

[Division of Water Supply Protection](#)



## DCR Division of Water Supply Protection: FY2022 Forest Harvest Proposals

### USING THIS INTERACTIVE STORY MAP

**Each tab** across the top of this page will open up an interactive map journal focused on one of the FY 2022 proposals. This year there are ten at Quabbin, five at Ware River, and six at Wachusett (the last tab on the right will open up the list of lots that cannot be fit across the top). As you scroll down in the frame on the left side, maps will update to highlight appropriate information relevant to the accompanying text section. The maps themselves can also be panned and zoomed using your mouse. *(If you are having issues with loading times or seemingly missing information, we have found that **clearing your browser cache** can help.)* A tab discussion archaeological review and protection of cultural resources during forestry activities has been included at the end.

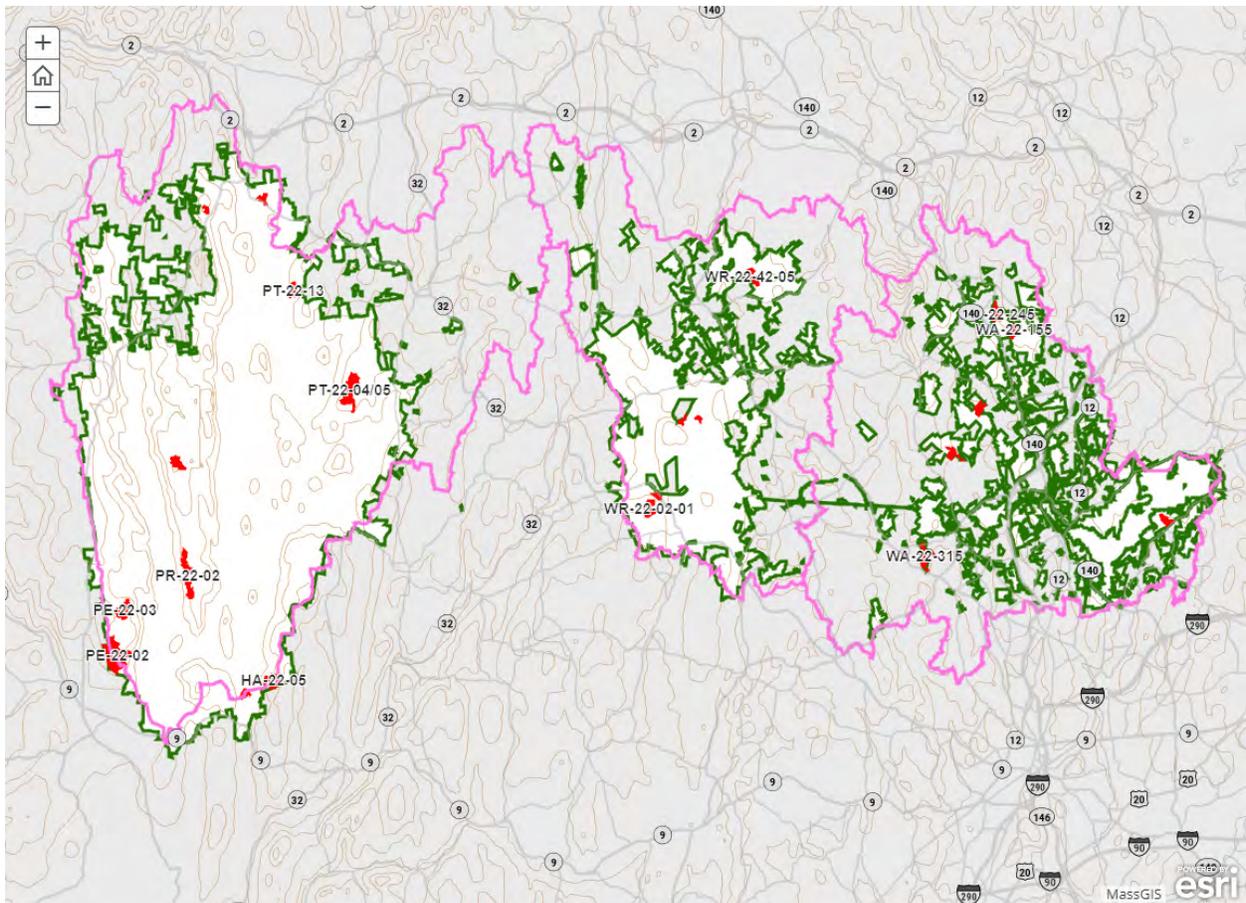
**Public comment** on these proposals is welcome and can be submitted online at this link: <https://www.mass.gov/forms/dcr-public-comments>. Comments may also be submitted by U.S. mail to

Department of Conservation and Recreation  
Office of Public Outreach  
251 Causeway Street  
Boston, MA 02114

**These proposals were presented at the Quabbin Watershed Advisory Committee meeting on June 28, 2021, and the Ware River Watershed Advisory on July 8, 2021. A link to this interactive web map application was also distributed to all advisory boards and committees, and letters were sent to individual Select Boards of affected towns.**

**Public Comments will be accepted until the close of business on Friday, August 6, 2021.**

If you have any questions, please contact Natural Resources Specialist Brian Keevan at [brian.keevan@mass.gov](mailto:brian.keevan@mass.gov) (preferred) or at (413) 213-7948.



# DWSP Forestry and Cultural Resources

## WATERSHED PROTECTION FORESTRY

[The Division of Water Supply Protection](#) (DWSP) is mandated to protect drinking water resources for over three million Massachusetts residents. DWSP owns and manages over 100,000 acres of land within the Quabbin Reservoir, Ware River, Wachusett Reservoir, and Sudbury Reservoir watersheds. Forests on these lands serve as a living, protective filter, producing high quality water in our streams and reservoirs. DWSP is committed to maintaining a watershed protection forest cover on the vast majority of its lands, and has determined that the most resilient and protective forest is one that is vigorously growing and comprised of a broad diversity of tree species and ages. The Division's long-term objective is to steadily transition today's mostly even-aged forest into a forest with more balanced proportions of young, middle-aged, and older trees of a variety of native species. These conditions have been shown to promote and enhance native plant and wildlife biodiversity. DWSP's working hypothesis is that a diverse forest structure will also promote resiliency in the event of large and small scale natural disturbances such as increasingly severe weather events, disease outbreaks, and insect pest infestations.

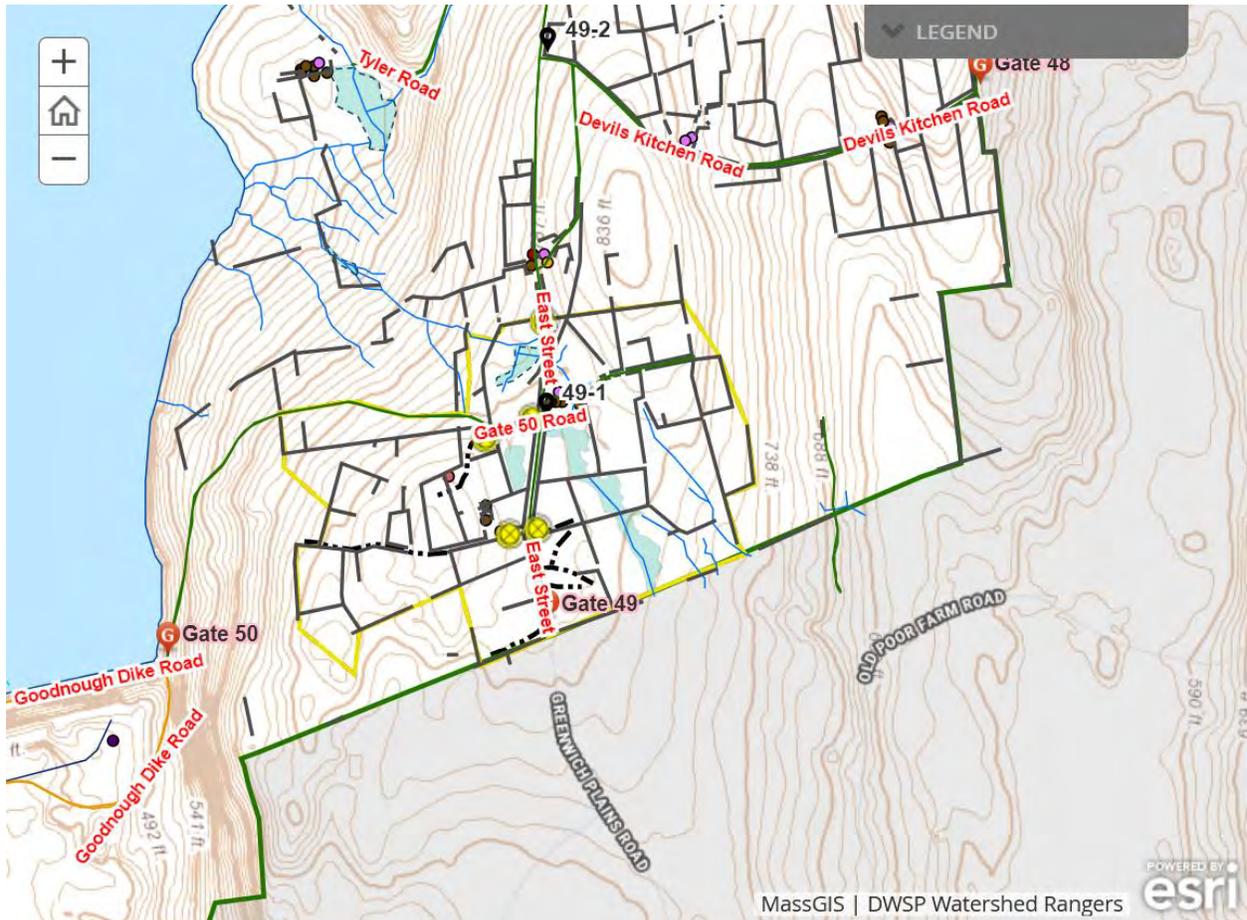
For full details on DWSP watershed land management please see the:

[2017 Land Management Plan](#) (opens a pdf)



DWSP FORESTRY PLANNING AND REVIEW PROCESS

[DWSP Foresters](#) are responsible for the design, preparation, implementation, and oversight of forest management operations. Each year they prepare a number of timber harvest proposals which are reviewed for compliance with Land Management Plan goals and for protection of environmental resources by DWSP professionals in Natural Resources, Environmental Quality, and Watershed Management. Cultural resource review is completed by DCR's Archaeologist. Following this process, these proposals are made available for public comment as presented here.

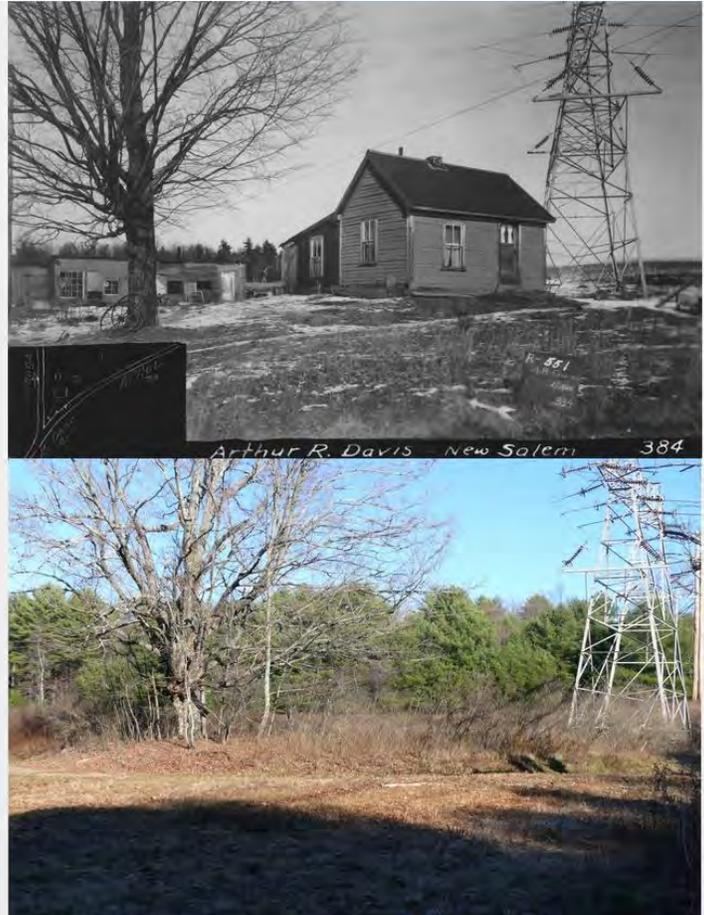


## Cultural Resource Protection and DWSP Forestry Activities

Cultural resource review has been a standard part of the internal review of DCR forestry activities for over two decades. In addition to overseeing historical preservation activities throughout the DCR Parks system, the DCR archaeologist reviews the areas we propose to harvest for proximity to known or potentially sensitive sites, both historic and pre-Contact.

Feedback is often fairly standard. If there are known to be significant historic or archaeological resources documented within the proposed project parcel, then the lot will have restrictions to be operated when the ground is dry, frozen, or can support harvesting equipment. A standing requirement is that any cultural resource features located before or during the forestry project will be protected according to guidelines set forth in the current DWSP's Land Management Program and indicated on harvest maps accordingly. And foresters are asked to flag, protect, photograph, and map any cultural features and contact DCR staff archaeologist if there are any questions or concerns.

In most cases on DWSP properties, the cultural resource sites are easily identified as recent historical activities associated with agricultural land clearing and farming by European colonists. Stone walls, cellar holes, foundations, and wells are routinely encountered by foresters as they walk DWSP's watershed forests. Some of these structures are well-documented, especially at Quabbin, while others would require research to determine original owner/builder, last known owner, etc. Systematic surveys were conducted of all the known historical sites at Quabbin by researchers in the 1990s, using property maps created when the lands were surveyed and taken for construction of the reservoir. Much of this information is available upon request at the Quabbin Visitor Center in Belchertown.

