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-25-329**
Fiscal Year	2025
Watershed	**Wachusett**
Town(s)	**Sterling**
Forester	Greg Buzzell
Total Acres	26
Block	n/a
Compartment and/or Working Unit	329
Location and Boundary Description	This area is bound by Justice Hill Road to the southwest and a stonewall to the northwest. The northeast and southeast sides are bounded by private property, some of which is stone wall.
Previous Proposal?	No
Project Goals and Summary Description	This 26-acre forest is a property that was acquired in 2018 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 90% greater than 80 years old and 0% less than 21 years old. This operation will result in up to 8 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. Some cutting may occur on up to 10 acres between the patches. This will occur where thick mountain laurel is preventing tree regeneration with the goal of damaging the laurel so that tree regeneration can become established. There is a small patch of Oriental bittersweet near a vernal pool to the east of the power line. This may require control in order to access farther to the east.

Forest Cover Types and Acreages

Overstory Forest Types	Acres
White pine/Oak	12
Mixed Hardwoods	12
White pine/Hardwoods	3

Understory Cover Types and Relative Importance

Understory Cover Type	Relative area covered (Dominant, Secondary, Minor, None)
Tree seedlings and saplings	Dominant
Mountain laurel	Secondary
Mesic site - witch hazel, highbush blueberry	Minor
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	In the larger portion of this area, to the northwest of the powerline, the overstory is primarily red oak and white pine with lesser amounts of red maple, white oak, paper birch, black oak, pitch pine and hickory. This is a dry hillside with a significant area of exposed ledge near the top of the hill. A logging operation in about 1987, long before DCR acquisition, resulted in good regeneration in most areas. The logging was particularly heavy in three areas resulting in about 2.5 acres of now 37-year-old hardwood stands. Much of the west-facing hillside has dense mountain laurel thickets. In the smaller area to the southeast of the powerline that was not harvested in 1987, the overstory is dominated by a diverse mix of hardwoods including white ash, red oak, red maple, black birch, white oak, hickory and black cherry.
Advance Regeneration description	Sampling found that there is adequate advance regeneration in 61% of the 55 plots taken, with marginal regeneration in another 7% of the plots. The regeneration is made up of primarily white pine, red oak and red maple. Oak was present in 54% of the plots. Interfering levels of mountain laurel was found on 28% of the plots taken.
Terrestrial Invasive Plants description	Sampling found invasives species in 2 of 53 plots. In both cases it was bittersweet. These plots were found east of the powerlines very close to the abutters property. The abutters property to the south has a heavier population of bittersweet.

Description of Wetland Resources Present

Resource Type	Description of resources present
Wetlands	There is a small, unmapped wetland in the far western corner of the sale area near Justice Hill Road.
Streams	None.

Resource Type	Description of resources present
Vernal pools	There is a verified vernal pool just to the east of the powerlines and another spot in the southwest corner of the sale area very near Justice Hill Rd. that needs to be investigated.
Seeps	None known

Description of Soils by Hydric Class

Soil Hydric Classes	% of area	Soil series and any further comments
Excessively Drained	34	Chatfield-Hollis-Rock outcrop complex.
Well-drained Thin		
Well-drained thick	53	Paxton fine sandy loam
Moderately well-drained		
Poorly to very poorly drained	14	Whitman

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 #18 (Middle Stillwater/Rocky Bk./Wilder Bk). Only 13% of the forest stands within this subwatershed are 20 years old or less. 60% of the stands are more than 80 years old. Within the 29 manageable acres of this working unit, there are no stands that are 20 years old or less. The full age structure is as follows: 0%, 0-20 years old; 10%, 21-40 years; 0%, 41-60 years; 0%, 61-80 years; 55%, 81-100 years and 35%, greater than 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 the goal of regenerating about a third of this working unit, the older overstory will be removed in patches focusing on areas with the best regeneration. These patches will total as many as 8 acres and will range in size from about 1/5th acre up to a maximum of about 2 acres. The patches of young forest will be similar in species diversity to the older forest. Some cutting may occur in areas with interfering levels of mountain laurel, prep cutting on up to ten acres will occur. By cutting and damaging the mountain laurel, it will set the stage for tree seedlings to fill in these areas.

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.
Diffuse overstory removal, partial cut, late rotation regeneration related. **(*see page 3, Silvicultural Prescription, prep cutting on up to 10 acres*)**	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**.

