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	**WA-25-210**
Fiscal Year	2025
Watershed	**Wachusett**
Town(s)	**West Boylston**
Forester	Greg Buzzell
Total Acres	53
Block	n/a
Compartment and/or Working Unit	210
Location and Boundary Description	The property is bounded by Pierce Street to the north, railroad lines to the east and Afra Terrace development to the south and west.
Previous Proposal?	None.
Project Goals and Summary Description	This 53-acre forest is part of a larger parcel that was acquired in 1995 for the protection of water quality. Forests provide exceptional water quality protection and yield high-quality water. Active forest management can increase the resistance and resilience of these watershed protection forests to disturbance by deliberately diversifying forest age structure and species composition. The forest in this area is not sufficiently diverse, particularly in age structure with 67% greater than 80 years old and 0% less than 20 years old. This operation will result in up to 17 acres of young forest through the removal of the older overstory in patches. These patches will range in size up to 2 acres and will be located throughout the area taking advantage of where young seedlings and saplings of diverse species are already present. Mature trees will be retained within nearly all of the patches, particularly those larger than ½-acre in size. This retention provides habitat diversity, ensuring the availability of snags, den trees and future downed woody debris for a variety of wildlife while more closely mimicking natural disturbance patterns than the complete removal of the forest overstory. It has the additional benefit of improving the visual aesthetics of the recently regenerated patches. Partial cutting may occur between openings on up to 15 acres and will be focused on ridgetops where the drier soils will benefit white pine and pitch pine/scrub oak.

Proposal Summary Item	Item Information/Description
Project Goals and Summary Description (cont.)	Terrestrial invasives were found on 15% of the plots taken in the area. These plots were located primarily in the northern section where the lot was last accessed for a timber sale around 1990. Invasives were primarily glossy buckthorn and a small amount of oriental bittersweet. These areas will be avoided to help prevent the spread of invasives. This lot was also the location of an Asian longhorned beetle infestation in 2014 and a small sanitation cut was performed in the wetland in the middle of this unit at that time. Dead snags and trees with large cavities will be retained for wildlife value. Old, non-active stick nests are present. If trees with active raptor nests are found, they will not be harvested.

Forest Cover Types and Acreages

Overstory Forest Types	Acres
Oak, mixed	41
Mixed Hardwoods	8
Red maple	3

Understory Cover Types and Relative Importance

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

Forest Vegetation Description

Vegetation Topic	Description
General Description, Forest Composition, Stand History, and Harvest History	This forest can be characterized by its North/South running rocky ridgelines on either side of the lot dropping down into the wetland area in the middle of the lot which flows into Muddy Brook and eventually the Wachusett Reservoir. The mature portion of the unit is dominated by red oak and white pine followed by lesser amounts of red maple, hickory, bigtooth aspen, gray birch, black gum, black oak and pitch pine/scrub oak patches on the ridgetops. This forest has been worked several times previously. Around 1990 a timber sale occurred in the northern half of the working unit. The sale resulted in diverse hardwoods coming in, unfortunately so did glossy buckthorn and smaller amounts of bittersweet. Fortunately, in most areas the hardwoods beat out the invasives except for the landing location and

Vegetation Topic	Description
General Description, Forest Composition, Stand History, and Harvest History (cont.)	roadside. In 2014, an Asian longhorned beetle (ALB) infestation was discovered in the lowlands of this working unit and a subsequent sanitation harvest occurred. The ALB has also been found (pre-2014) in the forest surrounding this working unit. Fortunately, the ALB hasn't been detected in this area since then. Shrubs in the working unit range from huckleberry, low bush blueberry and sheep laurel in the dry uplands and ridges to witch-hazel and high bush blueberry in the lowlands. There is evidence of deer hunting in this area and deer pressure on the vegetation appears to be lessening.
Advance Regeneration description	Sampling found adequate advance regeneration in 66% of the manageable plots with marginal regeneration present in an additional 21%. Oak was present in 37% of the plots. Overall, the regeneration is comprised of white pine, black cherry, white ash, gray birch, white oak, red maple, red oak, American chestnut, black birch, bigtooth aspen, American beech, sassafras, black gum, hickory and eastern hophornbeam. Where advance regeneration is not present, interfering levels of witch-hazel is present in some instances. Other places are either covered in huckleberry or have invasives.
Terrestrial Invasive Plants description	There were invasives found on 15% of the plots taken. These plots were located primarily in the northern section where the lot was last accessed for a timber sale around 1990. Invasives were primarily glossy buckthorn and bittersweet. A couple of these locations will be avoided in this proposal to help prevent the spread of invasives. This lot was also the location of an Asian longhorned beetle infestation in 2014 and a small sanitation cut was performed in the wetland in the middle of this unit at that time.