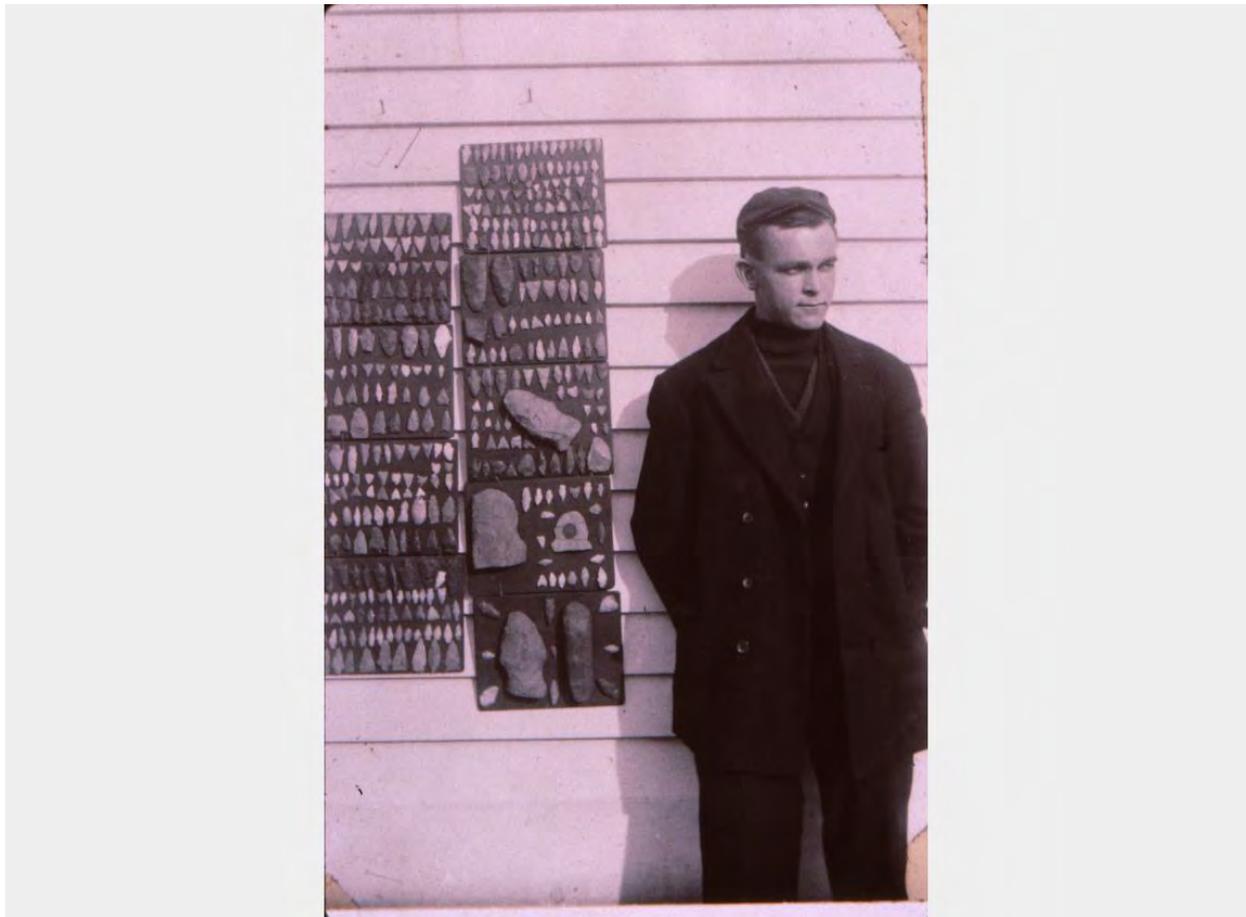


## Protection of Sensitive Sites

These lands had been occupied for thousands of years before the influx of Europeans in the 17th century and the reworking of the landscape to suit their agricultural way of life. Plowed soils often revealed artifacts from pre-Contact land use, such as the tools and weapons collected by this enthusiast from pre-Quabbin Enfield.

DCR's archaeologist routinely consults Massachusetts Historical Commission records to determine proximity of proposed activities to known protected sites such as villages and burial sites. Models are also consulted that use ground conditions such as topography and distance to water sources to estimate the potential locations of other pre-Contact sites such as seasonally occupied camps.

In an effort to protect this information it will not be included in the public documentation for the forestry proposals. DWSP foresters abide by all recommendations pertaining to protection of historic and pre-Contact cultural resources.



## Ongoing Field Mapping of Cultural Resources

Known and visible features and sites are mapped using GIS and are incorporated into editable digital field maps. Mapping apps for smartphones and tablets have revolutionized the ability for foresters to verify locations and add previously unmapped features right in the field. This technology aids immensely in planning harvesting operations.

At Ware River, Wachusett, and Sudbury no modern systematic surveys have been conducted, although the foresters routinely map stone walls and other features and do consult property sheets that show locations of extant homes and outbuildings at the time of land takings.

Most of what you will read in these individual lot proposals will be the foresters' assessments of visible cultural features in the area, and these are nearly always stone features related to colonial and post-colonial land use.



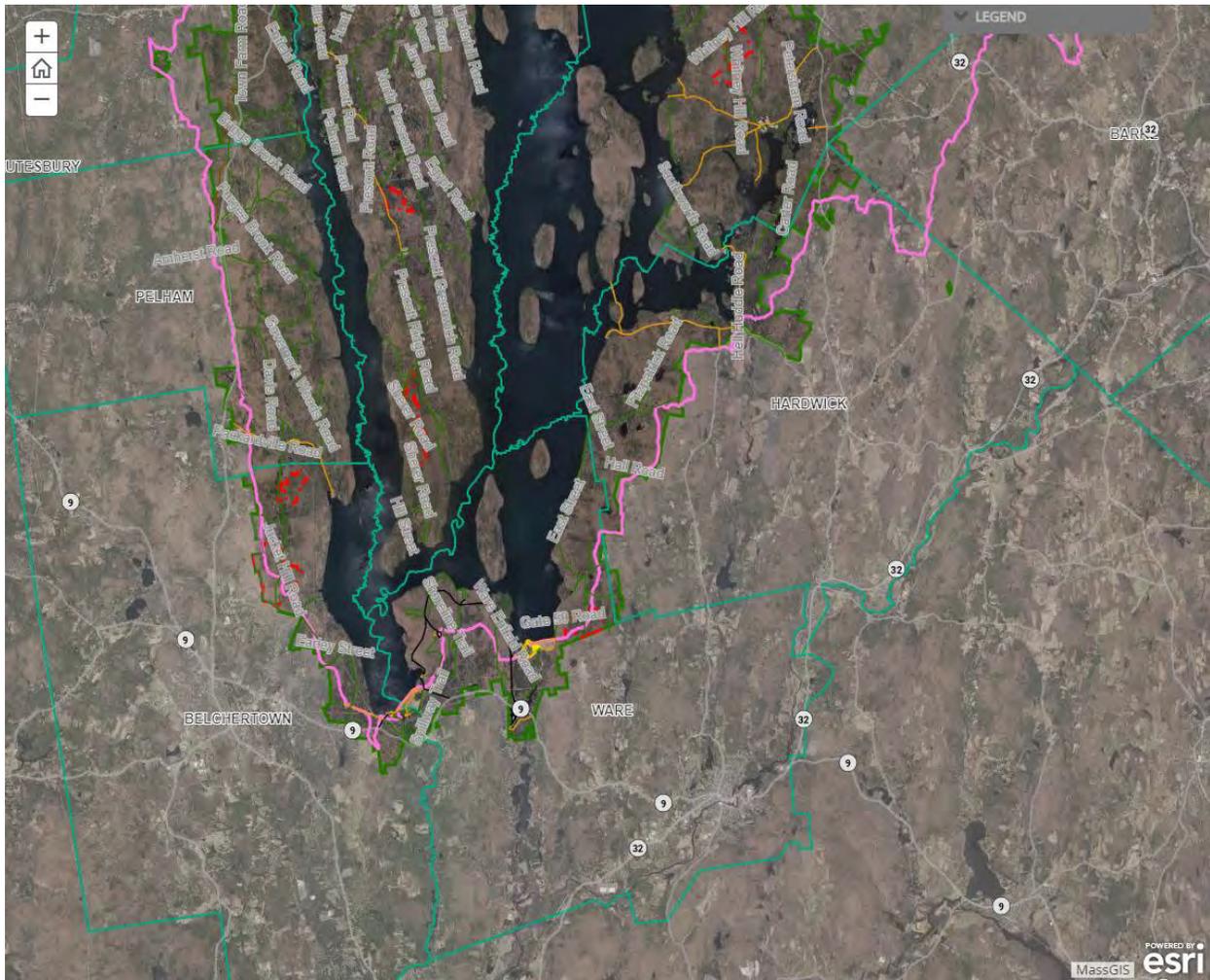
# Quabbin Harvest Proposal HA-22-4

## Proposal Goals

This is an even-aged stand of white pine/oak and oak/hardwoods on a dry site that is proposed to be modified to an open oak barren to be managed with prescribed fire shortly after logging is completed and periodically thereafter as needed to maintain the desired condition. Forestry is working closely with NR and NHESP to improve habitat for multiple endangered species that require this type of habitat to survive.

## Proposal Location

Wooded area east of Goodnough Dike Road and north of the lower road (wooded area NE of road intersection and west of the mowed areas of dike).



**Total Acres: 29**

General Description

	Overstory Type(s)	Acres
<b>Dominant</b>	White Pine - oak	16
<b>Secondary</b>	Oak - hardwoods	11
<b>Other</b>	Red pine	2

	Understory Type(s)
<b>Dominant</b>	Tree seedlings/saplings dominate site
<b>Secondary</b>	Dry site - blueberry/huckleberry

**Description of forest composition/condition:**

Proposal is on a dry pine/oak flat that drops off to some ledge and steep rocky ground that slopes towards Goodnough Dike.

The only recent harvest on proposal area was 15.6 acres thinned in 1985. Some of this harvest was likely for salvage of gypsy moth impacted trees. Some small openings were established in this cut and regeneration was stimulated throughout the area but most is now stagnant and some of the white pine is dropping out. The whole proposal is currently well stocked and even-aged. Gypsy moth impacted the whole area from 2015-2020 resulting in only scattered oak mortality though. Other than the gypsy moth impact the stands are healthy and fairly vigorous considering the site.

The area is mostly white pine/oak with white pine, red pine, red, black, scarlet and white oak, red maple and black birch with some scattered black cherry and white birch. North of the landing and to the east, where the terrain drops off, the pine drops out leaving only the hardwoods. At the base of the dike, on the flat, there is an isolated pocket of white and red pine with some hardwoods, that due to the amount of edge and exposure are mainly poorly formed.

**Assessment of Terrestrial Invasive Species:**

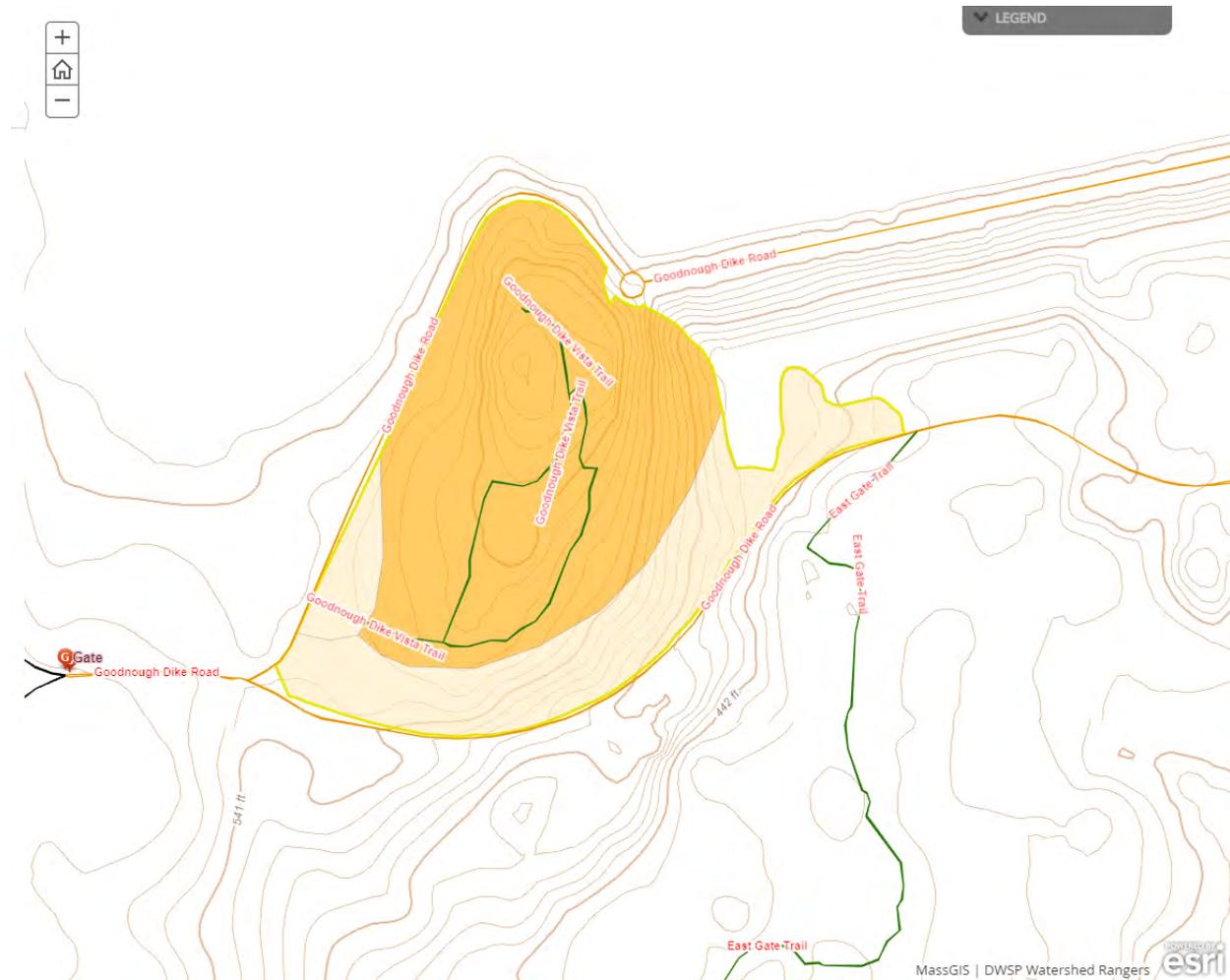
Some invasives present including Asiatic bittersweet, honeysuckle, porcelain-berry, and multiflora rose. These were located mainly near the road and in the stand of red/white pine in SE corner. Some treatment has been done by NR in conjunction with endangered plant habitat management.



## Soils

Drainage Class	%
Excessively Drained	34
Well Drained Thin	66
Well Drained Thick	0
Moderately Well Drained	0
Poorly to Very Poorly Drained	0

Mainly well drained 103E Charlton-Hollis-Rock outcrop complex; eastern and southern flat is excessively drained 253E Hinckley loamy sand.



## Wetlands

- Wetlands present? - **No**
- Streams present? - **No**
- Vernal pools present? - **No**
- Seeps present? - **No**
- Are stream crossings required? - **No**
- Are wetland crossings required? - **No**
- Is logging in filter strips planned? - **No** ([Riparian Zone Mgt](#))
- Is logging in wetlands planned? - **No**

None known, site is all well to excessively drained.



## Silviculture

Acres in Intermediate cuts: 0

Acres in prep/establishment cuts: 27

Acres in Regeneration cuts: 0

Average regen opening size: 1

Maximum regen opening size: 2

**Description of advance regeneration in proposal area:**

Regeneration is moderately diverse and well distributed. Regeneration is mainly in the seedling and sapling size classes and includes white pine and red maple with black birch, red, black and white oak and hickory. The past harvest was a while ago and fairly low intensity, so much of regeneration is stagnant now and some of the white pine is dying out. Area is surrounded by trails open to public and a loop trail goes through the upper flat area so there is regular human presence here which helps keep herbivores moving so browse impact is light. Moose rarely travel through here but deer do use the area. Most areas have over 1,000 seedlings/acre.

**General comments on silviculture proposed:**

Note this treatment's goal is to improve habitat for several endangered species by creating an open oak barren. Standard silviculture doesn't apply here and if treatment is successful and maintained the normal natural succession and regrowth of tree species will be altered. Goal is to remove all the white pine, red maple and other hardwoods other than the oaks and any hickory, basswood or sugar maple. Only the better formed, vigorous oaks would be retained along with any healthy hickory, basswood, sugar maple and pitch pine that might be present. Targeted density of retained overstory is 50% canopy cover. A whole tree chipping operation will be required so that as little as possible woody debris is left on the forest floor. Typically 1-2 years post-harvest stump sprouts other than oak and any invasives would be treated with herbicides, and 3-5 years post-harvest the area would have a controlled burn to control white pine and any remaining hardwoods other than oak. The fire also helps create conditions to initiate and stimulate growth of a range of fire dependent endangered plants and improve the habitat for the species that depend on them. Fire would be reintroduced on the site periodically, as needed (typically 8-10 yrs.) to maintain the habitat. The residual oak basal area will be reduced to 40-60 sq. ft. per acre and with the varying amount of other hardwood and pine there might be open areas up to around 2 acres created within this.

