Quabbin Harvest Proposal PR-21-10

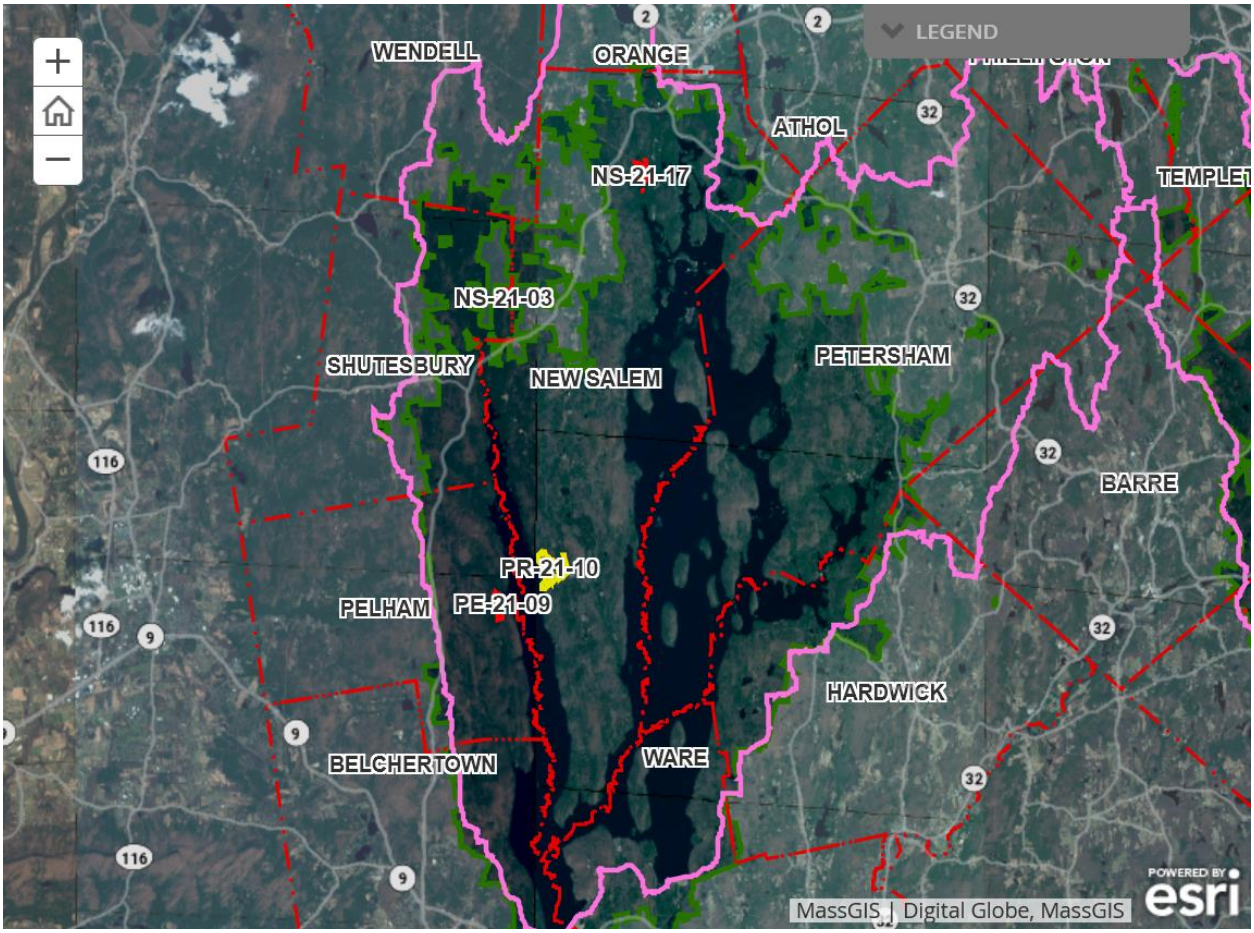
Proposal Goals

Diversifying forest structure and overall complexity is the primary purpose of the proposed harvest.

Proposal Location

Regionally, the area encompasses a portion of Prescott Hill's west slope. For point of reference, the area is northwest of the former UMass Observatory (Prescott Center) and north of East Valley Road. Specifically, it's bounded to the south by a perennial brook; to the west by steep slope, to the north by intermittent brook/stone wall/steep slope and to the east by Prescott Road (a.k.a. Gate 17 road).

Total Acres: 140



General Description

	Overstory Type(s)	Acres
Dominant	Oak/hardwood	93
Secondary	White pine/red pine	31
Other	White pine/hardwood	16

	Understory Type(s)
Dominant	Other, please see the below description

Description of forest composition/condition:

History:
Pre reservoir, the lion's share of watershed land (including this area) was open (agriculture) or in early stage reforestation from agricultural abandonment/short term forestry. Post reservoir (1920s), gone was the threat of agricultural clearing and shortsighted forestry practices; and the forest, for the most part, developed naturally with inexorable events (i.e. hurricanes, fires, drought and insect/disease outbreaks) being the main agent of change/disturbance. The exception was the arable land along the gate 17 road where portions became forest plantations (1940s Civilian Conservation Corp era). Documented forest management occurred in 1990 with thinning of the white and red pine along the 17 road and a fourteen acre thinning executed by Quabbin's inhouse logging crew. The inhouse project covered a reasonably flat longitudinal terrace that bisects the area's moderate to steep west slope. Faded tree marking paint found during field assessment suggests the project was not fully completed as planned. Post-harvest, a significant portion of the area (southern 1/3) was intentionally excluded from forest management planning on account of a recently concluded watershed study implemented in 1999 to assess changes in water yield and nutrient deposition resulting from natural disturbance (hemlock mortality from woolly adelgid). The infestation, likely beginning in the late 1970s, is quite small relative to this area (< 10%). However, it's concentrated along the perennial brook that forms the area's south boundary; hence why selected for the watershed natural disturbance study.

Current Composition:

Tall (relative to site) full canopy red oak is the dominant forest cover (86 acres). Composition variability is directly related to terrain position which affects a tree's availability to soil/water.

Upper slope: Red oak has less canopy abundance, but is replaced by other oak, better adapted to drier sites, like black, white, scarlet and chestnut. Mid canopy is predominately birch (black and white) red maple and hickory. Pole/small sawtimber represent the majority of size class distribute and timber quality is generally rougher due to droughtier growing conditions. Interestingly, much of the scattered larger sawtimber has uphill basal scaring/decay which is indicative of a hot fire.