Proposed Activity	Alignment of Activity with Climate Oriented Strategies and Recommendations
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. Specifically, this harvest will improve carbon and climate resilience by: **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.

Proposed Activity	Alignment of Activity with Climate Oriented Strategies and Recommendations
General/other Climate Change Considerations (cont.)	**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. **Protecting rare wildlife:** ○ Following NHESP guidance for preserving and enhancing habitat for species that are protected under the Massachusetts Endangered Species Act. ○ Creating/maintaining refugia for rare species. ○ Protecting uncommon and vulnerable habitats. **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	Forwarding and mechanized felling will be required.
Proposed wetland or stream crossings	None needed.
Further wetland comments	No comments.
Vernal Pools	All appropriate BMPs will be followed.
Access improvements needed	None
Other EQ issues	None
In-kind Services	None

Constraint Topic	Description and Considerations
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
18/Middle Stillwater/Rocky/Wilder Brook	2001	262	238	22
21/Off Watershed Lands	453	50	63	7

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.
General Wildlife Comments	There is a lot of exposed rock, large boulders and a good-sized cave on the highest elevation area up by the back boundary line. Looks like the cave could be big enough to be utilized as a bear den. It should be investigated further. As many high wildlife value trees as possible will be retained. A particular focus will be paid to trees that are used for denning and nesting.

Cultural Resources Description and proposed protection measures

Cultural Resource	Description and proposed protection measures
Historical features present; comments regarding protection	None known. Any cultural features that are located before or during the harvest will be mapped, photographed, flagged, avoided and protected, consistent with the guidelines set forth in the 2017 DWSP Land Management Plan.

Cultural Resource	Description and proposed protection measures
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. There is very little of this area that is less than 7% sloped. If applicable, DWSP will follow the recommendations of DCR's Archeologist regarding protection of sensitive sites.

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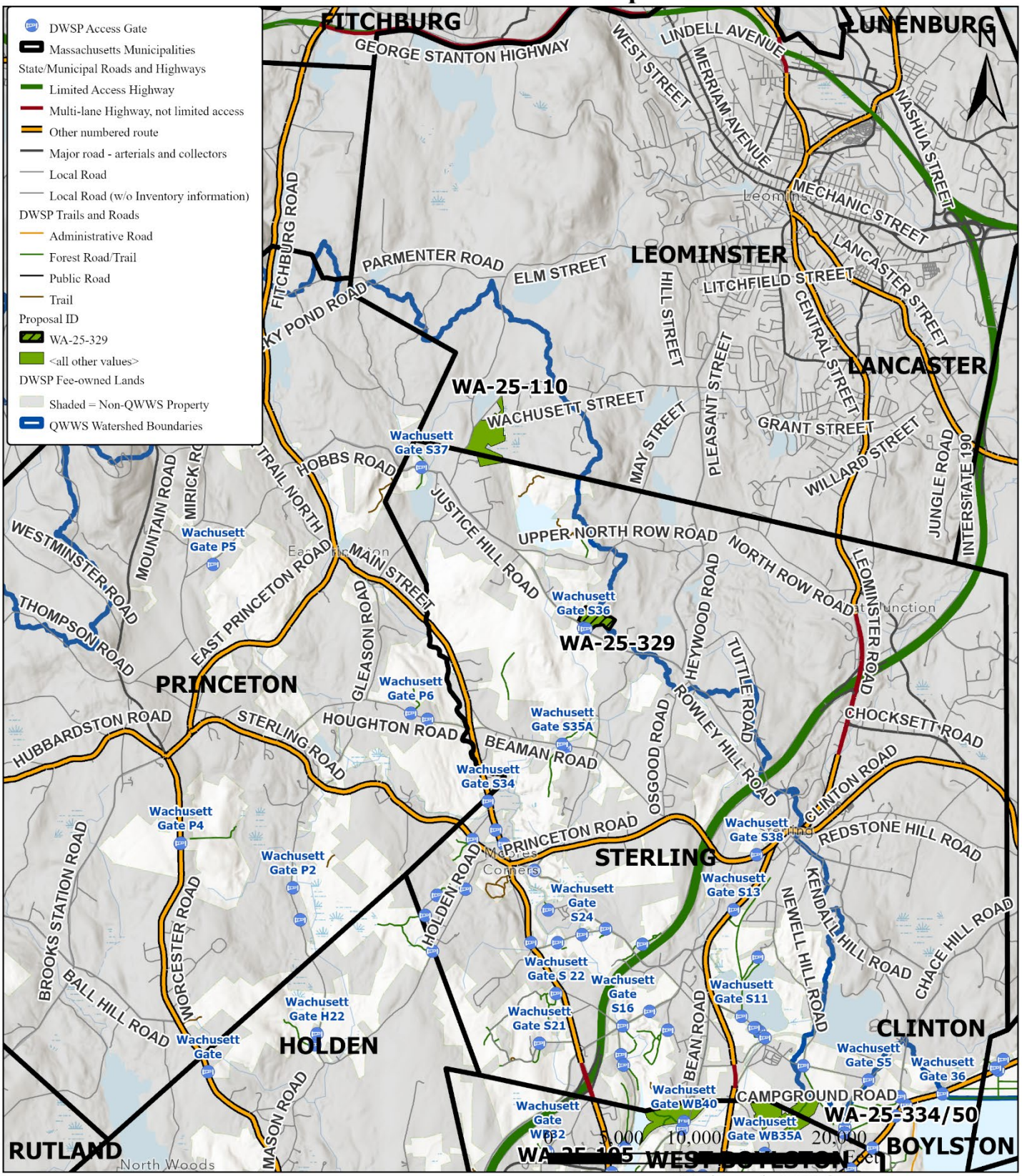
WA-25-329 -- Locus Map