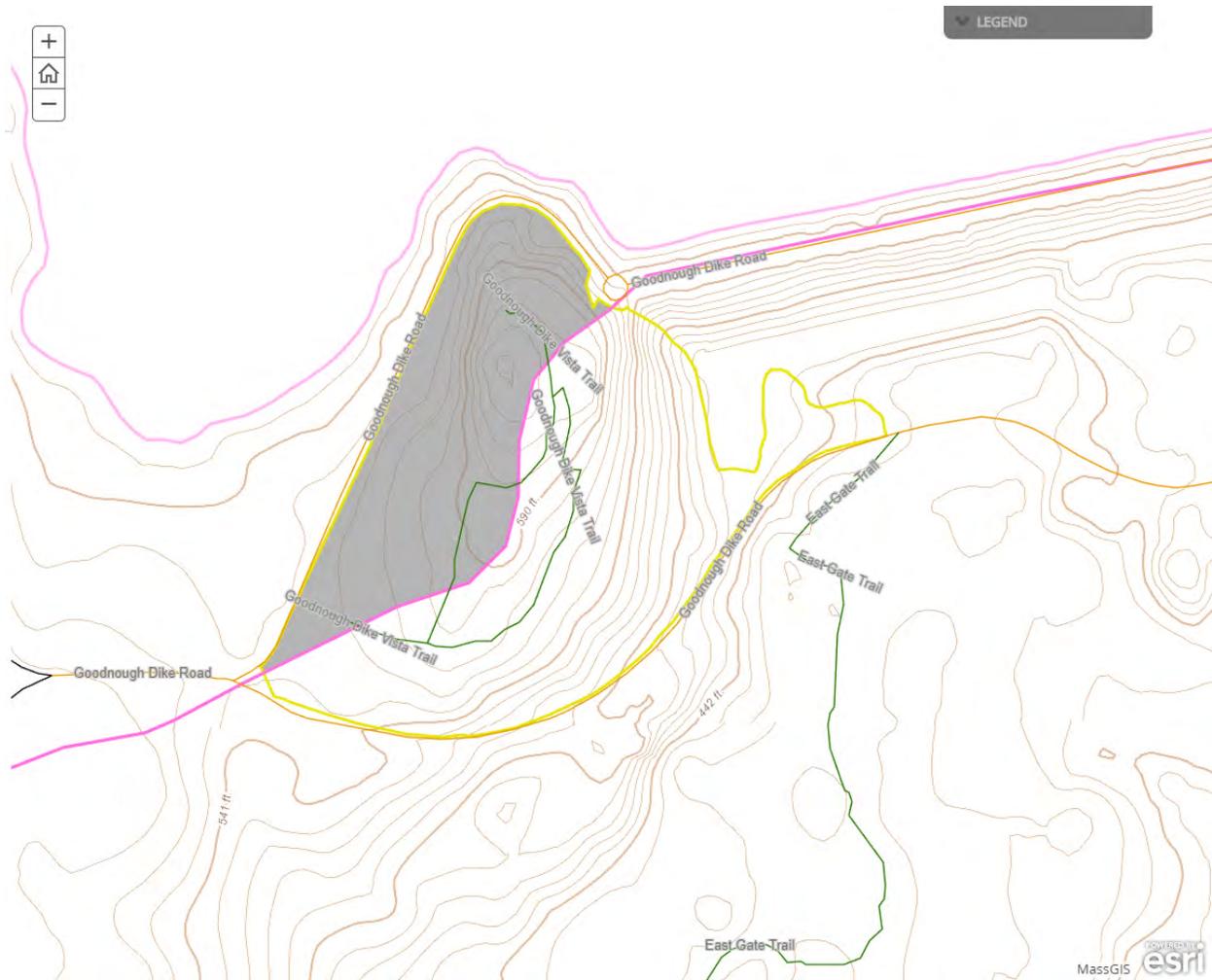
There is about 2.2 acres on the hill side by the dike that are very steep and rocky with exposed ledge and bedrock outcrop. These sections are inoperable and won't be treated unless it's decided to remove some of the undesirable species by hand. Due to the slope and proximity to the dike and erosion concerns, this will be carefully considered before undertaking. There is an additional 2.9 acres of steep ground on this hill side will be hard to harvest. Only one location for a skid trail down the slope has been identified and is mapped. Besides the steepness of slope and rockiness, proximity to the lower Dike Road and an old concrete drainage ditch which runs from the top of dike along the tree line all the way to and along the wooded flat at the base of the dike make harvesting this section difficult.



### 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
72 (Quabbin Park East)	325	12	69	11
Off-watershed	-	-	-	18

Only 11.15 acres of this proposal are on the watershed. The acres remaining to harvest in the sub-watershed far exceeds this so there is no way to exceed the 25% limit.



## Harvesting Limitations

Forwarder required: **No**

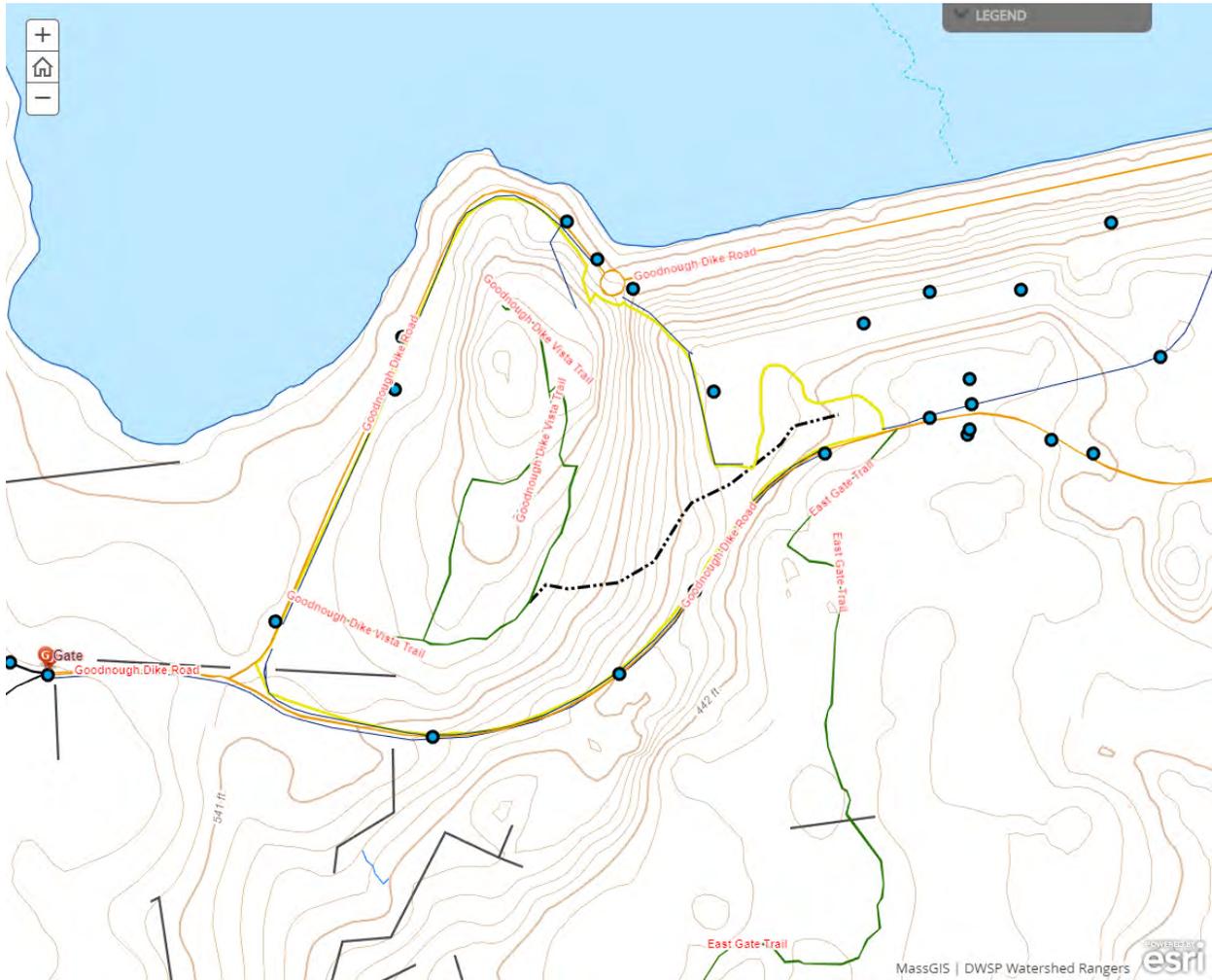
Feller/processor required: **No**

Steep slopes present: **Yes**

### Comments on harvesting limitations:

A whole tree chipping operation is preferred by NHESP ecologists to create desirable habitat and to create conditions favorable for future fire management. Landing area will be cleaned of chips and other woody debris removed from the site at end of job. There is a steep hillside towards Goodnough Dike with 2 mapped steep and rocky areas that are inoperable. There is also a large,

split bedrock outcrop here. Any skid trails through this steep section will require water bars at least every 100'.



## Cultural Resources

### Comments on Cultural Resources:

Area is adjacent to the reservoir and surface soils have most likely been heavily impacted by past farming and later by the reservoir construction. No known historic features. Most of the eastern half of lot is steep and rocky.



## Wildlife Resources & Rare and Endangered Species

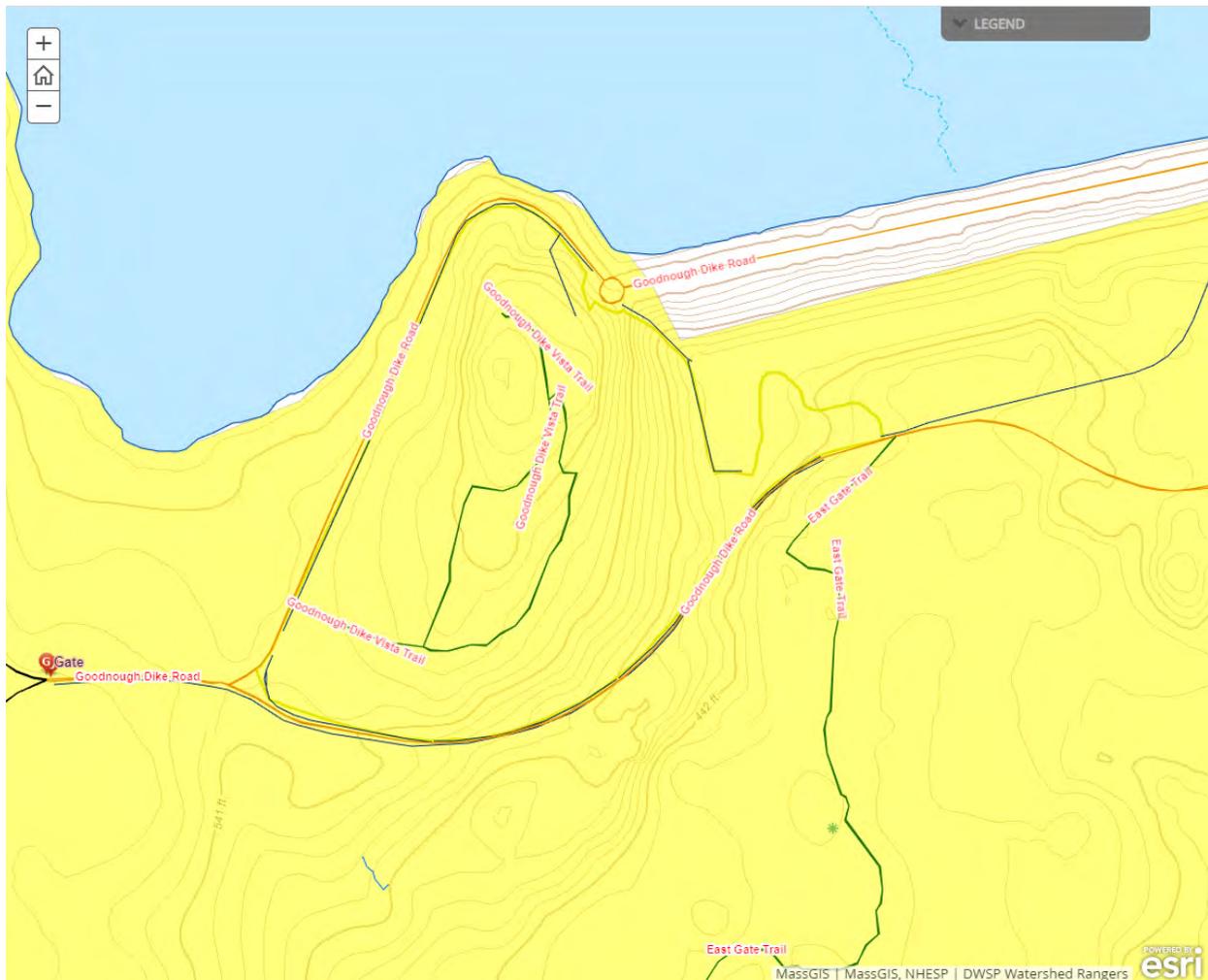
### General Wildlife Comments:

Moose, deer, turkey and bald eagle are a few of the species seen on the site. Moose mainly just pass through but deer are common and at least moderate browse is expected. This impact could be counter productive to one of the goals which is to maintain oak, especially scrub oak, on the site but will be beneficial in controlling other hardwoods.

### Comments on Rare Species/Habitats:

Main objective of cut is to improve and create oak barren habitat, remnants of which still persist.

