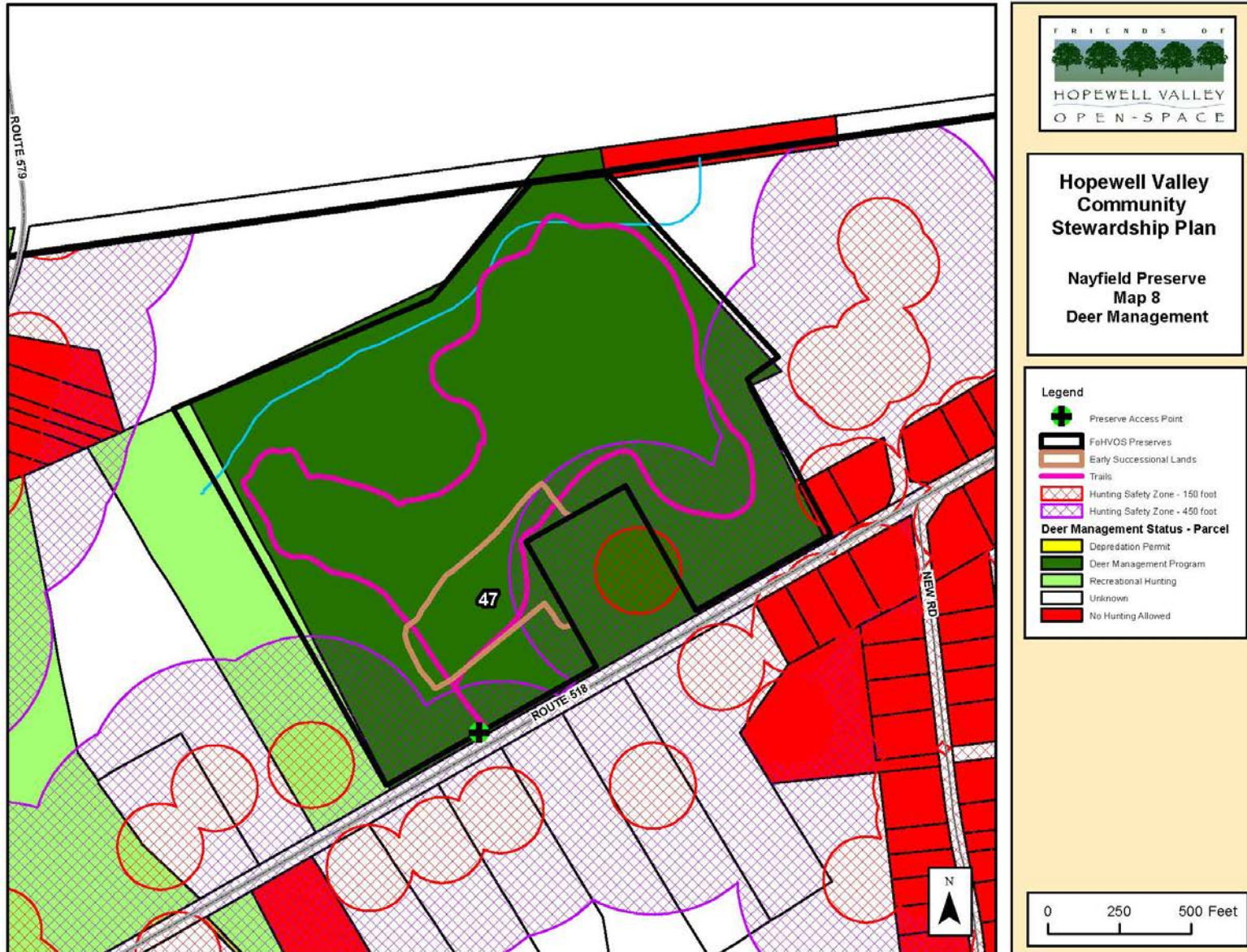
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