Mid and lower slope: Red oak abundance, size and quality increase; while black, white and scarlet decrease and chestnut oak mostly disappears. Occasionally, the associated tall canopy oaks (black, white and scarlet) are outcompeted by white ash, black birch, red maple, hickory, cherry, white pine and sugar maple. In addition to oak, these associates comprise the majority of the mid canopy. With greater availability to soil and water (particularly on the mid slope terrace) upper and mid canopy timber is generally better quality and larger relative to their up slope cohort. This portion of the area is also home to a few pockets of, below average quality large sawtimber size white pine (16 acres total). It's here (most southerly in particular) where hemlock, pre adelgid mortality, was present at all canopy levels. Currently it's down to a mere toehold of

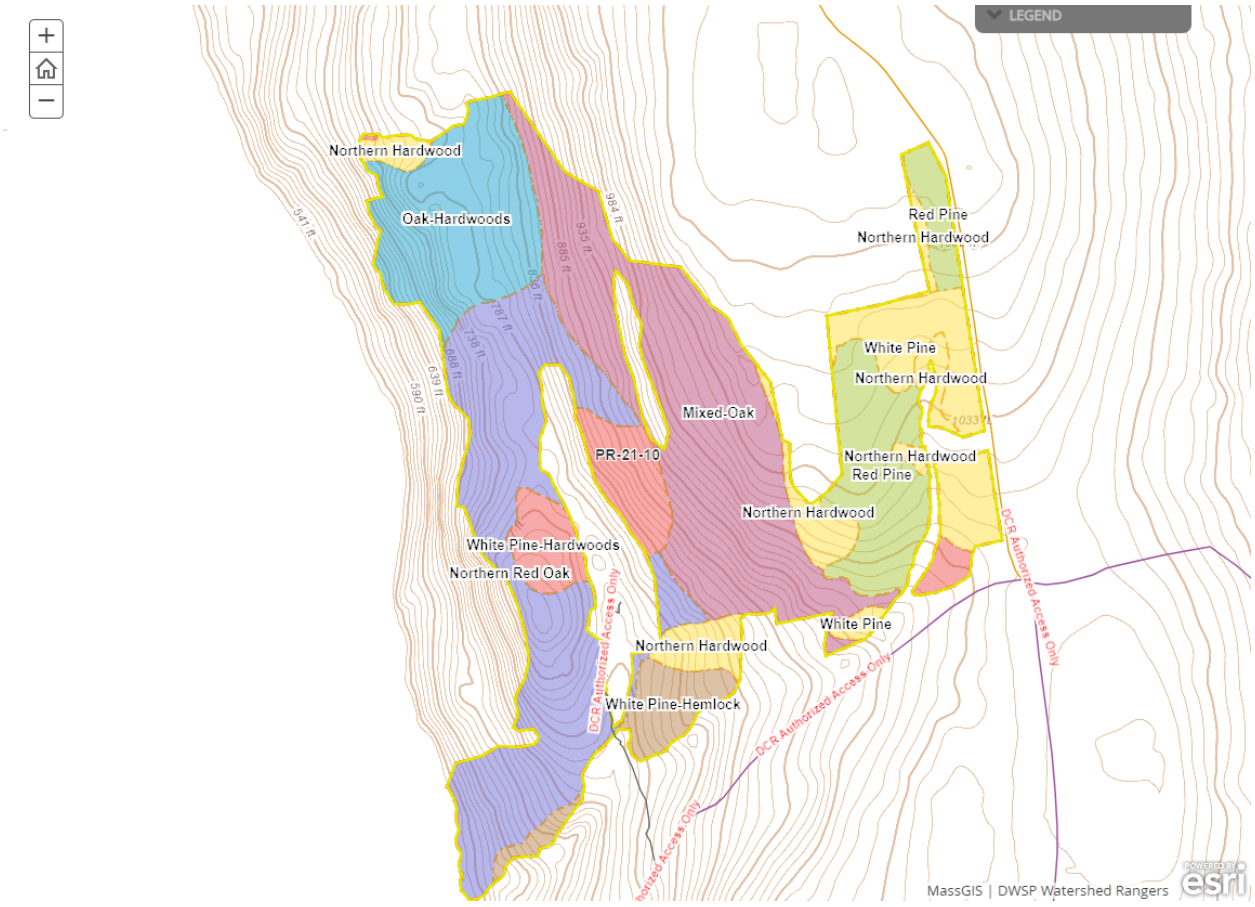
mostly struggling high canopy trees. Hemlock loss has been replaced by pole/sawtimber size black birch and red maple.

The eastern edge of the area is home to naturally regenerated sawtimber size white pine interspersed with sawtimber size planted red pine. Beginning in the mid 2000s a red pine scale infestation began moving (south to north) through Quabbin watershed plantations rendering them lifeless usually within 2 years. Unfortunately, the area's red pine is in the nascent stage of a scale infestation. Tell tail sign of an infestation onset is tufts of browning needles (usually current years growth) randomly interspersed throughout the stand. After onset, the browning darkens and envelopes the entire crown leading to tree mortality.

Area wide, regeneration (aka seedling/sapling layer) is under represented and confined to small pockets created by the 1990 thinnings or severe hemlock mortality (It should be noted that spurring regeneration was not the harvest intention). That said, harvest area understory is almost entirely represented by black birch. Encouragingly, some pockets of hemlock mortality have a fairly dense layer of vigorous seedling/sapling white pine.

Assessment of Terrestrial Invasive Species:

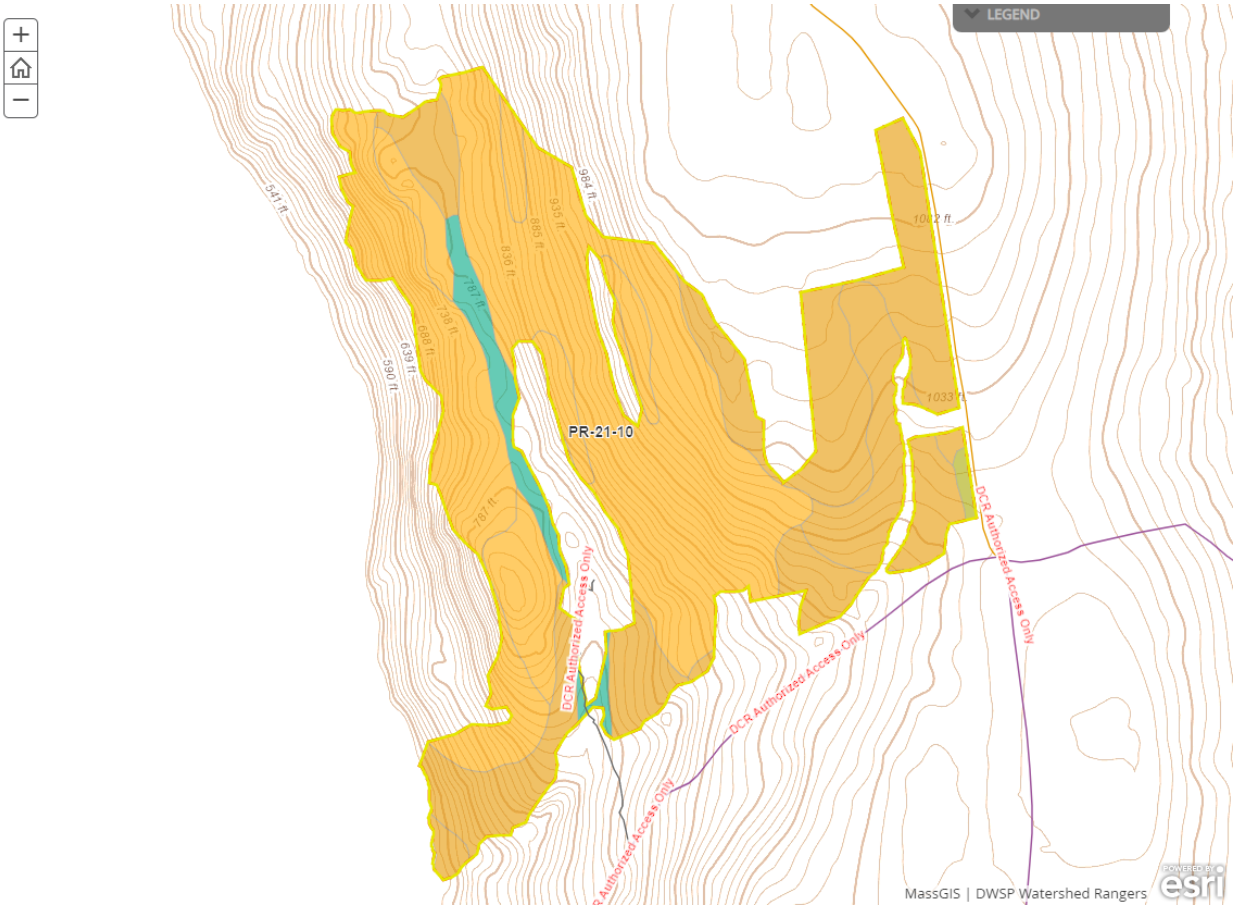
Several days of field reconnaissance suggests invasive presence in moderate to low. Greatest invasive density and diversity was found along the gate 17 road; home to several old homesteads and accompanying cropland/improved pasture some of which has been overtaken by Japanese barberry, non-native honeysuckle, and Asiatic bittersweet. An old farmstead in the midsection of the area is home to Japanese barberry and non-native honeysuckle. Greatest density is concentrated in what was likely a former wet meadow/orchard/tilled area. (thankfully much of this area can be avoided and is actually excluded from the proposal area). Frequency/density ebbs traveling away from the homesteads. Spread is a concern particularly within the gate 17 road section of the area.



Soils

Drainage Class	%
Excessively Drained	0
Well Drained Thin	31
Well Drained Thick	66
Moderately Well Drained	0
Poorly to Very Poorly Drained	3

The lot is mostly on Chatfield-Hollis complex soils with minor components of Canton fine sandy loam, Henniker sandy loam, Montauk fine sandy loam and Whitman very stony mucky fine sandy loam.

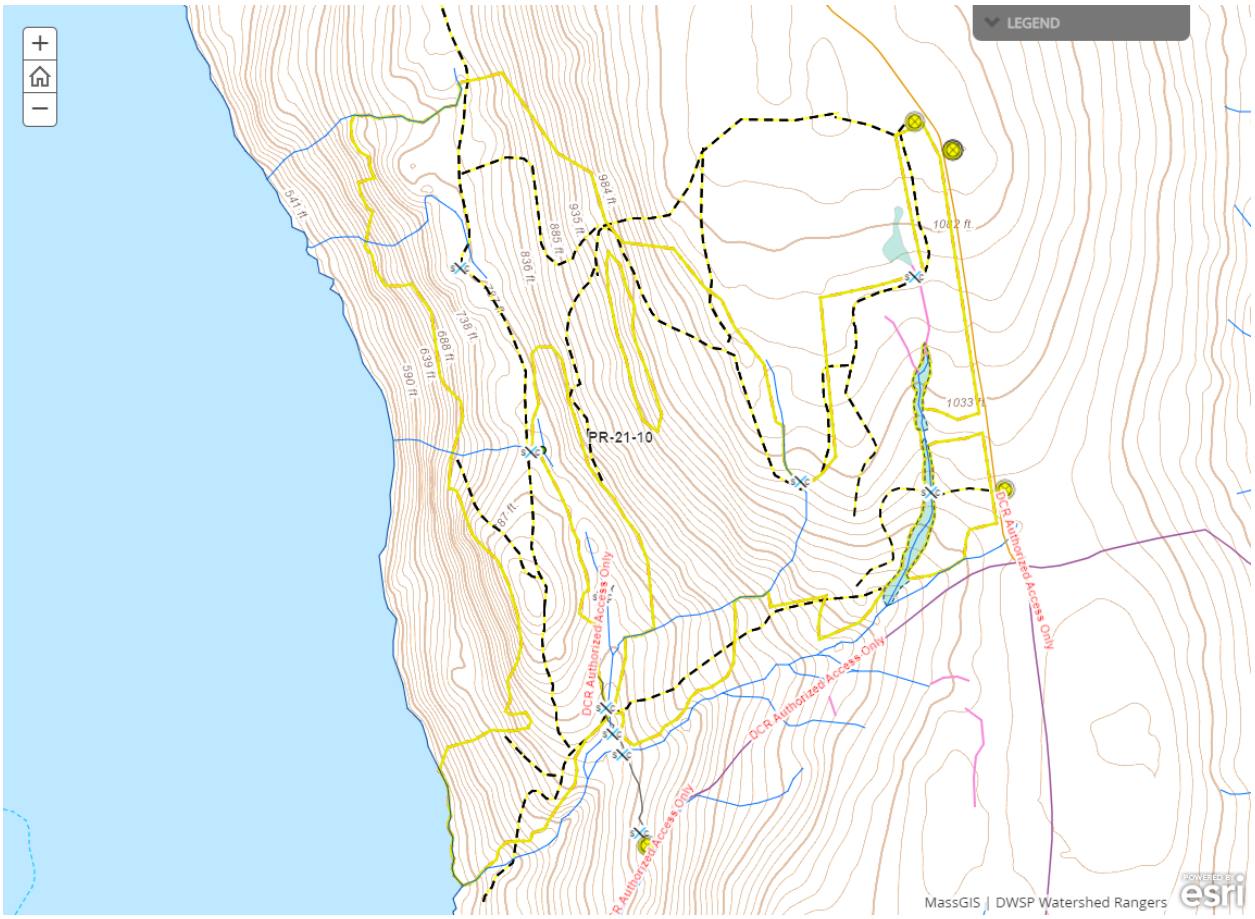


Wetlands

- Wetlands present? - **Yes**
- Streams present? - **Yes**
- Vernal pools present? - **None known**
- Seeps present? - **Yes**
- Are stream crossings required? - **Yes**
- Are wetland crossings required? - **No**
- Is logging in filter strips planned? - **Yes**
- Is logging in wetlands planned? - **No**

There will likely be seven stream crossings. With respect to the streams, only one is perennial and its crossing is an existing culvert. A temporary skid bridge should be used for all crossings

except maybe the most northerly. For the culverted perennial stream, a temporary skid bridge should be installed to protect it.
The southerly most crossing (just north of East Valley Road) isn't a stream but rather drainage from an up-gradient culvert on East Valley Rd.