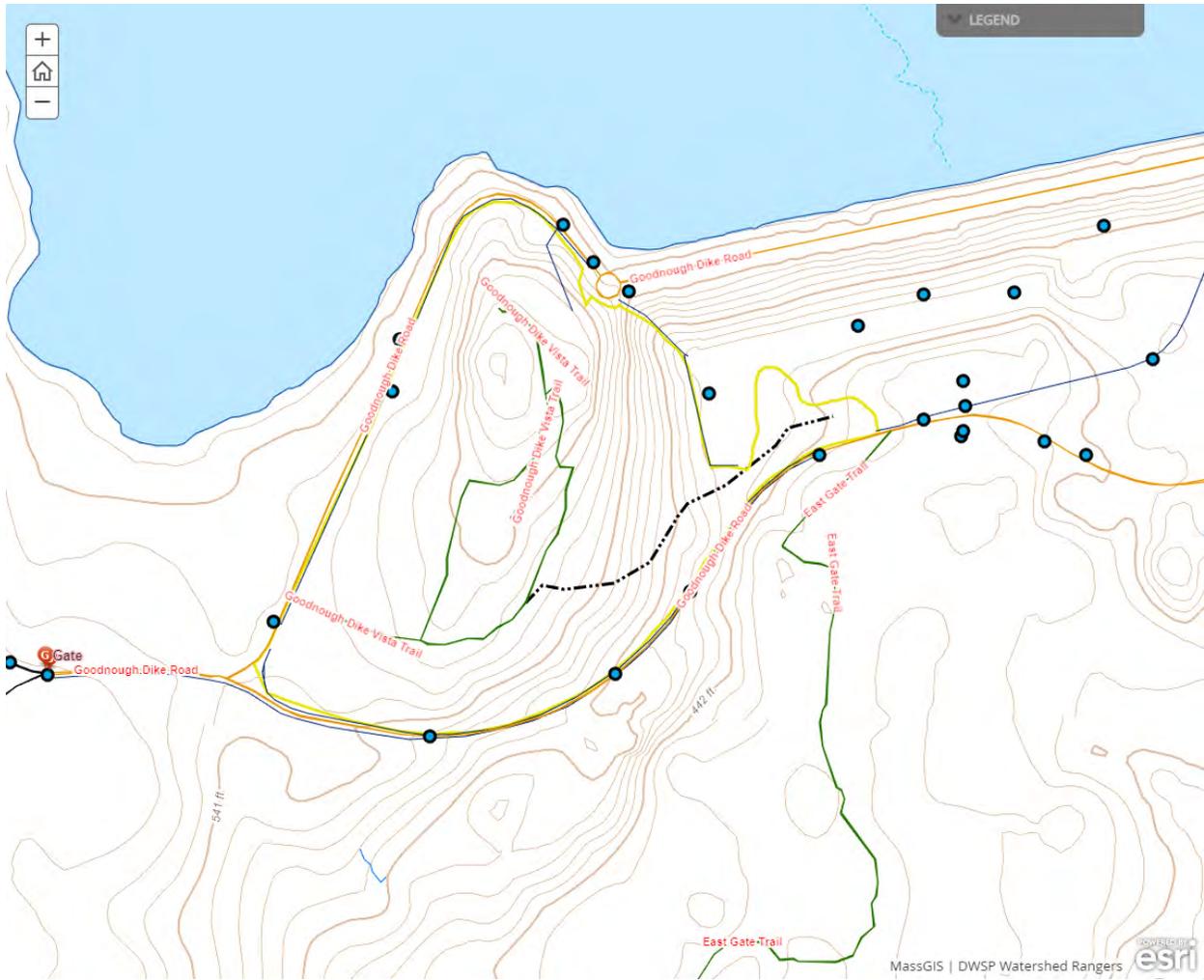
NHESP has determined that certain state-listed sensitive species and habitats exist within the lot proposal area. To protect them from unnecessary disturbance, detailed information regarding species and their locations is not included in this report. DWSP is coordinating with NHESP and will follow recommendations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



## Environmental Quality Engineering

### Comments on EQ Issues:

No wetlands or streams exist on site. There are multiple culverts that drain roadside water into reservoir. Spill kits will be required to be on site during harvesting operations and a DCR spill trailer may be moved on site while logging is taking place.



## Forest Access Engineering

**Gravel needed:** Yes

**Landing work needed:** Yes

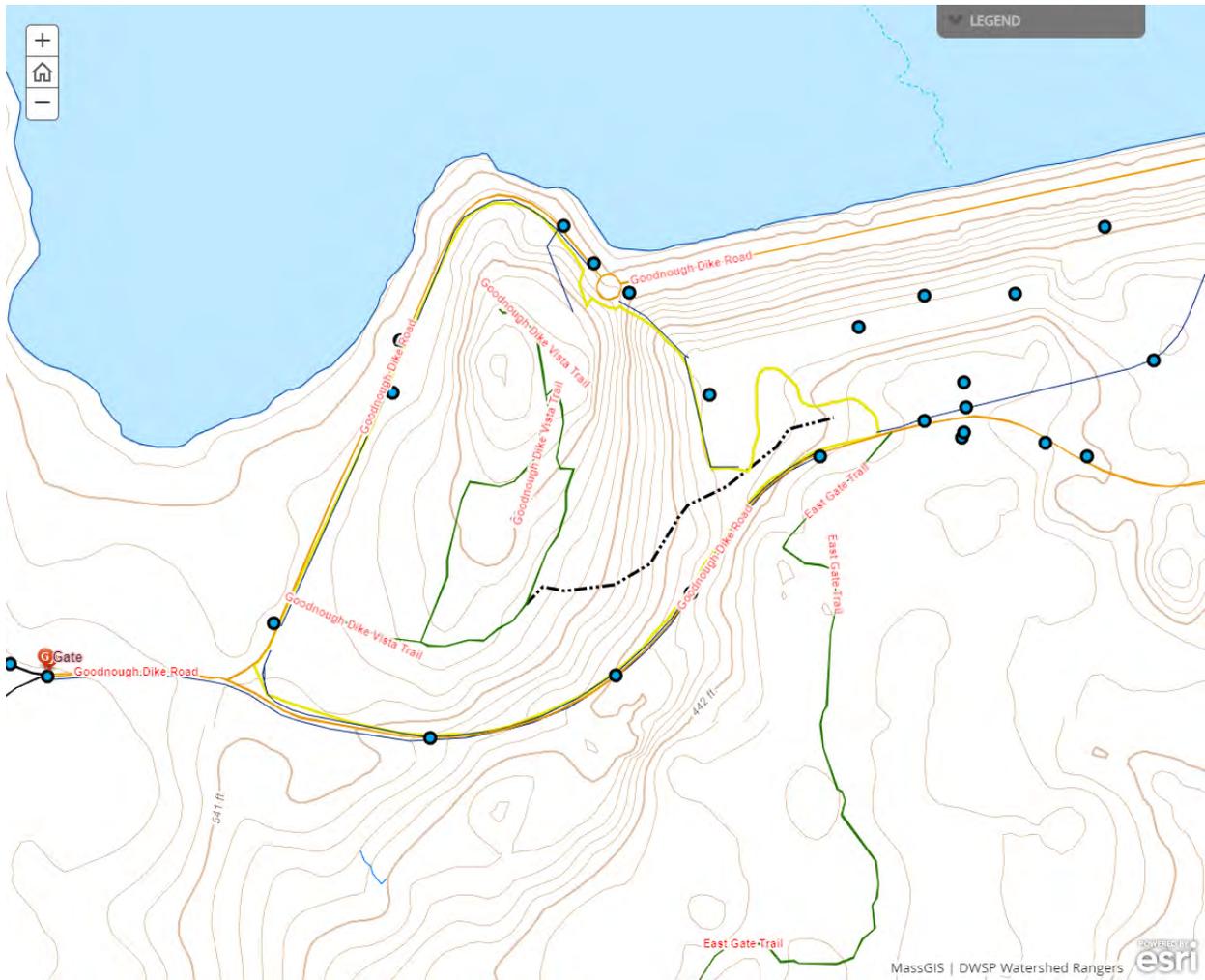
**Culverts needed:** No

**Work needed on permanent bridges:** No

**Beaver issue:** None

**Further comment on access needs:**

Access is through high security gate 50A. One or 2 of the bollards will need to be removed to allow trailer access to site. A landing suitable for a chipping operation will be established just NE of the junction of upper and lower Goodnough Dike Road; gravel may be needed to protect the edge of the paved Dike Road.



DWSP FY 2022 Forestry Proposals – Master Legend for story maps

<p><b>DWSP Gates</b></p> <hr/> <p><b>Landings</b></p> <hr/> <p><b>Crossings</b></p> <p>Xng</p> Stream Crossing	<p><b>QWWS Watershed Boundaries</b></p> <hr/> <p><b>Vernal Pools</b></p> <p>Status</p> <ul style="list-style-type: none"> <li>● Not a vernal pool</li> <li>● Potential vernal pool</li> <li>● DCR verified vernal pool</li> </ul> <p><b>Streams - Quabbin</b></p> <p>FType</p> <ul style="list-style-type: none"> <li>— Coastline/Shoreline</li> <li>— Stream/River</li> <li>- - - - - Swamp/Marsh</li> <li>- · - · - Submerged Stream</li> <li>- - - - - Artificial Path</li> <li>— Canal/Ditch</li> <li>- - - - - Pipeline</li> <li>— Dam/Weir</li> <li>— Connector</li> <li>— Unknown</li> <li>— Other</li> </ul> <p><b>Water Bodies - Quabbin</b></p> <p>FType</p> <ul style="list-style-type: none"> <li>■ Reservoir</li> <li>■ Lake/Pond</li> <li>■ Stream/River</li> <li>■ Swamp/Marsh</li> </ul> <p><b>Streams - Ware River</b></p> <p>FType</p> <ul style="list-style-type: none"> <li>— Stream/River</li> <li>— Canal/Ditch</li> </ul> <p><b>Water Bodies - Ware River</b></p> <p>FType</p> <ul style="list-style-type: none"> <li>■ Reservoir</li> <li>■ Lake/Pond</li> <li>■ Stream/River</li> <li>■ Swamp/Marsh</li> <li>■ Other</li> </ul> <p><b>Streams - Wachusett</b></p> <p>EQ_Stream_Type</p> <ul style="list-style-type: none"> <li>— Aqueduct</li> <li>- - - - - Ditch/Canal</li> <li>- · - · - Intermittent Stream</li> <li>— Perennial Stream</li> </ul> <p><b>Waterbodies - Wachusett</b></p> <p>EQ_Wetland_Type</p> <ul style="list-style-type: none"> <li>■ Reservoir</li> <li>■ Lake, Pond, Wide River, Impoundment</li> <li>■ Wetland, Marsh, Swamp, Bog</li> </ul> <p><b>NHESP Priority Habitats</b></p> <hr/> <p><b>NHESP Certified Vernal Pools</b></p> <p>NHESP Certified Vernal Pools</p>	<p><b>Forest Cover Type - Filled</b></p> <p>CoverTypeFull</p> <ul style="list-style-type: none"> <li>■ White Pine-Hardwoods</li> <li>■ Oak-Hardwoods</li> <li>■ White Pine-Oak</li> <li>■ WetHard</li> <li>■ Mixed Hardwood</li> <li>■ White Pine</li> <li>■ Grasses and Forbs</li> <li>■ White Pine-Hemlock</li> <li>■ Mixed Oak</li> <li>■ Northern Red Oak</li> <li>■ Red Maple</li> <li>■ Powerline</li> <li>■ WetMixed</li> <li>■ Error - Not DWSP</li> <li>■ Red Pine</li> <li>■ Shrub Swamp</li> <li>■ Upland Brush</li> <li>■ Northern Hardwood</li> <li>■ Road</li> <li>■ Beaver Pond</li> <li>■ Hemlock</li> <li>■ Hemlock-Hardwoods</li> <li>■ Mixed-Oak</li> <li>■ Norway Spruce</li> <li>■ Pitch Pine</li> <li>■ WetCon</li> <li>■ Abandoned Orchard</li> <li>■ Black Birch-Hardwoods</li> <li>■ Gravel Pit</li> <li>■ Northern Hardwoods</li> <li>■ Pitch Pine-Oak</li> <li>■ Water</li> <li>■ Oak, Mixed</li> <li>■ White pine - oak</li> <li>■ Mixed hardwoods</li> <li>■ Hemlock - hardwoods</li> <li>■ White pine - hardwoods</li> <li>■ Black Birch-Hardwood</li> <li>■ Field, mowed</li> <li>■ Oak - hardwoods</li> <li>■ Abandoned Field</li> <li>■ Beaver Meadow</li> <li>■ Chestnut Oak Heath</li> <li>■ Mixed hardwood</li> <li>■ White pine/hardwoods</li> </ul> <p><b>Forest Cover Type - Outline</b></p>	<p><b>SubWatersheds (QWWS-filled)</b></p> <p>Subwatershed Name</p> <ul style="list-style-type: none"> <li>■ ASNEBUMSKIT BROOK</li> <li>■ Barre Falls</li> <li>■ Belchertown Shoreline</li> <li>■ Blackington Swamp</li> <li>■ Cadwell Creek</li> <li>■ Cunningham</li> <li>■ East Br. Fever Brook</li> <li>■ East Prescott North</li> <li>■ Fed. Forest Stream</li> <li>■ Gate 20 Rd. Stream</li> <li>■ Gate 52 Shoreline</li> <li>■ Gates Brook</li> <li>■ Gibbs Brook</li> <li>■ Josslin</li> <li>■ Juckett Hill East</li> <li>■ MIDDLE STILLWATER/ROCKY/WILDER BROOK</li> <li>■ Mary Tamplin Drainage</li> <li>■ Middle Br. Swift Lower</li> <li>■ Moosehorn Brook</li> <li>■ NORTH STILLWATER/KEYES BROOK</li> <li>■ Northeast Shoreline</li> <li>■ Parker</li> <li>■ Prescott Brook</li> <li>■ Quabbin Park East</li> <li>■ RES. SHORELINE EAST</li> <li>■ Sherer Rd. North</li> <li>■ TROUT BROOK</li> <li>■ Thurston Brook</li> <li>■ Underhill Brook</li> <li>■ WACHUSETT BROOK</li> <li>■ Ware</li> <li>■ West Prescott Middle</li> <li>■ West Prescott North</li> <li>■ West Prescott South</li> <li>■ Whitney Hill Southeast</li> <li>■ Whitney Hill West</li> <li>■ Other</li> </ul> <p><b>Subwatersheds (WA-outline)</b></p> <hr/> <p><b>SubWatersheds (QWR-outline)</b></p> <hr/> <p><b>Subwatersheds</b></p>	<p><b>Forestry Proposal Boundaries</b></p> <hr/> <p><b>Towns</b></p> <hr/> <p><b>Water Supply Property Boundary</b></p> <hr/> <p><b>Proposed Skid Trails</b></p> <hr/> <p><b>Stone Walls - WA</b></p> <hr/> <p><b>StoneWalls - QWR</b></p> <hr/> <p><b>Stony Soils</b></p> <p>Stoniness</p> <ul style="list-style-type: none"> <li>■ extremely stony</li> <li>■ very stony</li> </ul> <p><b>Soils - Drainage</b></p> <p>Drainage Class</p> <ul style="list-style-type: none"> <li>■ Excessively Drained</li> <li>■ Well Drained Thick</li> <li>■ Well Drained Thin</li> <li>■ Moderately Well Drained</li> <li>■ Poorly To Very Poorly Drained</li> </ul> <p><b>Quabbin and Ware River Cultural Resources Inventory (Public view)</b></p> <p>Type</p> <ul style="list-style-type: none"> <li>● No Value/Blank</li> <li>● Agrarian</li> <li>● Cellar Hole</li> <li>● Civic</li> <li>● Commercial</li> <li>● Industrial</li> <li>● Military</li> <li>● Other</li> <li>● Residential</li> <li>● Shed</li> <li>● Unknown</li> </ul> <p><b>QWWS Percent Slope</b></p> <ul style="list-style-type: none"> <li>■ 0 - 7</li> <li>■ &gt; 7</li> </ul>
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# Quabbin Harvest Proposal HA-22-5

