

[Division of Water Supply Protection](#)

DCR Division of Water Supply Protection: FY2021 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 2021 proposals. This year there are four at Quabbin, four at Ware River, and seven at Wachusett. 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

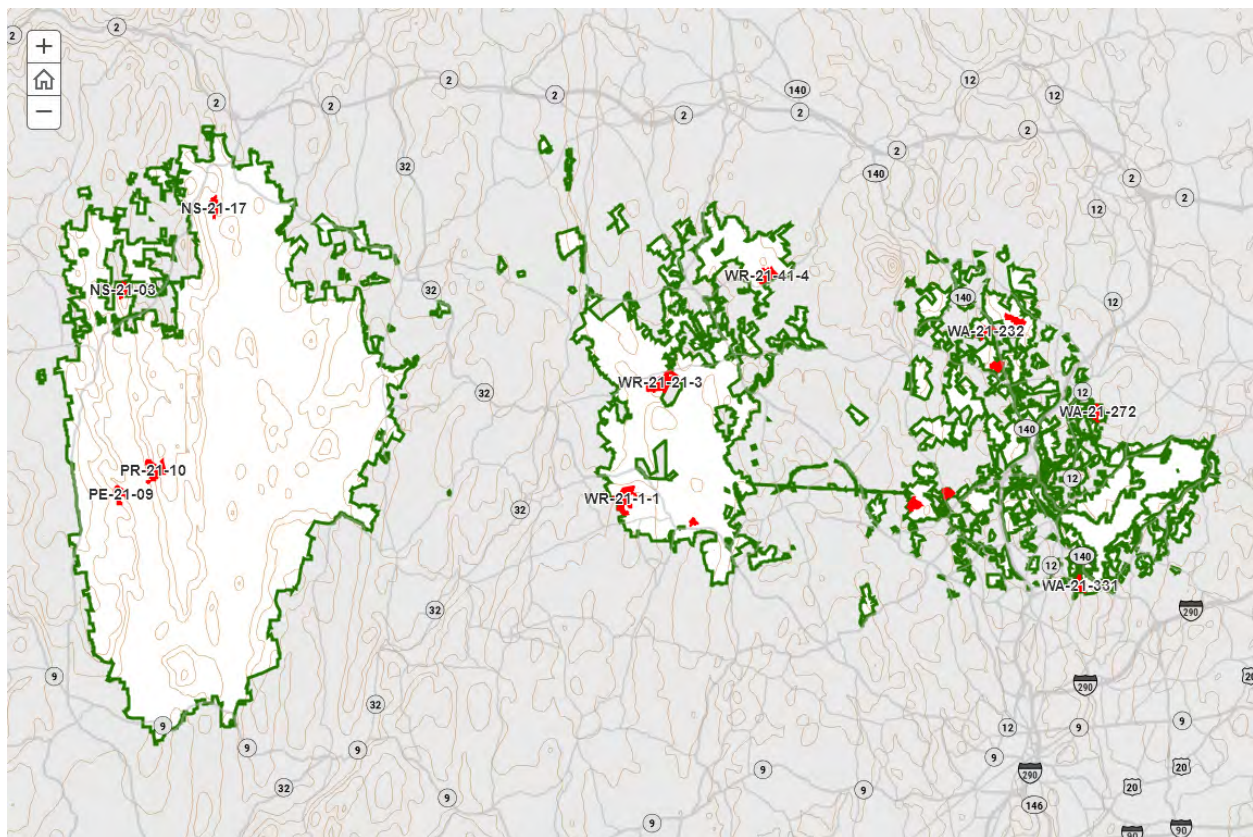
251 Causeway St.

Boston, MA 02114

Due to current COVID-19 health and safety precautions, these proposals were not presented at typical public meetings at Quabbin, Ware River, or Wachusett. A link to this interactive web map application was distributed to all advisory boards and committees on November 6, 2020, and letters were sent to individual Select Boards of affected towns.

Public Comments will be accepted until the close of business on Friday, December 11, 2020.

If you have any questions, please contact Natural Resources Specialist Brian Keegan at brian.keegan@mass.gov 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.

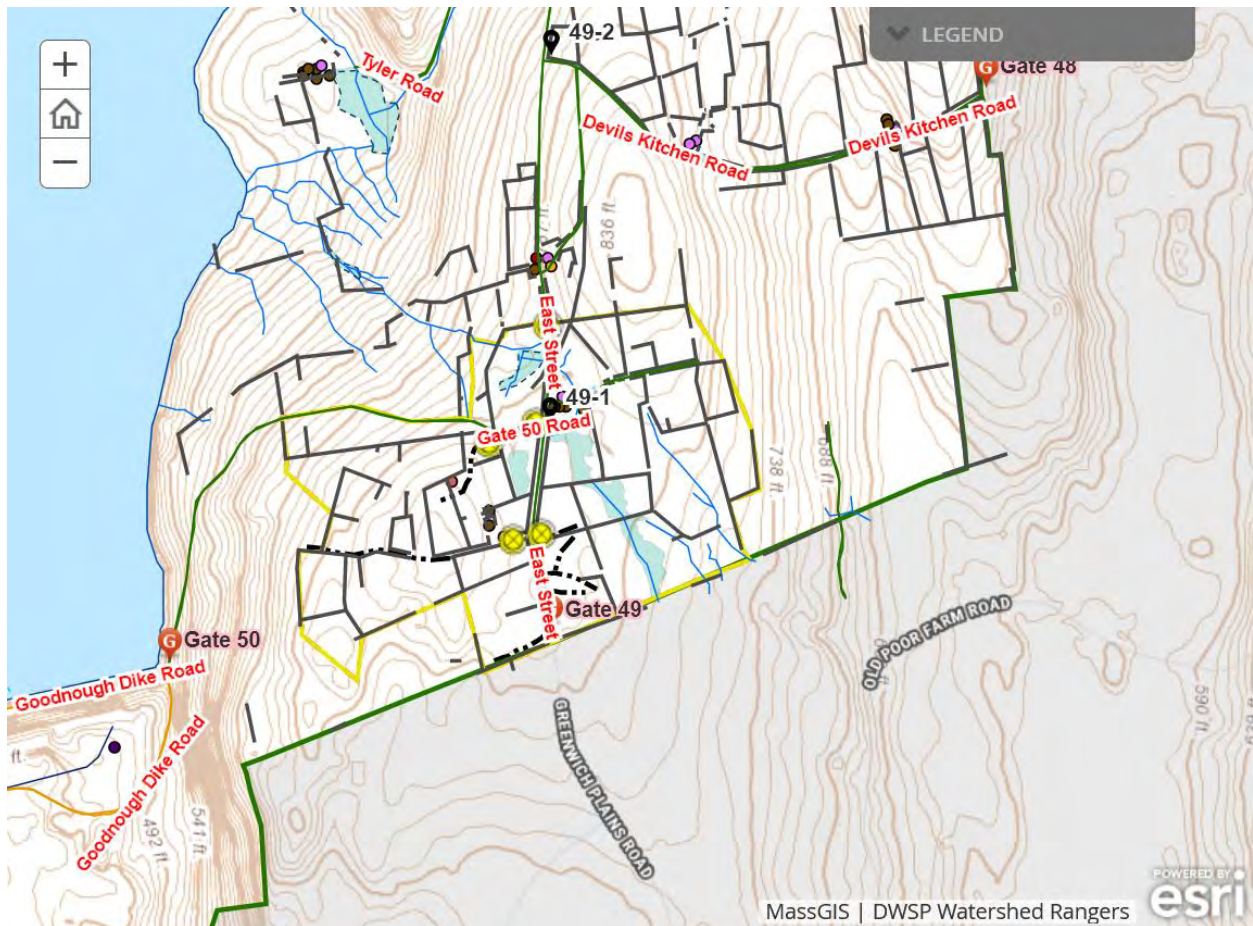
For full details on DWSP watershed land management please see the:

[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.

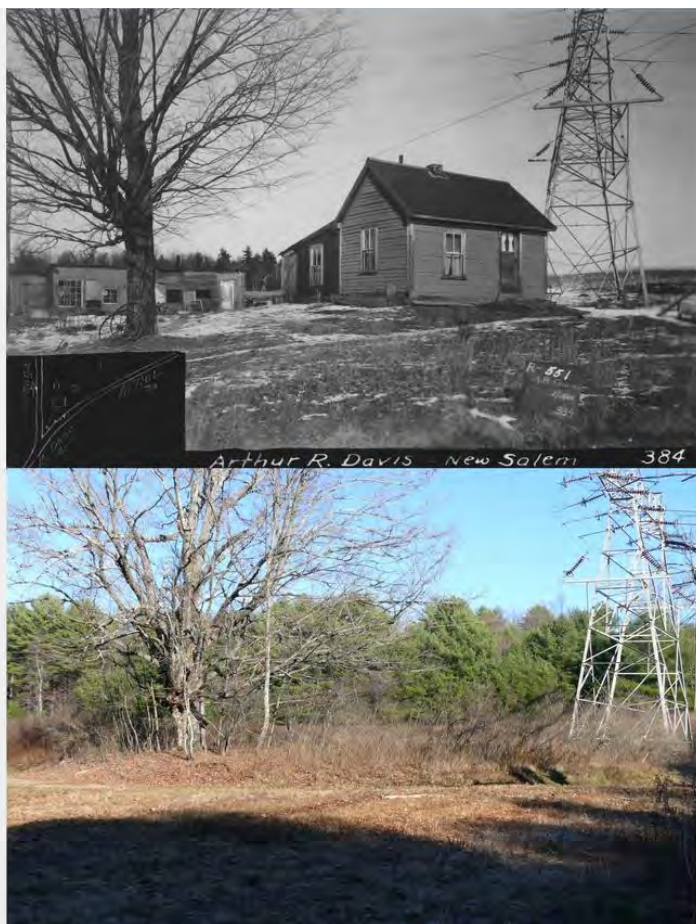


Cultural Resource Protection and DWSP Forestry Activities

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.



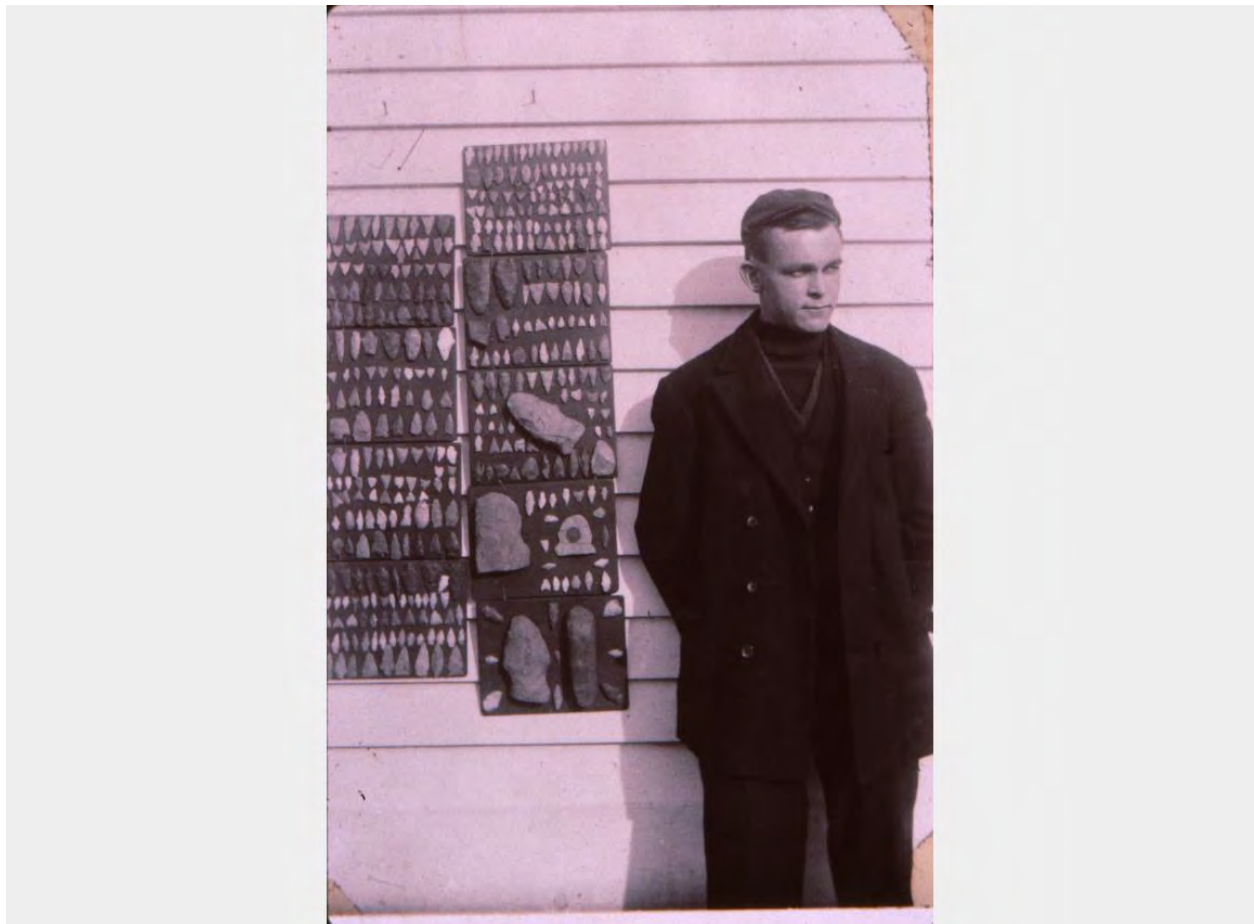
Arthur R. Davis New Salem 384

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.