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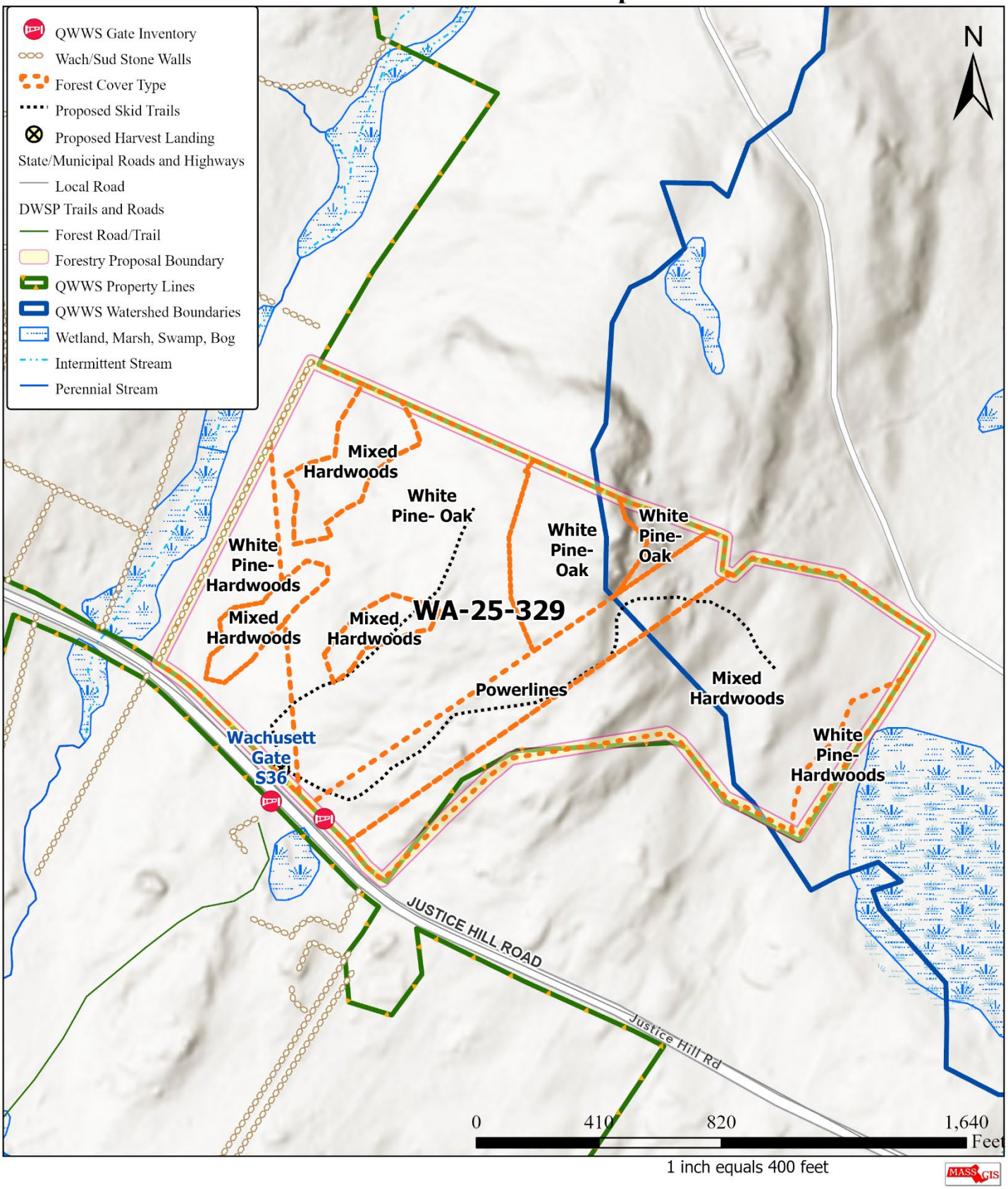
WA-25-329 -- Stand Map