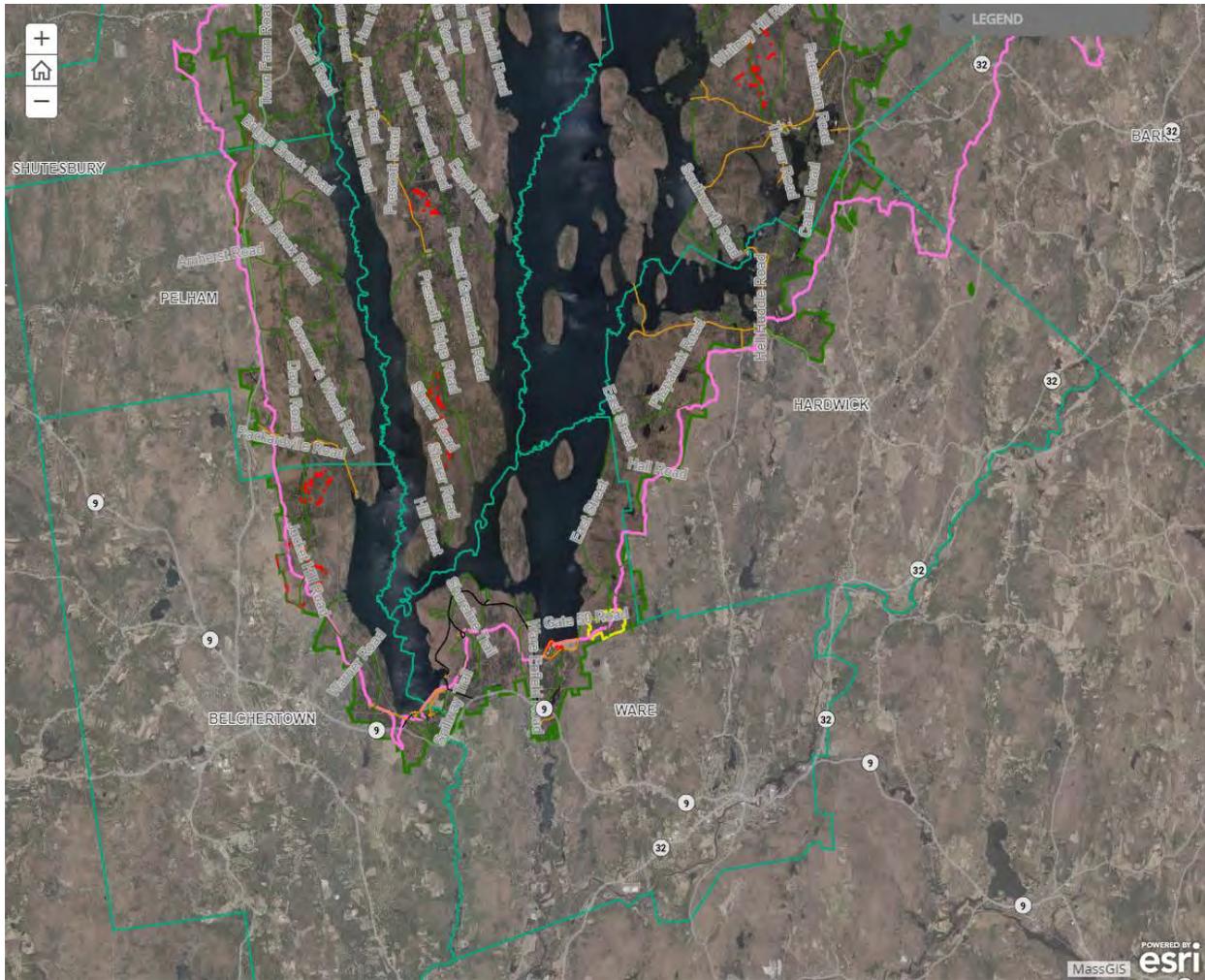
## Proposal Goals

One third of this proposal is red pine plantations that have been cut multiple times and have been declining due to red pine scale. A final harvest is proposed here which will leave a diverse uneven- aged stand. The rest of the area is mainly white pine or white pine hardwood stands proposed to receive our standard group selection harvest or a seed cut shelterwood harvest which will allow for diverse regeneration to become established and further release existing regeneration.

## Proposal Location

135 acre block of red pine plantations and abutting white pine, oak and hardwood stands. Starts at boundary at gate 49 and is roughly a rectangle 2,300' x 3,600' that is mostly bounded by stone walls.

**Total Acres: 135**



## General Description

	Overstory Type(s)	Acres
<b>Dominant</b>	White Pine - hardwoods	67
<b>Secondary</b>	Red pine	40
<b>Other</b>	Oak - hardwoods	19

	Understory Type(s)
<b>Dominant</b>	Tree seedlings/saplings dominate site
<b>Secondary</b>	Mesic site - witch hazel, highbush blueberry

**Description of forest composition/condition:**

The red pine plantations here have all been cut multiple times and are in various stages of being converted to uneven-aged white pine - hardwoods. Red pine scale has been present in the stand and the harvests occurred before there was much mortality in the stand so there is some, but not a lot, of standing dead currently. Scale is still most likely present and some of the crowns are thin and getting brown again. First cut (P 38) was in 1968 and covered most of the stands. In 1977 a second cut (RP C5) was done in stands east of intersection 49-1 and in one of the stands to the west of East Street. Most of area was cut again in 1990-'91 (600, 677 and S18). The 2 stands on the north end had most of the remainder of the red pine cut at this time. The final harvest (1040) in the remainder of the plantation was completed in February 2014 and left groups and strips of red pine and created groups of regeneration on about 25% of the cut area. These stands are currently two-aged mixed species, predominately red and white pine with red, white and black oak, red maple, and black birch. Scattered ash, white birch and black cherry are also present. The regenerated groups are mainly sapling to pole sized white pine, black birch and red maple with scattered hickory, ash, oaks, and black cherry. Southwest of intersection of East Street and Gate 50 Road (49-1) is a large wooded wetland that contains a shrub swamp and has had vernal pool species identified in it. This area will be buffered and not harvested. Overstory is red maple with white pine and scattered hardwoods.

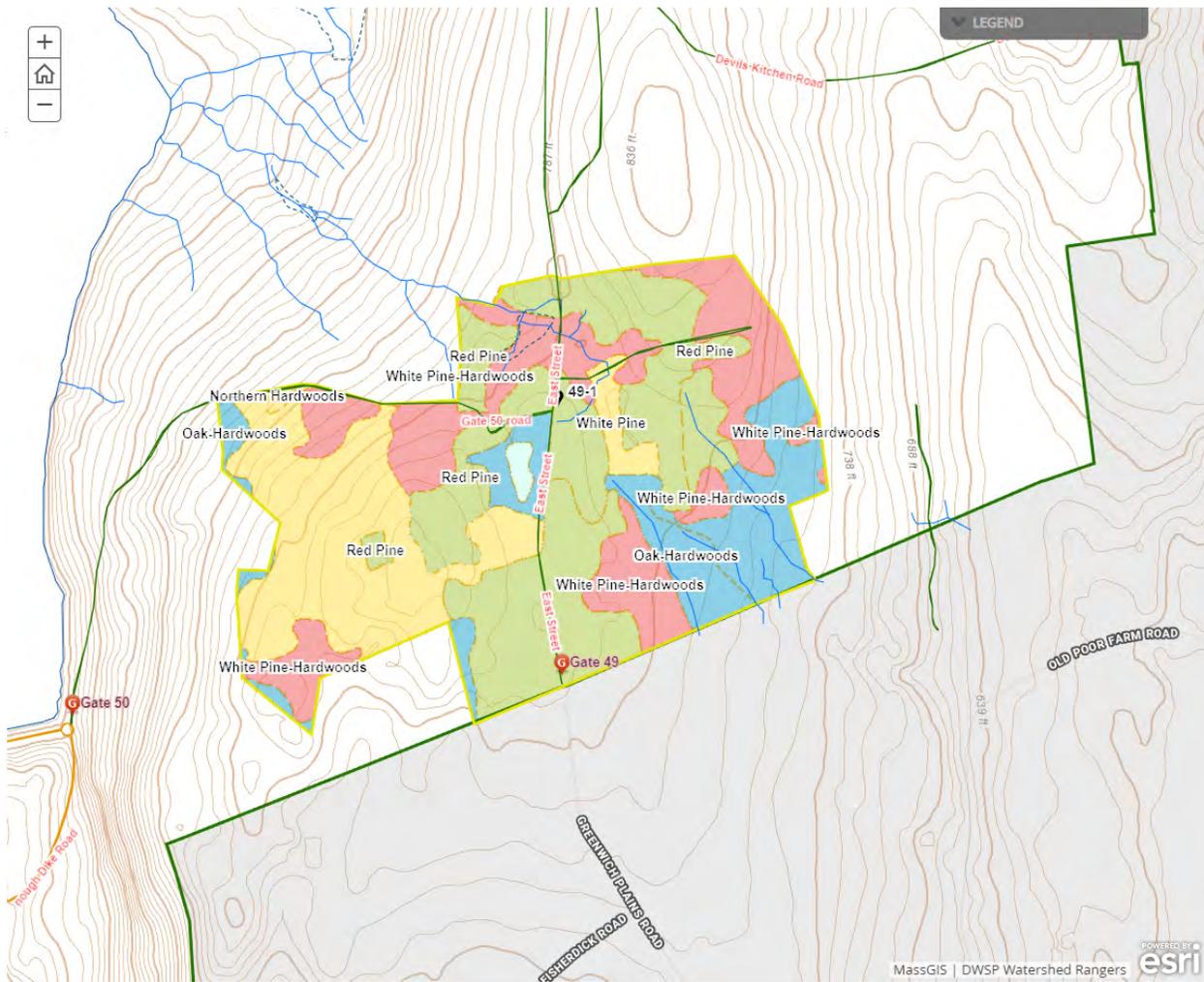
The rest of the western portion of proposal is mostly even-aged white pine/hardwoods with scattered small openings. All of this area has been previously cut starting in 1970 (61) and 1980 (222) and these cuts appear to have areas that overlapped, possibly to pick up gypsy moth - caused mortality. A second harvest was done in 2008 (1032) with small groups with retention created. There was plenty of regeneration started at this time but most now are overtopped and at risk of being damaged during future harvests. A similar cut took place in 2006 (1015) but most of this harvest was to the west of this proposal. Overstory is mainly white pine with oaks, red maple and black birch and scattered hickory, black cherry and white birch.

The eastern portion of the lot east of the red pine contains a couple of stands of white pine/hardwoods which have similar composition to the western stands but have not been cut recently for the most part. South of the walled lane, towards one of the vernal pools, is a pocket of large pitch pine mixed in with the pine/hardwoods. The southeast corner of the proposal contains an even-aged uncut oak/hardwood stand that transitions into a red maple wetland associated with an intermittent stream. There are several other intermittent streams that start on the southern edge and drain south off the property. Overstory is predominately red and black oak with red maple, white oak, black birch and ash along with scattered white birch, hickory and black cherry. Note the wetlands contain a lot of invasives (see section on invasives). Fortunately most are currently restricted to the wetter soils which won't be harvested. The last two stands are mainly red maple and black birch on seasonally wet soils. Most of these stands won't be cut this

time. The one just east of East Street was created by a patch cut of red pine (294) 5.3 acres in size and now is well stocked with white and black birch, red maple with scattered ash and oak.

**Assessment of Terrestrial Invasive Species:**

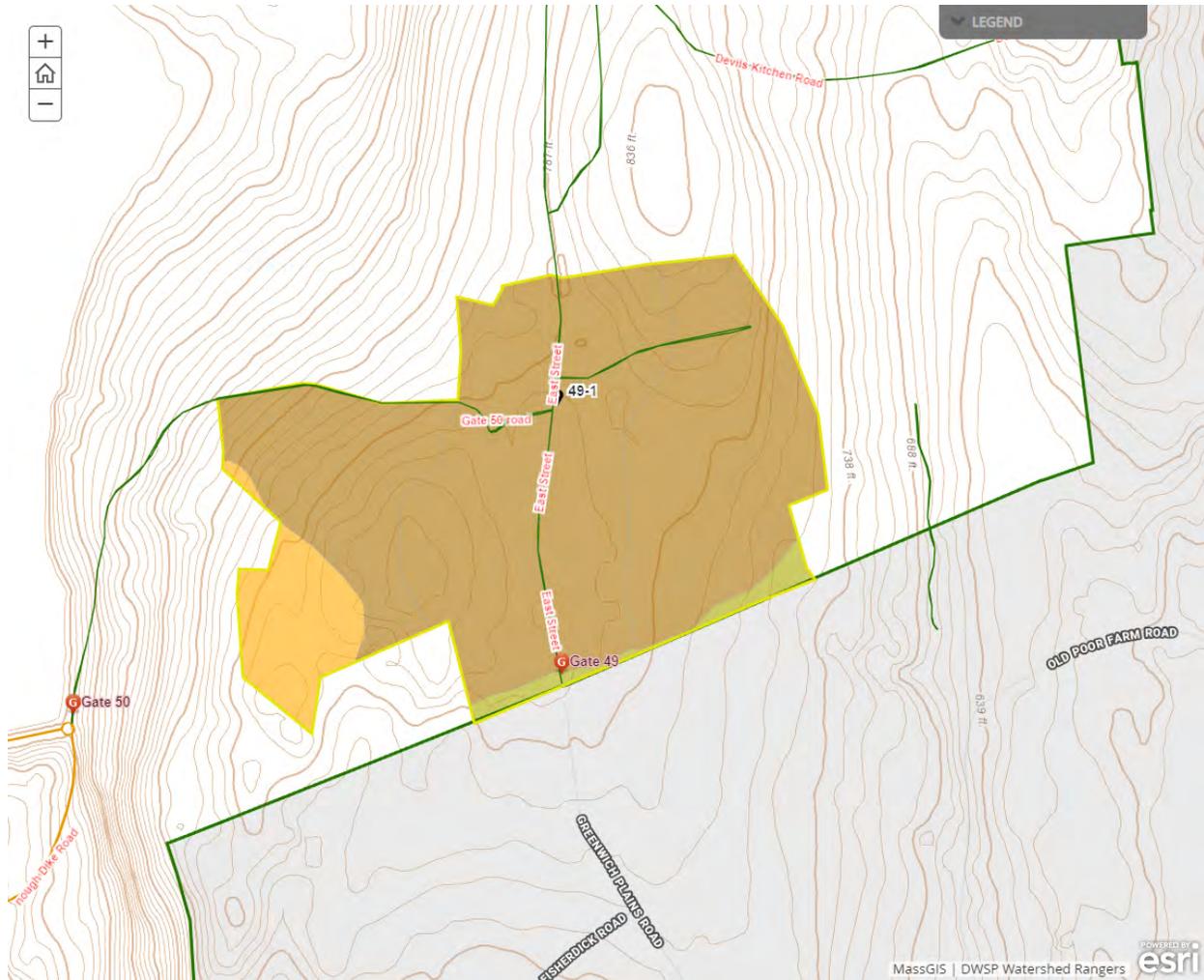
Japanese Barberry and Asiatic Bittersweet are common in and around several of the wetlands particularly the ones flowing out to southern boundary. Winged Euonymus and multiflora rose are scattered in these areas too.



