Massachusetts Department of Conservation and Recreation

Division of Water Supply Protection, Office of Watershed Management

Forest Management Project Proposal Summary for Public Comment

Location, goals, and summary of proposed forest management.

Proposal Summary Item	Item Information/Description
Lot Proposal ID	**PT-25-04**
Fiscal Year	2025
Watershed	**Quabbin**
Town(s)	**New Salem and Petersham**
Forester	Helen Johnson
Total Acres	68.2
Block	Petersham
Compartment and/or Working Unit	4
Location and Boundary Description	Bordered to the west by stone walls parallel to Doubleday Village Road, to the north and south by intermittent streams, and to the east by stone walls and forest type changes.
Previous Proposal?	None.
Project Goals and Summary Description	This site was chosen for harvesting because lack of forest management since 1967 has resulted in low age diversity and extremely variable form and vigor. In addition, white pine is dominant in some parts of the overstory – a species that is highly vulnerable to breakage in high winds (see Hurricane Damage and Forests and One for the Ages: The Hurricane of 1938 Battered New England's Woods 75 Years Ago), which would result in exposure of soils and rapid loss of stored carbon. The primary goal for this harvest is to improve forest health, resilience, and structural diversity of the forest for the continued provision of outstanding quality drinking water. This will be accomplished by removing clusters of trees that are diseased, declining, or have poor stem structure, or where there are seedlings and saplings in need of more growing space, creating openings that provide sufficient light for young trees to survive and thrive. Where declining trees are scattered between openings, they will be removed in order to increase sunlight and nutrients for healthier adjacent trees. This process, known as thinning, is comparable to thinning a vegetable garden. The overall result will be a diverse, vigorous, climate-resilient forest that provides carbon storage and sequestration, and can recover, survive and thrive in the face of increasing rates and severity of disturbances. This area has numerous cultural features along Doubleday Village Road (house sites, wells, stone walls, etc.) that have been reviewed by the state archaeologist, and will be avoided and protected during this harvest. Where it is necessary to cross walls, the crossings will be located at existing barways or where walls have been crossed in the past. As is common, invasive species are present near some of the cultural sites; these will be treated prior to the harvest in order to avoid their spread.

Forest Cover Types and Acreages

Overstory Forest Types	Acres
Oak-hardwood	30.5
White pine-hardwood	22.1
Hemlock-hardwood	7.0
White pine	3.6
Northern hardwood	2.4
Red oak	1.4
Black birch-red maple-cherry	1.2

Understory Cover Types and Relative Importance

Understory Cover Type	**Relative area covered** (Dominant, Secondary, Minor, None)
Tree seedlings and saplings	secondary
Mountain laurel	minor
Mesic site - witch hazel, highbush blueberry	minor
Dry site -Huckleberry, blueberry	secondary
Mesic site - cinnamon fern, mixed hardwood	minor
Hayscented fern	secondary
Invasive shrubs/vines	minor
Other	dominant: minimal understory cover

Forest Vegetation Description

Vegetation Topic	Description
General Description, Forest Composition, Stand History, and Harvest History	The main canopy consists of mixed hardwood sawlogs, primarily black birch with associates of red and sugar maple, and less commonly red, white and black oak, pignut hickory, white ash, paper birch and black cherry. Emergent white pine is common, and sometimes sufficiently concentrated to constitute the dominant forest type. Hemlock is much less common, and present mostly as small area of emergents in the north-central portion of the proposal area. The sparse midstory is dominated by shade tolerant species, primarily black birch, red maple and sugar maple. Understory cover is limited, and consists primarily of hardwood saplings, as described below. Understory species are also sparse, with the primary species being low bush blueberry, Christmas fern, partridge berry, sedges, and occasional hayscented fern. Cinnamon fern, dewberry, gold thread, and sphagnum moss are present on the lower, wetter slopes. White pine form is generally good, with mostly straight stems and few branches. White pine vigor is generally good, with low vigor crowns evident mostly where competition among pines has resulted in differentiation. Overstory hemlock form is also generally good, but vigor is poor to fair. Hardwood form is variable, but generally below average. In the southern half of the proposal area there are numerous butt scars from past logging; to the north poor form has been allowed to persist by the lack of forest management by DWSP and MDC. Moderate