Silviculture

Acres in Intermediate cuts: **0**

Acres in prep/establishment cuts: **0**

Acres in Regeneration cuts: **28**

Average regen opening size: **2**

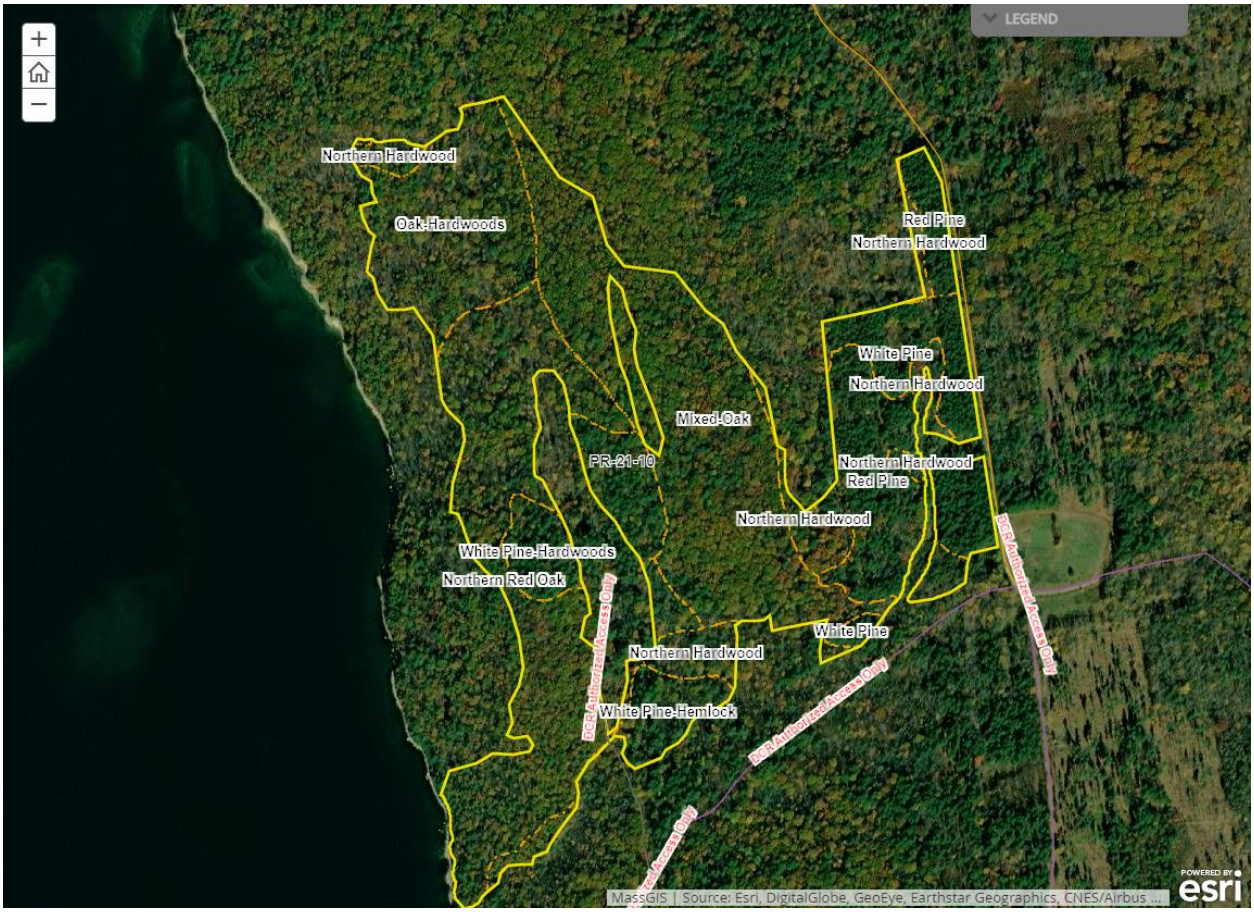
Maximum regen opening size: **5**

Description of advance regeneration in proposal area:

Given the light silvicultural treatment history (two thinnings (one not fully completed) in 1990), it comes as no surprise that the forest canopy is closed and vigorous regeneration is, at best, scarce. That said, natural canopy gaps have developed with the continued mortality of adelgid stricken hemlock; some large enough to trigger a vigorous white pine seedling/sapling layer. Black birch saplings occupy the skid roads and random small gaps associated with the 1990 thinning.

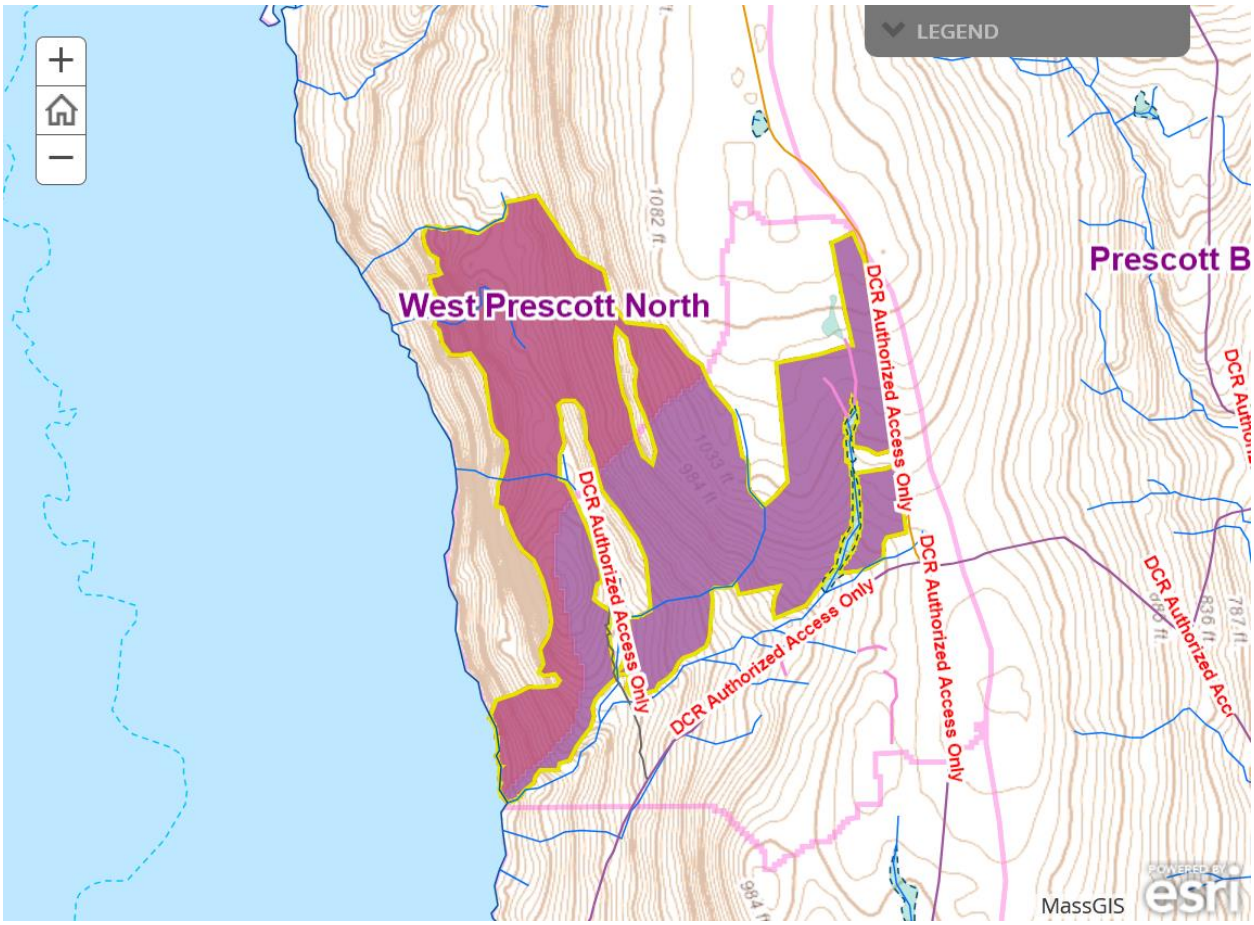
General comments on silviculture proposed:

Harvest purpose is to increase forest complexity, with the lion's share being accomplished through patch cutting to foster/stimulate understory development. First priority is removing dying red pine (~50% of the regeneration cutting in this harvest), followed by release of areas exhibiting vigorous dense seedling/sapling development, and lastly treating lower quality overstory that has sparse to no regeneration beneath. Within the red pine vicinity, lower quality white pine will be removed reducing risk of disease and increasing spacing for overstory development. Furthermore, within openings, sufficient levels/numbers of legacy (extraordinarily large/old) trees and coarse woody debris will be preserved. Lastly, to the greatest extent possible, openings will be well distributed and fit the contour.



Subwatershed Analysis

Sub-watershed number	Total DCR-owned Acres	Acres Regenerated on DCR Land in the last 10 years	Acres Remaining for Regenerating Up to the 25% / 10 Year	Acres part of this proposal
27 (West Prescott North)	1054	0	257	63
68 (Shays Brook)	219	6	49	77



Harvesting Limitations

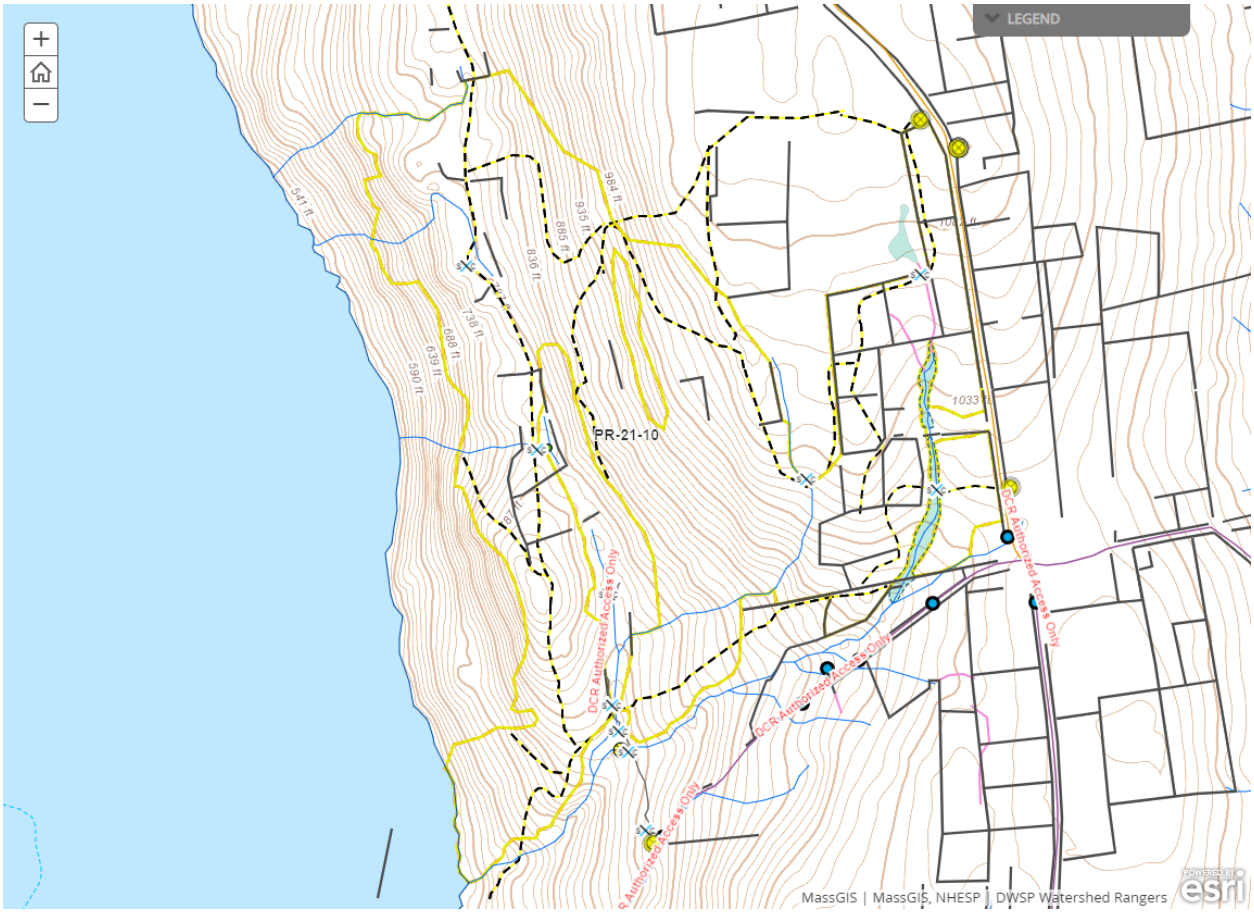
Forwarder required: **Yes**

Feller/processor required: **No**

Steep slopes present: **Yes**

Comments on harvesting limitations:

Specific forwarder requirement would like be a minimum of 6 wheels which increases displacement of ground pressure and reduces chance of severe soil compaction. A competent operator of such equipment can effectively/efficiently armor main skid trails and install/remove temporary bridges.