**Soils**

Drainage Class	%
Excessively Drained	0

<b>Well Drained Thin</b>	9
<b>Well Drained Thick</b>	88
<b>Moderately Well Drained</b>	3
<b>Poorly to Very Poorly Drained</b>	0



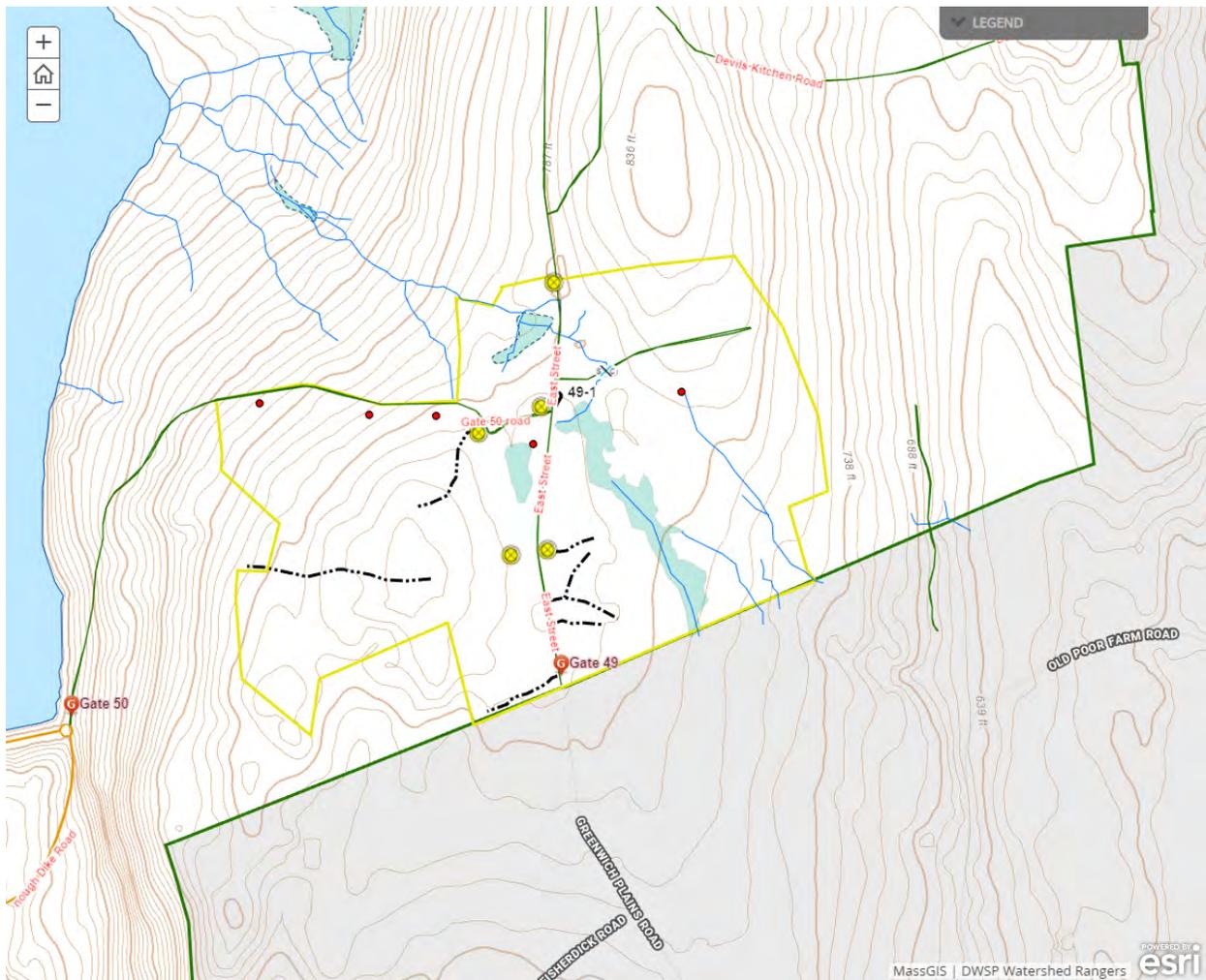
## Wetlands

- Wetlands present? - **Yes**
- Streams present? - **Yes**
- Vernal pools present? - **Yes**
- Seeps present? - **Yes**

- Are stream crossings required? - **Yes**
- Are wetland crossings required? - **No**
- Is logging in filter strips planned? - **Yes**([Riparian Zone Mgt](#))
- Is logging in wetlands planned? - **No**

The only crossing that should be required is over an intermittent brook that passes through a stone culvert in an old roadway. There are now 4 vernal pools identified south of Gate 50 Road. 2 are located in old gravel pits, one is an old gravel test hole and the third is a large shrub swamp/wooded wetland complex that has had vernal pool species identified in it. This last area stays wet all year. 2 more pools were identified and confirmed this year. 1111 was created by the above mentioned stone culvert which has become partially blocked with sediment over the years. The existing roadway has been used as a main skid trail and is the best access to the land to the east. Care needs to be taken when this access is used so as not to disturb the pool or create ruts in road. A portable bridge should be required to protect the stone culvert from damage. The last pool 2222 is in a depression that was probably dug long ago to water livestock. There is a well beside the intermittent brook that drains out of this pool.

Note the long skinny wetland that runs from the southern boundary to the old lane and vernal pool crosses the Quabbin watershed boundary. The northern end of this wetland is a large flat area that drains both to the south across the boundary and northwest out of the stone culvert. The latter intermittent stream forms another wetland after it crosses East Street.



## Silviculture

Acres in Intermediate cuts: 4

Acres in prep/establishment cuts: 31

Acres in Regeneration cuts: **38**

Average regen opening size: **1**

Maximum regen opening size: **4.9**

**Description of advance regeneration in proposal area:**

Advance regeneration is established on most of the proposal and is moderately diverse, but mainly black birch, red maple and white pine. Oak, hickory, black cherry, beech and sugar maple are scattered on uplands and some yellow birch and hemlock are present along the wetlands. Regeneration is mostly in the sapling size with some pole sized particularly where there were larger openings created from past harvests. Seedlings are present throughout but other than areas most recently cut (1040) are mainly non-vigorous due to being suppressed for so long. Deer are common here and moose pass through and are one of the reasons for lack of diversity and prevalence of white pine and black birch which are not preferred browse. There is more oak and red maple seedlings and saplings surviving with less browse than typical so there is still hope for some to get past the browse height of moose. Most areas have over 1,000 seedlings/acre.

**General comments on silviculture proposed:**

Opening sizes and retention will be as directed by current guidelines in place at the time the lot is marked. Opening sizes and retention cited below are from current guidelines.

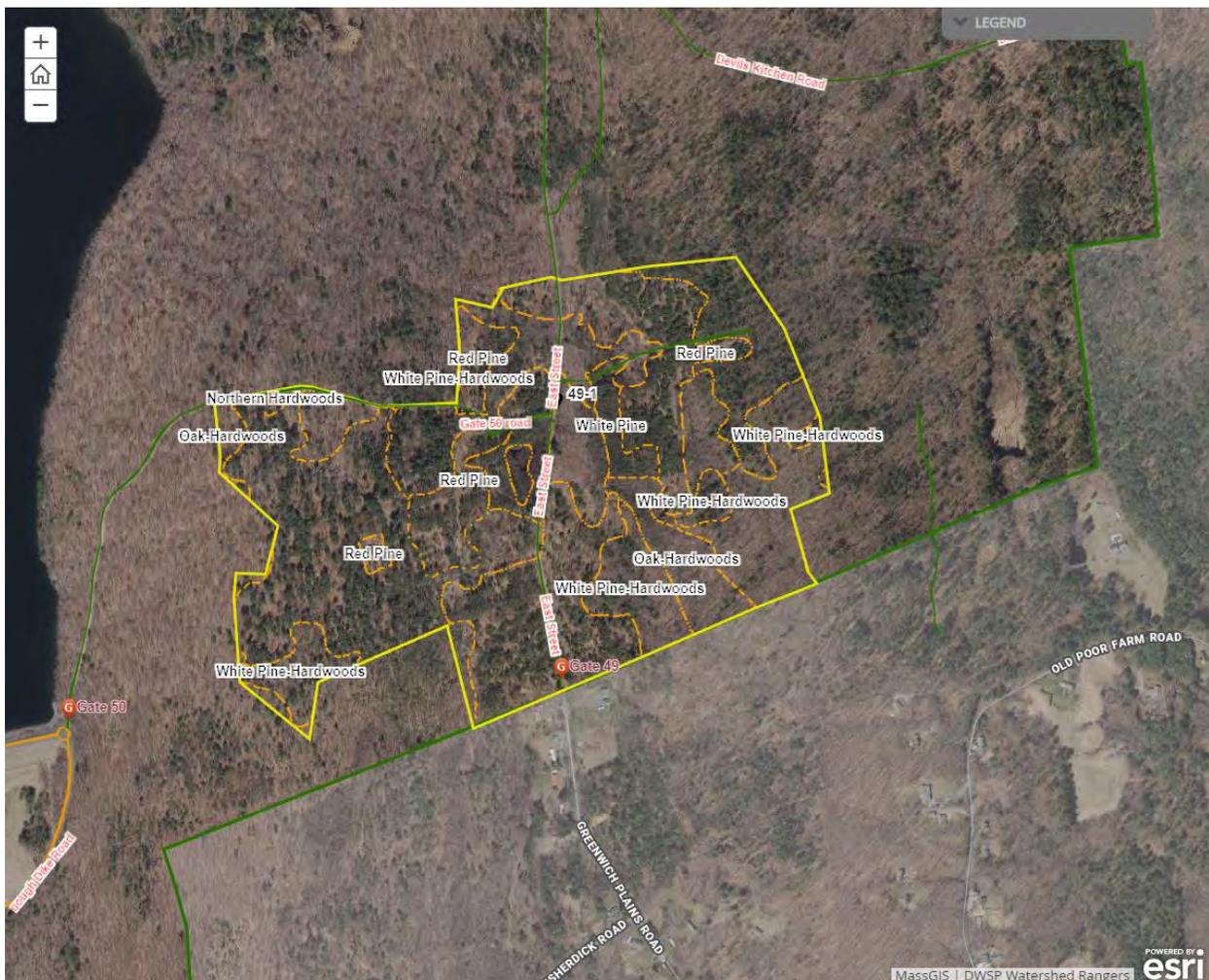
For the red pine plantations the remainder of the red pine outside of restricted areas such as wetlands and vernal pool buffers will be harvested, along with most of the remaining unacceptable growing stock (ugs), ash, merchantable dead oak, trees of poor form or vigor, and additional trees to create openings from 0.5 up to 4.9 acres in size. In the majority of openings over 0.5 acre at least 5 sq ft of basal area will be retained. Intent is to create an uneven-aged stand with this being the final harvest for 30+ years.

About 75% of the rest of the operable portion of the proposal will be treated mostly with our standard group selection silviculture with openings ranging from 0.25-4.9 acres. Exceptions will be in areas with well formed white pine under 18" which may be treated more as a shelterwood seed cut to allow these trees to continue growing. The other section to be treated differently is the area with pitch pine. This section will have most if not all of the white pine removed along with most of the hardwoods except retaining the better formed oaks. Intent is to release the pitch pine and reduce the basal area to around 50.

For all treatments openings will be placed as per our then current guidelines and will be located first in areas with more trees of low vigor or poor form or health. In areas partially cut these same categories will be targeted first. Additional large higher quality trees will then be included

to create the desired condition. Retained trees, other than wildlife and structural trees mentioned below, will generally be the better formed, vigorous individuals of the range of species that are desired to be regenerated on the area. Attempt will be made to retain structure and select well rooted, wind firm trees particularly in retained exposed groups in openings.

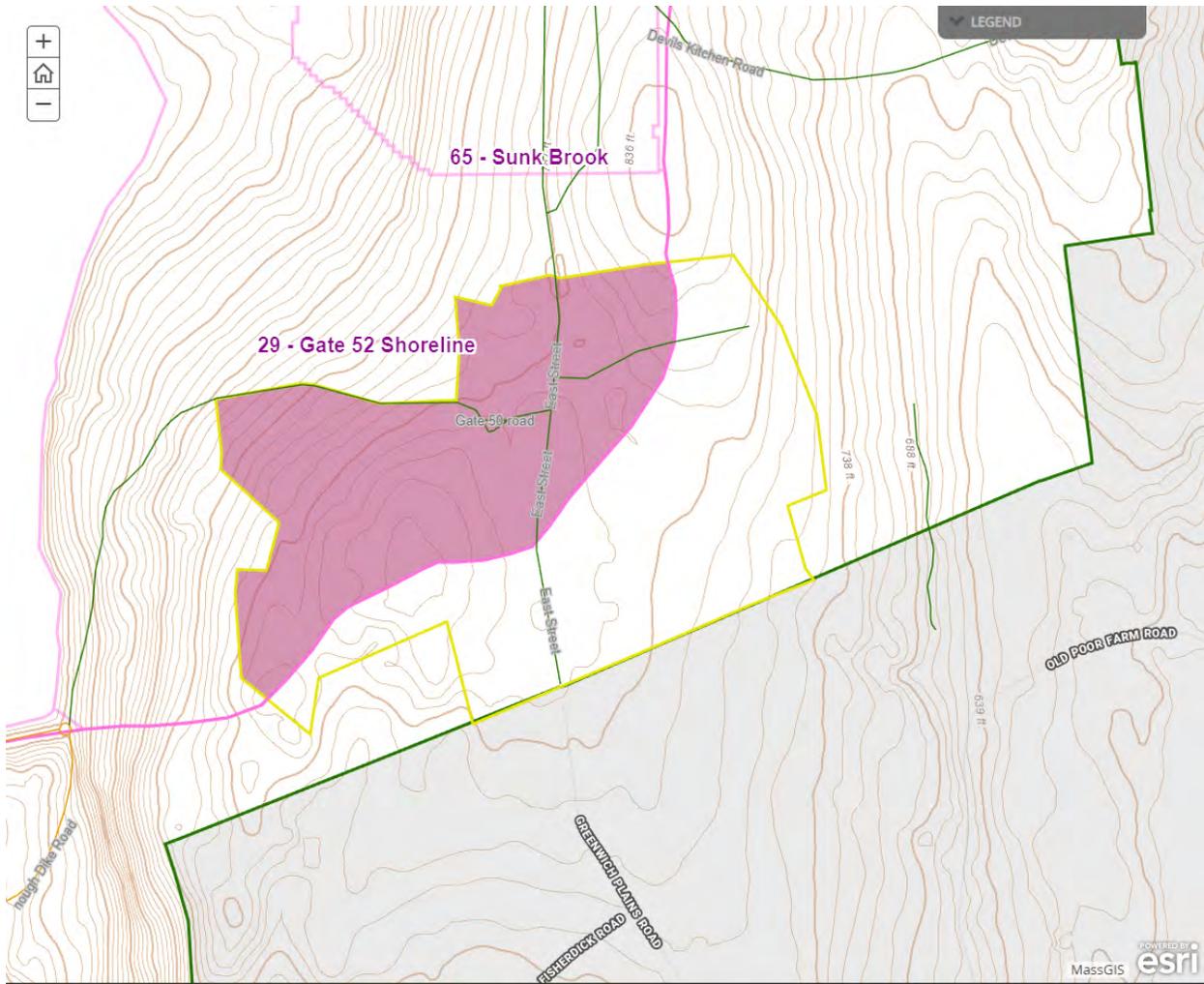
Scattered wildlife trees, standing dead, healthy individuals of all species present, and individuals with superior form and vigor will be retained throughout proposal to preserve habitat, maintain or increase diversity, improve overall stand health and vigor and retain some carbon storage and increase the growth rate (carbon sequestration) of the retained trees. One of the main silvicultural goals across the proposal is to diversify species and age structure by regenerating sections with areas of free to grow regeneration that should stay vigorous until the next harvest is done. These openings should also encourage species that are better adapted to our changing climate to become established.