Vegetation Topic	Description
General Description, Forest Composition, Stand History, and Harvest History (cont.)	to severe nectria canker is present on much of the black birch, and cavities are common on red maple. On the higher slopes to the north there are a few scattered oak snags that were killed by the recent spongy moth infestation. A shelterwood prep cut in the southwestern half of the proposal area was completed in 1967 (Lot 30). No other DCR harvests have occurred in this area.
Advance Regeneration description	Regeneration consists primarily of black birch saplings, with lesser amounts of red maple and sugar maple, and occasional white ash, hickory, hemlock, and American beech. There are very few seedlings, most of them scattered, light density patches of white pine with poor vigor.
Terrestrial Invasive Plants description	Low density Japanese barberry is present in in the intermittent stream to the south, and along Doubleday Village Road. Other invasives along Doubleday Village Road, especially in proximity to old house sites, include bittersweet and multiflora rose. These areas have been excluded from the harvest, but may include landings and skid roads if the invasives around them can be removed or controlled. Invasive plants are more prevalent to the south, which has been excluded from this proposal.

Description of Wetland Resources Present

Resource Type	Description of resources present
Wetlands	Small bordering vegetated wetlands are present along and upstream of the intermittent streams.
Streams	Intermittent streams drain the hill from east to west, ending at culverts across Doubleday Village Road.
Vernal pools	Two sites have been flagged as possible vernal pools, one in the intermittent stream along the south border of the proposal area, and one in a low spot near the center of the proposal. If either is verified, it will be protected in accordance with the restrictions in the 2017 DWSP Land Management Plan.
Seeps	None known

Description of Soils by Hydric Class

Soil Hydric Classes	% of area	Soil series and any further comments
Excessively Drained	0	
Well-drained Thin	38	Charlton-Chatfield-Hollis association, very rocky
Well-drained thick	62	Montauk-Scituate-Canton association, extremely stony
Moderately well-drained	0	
Poorly to very poorly drained	0	

Proposed Silvicultural Activities

Topic	Description
Site Selection and Silvicultural Objectives	This site was chosen because lack of forest management since 1967 has resulted in low age diversity and extremely variable form and vigor; and also because of the prevalence of white pine in some parts of the overstory, a species that is highly vulnerable to breakage in high winds (see Hurricane Damage and Forests and One for the Ages: The Hurricane of 1938 Battered New England's Woods 75 Years Ago).

Topic	Description
Silviculture Prescription	Openings of up to two acres each totaling up to 20 acres will be located where there are clusters of trees that are diseased, declining, or have poor stem structure. White pines and hardwoods with poor form or vigor will be top priorities for removal. Healthy oaks, hickories and sugar maples will be favored for retention. Where declining trees are scattered between groups, they will be cut in order to increase sunlight and nutrients for healthier adjacent trees. The healthiest, most windfirm individuals of all species will be retained. Trees on the perimeter of openings will have large, healthy crowns (hence strong seed bearing potential), stable stem structure, and will be either vertical or leaning away from the openings so that they will not damage regeneration in the opening if they fall or are cut in the future. Thinning around openings will improve the vigor and seed production of perimeter trees, and will make them more windfirm after a few years. All trees under 6" dbh within openings will be cut except for healthy oak, hickory and sugar maple seedlings and saplings, which will be flagged or marked for retention. In 90% of openings over 0.5 acres, 5-10 ft^2 of basal area will be retained.

Climate Change Considerations: DWSP has determined that the decision to implement this project is consistent with EEA climate goals and guidelines and agency land management objectives. Carbon and climate change considerations specific to the activities proposed for this project are discussed below.