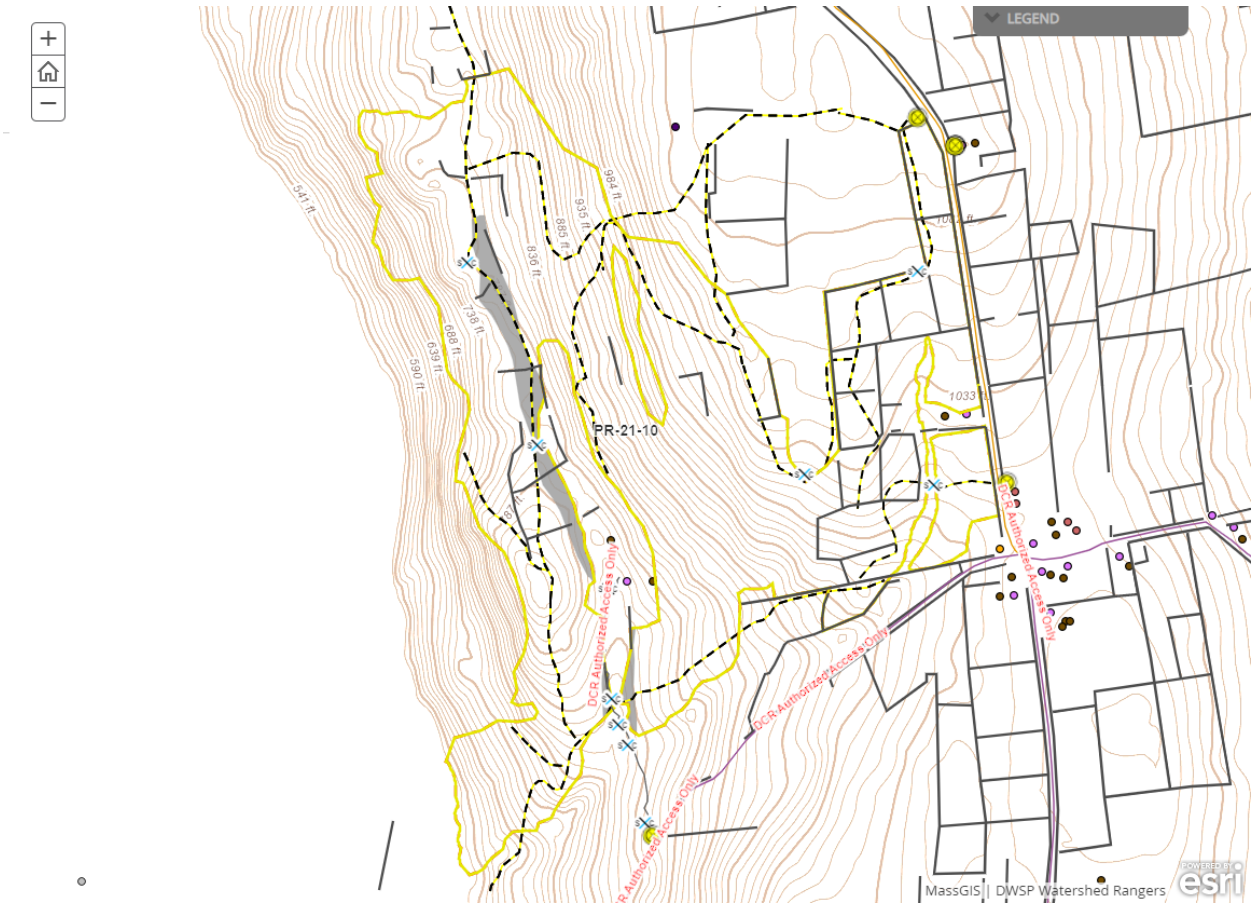
Cultural Resources

Comments on Cultural Resources:

Most of the stone walls traverse the flat ground along the Gate 17 road associated with an old homestead.

A significant complex of foundations is present along the mid-slope intermittent brook. These buildings were part of the Daniel Shays homestead. The entire area will be avoided during the harvest activities.

A small borrow pit was found adjacent to an intermittent brook along the area's eastern edge.



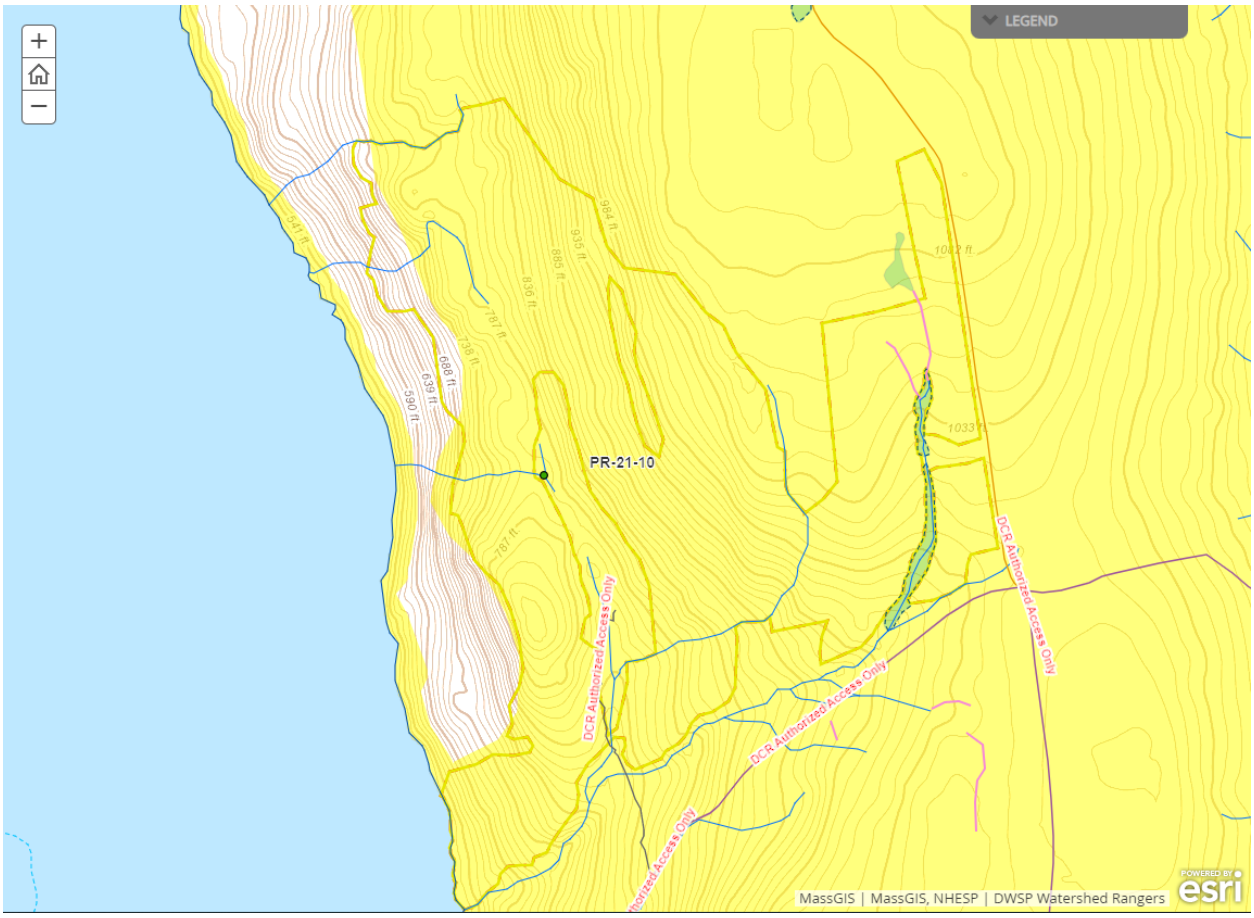
Wildlife Resources & Rare and Endangered Species

General Wildlife Comments:

The upslope portion of the area is home to scattered legacy trees with likely fire derived basal scars/decay that provide foraging/denning opportunity.