## 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
29 (Gate 52 Shoreline)	224	10	46	67
Off-watershed	-	-	-	68

Half (68 acres) of this proposal are off watershed. Of the acres in watershed it could be possible, though unlikely, to exceed the 25% harvest limit. The only cut within 10 years that is affecting this calculation is from lot 1040 which was a harvest of red pine completed 2/19/2014 so these 10 acres will drop out of calculation in less than 3 years. The area cut is now all stable and fully regenerated. Also since typically we are only regenerating 25% of an area that would come out to 14.2 acres which is well below the 45.7 acre threshold. Proposed harvesting will not exceed the 25% threshold.



## Harvesting Limitations

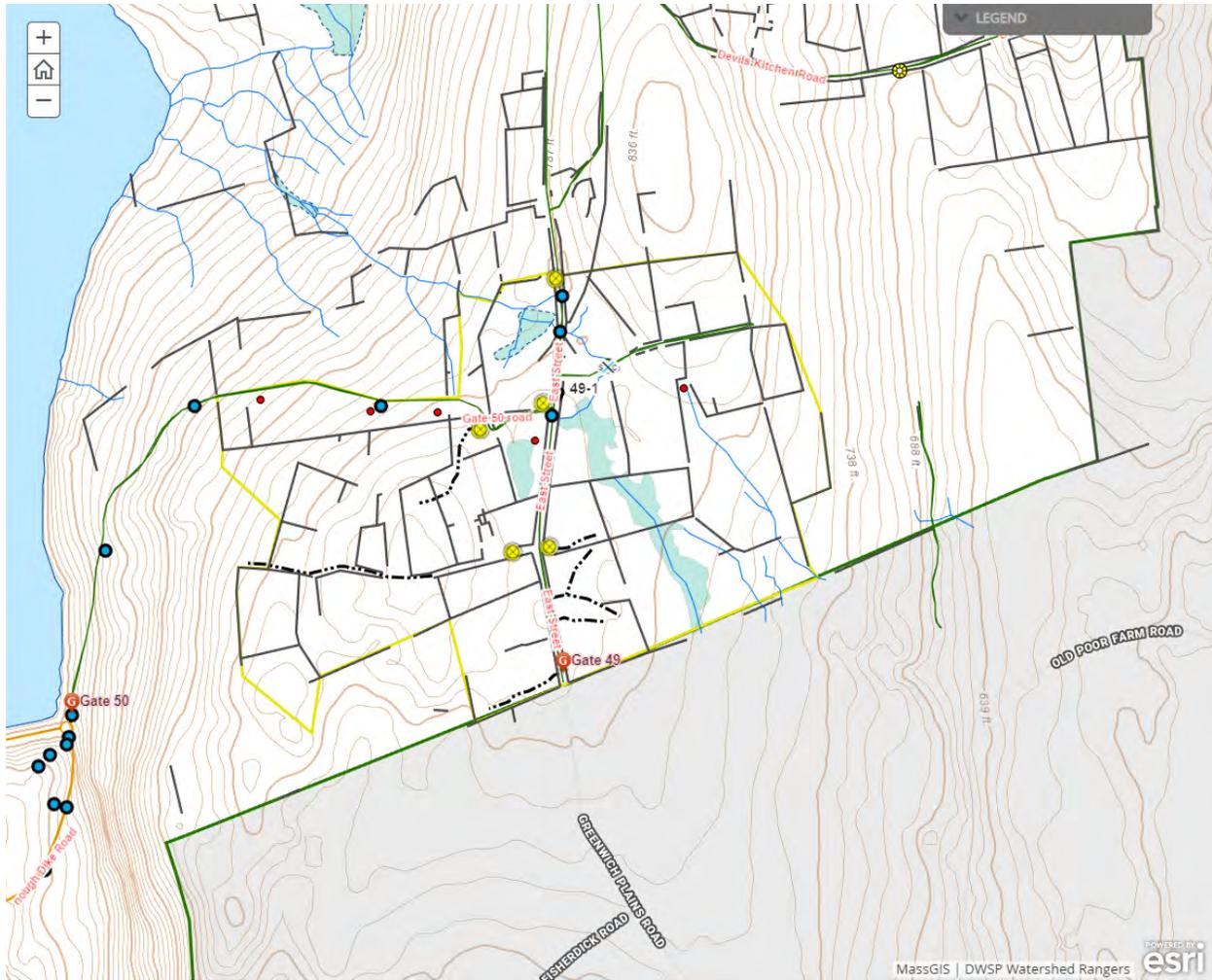
Forwarder required: **Yes**

Feller/processor required: **No**

Step slopes present: **No**

### Comments on harvesting limitations:

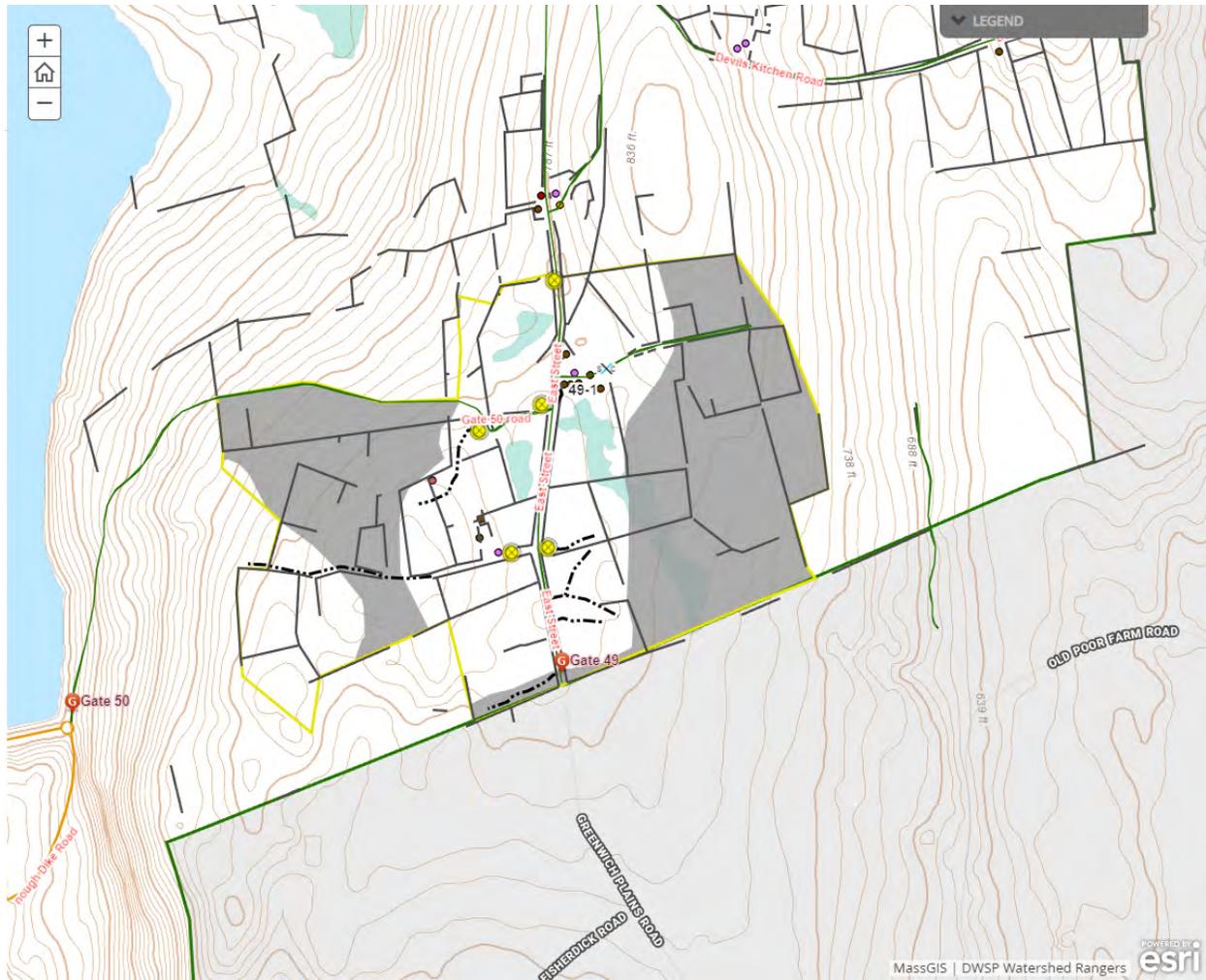
Due to the number of walls and historic features to be worked around a 6- or 8-wheel forwarder with tracks available will be required, as will ability to winch or directionally fell trees within filter strips and around historic features.



## Cultural Resources

### Comments on Cultural Resources:

Most of lot was previously reviewed (HA-07-05). Surface stone is prevalent through out lot, microtopography is pronounced except in a few of the red pine plantations which might have been tilled or stumped at some point. There are several cellar holes present, one with a stone covered entry way that is still in good condition.



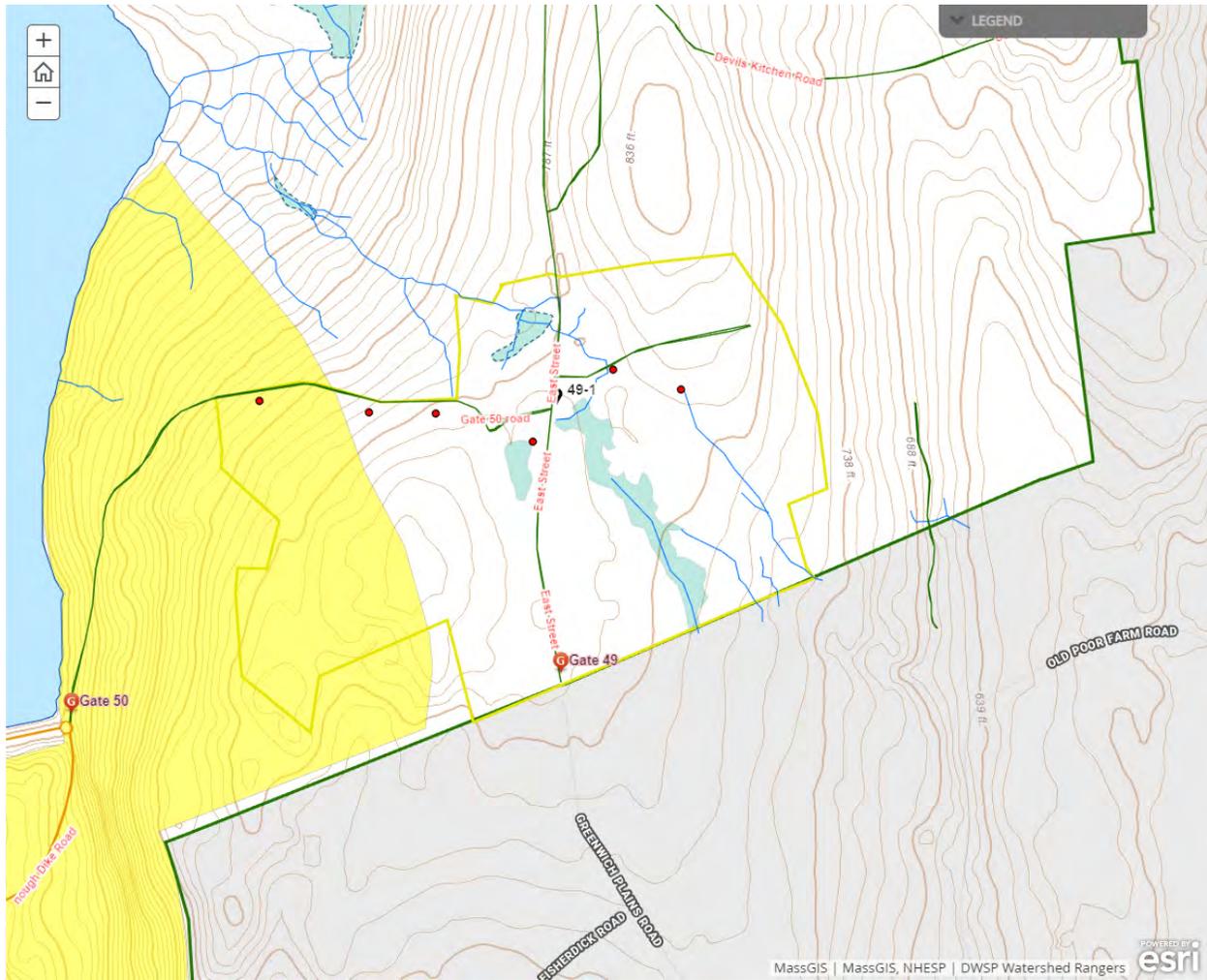
## Wildlife Resources & Rare and Endangered Species

### General Wildlife Comments:

Deer and turkeys use the area frequently, moose pass through occasionally. Woodcock were seen twice in the long wetland that drains south across boundary.

### Comments on Rare Species/Habitats:

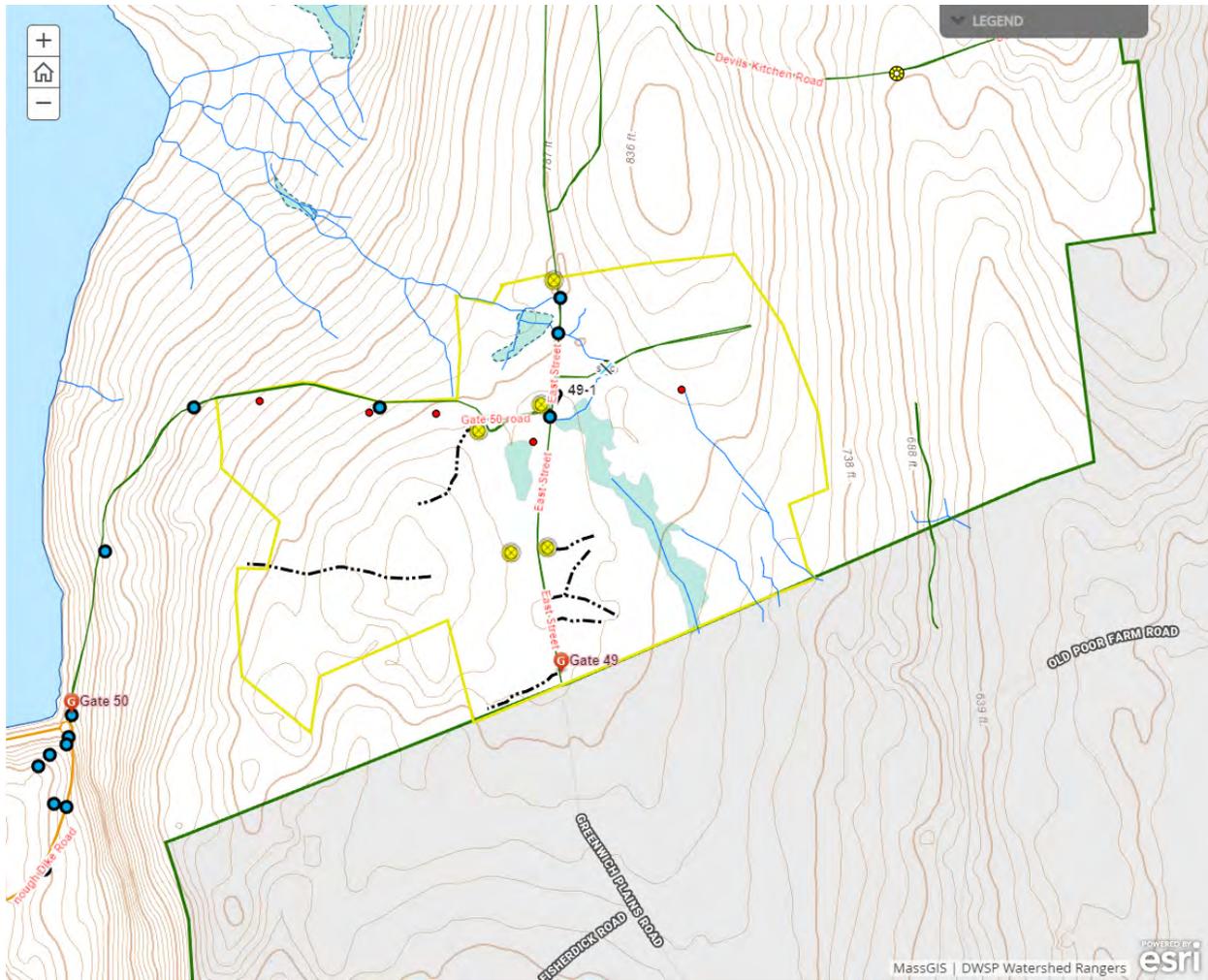
There is a mixed stand of larger pitch pine mixed in with white pine and hardwoods on the eastern side of lot south of the walled lane.