Proposed Activity	Alignment of Activity with Climate Oriented Strategies and Recommendations
Full overstory removal, partial stand, patch regeneration cut. **(*see page 3, Silvicultural Prescription, patch openings)***	Patch cutting is a regeneration technique that straddles the boundary between classic even-aged and uneven-aged forest management systems. Foresters select appropriate areas ('patches' or 'groups') covering a portion of the stand to harvest rather than removing the entire stand and then return periodically to repeat the process in other portions of the stand. In using patch cutting there is no final regeneration cut. Patch size and shape are determined by many different factors including overstory condition, desired species composition in the regeneration layer, other desirable herbaceous and woody vegetation, location, stand re-entry period, etc. Harvesting in patches aligns with many **climate-smart forestry practices**: • Increasing **structural diversity** improves resiliency by reducing the impact of age/size related disturbances. • Extending regeneration periods minimizes short term impacts to groundwater and nutrient cycling. • Partial stand overstory removals more closely align with **natural disturbance patterns**. • More **carbon is left on the landscape** for longer periods, and within-patch live tree, snag, and coarse debris retention allow for development of old forest characteristics. • Can also be used as opportunities to increase the stocking of **future climate adapted species, current climate imperiled species**, or other types of desirable vegetation.

Proposed Activity	Alignment of Activity with Climate Oriented Strategies and Recommendations
Diffuse overstory removal, partial cut, late rotation regeneration related. **(*see page 3, Silvicultural Prescription, thinning around openings*)**	Partial cutting via single trees or small groups in a mature stand can advance a variety of management objectives as well as **climate-smart practices**. Single tree or very small group removals, if used exclusively and repeatedly, will perpetuate an **uneven-aged stand condition** with a species mix shifted towards higher shade tolerance. However, this type of harvest can also serve within an even-aged system to establish regeneration of species of lower shade tolerance under a partial canopy for subsequent release using larger group or patch cuts (irregular shelterwood) or complete-stand overstory removals. Advantages of partial overstory removals include, but not limited to: • Partial cutting **retains carbon on the landscape** for extended periods while regeneration develops. • Reducing competition for resources improves growth and **carbon sequestration** rates on residual trees. • Promotion of a diversity of age classes enhances overall forest **resiliency**. • Maintenance of continuous forest corridors provides for wildlife habitat. As part of a regeneration system this method can be used to help guide species diversity towards more **future-adapted mixes**.
Additional Carbon and Climate Considerations	The primary purpose of forest management by the DCR Division of Water Supply Protection is to maintain and improve the **watershed forest resilience**, i.e. the ability to resist and recover quickly from major disturbances, including climactic events such as hurricanes, tornados, microbursts, prolonged drought or excessive rainfall, as well as severe disease or insect infestations. DCR-DWSP conducts timber harvests on <1% of the forest per year in order to achieve that objective, which is accomplished by **fostering forest health and diversity at all levels, resulting in communities of vigorous, healthy trees of multiple species and at various stages of development** (seedlings through large legacy trees). Species diversity improves resistance by reducing canopy loss in the event of major disease or insect outbreaks, because most such forest health issues target a limited selection of species. Age diversity ensures that even if the taller trees are blown over by high force winds, younger trees will be present to continue to hold the soil. These measures, taken for the purpose of maintaining high quality drinking water in perpetuity, are also **highly adaptive for climate change** in that they increase forest **carbon resilience**, the maintenance of both carbon sequestration and carbon storage over time, and **climate resilience,** the ability of a forested ecosystem to survive and thrive despite major disturbances. Specifically, this harvest will improve carbon and climate resilience by:

Proposed Activity	Alignment of Activity with Climate Oriented Strategies and Recommendations
Additional Carbon and Climate Considerations	**Enhancing carbon sequestration:** ○ Initiating regeneration (fast-growing young trees) by increasing sunlight to the forest floor. ○ Thinning to increase growth rates of mature trees. **Protecting forest carbon:** ○ Retaining large legacy trees for their full lifespan. ○ Retaining the healthiest, most vigorous (fastest growing) trees. ○ Installing water bars to prevent loss of soil carbon to erosion. ○ Careful routing of skid trails to avoid sensitive soils. **Sustaining forest hydrology:** ○ Protecting riparian areas with filter strips of increasing width based on slope, and avoiding steep slopes altogether. ○ Avoiding stream and wetland crossings, and using Best Management Practices to reduce impact when crossings are necessary. ○ Refraining from harvesting in wetlands, unless absolutely necessary to protect overall forest health. **Maintaining native plant biodiversity:** ○ Minimizing new introductions of invasive plants on vehicles and equipment, and removing existing invasive plants. ○ Ensuring the diversity of the next generation of trees by creating canopy gaps large enough to support the full breadth of tree species diversity. ○ Retaining the healthiest trees of all native species. **Preserving wildlife habitat:** ○ Retaining uncommon habitat features, such as large diameter logs, snags, and den trees. ○ Protecting current and potential nesting trees for raptors. ○ Maintaining 100 foot shade zones and 200 foot low ground disturbance zones around vernal pools. ○ Maintaining stream water temperature for aquatic species by preserving forested corridors along perennial streams and rivers. **Reducing impacts of severe disturbances:** ○ Improving overall forest health. ○ Favoring the tree species that are expected to be best adapted to future climate conditions, such as oak and hickory. Increasing age class diversity to allow rapid recovery after disruption of the forest canopy.

Equipment and Access Constraints and Considerations

Constraint Topic	Description and Considerations
Proposed Equipment requirements	None
Proposed wetland or stream crossings	None
Further wetland comments	None
Vernal Pools	Verified vernal pools will be protected in accordance with the 2017 DWSP Land Management Plan.
Access improvements needed	A trailer turnaround on Doubleday Village Road would be helpful. Siting may be a challenge due to terrain, drainages from the hill to the east, and numerous cultural features on both sides of the road.
Other EQ issues	None
In-kind Services	TSI will be required in groups. Restoration of Dugway Road and Doubleday Village Road to their original condition will be required at lot completion.
Other Access Concerns (parking, trails, etc.)	None

Subwatershed Analysis

Sub-Watershed number/name	Total DCR-owned acres in this sub-watershed	Acres regenerated on DCR land in the last 10 years in this sub-watershed	Total DCR-owned acres remaining for regenerating up to the 25% per 10 year limit for this sub-watershed	Acres in this sub-watershed that are part of this proposed lot
82/East Fever Brook	2,138.3	20.6	510.6	68.2

Additional comments on Subwatershed analysis: No comments.

Wildlife and Habitat Observations and Considerations

Wildlife/Habitat	Observations and Considerations
Natural Heritage Priority Habitats?	No
State Listed species present:	None known
Rare Natural Communities:	None known
General Wildlife Comments	Large den trees will be avoided and protected. Stick nests were not observed but if found will be protected in accordance with the restrictions in the 2017 DWSP Land Management Plan. Deer and moose scat are present, but excessive browse was not observed.