Description of Wetland Resources Present

Resource Type	Description of resources present
Wetlands	The wetland in this working unit is in the middle of the lot and eventually flows into Muddy Brook. The working portions of the lot can be accessed without crossing the wetlands.
Streams	None
Vernal pools	None known
Seeps	None known

Description of Soils by Hydric Class

Soil Hydric Classes	% of area	Soil series and any further comments
Excessively Drained	10	Merrimac
Well-drained Thin	54	Chatfield-Hollis-Rock well drained thin soils makeup over half the soils in this unit and are found on the ridges.
Well-drained thick	12	Paxton fine sandy loam.
Moderately well-drained	7	
Poorly to very poorly drained	17	Poorly drained Whitman soils are associated with the wetland valley area

Proposed Silvicultural Activities

Topic	Description
Site Selection and Silvicultural Objectives	This working unit was selected due both to the lack of age diversity in the forests of this subwatershed and in this working unit itself. Most of this area is within subwatershed #8 (Muddy Brook). There are no forest stands within this subwatershed that are 20 years old or less. 78% of the stands are more than 80 years old. Within the 53 manageable acres of this working unit, there are no stands that are 20 years old or less. The age structure of the working unit is as follows: 0%, 0-20 years old; 17% 21-40 years; 8% 41-60 years; 8% 61-80 years; 28%, 81-100 years and 39% >100 years old. Given the lack of young stands in this area and given the presence of good advance regeneration comprised of species well suited to this site, the primary goal will be to increase the proportion of young forest stands in this area.
Silviculture Prescription	With adequate regeneration now present throughout this working unit, openings will be made on up to 17 acres thereby achieving the goal of creating a new age class on 1/3rd of the area. This will be accomplished by the removal of the overstory in patches that average about 1 acre with a maximum size of 2 acres. These will be distributed throughout the proposed area taking advantage of the good regeneration on the southern portion of the unit as well as the higher elevations and avoiding the northern areas with invasives. Partial cutting may occur between openings on up to 15 acres and will be focused on the ridgetop drier soils area where it will benefit white pine and pitch pine/scrub oak.

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 4, Silvicultural Prescription, partial cutting on ridgetops*)**	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**.
General/other Climate Change 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.

Proposed Activity	Alignment of Activity with Climate Oriented Strategies and Recommendations
General/other Climate Change Considerations (cont.)	Specifically, this harvest will improve carbon and climate resilience by: **Enhancing carbon sequestration:** o Initiating regeneration (fast-growing young trees) by increasing sunlight to the forest floor. o Thinning to increase growth rates of mature trees. **Protecting forest carbon:** o Retaining large legacy trees for their full lifespan. o Retaining the healthiest, most vigorous (fastest growing) trees. o Installing water bars to prevent loss of soil carbon to erosion. o Careful routing of skid trails to avoid sensitive soils. **Sustaining forest hydrology:** o Protecting riparian areas with filter strips of increasing width based on slope, and avoiding steep slopes altogether. o Avoiding stream and wetland crossings, and using Best Management Practices to reduce impact when crossings are necessary. o Refraining from harvesting in wetlands, unless absolutely necessary to protect overall forest health. **Maintaining native plant biodiversity:** o Minimizing new introductions of invasive plants on vehicles and equipment, and removing existing invasive plants. o Ensuring the diversity of the next generation of trees by creating canopy gaps large enough to support the full breadth of tree species diversity. o Retaining the healthiest trees of all native species. **Protecting rare wildlife:** o Following NHESP guidance for preserving and enhancing habitat for species that are protected under the Massachusetts Endangered Species Act. o Creating/maintaining refugia for rare species. o Protecting uncommon and vulnerable habitats. **Preserving wildlife habitat:** o Retaining uncommon habitat features, such as large diameter logs, snags, and den trees. o Protecting current and potential nesting trees for raptors. o Maintaining 100 foot shade zones and 200 foot low ground disturbance zones around vernal pools. o Maintaining stream water temperature for aquatic species by preserving forested corridors along perennial streams and rivers. o