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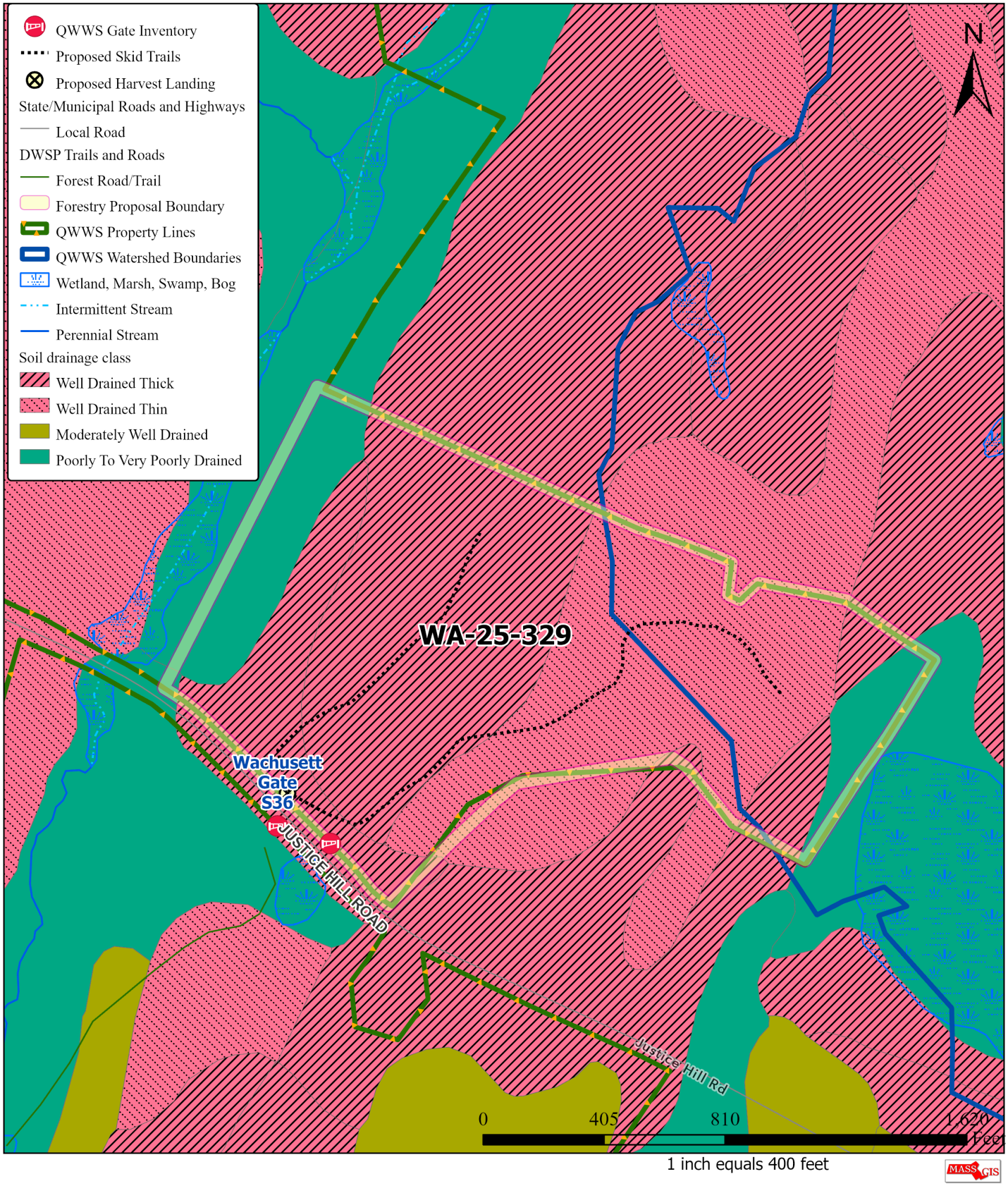
WA-25-329 -- Soil Drainage Class