Cultural Resources Description and proposed protection measures

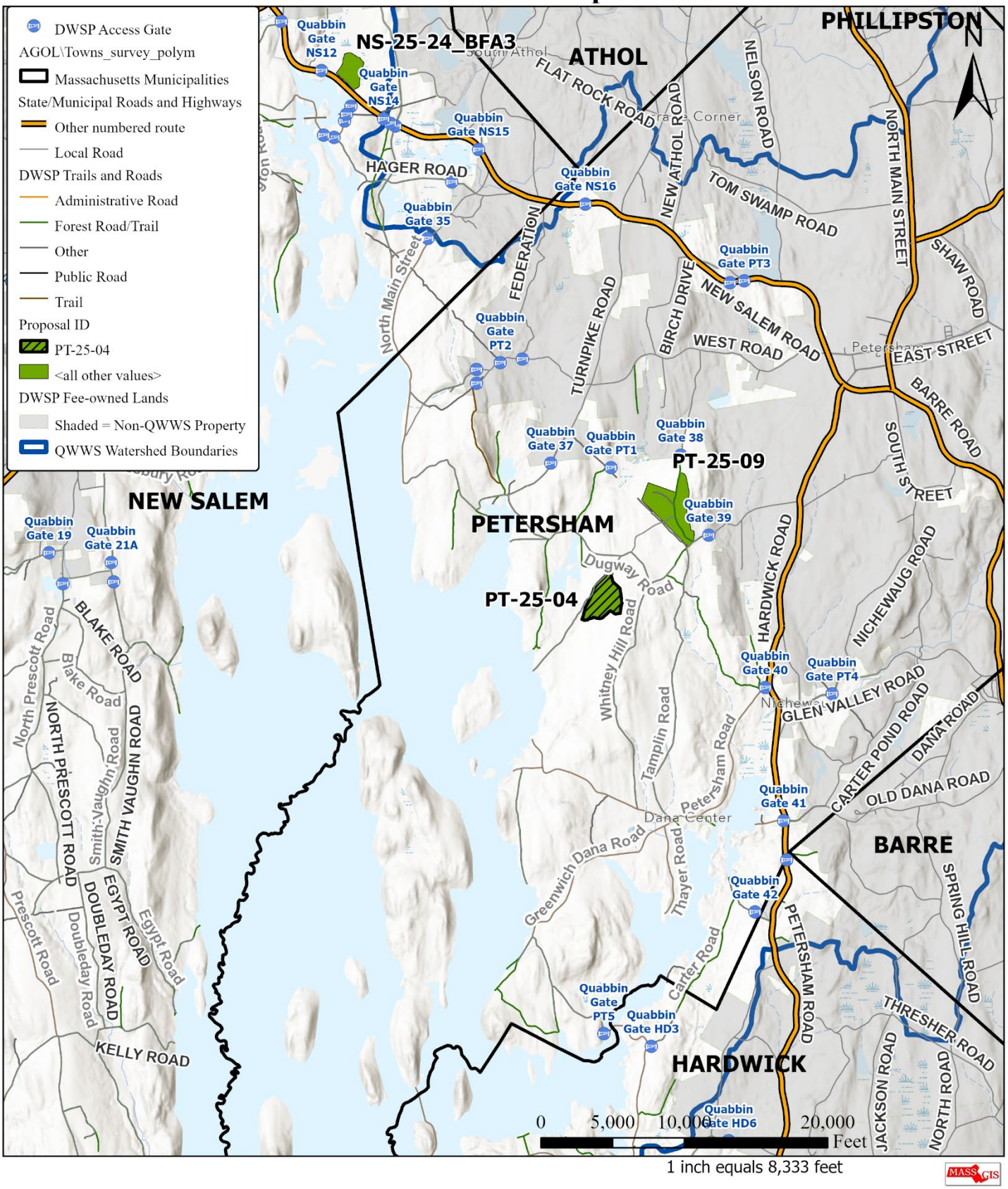
Cultural Resource	Description and proposed protection measures
Historical features present; comments regarding protection	Thrown stone walls, house sites, and outbuildings are present along both sides of Doubleday Village Road. Proposed landings and skid roads have been sited to avoid the locations of cultural features and make use of existing barways and portions of walls that are already damaged. Additional short thrown stone walls that are present elsewhere around and within the proposal area can easily be avoided.
Description of site characteristics in relation to Ancient sites modeling or other verified evidence	Surface stone is common in this area, but microtopography is not pronounced. The entire proposal area slopes southeasterly towards Doubleday Village Road, and ranges from 15-40%. If applicable, DWSP will follow the recommendations of DCR's Archeologist regarding protection of sensitive sites.