Proposed Activity	Alignment of Activity with Climate Oriented Strategies and Recommendations
General/other Climate Change Considerations (cont.)	**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	Mechanized felling and forwarding will be required.
Proposed wetland or stream crossings	The small stream that flows north to south will be crossed at the existing culvert on the road.
Further wetland comments	No comments.
Vernal Pools	There are no known vernal pools.
Access improvements needed	None needed.
Other EQ issues	None.
In-kind Services	None.
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
2/Res. Shoreline South	515	85	44	17
8/Muddy Brook	100	0	25	36

Additional comments on Subwatershed analysis:

Wildlife and Habitat Observations and Considerations

Wildlife/Habitat	Observations and Considerations
Natural Heritage Priority Habitats?	None.
State Listed species present:	None known.
Rare Natural Communities:	None known

Wildlife/Habitat	Observations and Considerations
General Wildlife Comments	The eastern ridgetop is unique in that on one side to the west you have this beautiful view of this shrub wetland in an area that was an ALB infestation. To the east from this hilltop is a view of the Wachusett Reservoir.

Cultural Resources Description and proposed protection measures

Cultural Resource	Description and proposed protection measures
Historical features present; comments regarding protection	At the southern end of the working unit is a pond that has a small earthen/concrete dam that helps form Muddy Brook that then flows as a waterfall under the railroad tracks on down to the reservoir.
Description of site characteristics in relation to Ancient sites modeling or other verified evidence	Surface stone is prevalent throughout the area. Microtopography is not especially pronounced. Only a few acres along the western side of this area are less than a 7% slope. If applicable, DWSP will follow the recommendations of DCR's Archeologist regarding protection of sensitive sites.

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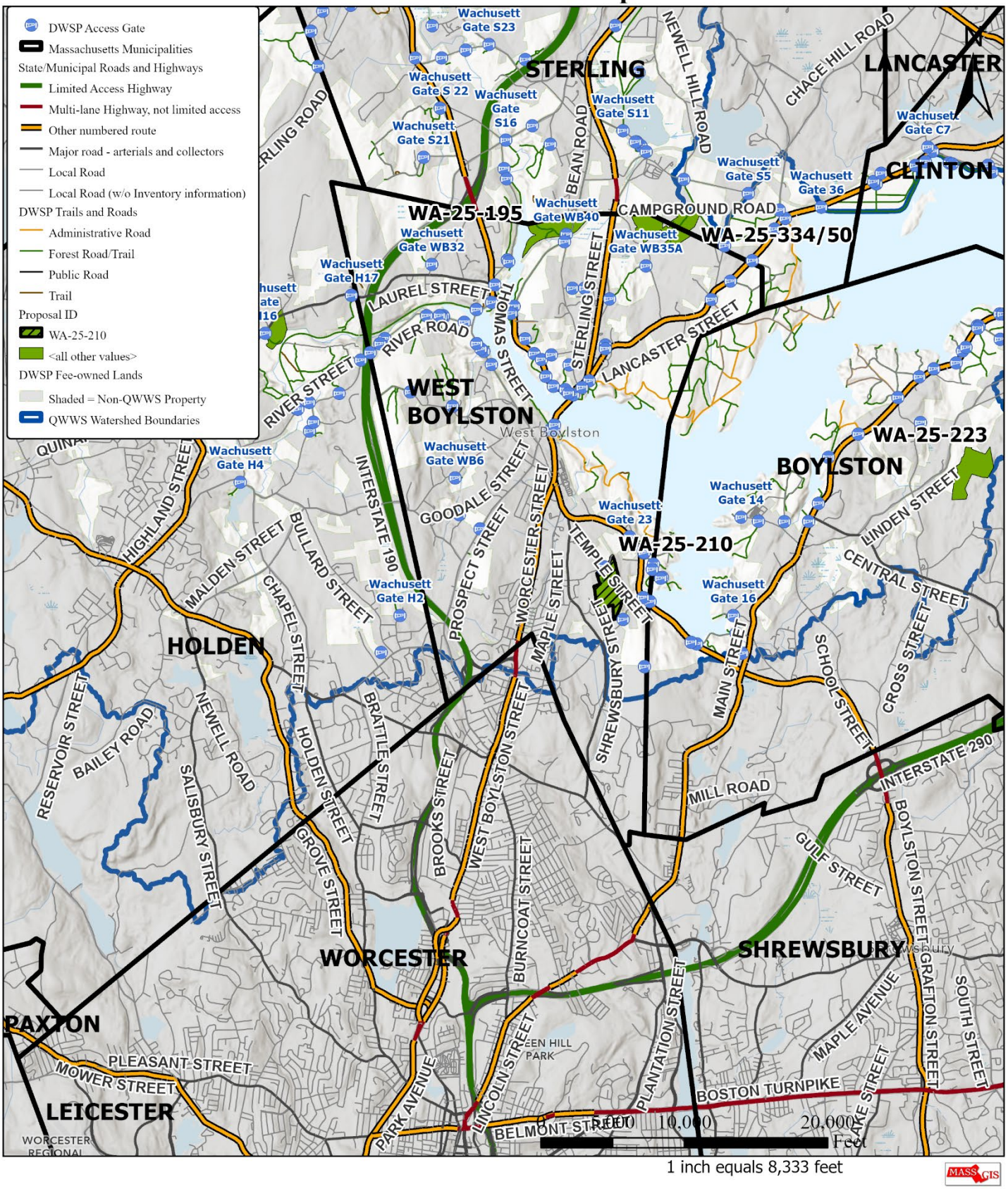
WA-25-210 -- Locus Map