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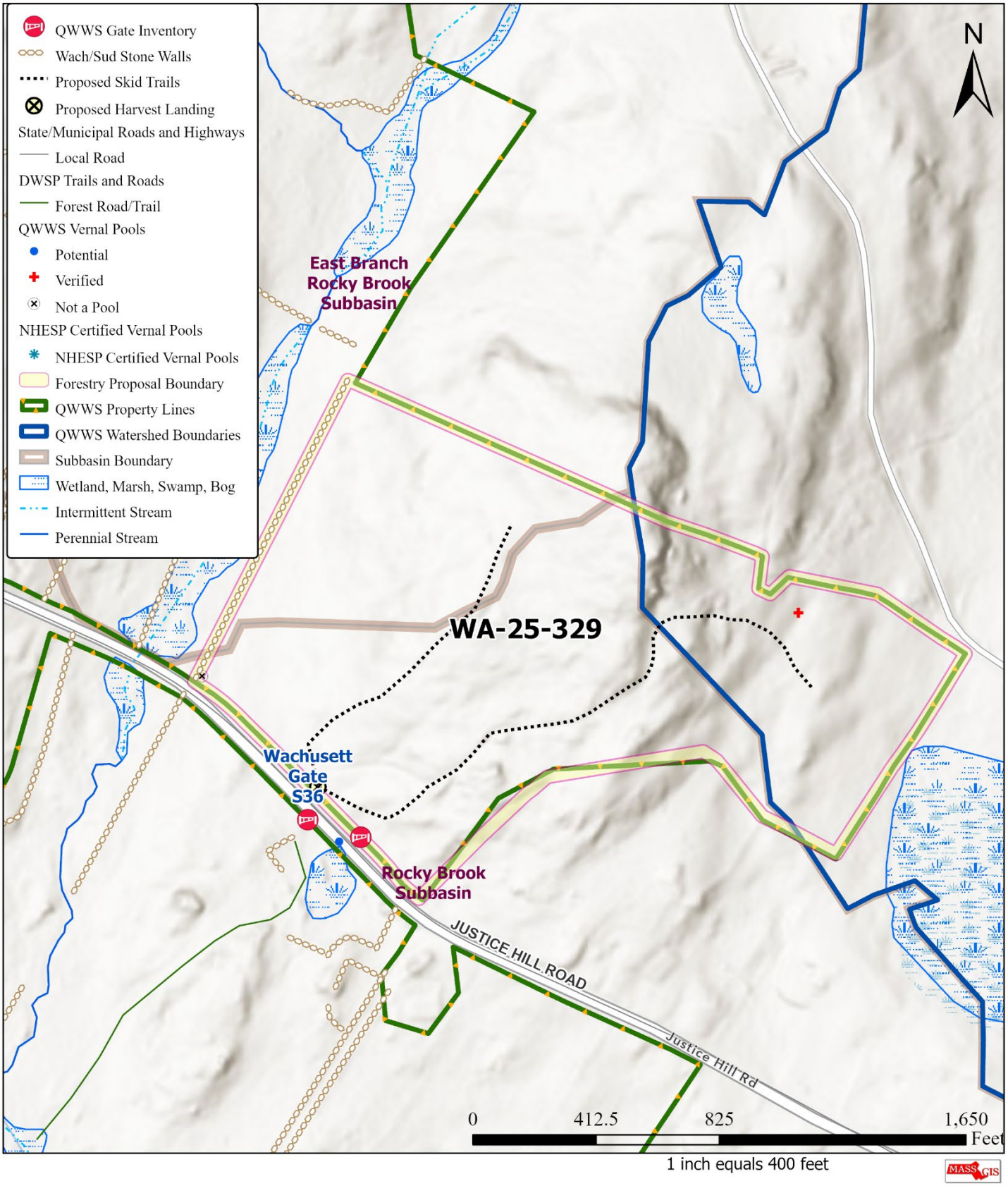
WA-25-329 -- Wetlands and Wildlife Resources



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WA-25-329 -- Cultural Resources and Landscape Characteristics