Massachusetts Department of Conservation & Recreation

Division of Water Supply Protection

Office of Watershed Management

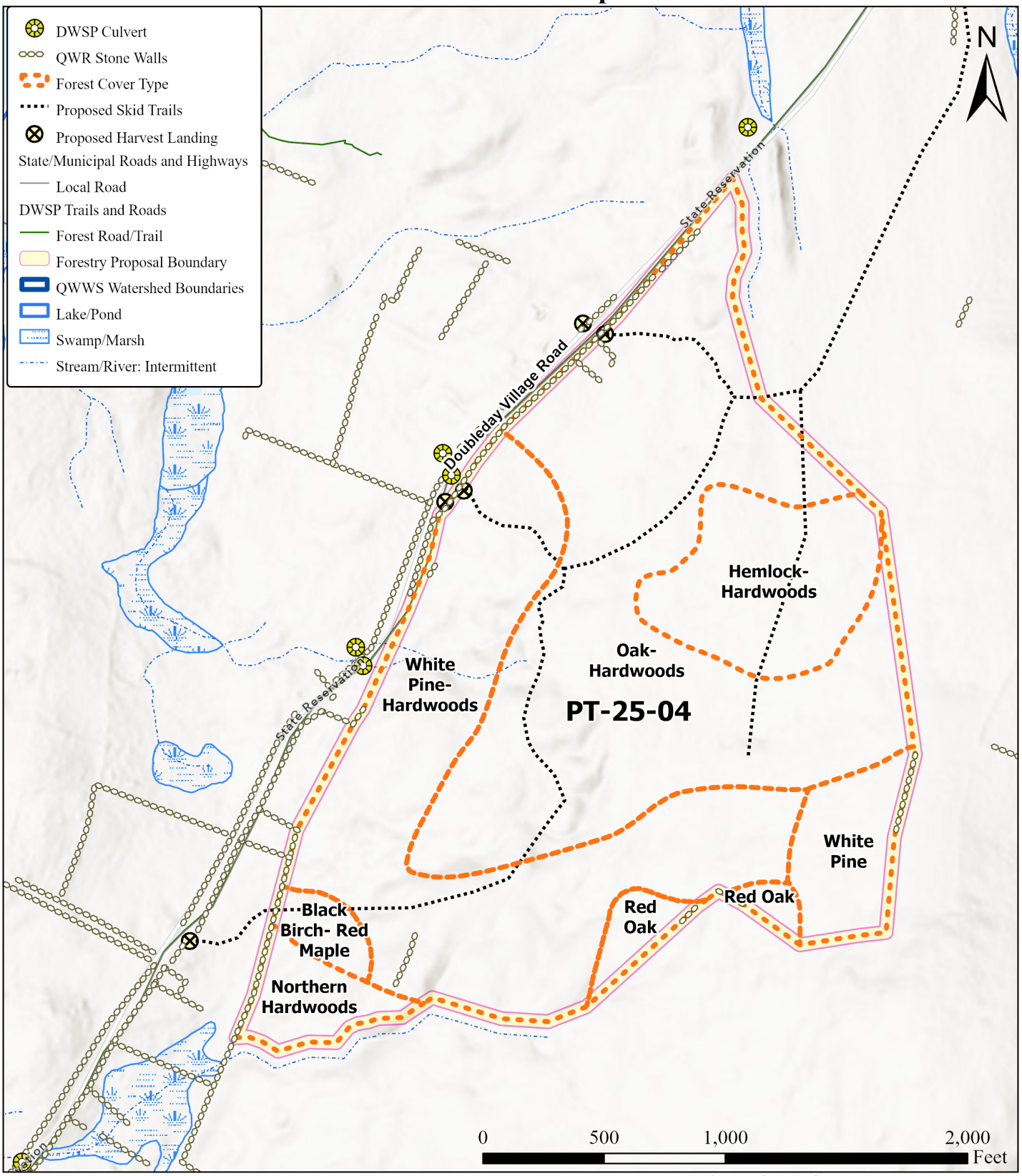
PT-25-04 -- Locus Map



Massachusetts Department of Conservation & Recreation

Division of Water Supply Protection
Office of Watershed Management