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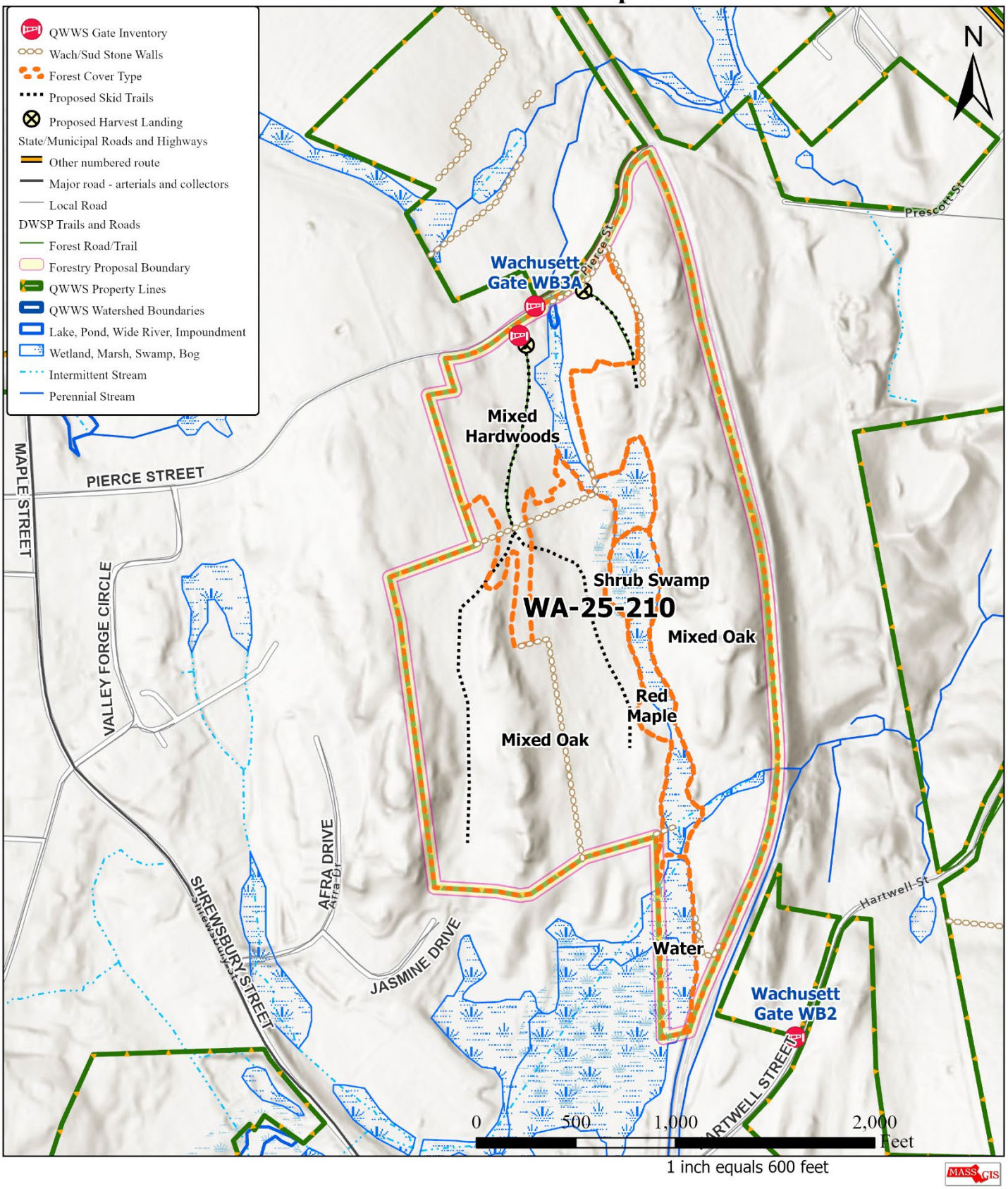
WA-25-210 -- Stand Map