Comments on Rare Species/Habitats:

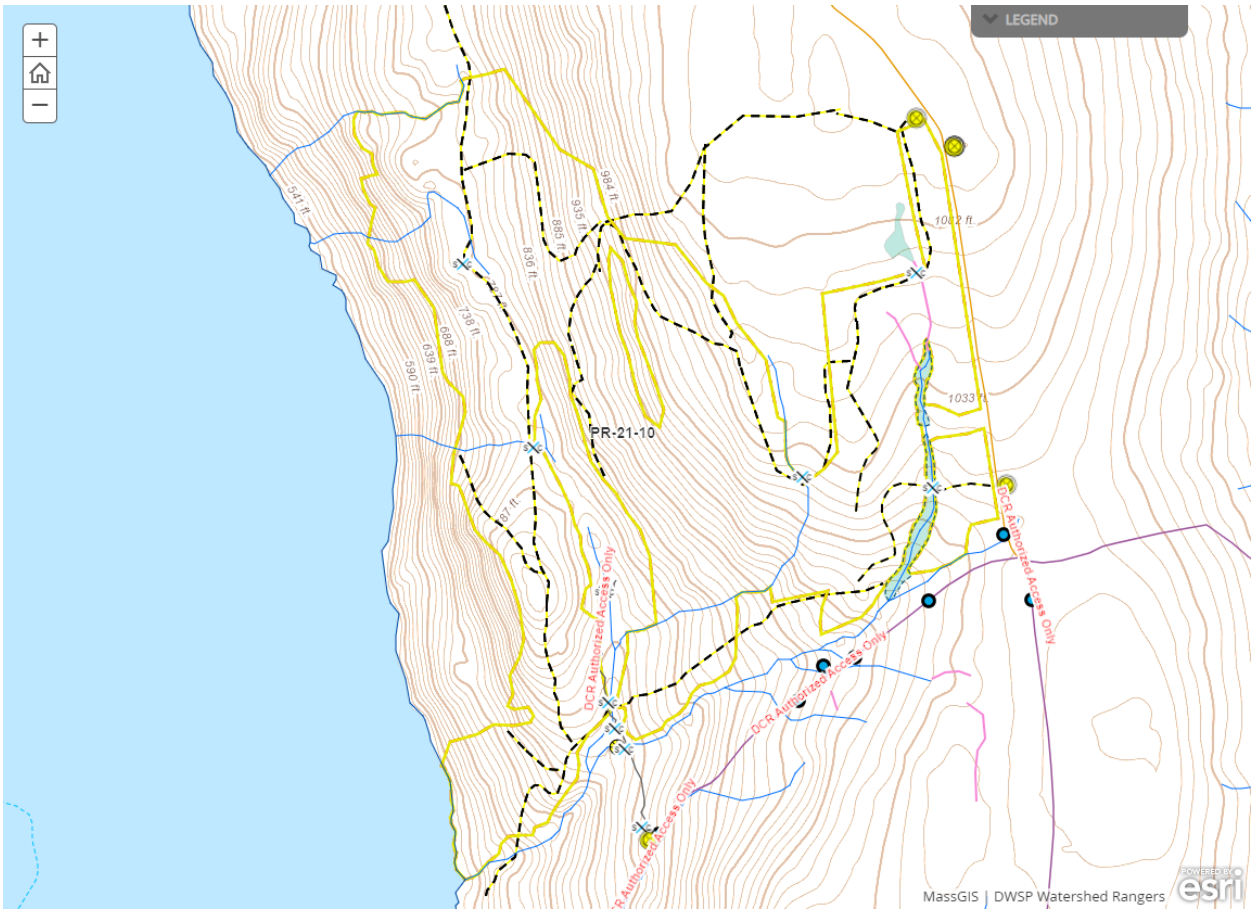
NHESP has determined that certain state-listed sensitive species or habitats may exist within the lot proposal area. To protect them from unnecessary disturbance, detailed information regarding affected species and their locations is not included in this report. DWSP will coordinate with NHESP and follow recommendations to protect these species during the proposed activity.



Environmental Quality Engineering

Comments on EQ Issues:

The perennial stream crossing offers a sampling opportunity for EQ's short term water quality monitoring program associated with watershed timber harvesting projects.