Wachusett Harvest Proposal WA-21-272

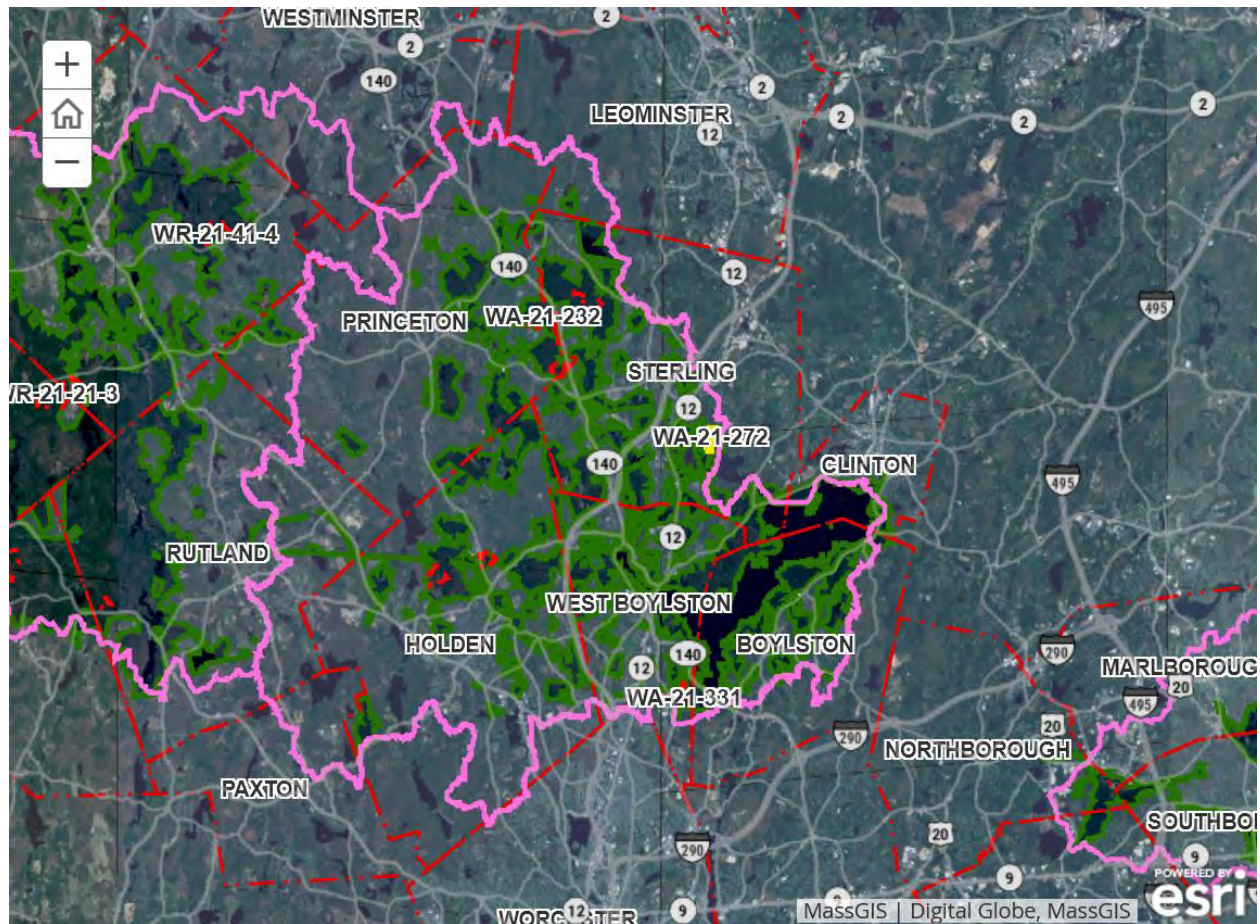
Proposal Goals

The primary goal is to promote a resilient, diverse forest through the creation of canopy openings that allow young forest to develop, release established healthy young trees, and remove groups of poor quality trees. In this case, there is good advance regeneration distributed throughout this primarily oak forest. Special attention will be paid to promoting chestnut oak, a relatively uncommon species in the Wachusett forest.

Proposal Location

This proposal is located on the northern side of Newell Hill Road in Sterling. The west side of this area is bound by an intermittent stream that, followed to the north, becomes a valley with a series of small wetlands and vernal pools. The north side is bound by stone wall; the east side is bounded partially by stone wall and partially by an intermittent stream and the south side is bound by property boundary line and road frontage.

Total Acres: 41



General Description

	Overstory Type(s)	Acres
Dominant	Oak, mixed - dry site	13
Secondary	Northern red oak	10
Other	White pine/oak	7

	Understory Type(s)
Dominant	Tree seedlings/saplings dominate site

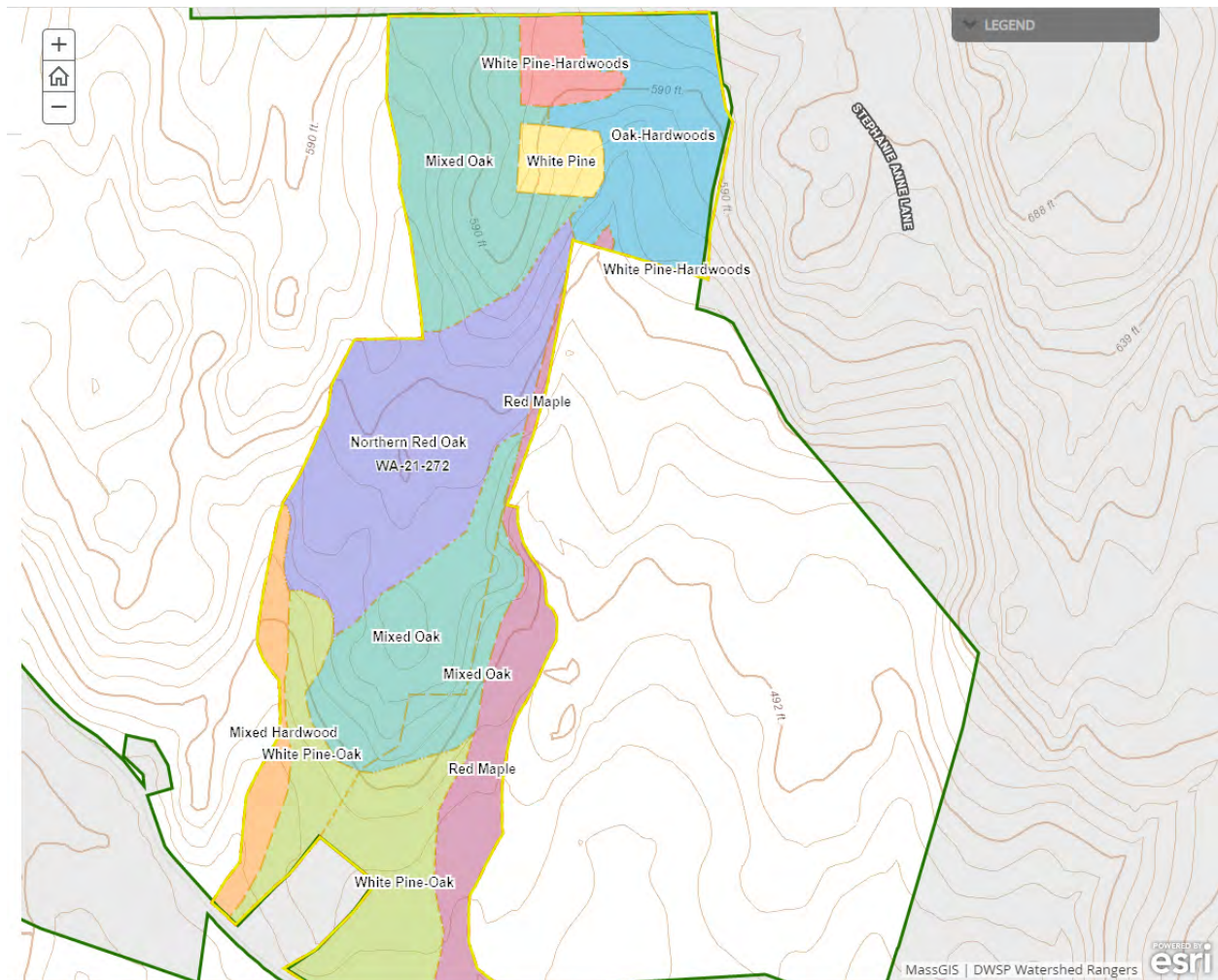
Secondary	Mesic site - witch hazel, highbush blueberry
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Description of forest composition/condition:

This property was purchased by the MDC in 1996. While many of the oaks in the southern end of the area are multi-stemmed, suggesting past logging, these trees are about 85 years old. Otherwise, there's no evidence of past harvest activities. This lot is characterized by ledge ground and bedrock outcrops that drop off to drainages on the east and west while generally gaining altitude going north. Most of the forest originated in about 1900 with some coming 20 to 30 years later. The overstory in these areas are dominated by red oak, black oak, white oak, white pine. Along the eastern side on the eastern slopes there's a good component of hickory. In the northern end at higher elevation there's a good component of chestnut oak. There's also hemlock and yellow birch near the intermittent streams on either side of this area. There are some blackgum associated with the small wetlands in the north end. The understory is variably comprised of witch-hazel where the soil is deeper between the outcrops and huckleberry where the soil is thin. There's a good component of maple-leaved viburnum that is generally tall and fruit-bearing, hopefully suggesting that the local deer population is under some level of control. There's a walled-off 8 acre section in the far northeast corner of this working unit that is much different in character than the rest of these 41 acres. This area was in pasture until much more recently than the balance of the area. The forest here originated in about 1964 and is comprised of red maple, red oak, white ash, white pine, black cherry, sugar maple, black birch and bigtooth aspen. Presumably due to the stream that bisects this area which has washed seeds in from the subdivisions upstream, there is a very significant amount of invasive species here. The understory is dominated by winged euonymus, honeysuckle, bittersweet, multiflora rose and buckthorn. The age structure of this working unit is as follows; 0%, 0-20 years old; 0%, 21-40 years; 20% 41-60 years; 0%, 61-80 years; 22%, 81-100 years and 58%, >100 years old.

Assessment of Terrestrial Invasive Species:

Outside of the 8 acre walled-off section in the far northeast corner, sampling did not find any invasives present.

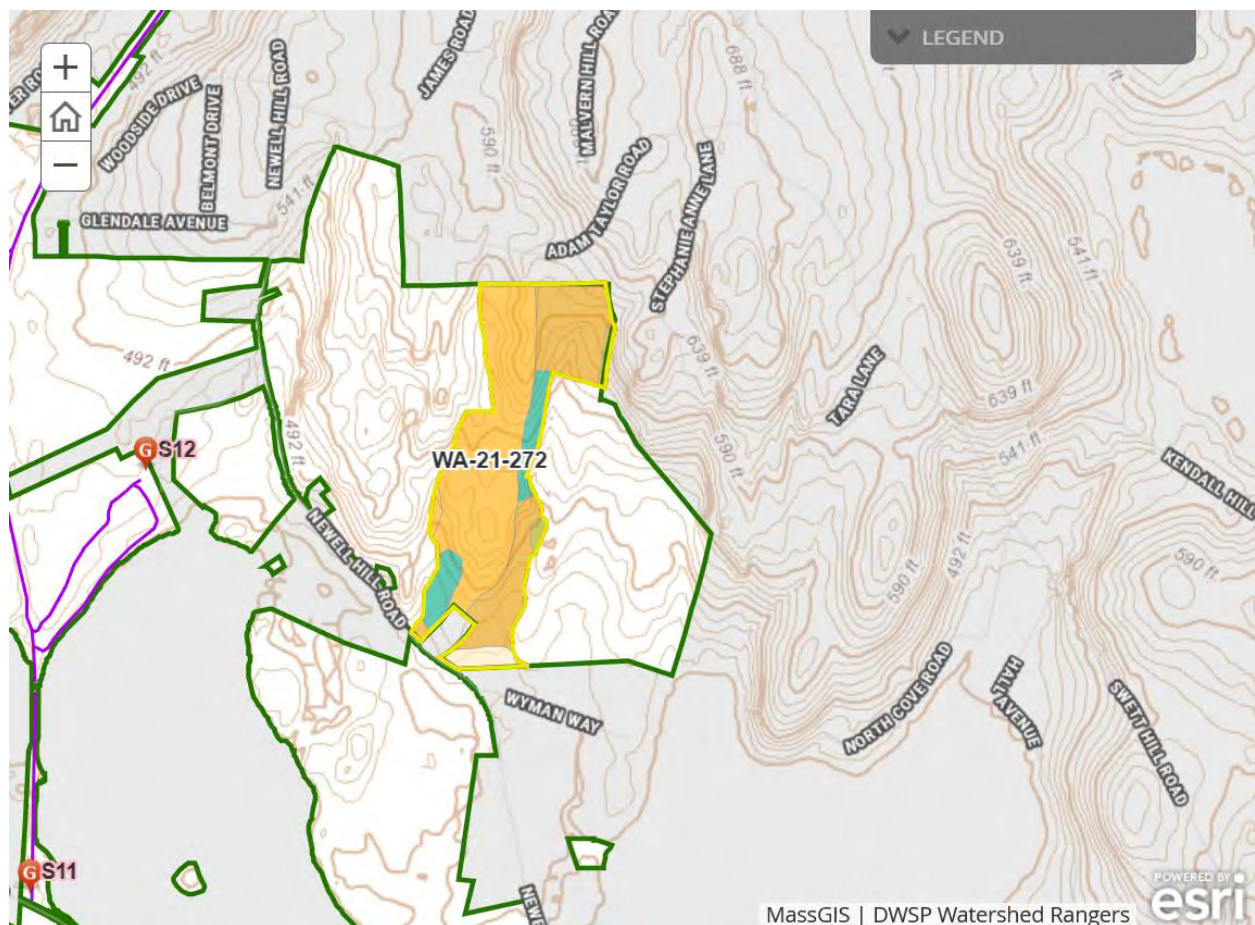


Soils

Drainage Class	%
Excessively Drained	3
Well Drained Thin	53
Well Drained Thick	32
Moderately Well Drained	1

Poorly to Very Poorly Drained	11
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The well drained, thin soil is the typical soil of these ledgey sites...the Chatfield-Hollis-Rock outcrop complex. The well drained soil is the Paxton fine sandy loam. This is the soil in the 8 acre section and at the lower slopes in the southeast part of the area. The Ridgebury fine sandy loam in the lowest elevation in the southwest corner near the stream is a poorly drained soil.