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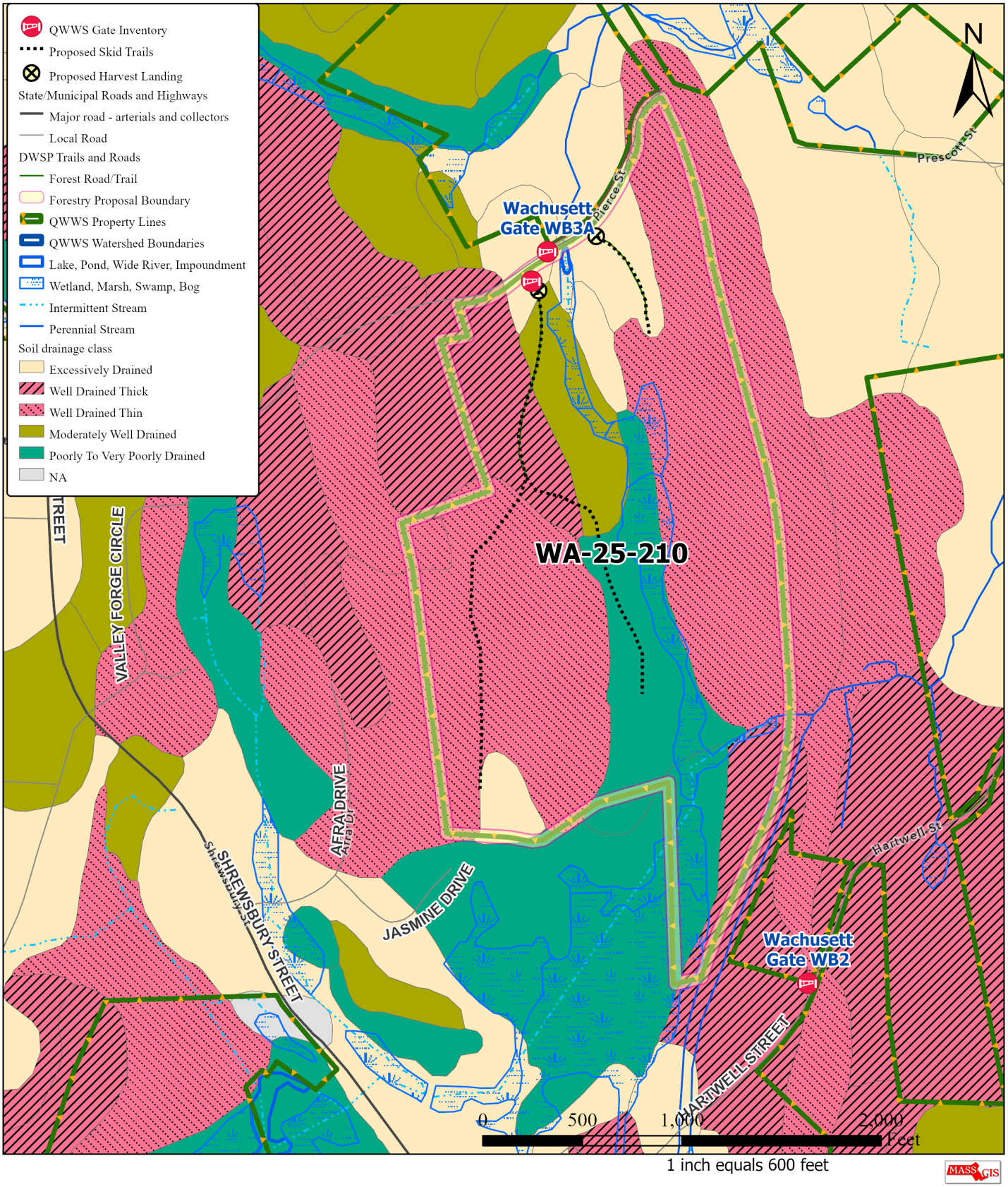
WA-25-210 -- Soil Drainage Class