## Environmental Quality Engineering

### Comments on EQ Issues:

Only one intermittent stream crossing in an old road which has a stone culvert. Flow is very low and intermittent. Bridge panels will be used to protect stone work and prevent siltation at the crossing location.



## Forest Access Engineering

**Gravel needed:** Yes

**Landing work needed:** Yes

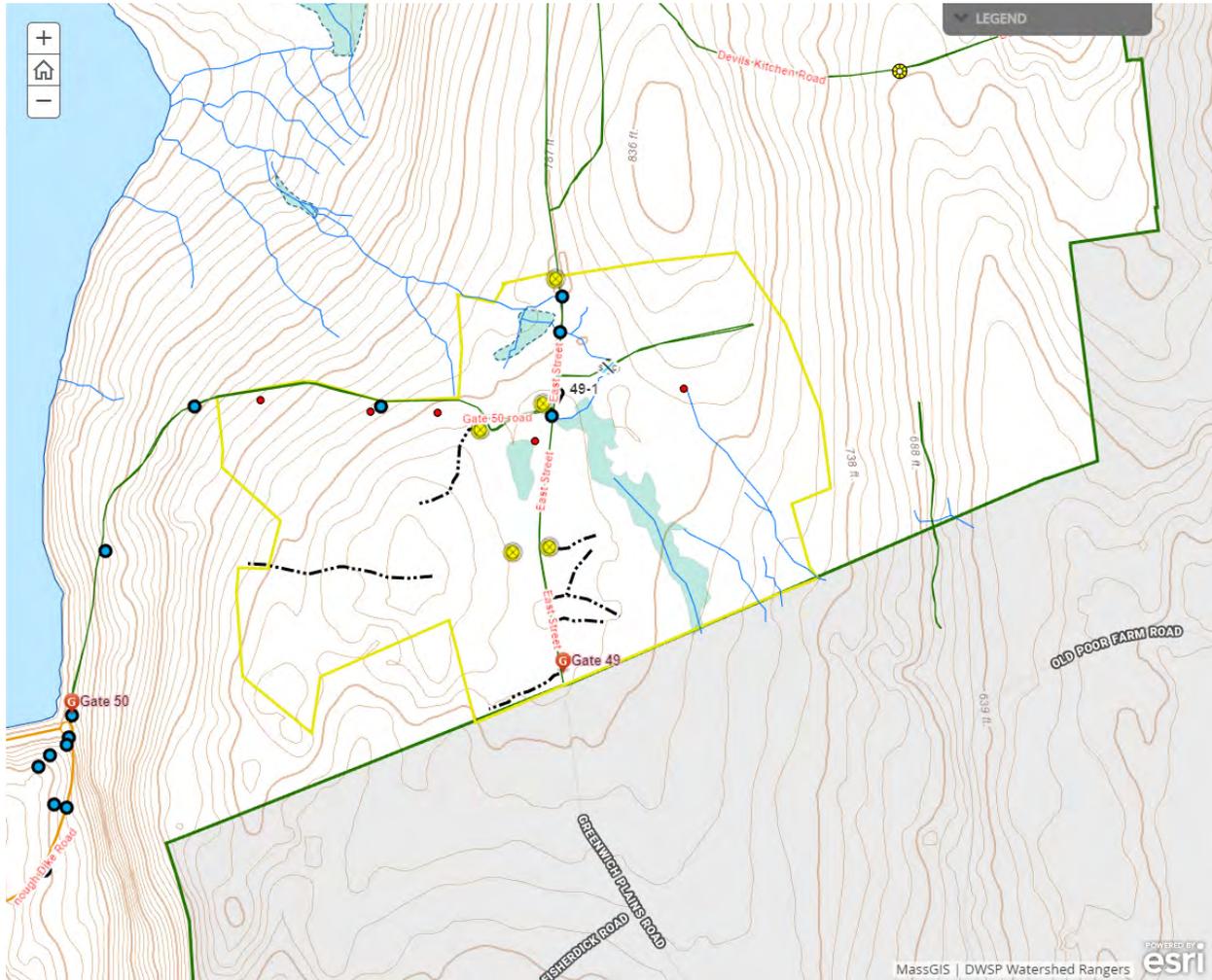
**Culverts needed:** No

**Work needed on permanent bridges:** No

**Beaver issue:** None

**Further comment on access needs:**

Several of the landings could use additional gravel. Culverts on the road from gate 49 may need additional cover.



DWSP FY 2022 Forestry Proposals – Master Legend for story maps

<p><b>DWSP Gates</b></p> 	<p><b>QWWS Watershed Boundaries</b></p> 	<p><b>Forest Cover Type - Filled</b></p> <p>CoverTypeFull</p>	<p><b>SubWatersheds (QWWS-filled)</b></p> <p>Subwatershed Name</p>	<p><b>Forestry Proposal Boundaries</b></p> 
<p><b>Landings</b></p> 	<p><b>Vernal Pools</b></p> <p>Status</p> <ul style="list-style-type: none"> <li>Not a vernal pool</li> <li>Potential vernal pool</li> <li>DCR verified vernal pool</li> </ul>	<ul style="list-style-type: none"> <li>White Pine-Hardwoods</li> <li>Oak-Hardwoods</li> <li>White Pine-Oak</li> <li>WetHard</li> <li>Mixed Hardwood</li> <li>White Pine</li> <li>Grasses and Forbs</li> <li>White Pine-Hemlock</li> <li>Mixed Oak</li> <li>Northern Red Oak</li> <li>Red Maple</li> <li>Powerline</li> <li>WetMixed</li> <li>Error - Not DWSP</li> <li>Red Pine</li> <li>Shrub Swamp</li> <li>Upland Brush</li> <li>Northern Hardwood</li> <li>Road</li> <li>Beaver Pond</li> <li>Hemlock</li> <li>Hemlock-Hardwoods</li> <li>Mixed-Oak</li> <li>Norway Spruce</li> <li>Pitch Pine</li> <li>WetCon</li> <li>Abandoned Orchard</li> <li>Black Birch-Hardwoods</li> <li>Gravel Pit</li> <li>Northern Hardwoods</li> <li>Pitch Pine-Oak</li> <li>Water</li> <li>Oak, Mixed</li> <li>White pine - oak</li> <li>Mixed hardwoods</li> <li>Hemlock - hardwoods</li> <li>White pine - hardwoods</li> <li>Black Birch-Hardwood</li> <li>Field, mowed</li> <li>Oak - hardwoods</li> <li>Abandoned Field</li> <li>Beaver Meadow</li> <li>Chestnut Oak Heath</li> <li>Mixed hardwood</li> <li>White pine/hardwoods</li> </ul>	<ul style="list-style-type: none"> <li>ASNEBUMSKIT BROOK</li> <li>Barre Falls</li> <li>Belchertown Shoreline</li> <li>Blackington Swamp</li> <li>Cadwell Creek</li> <li>Cunningham</li> <li>East Br. Fever Brook</li> <li>East Prescott North</li> <li>Fed. Forest Stream</li> <li>Gate 20 Rd. Stream</li> <li>Gate 52 Shoreline</li> <li>Gates Brook</li> <li>Gibbs Brook</li> <li>Josslin</li> <li>Juckett Hill East</li> <li>MIDDLE STILLWATER/ROCKY/WILDER BROOK</li> <li>Mary Tamplin Drainage</li> <li>Middle Br. Swift Lower</li> <li>Moosehorn Brook</li> <li>NORTH STILLWATER/KEYES BROOK</li> <li>Northeast Shoreline</li> <li>Parker</li> <li>Prescott Brook</li> <li>Quabbin Park East</li> <li>RES. SHORELINE EAST</li> <li>Sherer Rd. North</li> <li>TROUT BROOK</li> <li>Thurston Brook</li> <li>Underhill Brook</li> <li>WACHUSETT BROOK</li> <li>Ware</li> <li>West Prescott Middle</li> <li>West Prescott North</li> <li>West Prescott South</li> <li>Whitney Hill Southeast</li> <li>Whitney Hill West</li> <li>Other</li> </ul>	<p><b>Towns</b></p>  <p><b>Water Supply Property Boundary</b></p>  <p><b>Proposed Skid Trails</b></p>  <p><b>Stone Walls - WA</b></p>  <p><b>StoneWalls - QWR</b></p>  <p><b>Stony Soils</b></p> <p>Stoniness</p> <ul style="list-style-type: none"> <li>extremely stony</li> <li>very stony</li> </ul> <p><b>Soils - Drainage</b></p> <p>Drainage Class</p> <ul style="list-style-type: none"> <li>Excessively Drained</li> <li>Well Drained Thick</li> <li>Well Drained Thin</li> <li>Moderately Well Drained</li> <li>Poorly To Very Poorly Drained</li> </ul>
<p><b>Crossings</b></p> <p>Xng</p>  Stream Crossing	<p><b>Streams - Quabbin</b></p> <p>FType</p> <ul style="list-style-type: none"> <li>Coastline/Shoreline</li> <li>Stream/River</li> <li>Swamp/Marsh</li> <li>Submerged Stream</li> <li>Artificial Path</li> <li>Canal/Ditch</li> <li>Pipeline</li> <li>Dam/Weir</li> <li>Connector</li> <li>Unknown</li> <li>Other</li> </ul>	<p><b>Forest Cover Type - Outline</b></p> 	<p><b>Subwatersheds (WA-outline)</b></p> 	<p><b>Quabbin and Ware River Cultural Resources Inventory (Public view)</b></p> <p>Type</p> <ul style="list-style-type: none"> <li>No Value/Blank</li> <li>Agrarian</li> <li>Cellar Hole</li> <li>Civic</li> <li>Commercial</li> <li>Industrial</li> <li>Military</li> <li>Other</li> <li>Residential</li> <li>Shed</li> <li>Unknown</li> </ul>
<p><b>QWR Culverts</b></p> <p>Purpose</p> <ul style="list-style-type: none"> <li>Stream Crossing B</li> <li>Stream Crossing C</li> <li>Drainage Relief-D</li> <li>Unknown</li> </ul>	<p><b>Water Bodies - Quabbin</b></p> <p>FType</p> <ul style="list-style-type: none"> <li>Reservoir</li> <li>Lake/Pond</li> <li>Stream/River</li> <li>Swamp/Marsh</li> </ul> <p><b>Streams - Ware River</b></p> <p>FType</p> <ul style="list-style-type: none"> <li>Stream/River</li> <li>Canal/Ditch</li> </ul>	<p><b>NHESP Priority Habitats</b></p> 	<p><b>SubWatersheds (QWR-outline)</b></p> 	<p><b>QWWS Percent Slope</b></p> <ul style="list-style-type: none"> <li>0 - 7</li> <li>&gt; 7</li> </ul>
<p><b>Quabbin Road Intersections</b></p> 	<p><b>Water Bodies - Ware River</b></p> <p>FType</p> <ul style="list-style-type: none"> <li>Reservoir</li> <li>Lake/Pond</li> <li>Stream/River</li> <li>Swamp/Marsh</li> <li>Other</li> </ul>	<p><b>NHESP Certified Vernal Pools</b></p> 	<p><b>Subwatersheds</b></p> 	<p><b>Infrastructure Type</b></p> <ul style="list-style-type: none"> <li>Bridge</li> <li>Broad Based Dip</li> <li>Checkdam</li> <li>Culvert</li> <li>Ditch</li> <li>Ford</li> <li>Waterbar</li> <li>Other</li> </ul>
<p><b>DCR/DWSP Trail/Road Data (Public View)</b></p> <p>Type</p> <ul style="list-style-type: none"> <li>Public Road</li> <li>Administrative Road</li> <li>Forest Road/Trail</li> <li>Trail</li> <li>Other</li> </ul>	<p><b>Streams - Wachusett</b></p> <p>EQ_Stream_Type</p> <ul style="list-style-type: none"> <li>Aqueduct</li> <li>Ditch/Canal</li> <li>Intermittent Stream</li> <li>Perennial Stream</li> </ul>	<p><b>NHESP Certified Vernal Pools</b></p> <p>NHESP Certified Vernal Pools</p> 	<p><b>Subwatersheds</b></p> 	<p><b>Infrastructure Type</b></p> <ul style="list-style-type: none"> <li>Administrative Road</li> <li>Forest Road/Trail</li> <li>Other</li> <li>Public Road</li> <li>Trail</li> </ul>
<p><b>DCR-DWSP Trails and Roads</b></p> <p>Type</p> <ul style="list-style-type: none"> <li>Administrative Road</li> <li>Forest Road/Trail</li> <li>Other</li> <li>Public Road</li> <li>Trail</li> </ul>	<p><b>Waterbodies - Wachusett</b></p> <p>EQ_Wetland_Type</p> <ul style="list-style-type: none"> <li>Reservoir</li> <li>Lake, Pond, Wide River, Impoundment</li> <li>Wetland, Marsh, Swamp, Bog</li> </ul>	<p><b>Wachusett/Sudbury Road Infrastructure</b></p> <p>Infrastructure_Type</p>	<p><b>Subwatersheds</b></p> 	<p><b>Infrastructure Type</b></p> <ul style="list-style-type: none"> <li>Administrative Road</li> <li>Forest Road/Trail</li> <li>Other</li> <li>Public Road</li> <li>Trail</li> </ul>
<p><b>Wachusett/Sudbury Road Infrastructure</b></p> <p>Infrastructure_Type</p> <ul style="list-style-type: none"> <li>Bridge</li> <li>Broad Based Dip</li> <li>Checkdam</li> <li>Culvert</li> <li>Ditch</li> <li>Ford</li> <li>Waterbar</li> <li>Other</li> </ul>	<p><b>NHESP Priority Habitats</b></p> 	<p><b>NHESP Certified Vernal Pools</b></p> <p>NHESP Certified Vernal Pools</p> 	<p><b>Subwatersheds</b></p> 	<p><b>Infrastructure Type</b></p> <ul style="list-style-type: none"> <li>Administrative Road</li> <li>Forest Road/Trail</li> <li>Other</li> <li>Public Road</li> <li>Trail</li> </ul>