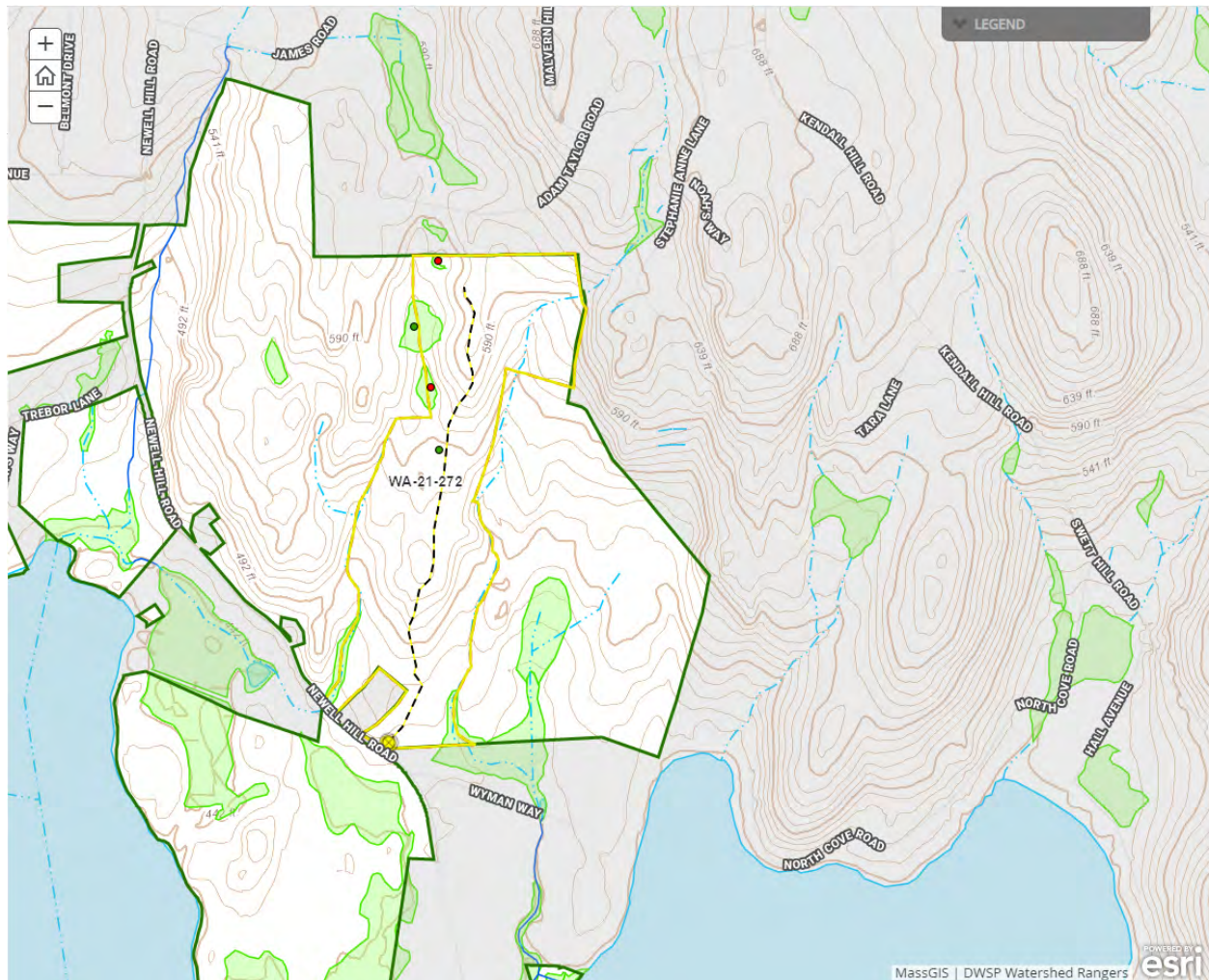


Wetlands

- Wetlands present? - **Yes**
- Streams present? - **Yes**
- Vernal pools present? - **Yes**
- Seeps present? - **None known**
- Are stream crossings required? - **No**
- Are wetland crossings required? - **No**
- Is logging in filter strips planned? - **Yes** ([Riparian Zone Mgt](#))
- Is logging in wetlands planned? - **No**

There are two verified Vernal Pools (VP190 and VP191) in this lot. Both pools were visited and verified on 4/1/20.

Wetlands and drainage channels form the east and west boundaries of this lot, and no crossings will be required.



Silviculture

Acres in Intermediate cuts: **13**

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

Acres in Regeneration cuts: **13**

Average regen opening size: 1

Maximum regen opening size: 2

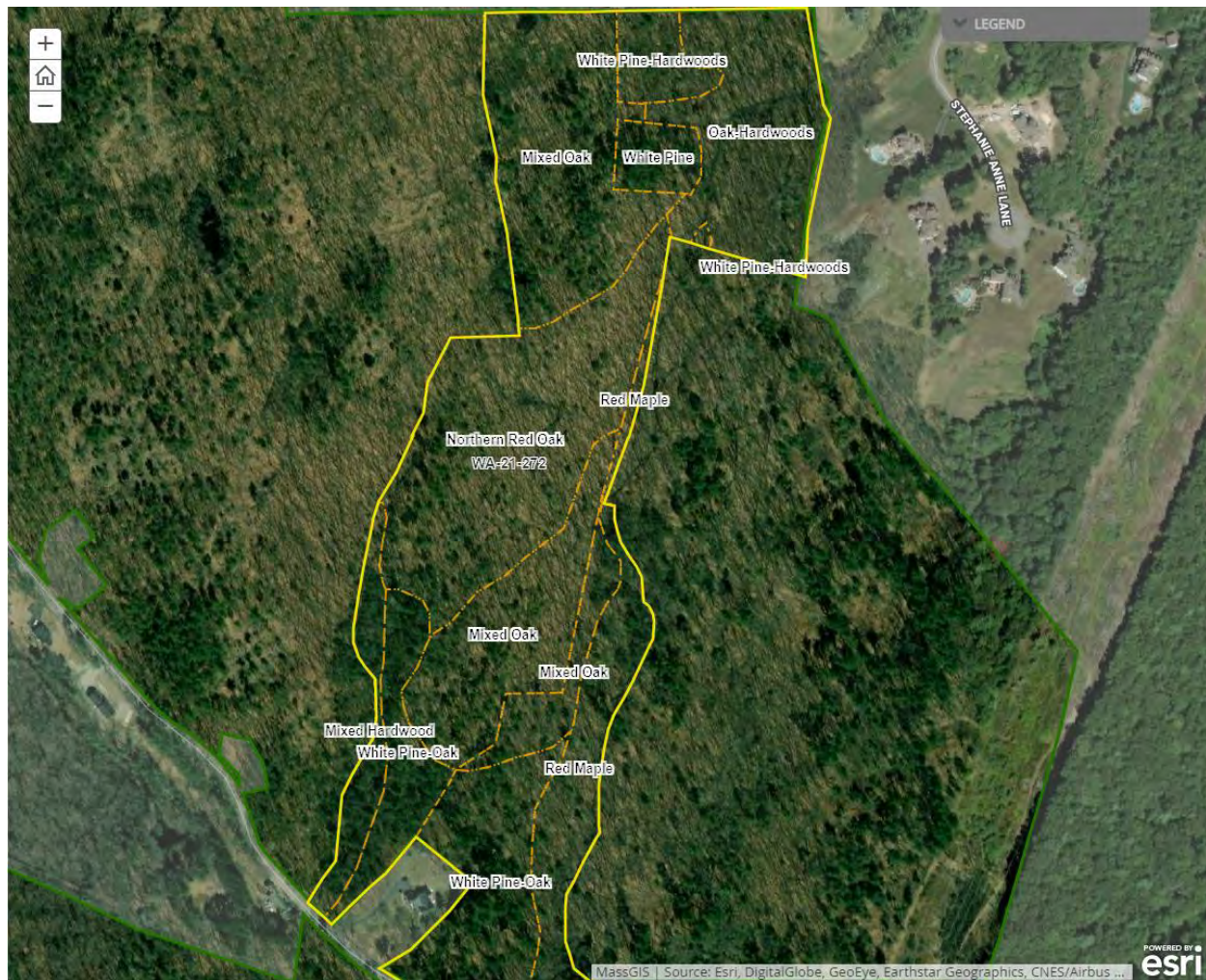
Description of advance regeneration in proposal area:

Sampling found good advance regeneration on 32% of the plots with marginal regeneration on 32% of the plots as well. There was interfering levels of witchhazel on 8% of the plots. The regeneration is comprised of white oak, black birch, red oak, white pine, chestnut oak, red maple, hickory, hemlock and yellow birch. Oak was present in 38% of the plots. The good advance regeneration is well distributed throughout this area.

General comments on silviculture proposed:

Given the good advance regeneration, it should be possible to create a new age class on 1/3rd of the manageable forest in this sale area. This will be accomplished by the removal of the overstory in patches of a variety of sizes that are well distributed throughout the area. Given the relative scarcity of chestnut oak on DCR property in the Wachusett watershed, special attention will be paid to ensuring that chestnut oak is well represented in this new age class. Some amount of partial cutting may occur in the forest between these openings primarily focused on removing trees of poorest health and vigor while encouraging species diversity by favoring the less well represented species such as chestnut oak, hickory and black gum where it may be growing outside of a wetland.

Following this harvest, the age structure of this working unit is projected to be; 33%, 0-20 years old; 0%, 21-40 years; 20%, 41-60 years; 0%, 61-80 years; 11%, 81-100 years and 69%, >100 years old.

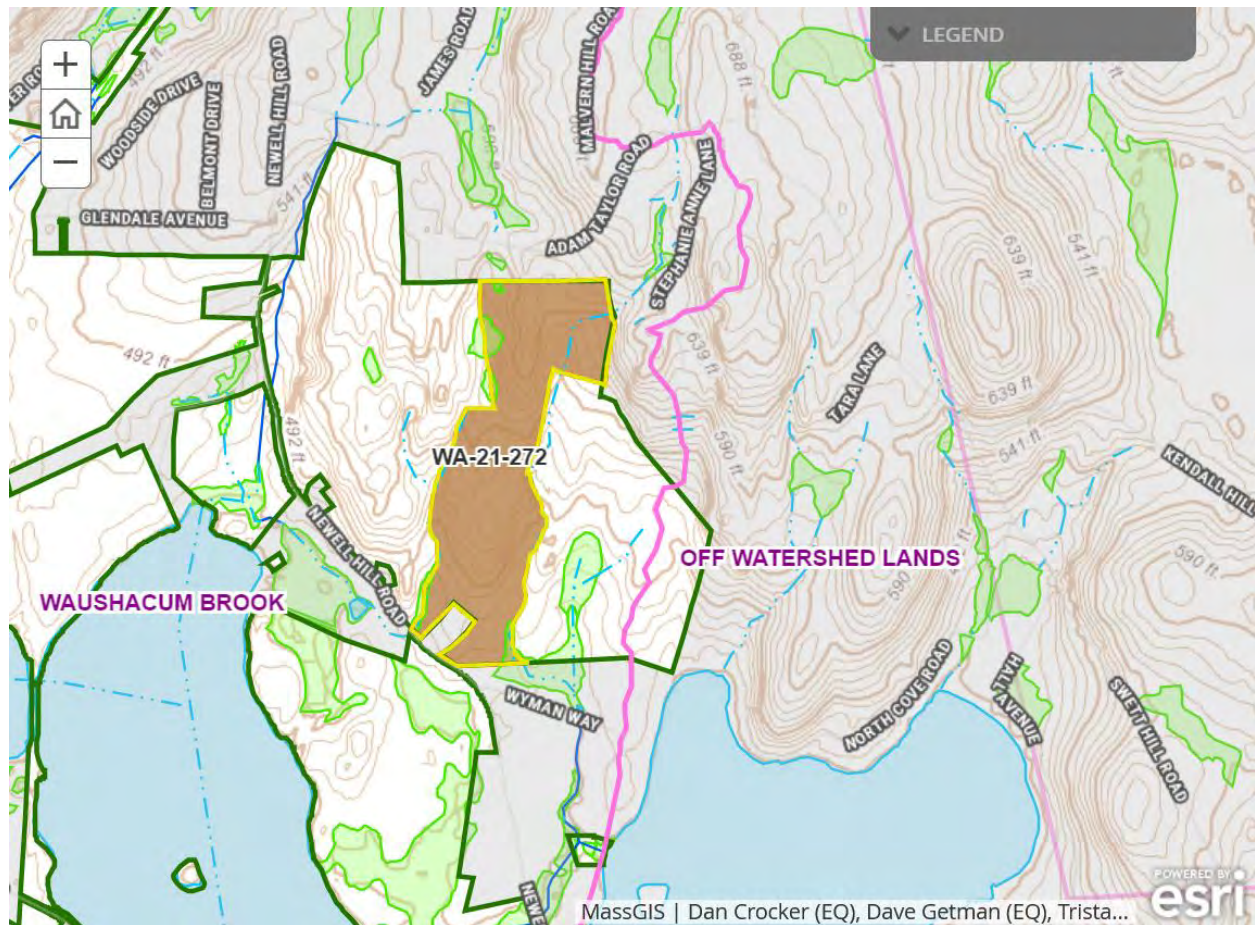


Subwatershed Analysis

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
16 (Washacum Brook)	1006	11	240	41

The proposed level of cutting falls below the 25% threshold.

Harvesting Limitat



Harvesting Limitations

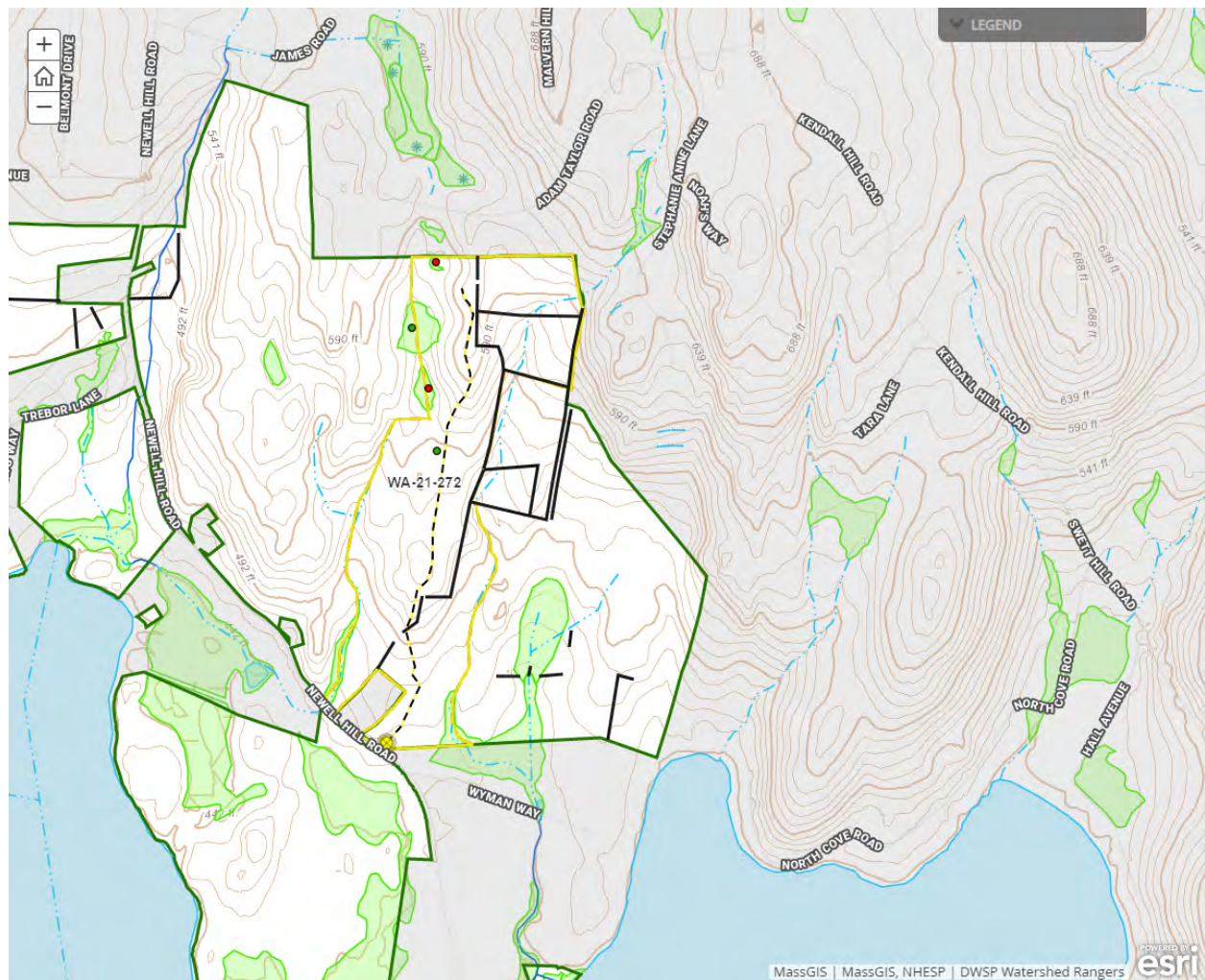
Forwarder required: **Yes**

Feller/processor required: **Yes**

Steep slopes present: **No**

Comments on harvesting limitations:

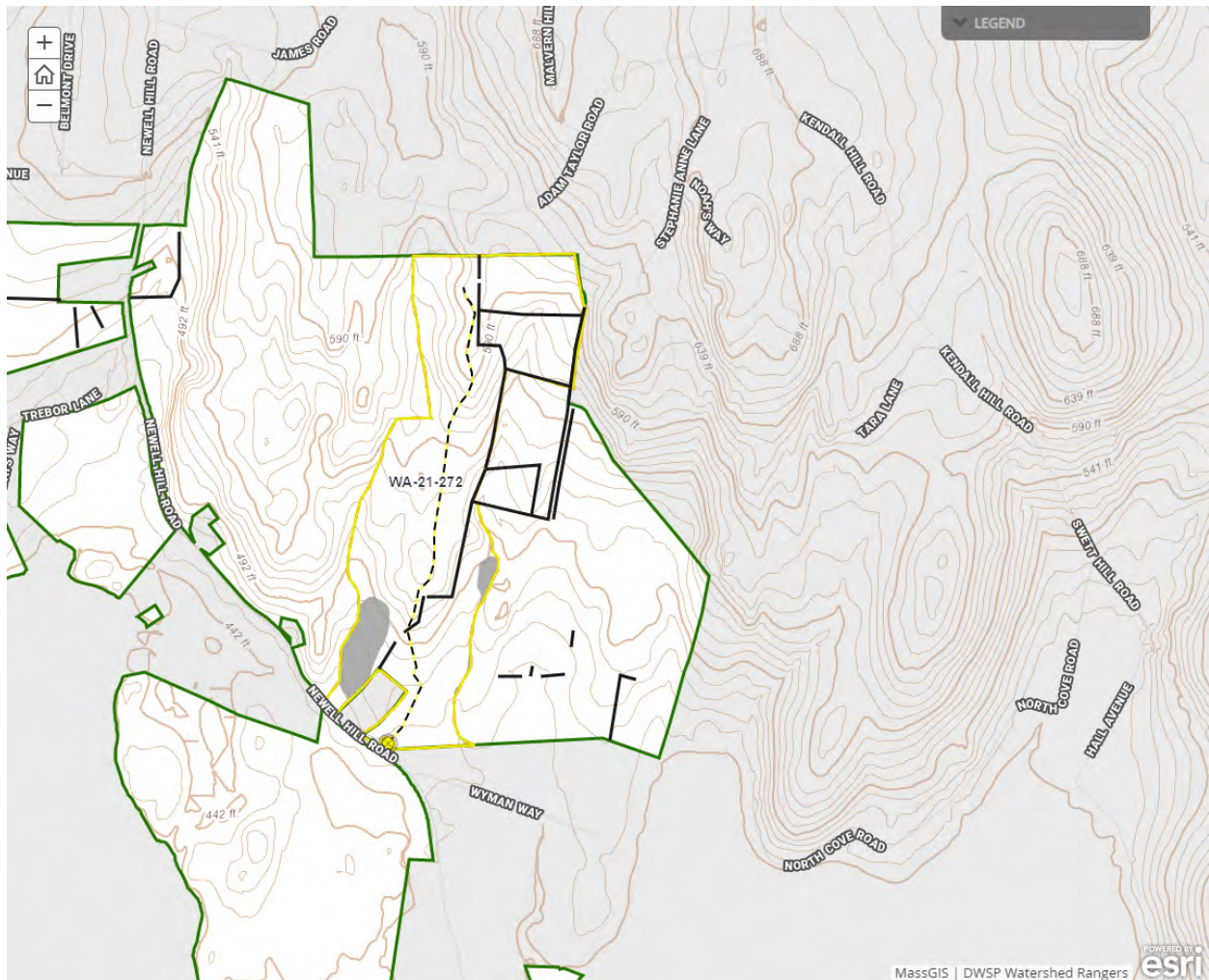
With advance regeneration present and a desire to protect as much of it as possible during the harvest, a cut-to-length harvesting system will be employed.



Cultural Resources

Comments on Cultural Resources:

Although perhaps not culturally or archaeologically significant, there's an interesting very large pile of rocks in the north end of this area as shown on the map. It presumably is the result of the dumping of rocks that originated from agricultural activities on the property to the north. Stone walls are prevalent.



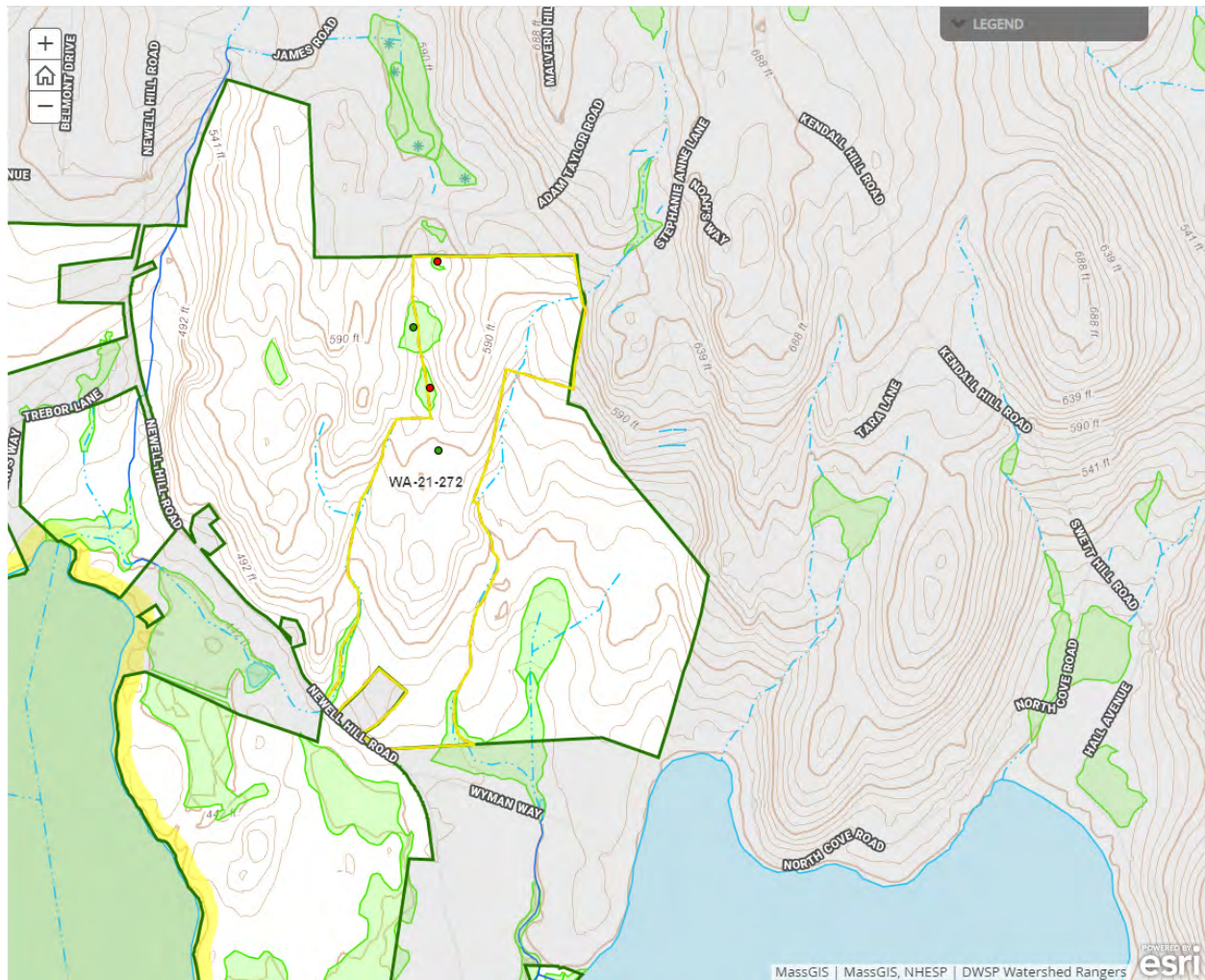
Wildlife Resources & Rare and Endangered Species

General Wildlife Comments:

Two verified vernal pools on this lot, with wood frog and spotted salamander egg masses. Deer browse appeared low on the southern portion of the lot and was moderate on the northern end particularly where invasive plant species dominate. Oak stump sprouts were moderately browsed along trail corridors. Deer may impact some regeneration based on the observations made. A unique large pile of small rocks is present to the southeast of VP191 along a rock outcrop. This area though also containing old trash/junk, may be a good hibernaculum for snakes or other wildlife species.

Comments on Rare Species/Habitats:

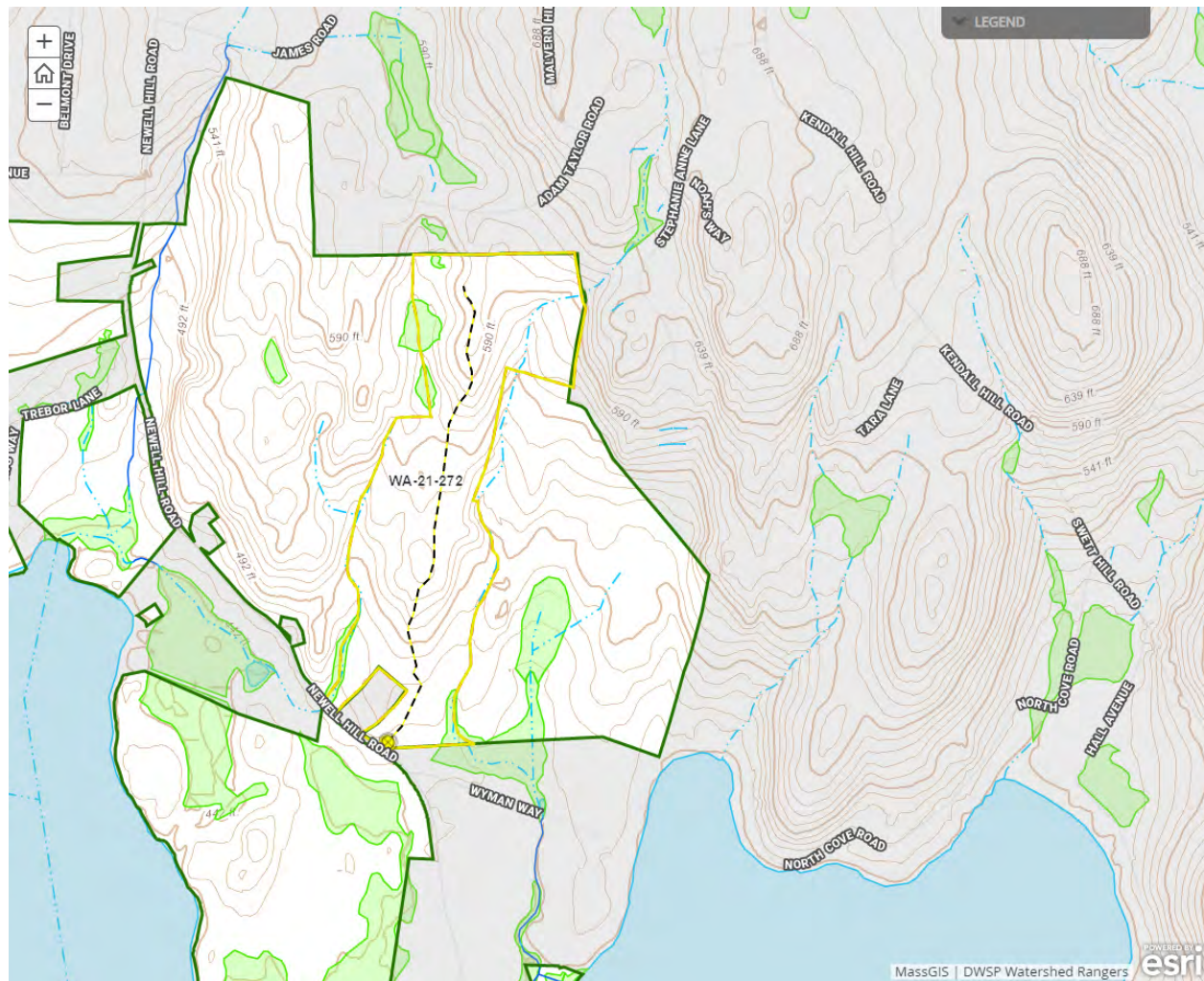
No rare species or habitats present on this proposal area.



Environmental Quality Engineering

Comments on EQ Issues:

No stream crossings or EQ comments.