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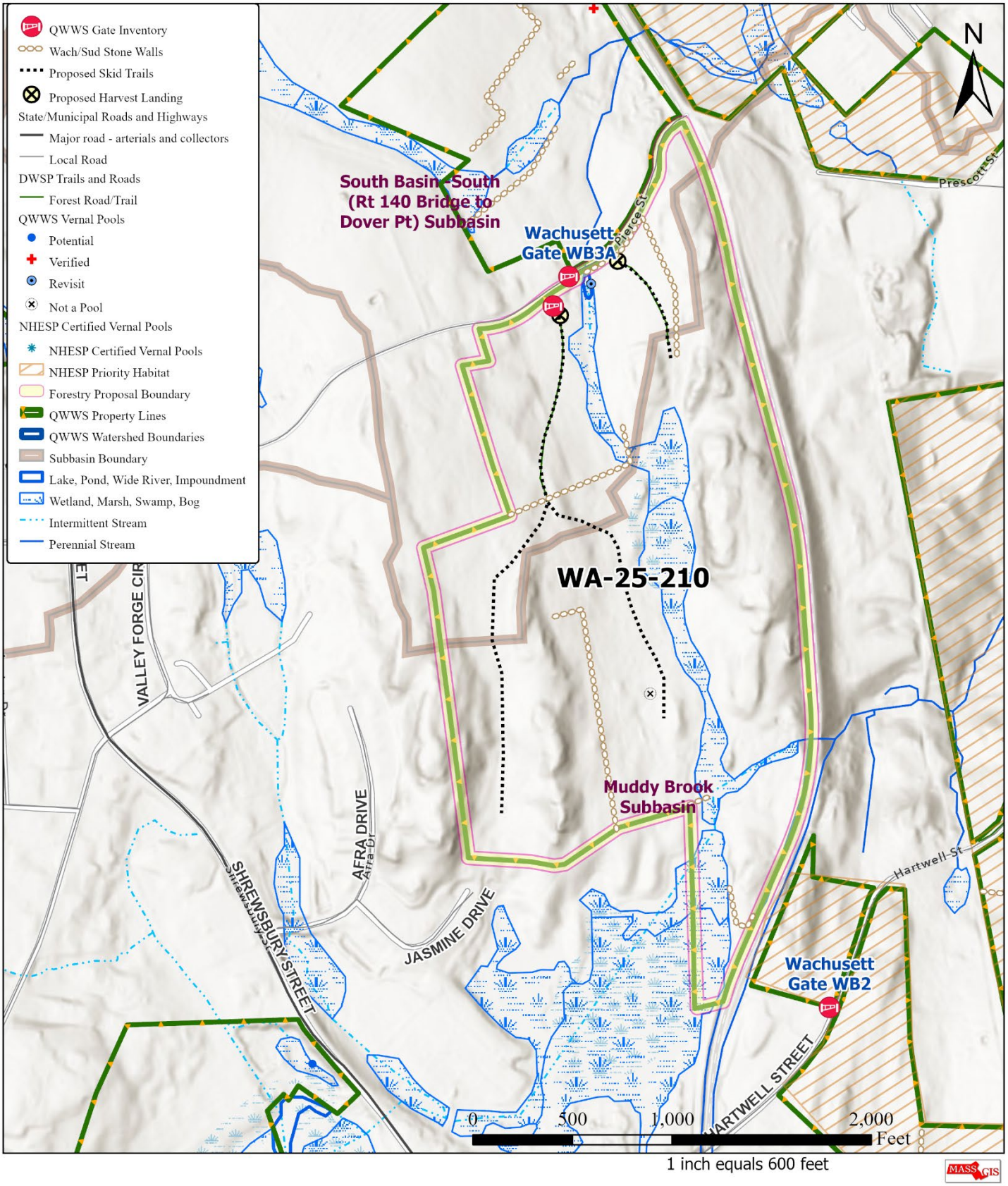
WA-25-210 -- Wetlands and Wildlife Resources



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WA-25-210 -- Cultural Resources and Landscape Characteristics