Forest Access Engineering

Gravel needed: Yes

Landing work needed: Yes

Culverts needed: Yes

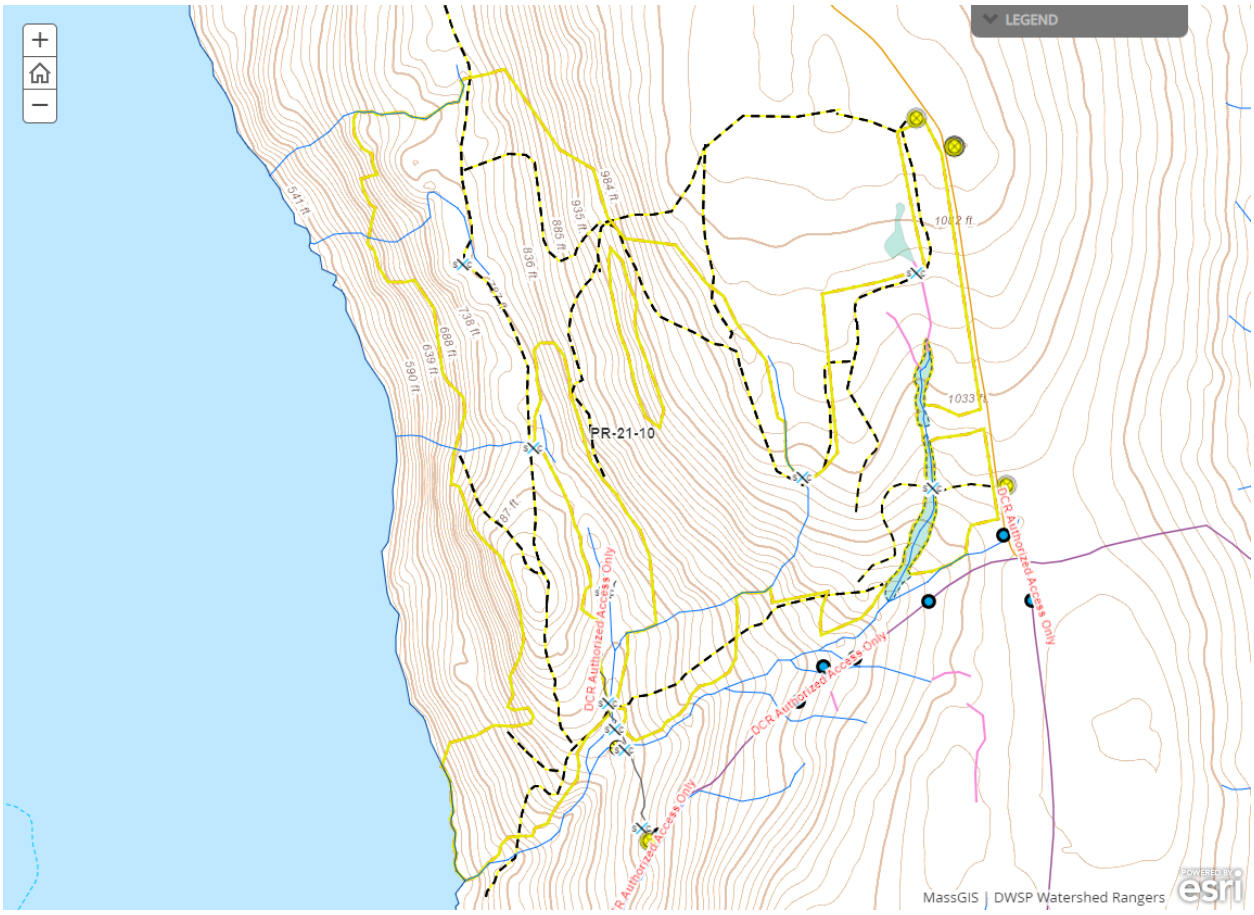
Work needed on permanent bridges: No

Beaver issue: No

Further comment on access needs:

Some work was done several years ago to triage drainage issues on East Valley Road, although it could use more attention with respect to stabilization and proper culvert protection (some are above road grade/exposed).

As mentioned in the wetlands section above, the southerly most stream crossing (just north of East Valley Road) exists because of runoff from an up-gradient East Valley Road culvert. Due to the fact that it would be a high frequency/traffic crossing during a timber harvest, it's recommended a culvert be installed.



DWSP FY 2021 Forestry Proposals – Master Legend for story maps

DWSP Gates

Landings

Crossings

Xng

Stream Crossing

QWR Culverts

Purpose

- Stream Crossing-B
- Stream Crossing-C
- Drainage Relief-D
- Unknown

Quabbin Road Intersections

DCR/DWSP Trail/Road Data (Public View)

Type

- Public Road
- Administrative Road
- Forest Road/Trail
- Trail
- Other

DCR-DWSP Trails and Roads

Type

- Administrative Road
- Forest Road/Trail
- Other
- Public Road
- Trail

Wachusett/Sudbury Road Infrastructure

Infrastructure_Type

- Bridge
- Broad Based Dip
- Checkdam
- Culvert
- Ditch
- Ford
- Waterbar
- Other

Wachusett Internal Roads

Priority:

- Access Road, unmaintained
- Access Road

QWWS Watershed Boundaries

Vernal Pools

Status

- Not a vernal pool
- Potential vernal pool
- DCR verified vernal pool

Streams - Quabbin

FType

- Coastline/Shoreline
- Stream/River
- Swamp/Marsh
- Submerged Stream
- Artificial Path
- Canal/Ditch
- Pipeline
- Dam/Weir
- Connector
- Unknown
- Other

Water Bodies - Quabbin

FType

- Reservoir
- Lake/Pond
- Stream/River
- Swamp/Marsh

Streams - Ware River

FTYPE

- Stream/River
- Canal/Ditch

Water Bodies - Ware River

FTYPE

- Reservoir
- Lake/Pond
- Stream/River
- Swamp/Marsh
- Other

Streams - Wachusett

EQ_Stream_Type

- Aqueduct
- Ditch/Canal
- Intermittent Stream
- Perennial Stream

Waterbodies - Wachusett

EQ_Wetland_Type

- Reservoir
- Lake, Pond, Wide River, Impoundment
- Wetland, Marsh, Swamp, Bog

NHESP Priority Habitats

NHESP Certified Vernal Pools

NHESP Certified Vernal Pools

Forest Cover Type - Filled

CoverTypeFull

- White Pine-Hardwoods
- Oak-Hardwoods
- White Pine-Oak
- WetHard
- Mixed Hardwood
- White Pine
- Grasses and Forbs
- White Pine-Hemlock
- Mixed Oak
- Northern Red Oak
- Red Maple
- Powerline
- WetMixed
- Error - Not DWSP
- Red Pine
- Shrub Swamp
- Upland Brush
- Northern Hardwood
- Road
- Beaver Pond
- Hemlock
- Hemlock-Hardwoods
- Mixed-Oak
- Norway Spruce
- Pitch Pine
- WetCon
- Abandoned Orchard
- Black Birch-Hardwoods
- Gravel Pit
- Northern Hardwoods
- Pitch Pine-Oak
- Water
- Oak, Mixed
- White pine - oak
- Mixed hardwoods
- Hemlock - hardwoods
- White pine - hardwoods
- Black Birch-Hardwood
- Field, mowed
- Oak - hardwoods
- Abandoned Field
- Beaver Meadow
- Chestnut Oak Heath
- Mixed hardwood
- White pine/hardwoods

Forest Cover Type - Outline

SubWatersheds (QWWS-filled)

Subwatershed Name

- ASNEBUMSKIT BROOK
- Barre Falls
- Belchertown Shoreline
- Blackington Swamp
- Cadwell Creek
- Cunningham
- East Br. Fever Brook
- East Prescott North
- Fed. Forest Stream
- Gate 20 Rd. Stream
- Gate 52 Shoreline
- Gates Brook
- Gibbs Brook
- Josslin
- Juckett Hill East
- MIDDLE STILLWATER/ROCKY/WILDER BROOK
- Mary Tamplin Drainage
- Middle Br. Swift Lower
- Moosehorn Brook
- NORTH STILLWATER/KEYES BROOK
- Northeast Shoreline
- Parker
- Prescott Brook
- Quabbin Park East
- RES. SHORELINE EAST
- Sherer Rd. North
- TROUT BROOK
- Thurston Brook
- Underhill Brook
- WACHUSETT BROOK
- Ware
- West Prescott Middle
- West Prescott North
- West Prescott South
- Whitney Hill Southeast
- Whitney Hill West
- Other

Subwatersheds (WA-outline)

SubWatersheds (QWR-outline)

Subwatersheds

Forestry Proposal Boundaries

Towns

Water Supply Property Boundary

Proposed Skid Trails

Stone Walls - WA

StoneWalls - QWR

Stony Soils

Stoniness

- extremely stony
- very stony

Soils - Drainage

Drainage Class

- Excessively Drained
- Well Drained Thick
- Well Drained Thin
- Moderately Well Drained
- Poorly To Very Poorly Drained

Quabbin and Ware River Cultural Resources Inventory (Public view)

Type

- No Value/Blank
- Agrarian
- Cellar Hole
- Civic
- Commercial
- Industrial
- Military
- Other
- Residential
- Shed
- Unknown

QWWS Percent Slope

- 0 - 7
- > 7