Forest Access Engineering

Gravel needed: No

Landing work needed: No

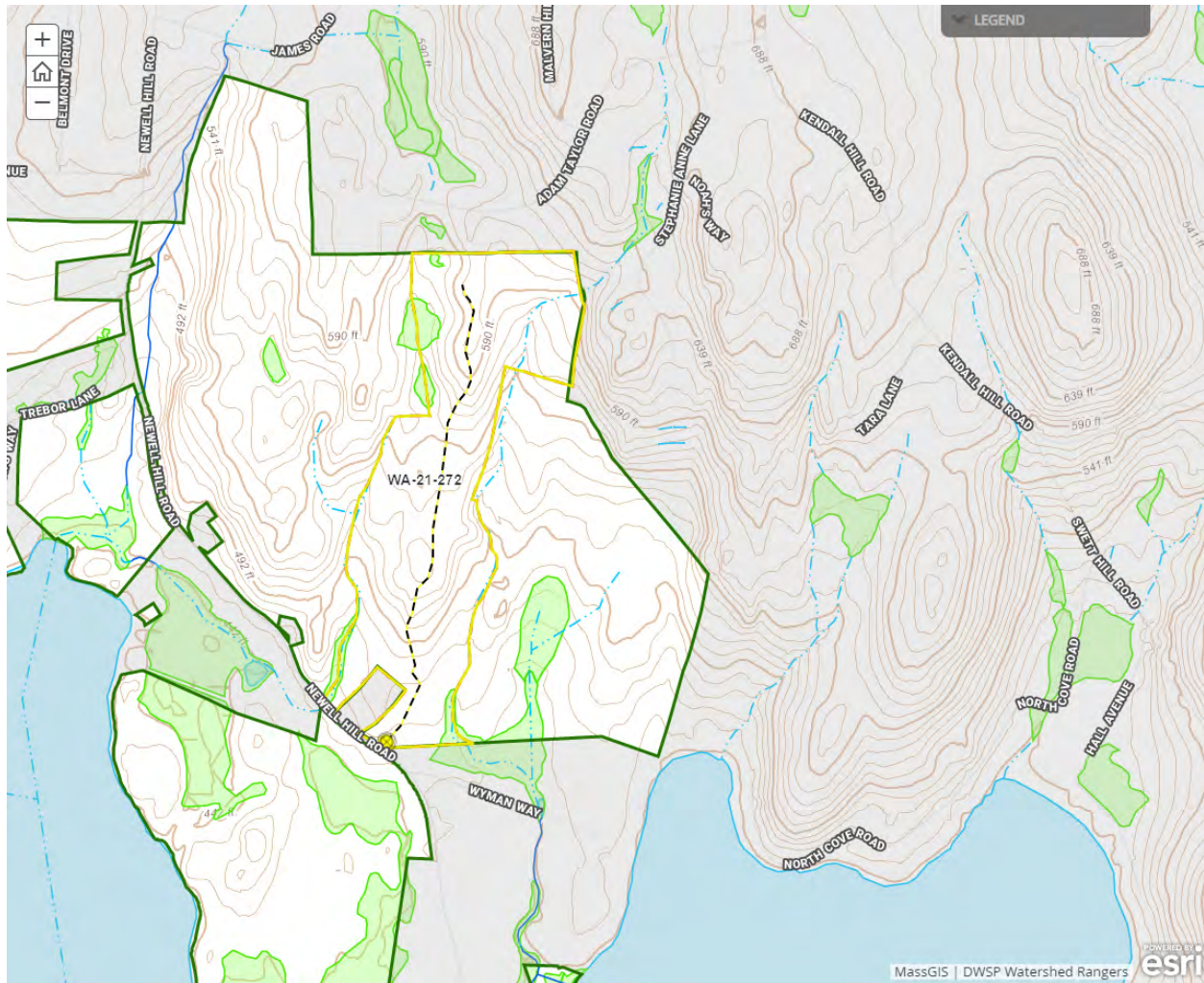
Culverts needed: No

Work needed on permanent bridges: No

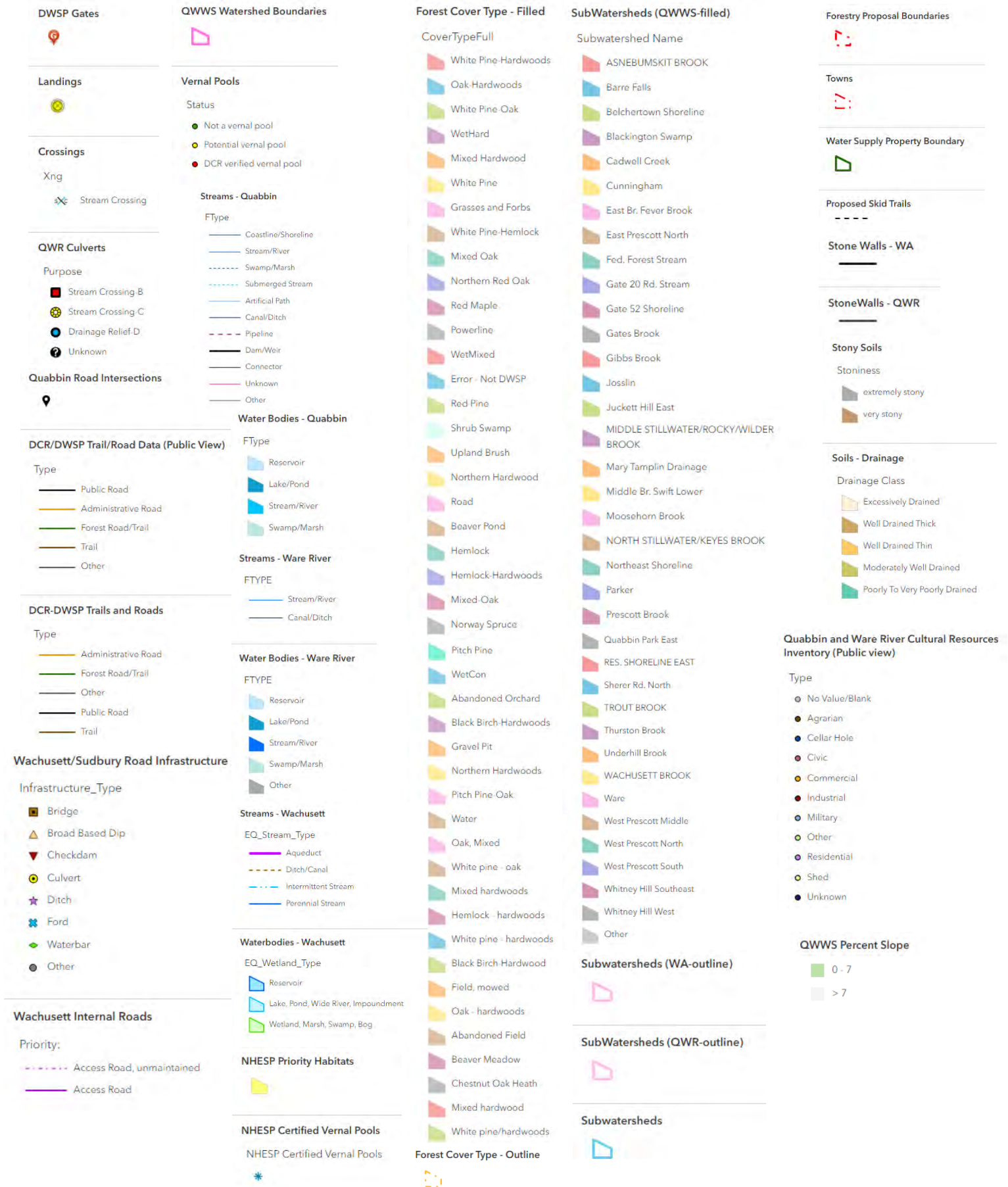
Beaver issue: No

Further comment on access needs:

No engineering work is anticipated to be needed prior to harvest.



DWSP FY 2021 Forestry Proposals – Master Legend for story maps



Wachusett Harvest Proposal WA-21-232

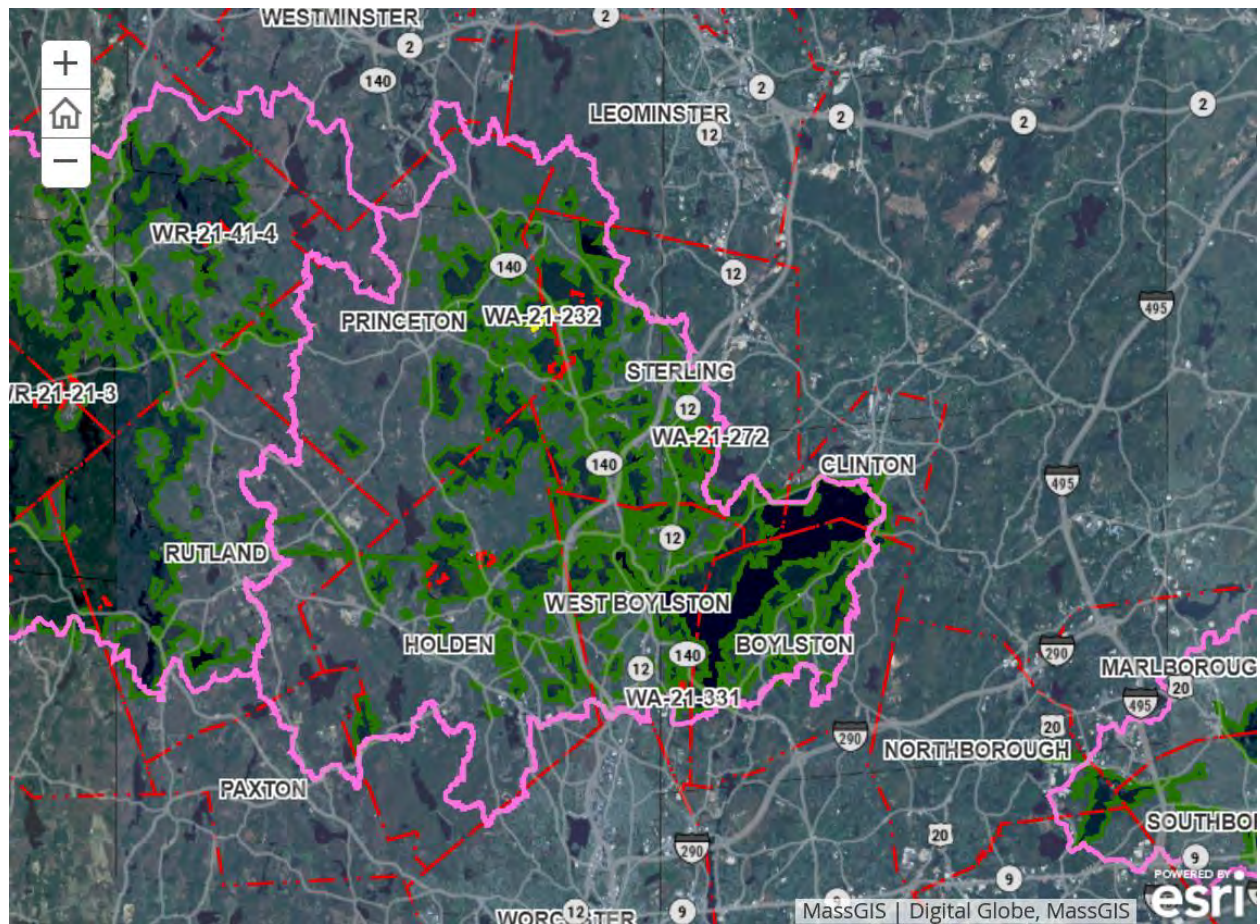
Proposal Goals

The primary goal is to promote a resilient, diverse forest through the creation of canopy openings that allow young forest to develop, release established healthy young trees, and remove groups of poor quality trees. With advance regeneration in some areas and small pockets of a second age class established, this will be an excellent opportunity to create a new well-defined age class within the working unit. This will be done by releasing the advance regeneration in some areas and expanding/defining a younger age class around current small openings. A secondary goal will be to prep cut the mountain laurel areas, creating some new regeneration.

Proposal Location

This proposal is located on the northern side of Houghton Road in Princeton. Starting with a short road frontage on Houghton Road heading northeasterly for about 2400 feet to the Stillwater River where the working unit follows the river northerly for about 400 feet. From there the property line heads easterly along abutting property for about 200 feet where it meets Redemption Rock Trail (Route 140). Northerly on Redemption rock trail for about 700 feet then southwesterly along an underground cable line for 2400 feet where it meets a field edge. From there the boundary of the working unit heads generally south for 450 feet or so until it meets up again with Houghton Road.

Total Acres: 72



General Description

	Overstory Type(s)	Acres
Dominant	White pine/hardwood	40
Secondary	Mixed hardwoods	21
Other	Oak/hardwood	5

	Understory Type(s)
Dominant	Tree seedlings/saplings dominate site

Secondary	Mountain laurel prevalent
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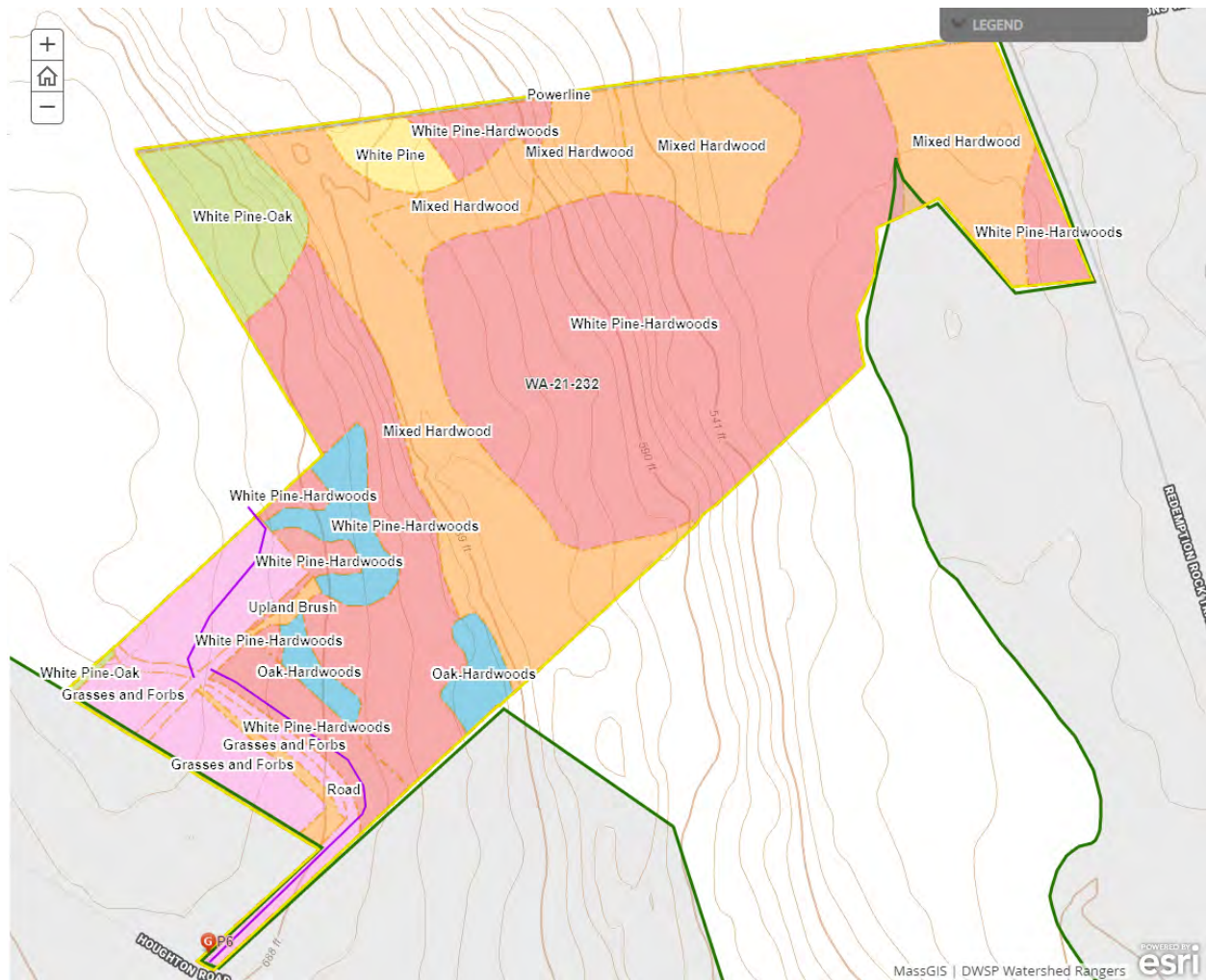
Description of forest composition/condition:

This working unit was acquired in 1996 and was previously owned by U.S. Farms Inc. The land was managed by Forester Joe Lee between 1978-1996. Just before the working unit was purchased in February of 1996, Joe Lee oversaw a shelterwood harvest that covered a larger portion of U.S. Farms land and only a couple sections of this working unit. The harvest resulted in some small stands of young mixed hardwoods and other areas with very advanced hardwood and pine regeneration under a mature canopy. There are also sections of interfering mountain laurel on the drier sites, while witch-hazel is more prevalent along the stream. Some sections have no regeneration including areas with mature hemlock which is slowly dying or has died from the hemlock woolly adelgid. White pine is the dominant species within the working unit and is of fair quality with a lot of multi-stemmed or burly trees. The remaining species on the site include red oak, white oak, black oak, white ash, elm, paper birch, black birch, yellow birch, bigtooth aspen, hemlock, American beech, and Eastern hophornbeam. Musclewood and black gum are present along the stream and pitch pine appears on the hilltop. Pine snags are prevalent on this site with no stick nests noted. There are several uprooted trees down along the Stillwater River. The site conditions are variable with dry uplands and benches with leaky hillsides followed by very damp lowlands.