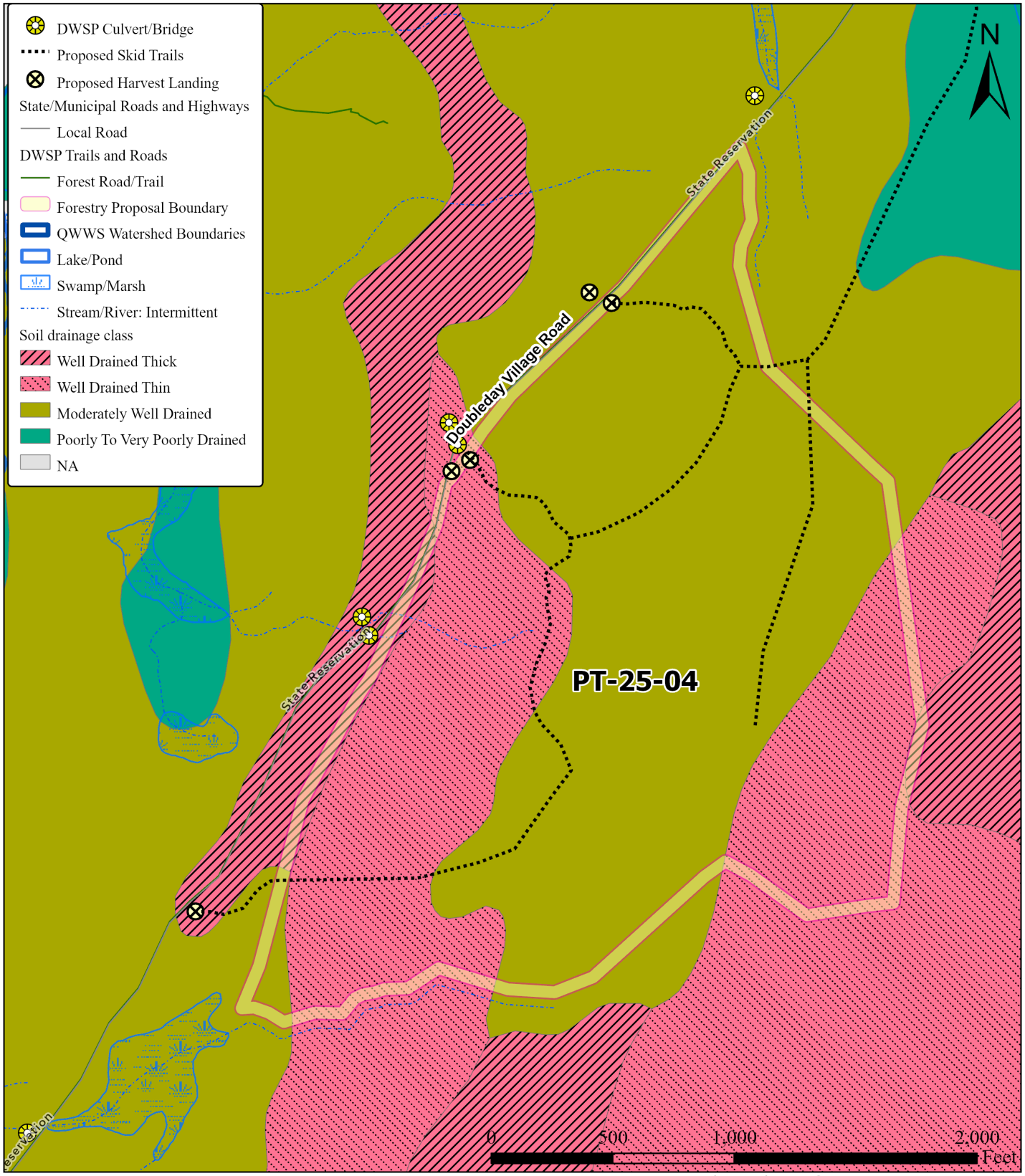
PT-25-04 -- Stand Map



Massachusetts Department of Conservation & Recreation

Division of Water Supply Protection
Office of Watershed Management

PT-25-04 -- Soil Drainage Class



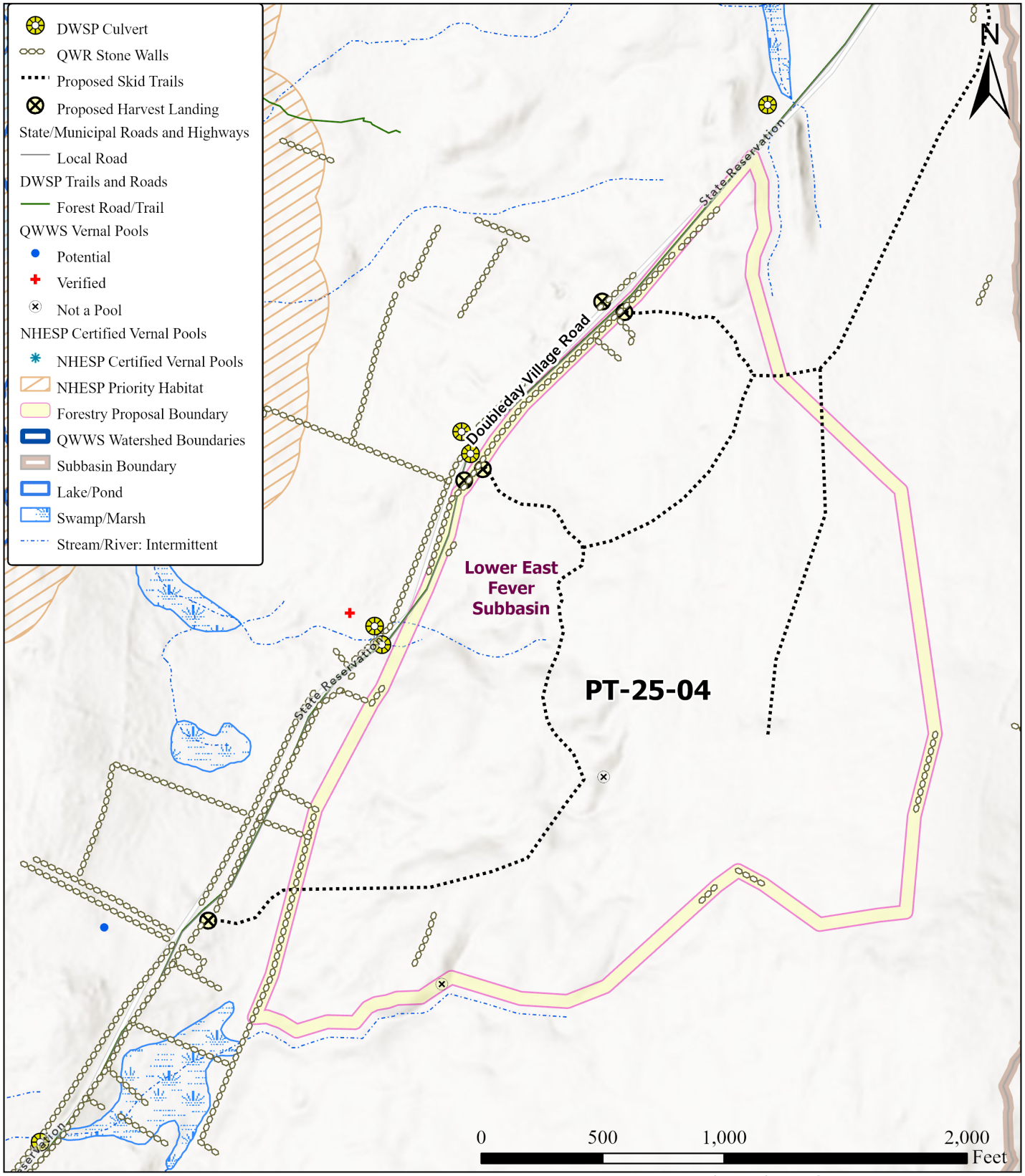
1 inch equals 500 feet

Massachusetts Department of Conservation & Recreation

Division of Water Supply Protection

Office of Watershed Management

PT-25-04 -- Wetlands and Wildlife Resources



Massachusetts Department of Conservation & Recreation

Division of Water Supply Protection

Office of Watershed Management

PT-25-04 -- Cultural Resources and Landscape Characteristics