The age structure is as follows; 0% 0-20 years old, 4% 21-40 years old, 10% 41-60 years old, 2% 61-80 years old, 84% 81-100 years old and 0% >100 years old.

Assessment of Terrestrial Invasive Species:

Invasives were found on 5 plots out of 132 total plots taken. Four of the plots were in a field and one plot was right next to a field. Bittersweet was the only invasive found during sampling.

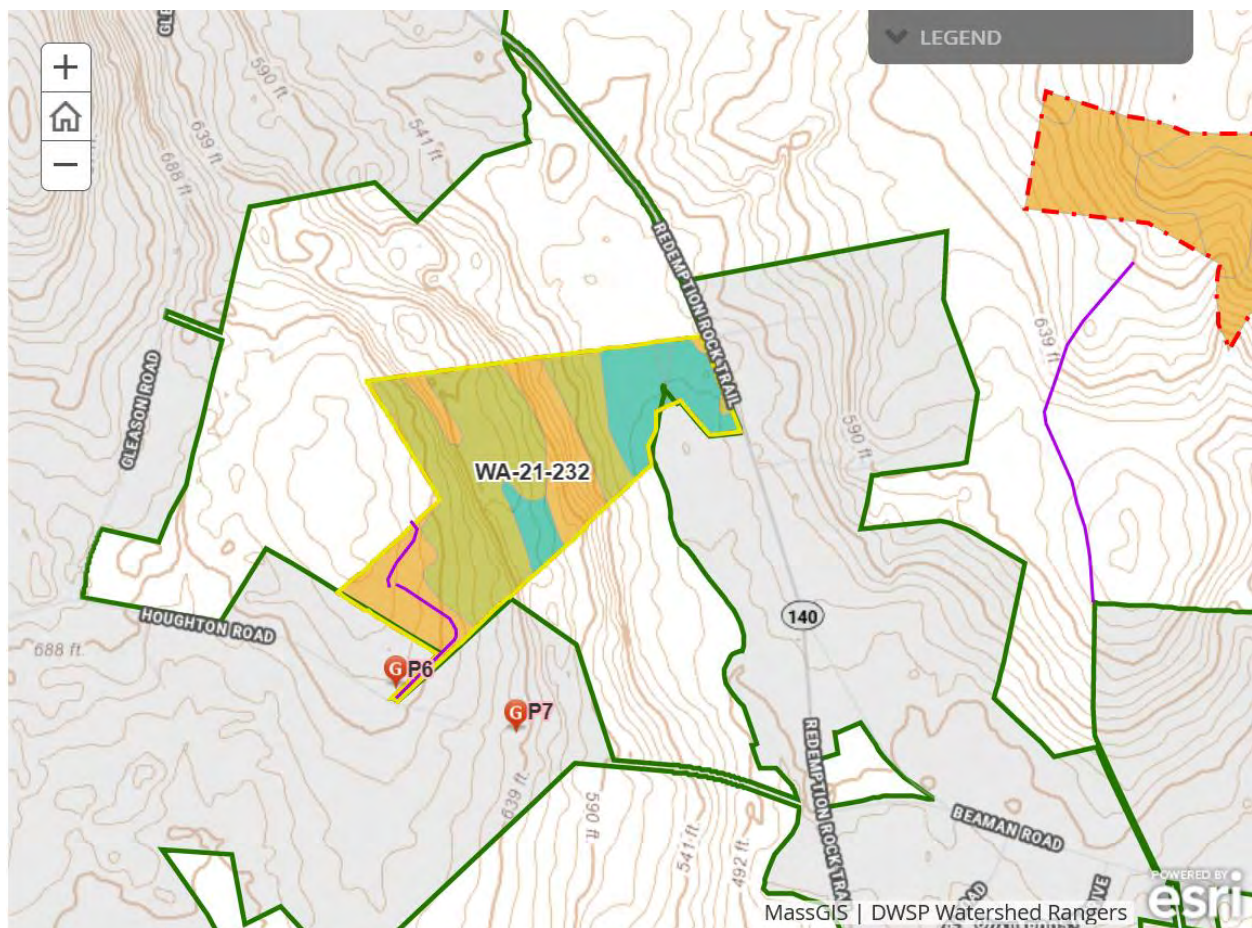


Soils

Drainage Class	%
Excessively Drained	0
Well Drained Thin	0
Well Drained Thick	86
Moderately Well Drained	1

Poorly to Very Poorly Drained	13
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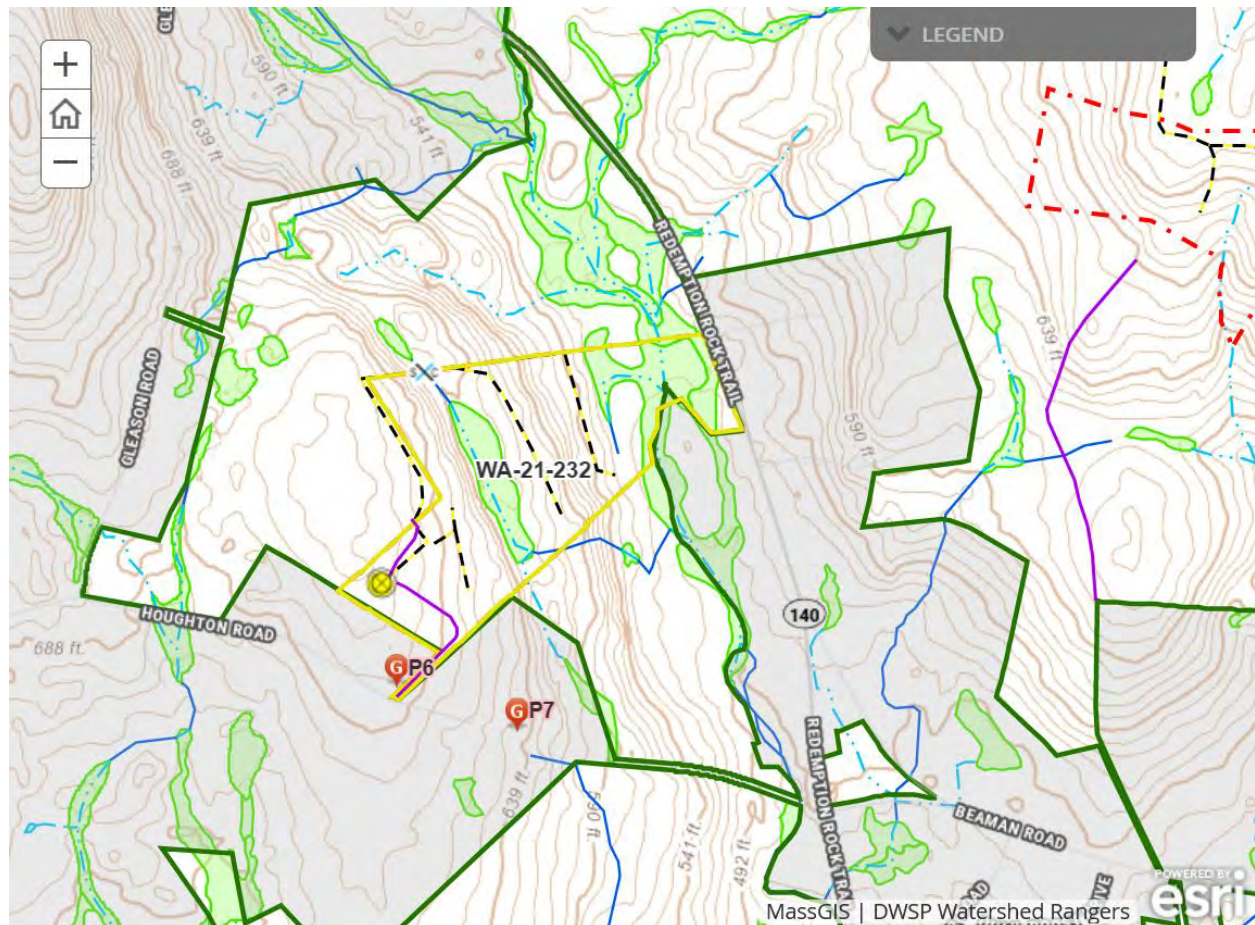
Soils within this working unit are mostly Montauk-Scituate-Canton association, Montauk Canton, and Paxton which are all well-drained soils. Moderately well drained Woodbridge soils making up only 0.2 acres and the remaining land being the wetland/stream areas with poorly drained Ridgebury-Whitman and Walpole.



Wetlands

- Wetlands present? - **Yes**
- Streams present? - **Yes**
- Vernal pools present? - **None known**
- Seeps present? - **None known**
- Are stream crossings required? - **Yes**
- Are wetland crossings required? - **Yes**
- Is logging in filter strips planned? - **No** ([Riparian Zone Mgt](#))
- Is logging in wetlands planned? - **No**

There is an existing underground cable line that crosses the wetland/stream and will most likely be used as the primary crossing location. An unmapped intermittent stream in the middle of the lot, connecting the upper and lower wetlands, will also need to be crossed. BMPs will be implemented as described in the LMP.



Silviculture

Acres in Intermediate cuts: **0**

Acres in prep/establishment cuts: **10**

Acres in Regeneration cuts: **24**

Average regen opening size: **1**

Maximum regen opening size: **2**

Description of advance regeneration in proposal area:

Regeneration sampling found good amounts of regeneration present on 41% of the 132 plots taken and were generally on the western half of the working unit. No regeneration was found on 23% of the plots taken and were concentrated on the northern and eastern areas of the working unit. Interfered plots were found on 19% of the plots and were located mostly in the southern and eastern sections of the working unit and comprised of mountain laurel and witch-hazel. Marginal regeneration was found on 15% of the plots taken and were scattered throughout the unit. The regeneration is made up of white pine, red maple, red oak, black birch, hickory, white ash, Eastern hophornbeam, yellow birch and black gum.

General comments on silviculture proposed:

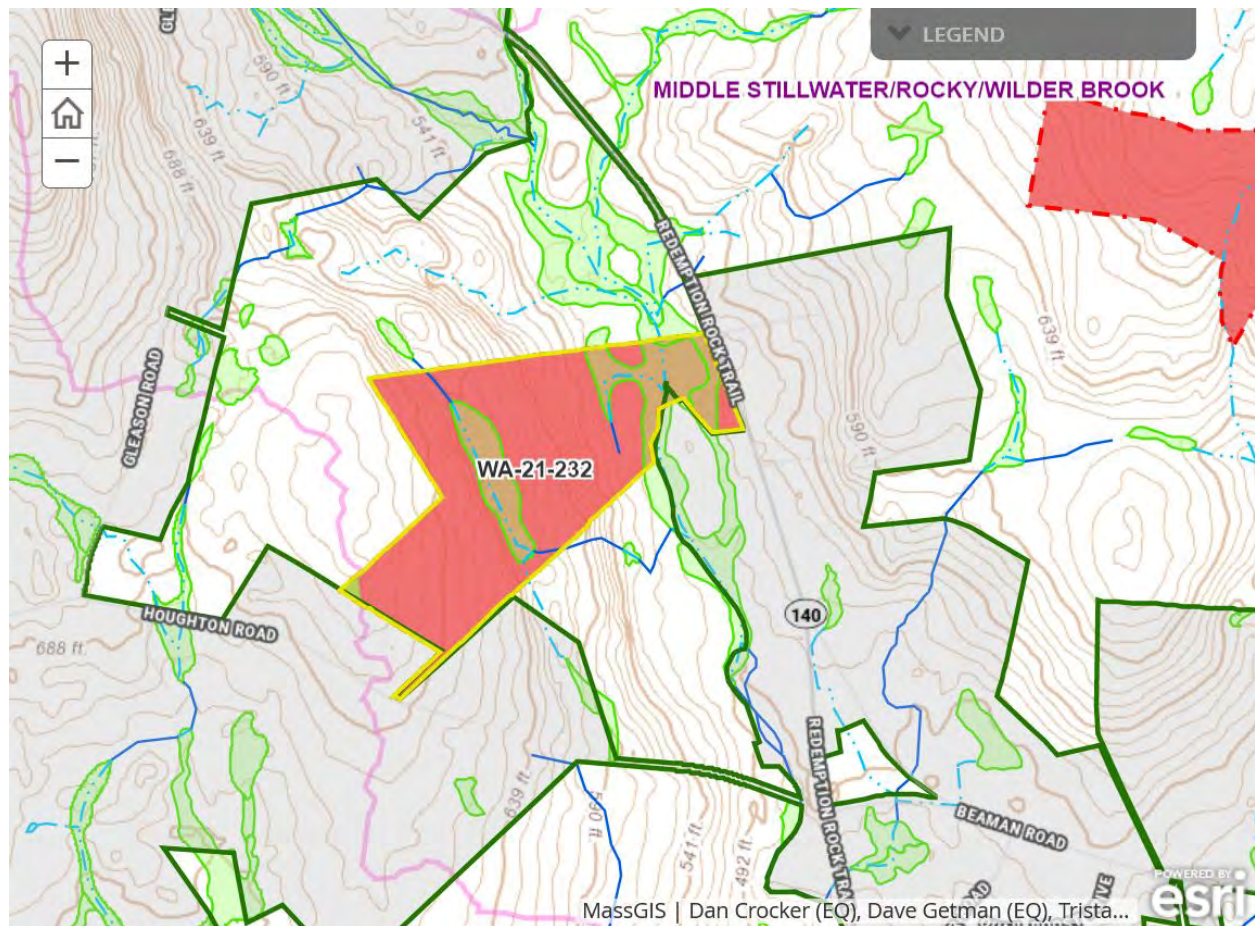
With advance regeneration in some areas and small pockets of a second age class established, this would be an excellent opportunity to create a new well-defined age class within the working unit. This would be done by releasing the advance regeneration in some areas and expanding/defining a younger age class around these current small openings. Some prep cutting will occur in the interfered areas where openings should not be made. The prep areas will have the goal of damaging as much mountain laurel as possible to encourage regeneration.



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
20 (Middle Stillwater/ Rocky/ Wilder Brook)	1123	44	236	72

The proposed level of cutting falls below the 25% threshold.



Harvesting Limitations

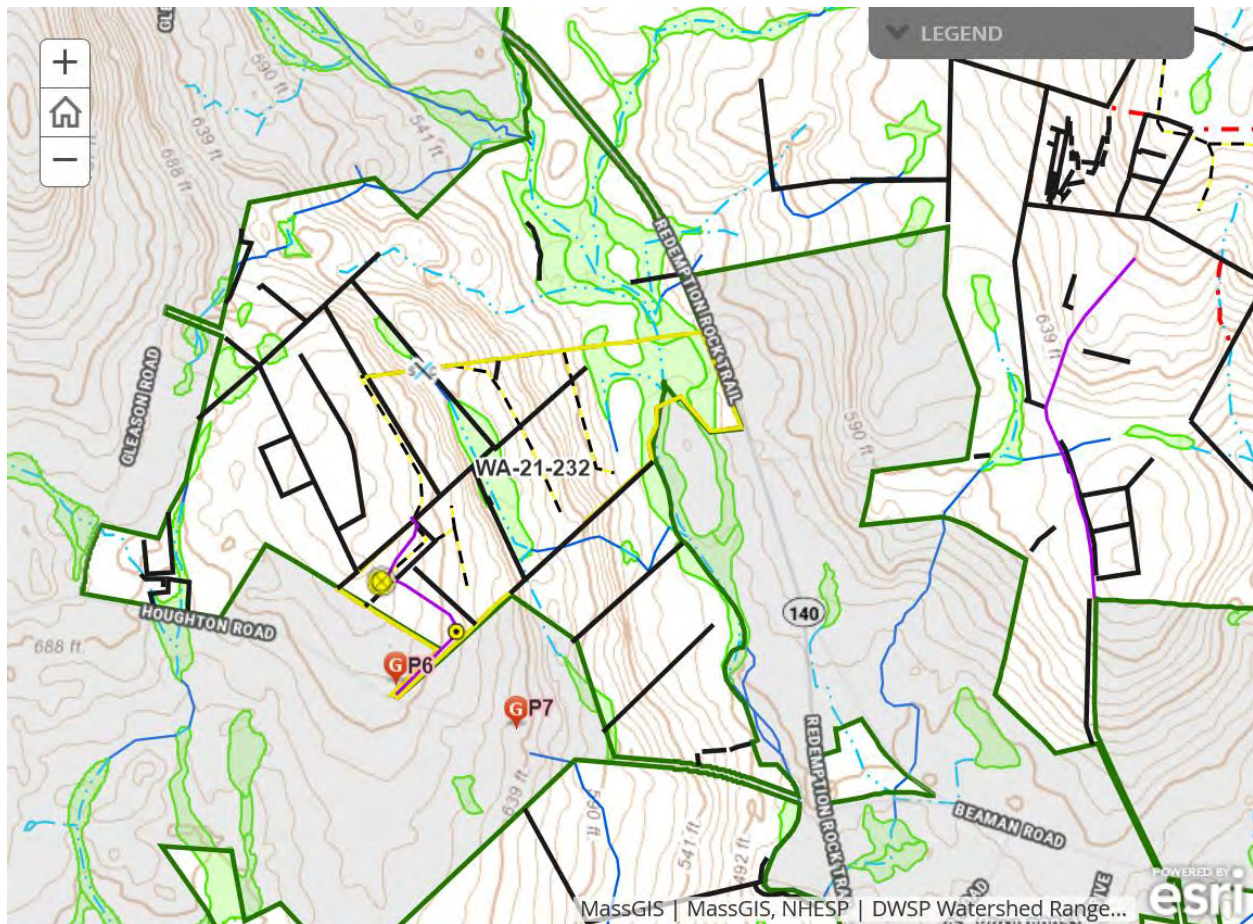
Forwarder required: **Yes**

Feller/processor required: **Yes**

Steep slopes present: **No**

Comments on harvesting limitations:

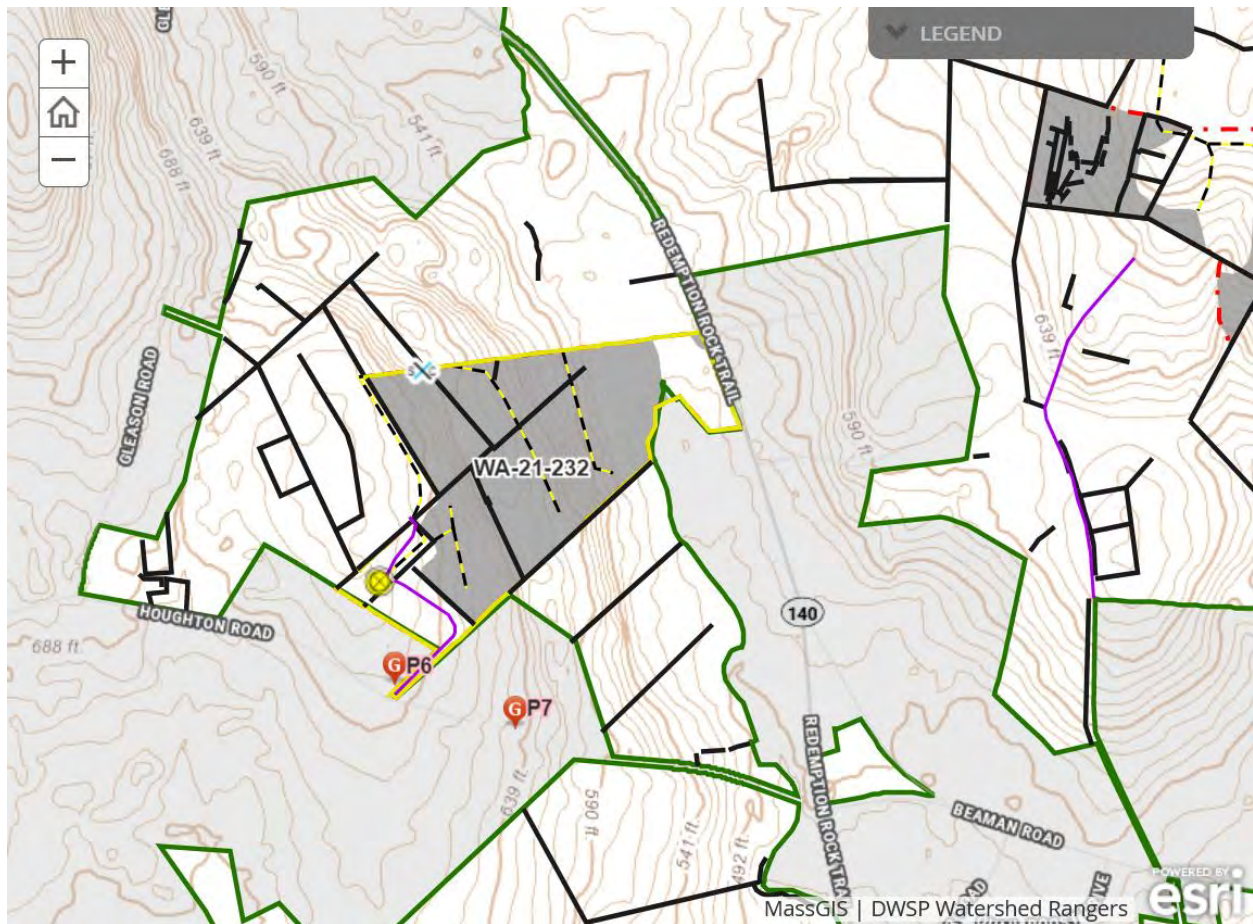
Some sections of this harvest will require the protection of advance regeneration. For this reason a processor and forwarding will be required.



Cultural Resources

Comments on Cultural Resources:

No cultural resources known on lot, other than stone walls.



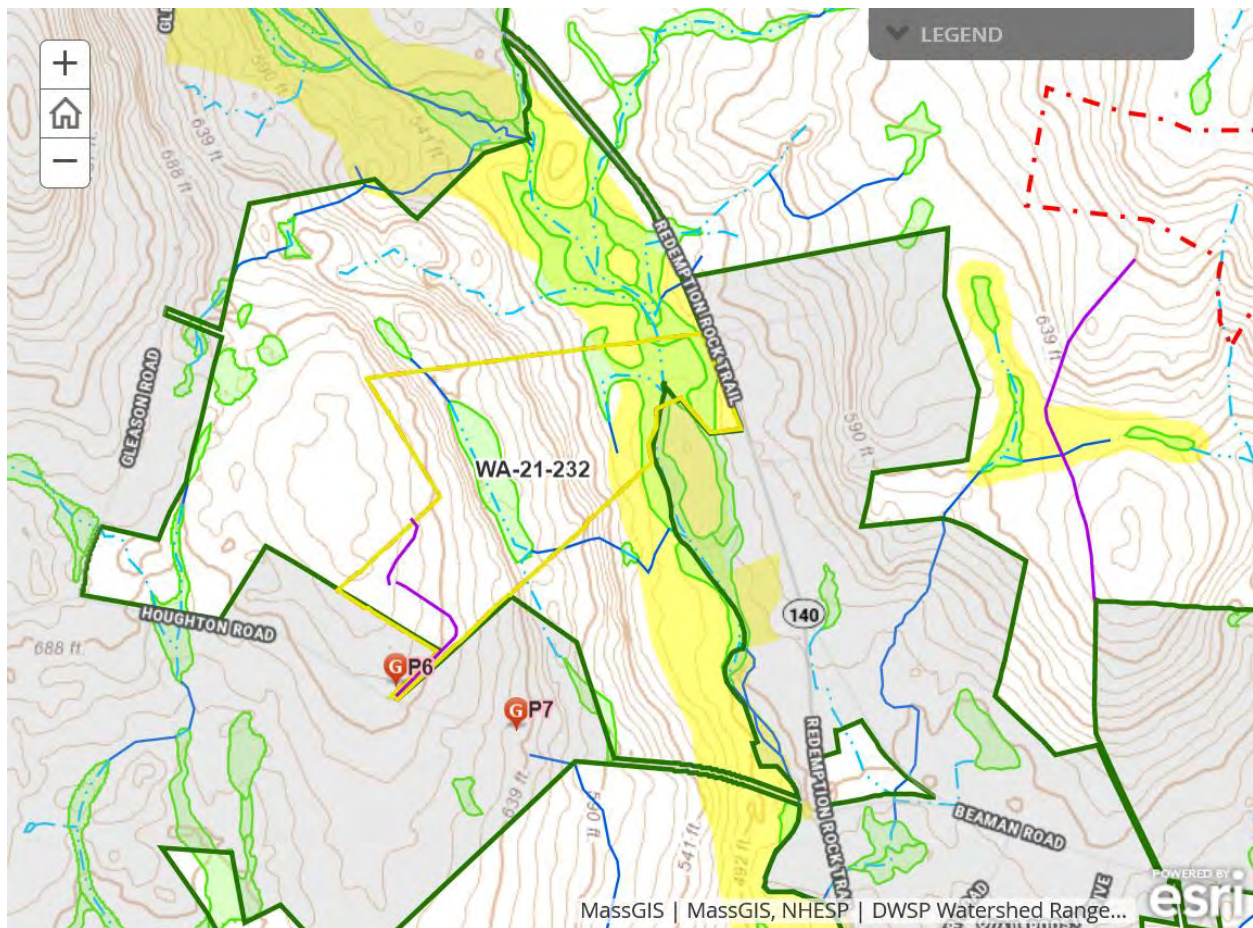
Wildlife Resources & Rare and Endangered Species

General Wildlife Comments:

Active beaver site and a good duck population at the time. A lot of deer activity by the Stillwater. There are some large exposed boulders and an interesting wetland along the Stillwater, just downstream of where Justice Brook and Keyes Brook meet. Some large white oak trees were noted and may be important food sources for wildlife.

Comments on Rare Species/Habitats:

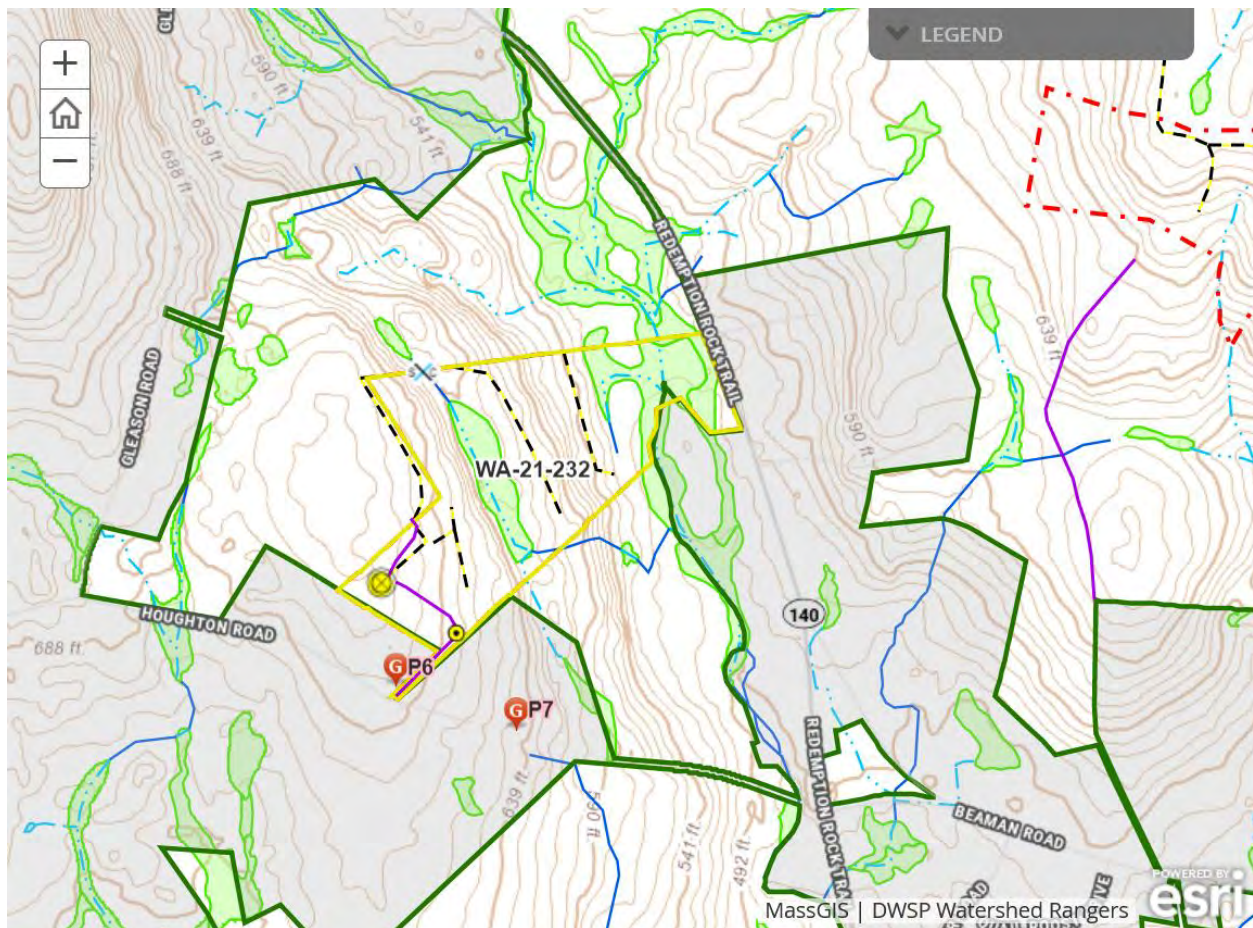
NHESP has determined that certain state-listed sensitive species or habitats may exist within the lot proposal area. To protect them from unnecessary disturbance, detailed information regarding affected species and their locations is not included in this report. DWSP will coordinate with NHESP and follow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



Environmental Quality Engineering

Comments on EQ Issues:

One stream crossing is proposed. The stream crossing was identified in the field with flagging and a water quality sample was collected at the proposed crossing. EQ staff will collect water quality samples at the stream crossings. Background samples will be collected downstream from the proposed stream crossing prior to logging in order to establish baseline conditions, while downstream and upstream samples will be collected to measure the effects of ongoing logging operations, and after, to determine whether there are any measurable impacts.



Forest Access Engineering

Gravel needed: No

Landing work needed: No

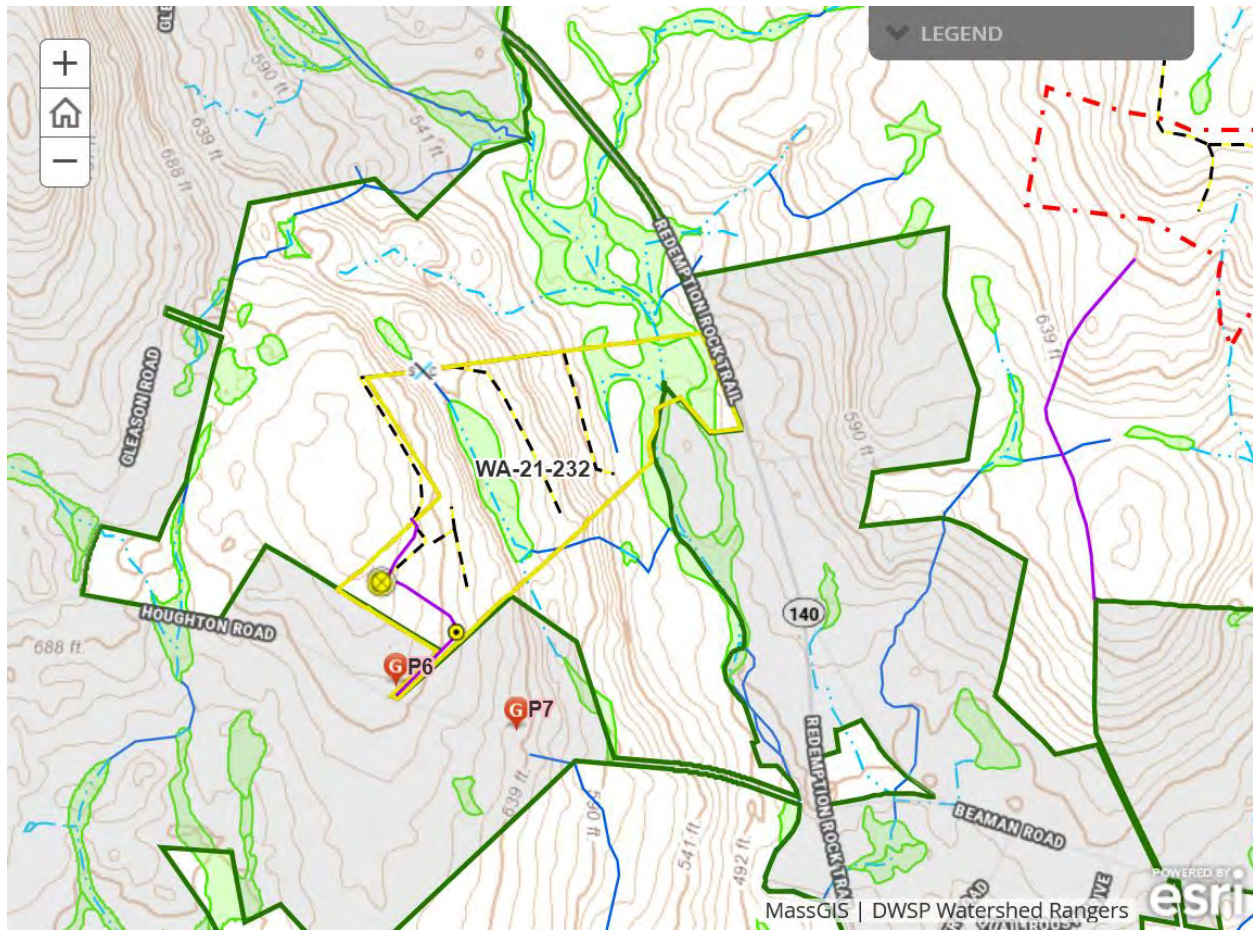
Culverts needed: No

Work needed on permanent bridges: No

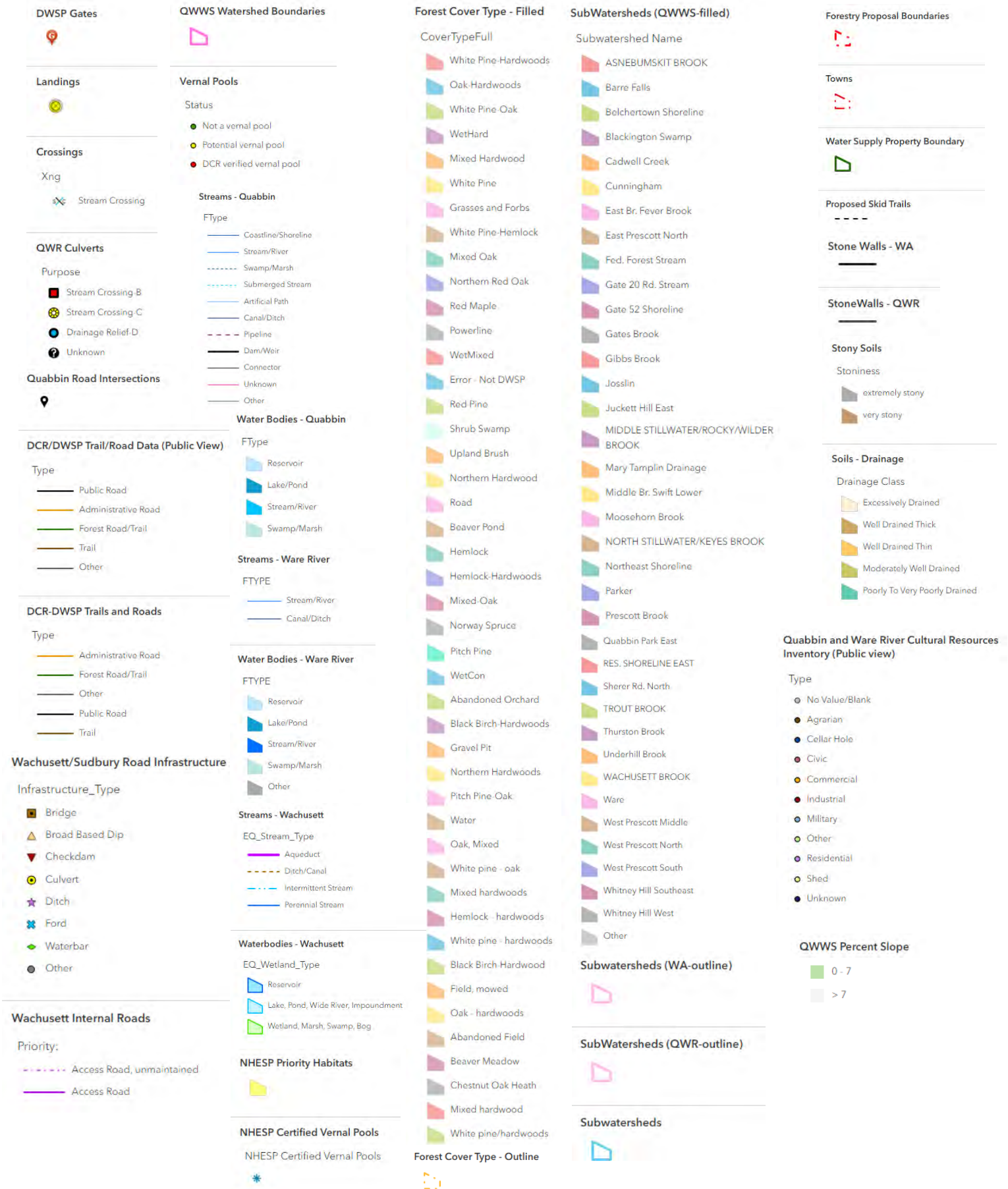
Beaver issue: No

Further comment on access needs:

No engineering work is anticipated to be needed prior to harvest.



DWSP FY 2021 Forestry Proposals – Master Legend for story maps



Wachusett Harvest Proposal WA-21-231

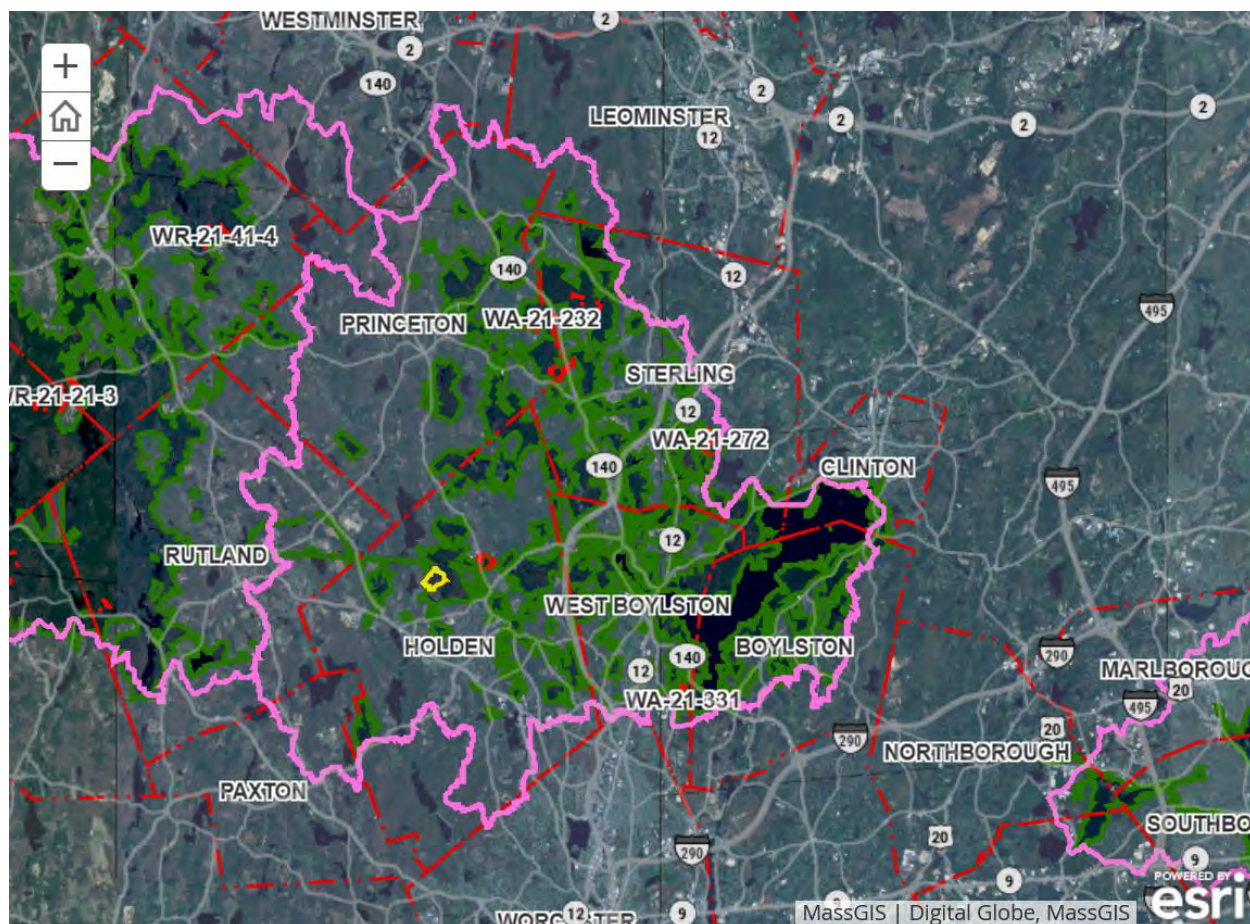
Proposal Goals

The primary goal is to promote a resilient, diverse forest through the creation of canopy openings that allow young forest to develop, release established healthy young trees, and remove groups of poor quality trees. In this area, the result of past logging and a fire is an excellent understory of oak regeneration along with white pine, red maple, sassafras and paper birch.

Proposal Location

This proposal is located in Holden, along an old railroad line running between the Quinapoxet River and Asnebumskit Brook. The northwest side is bound by the old railroad bed; the northeast and east sides are bound by Bear Brook and an arbitrary line through Bear Swamp; and the south side by the edge of the old Parker fields and the DWSP property boundary stone wall.

Total Acres: 47



General Description

	Overstory Type(s)	Acres
Dominant	Oak, mixed - dry site	36
Secondary	Mixed hardwoods	19

	Understory Type(s)
Dominant	Tree seedlings/saplings dominate site

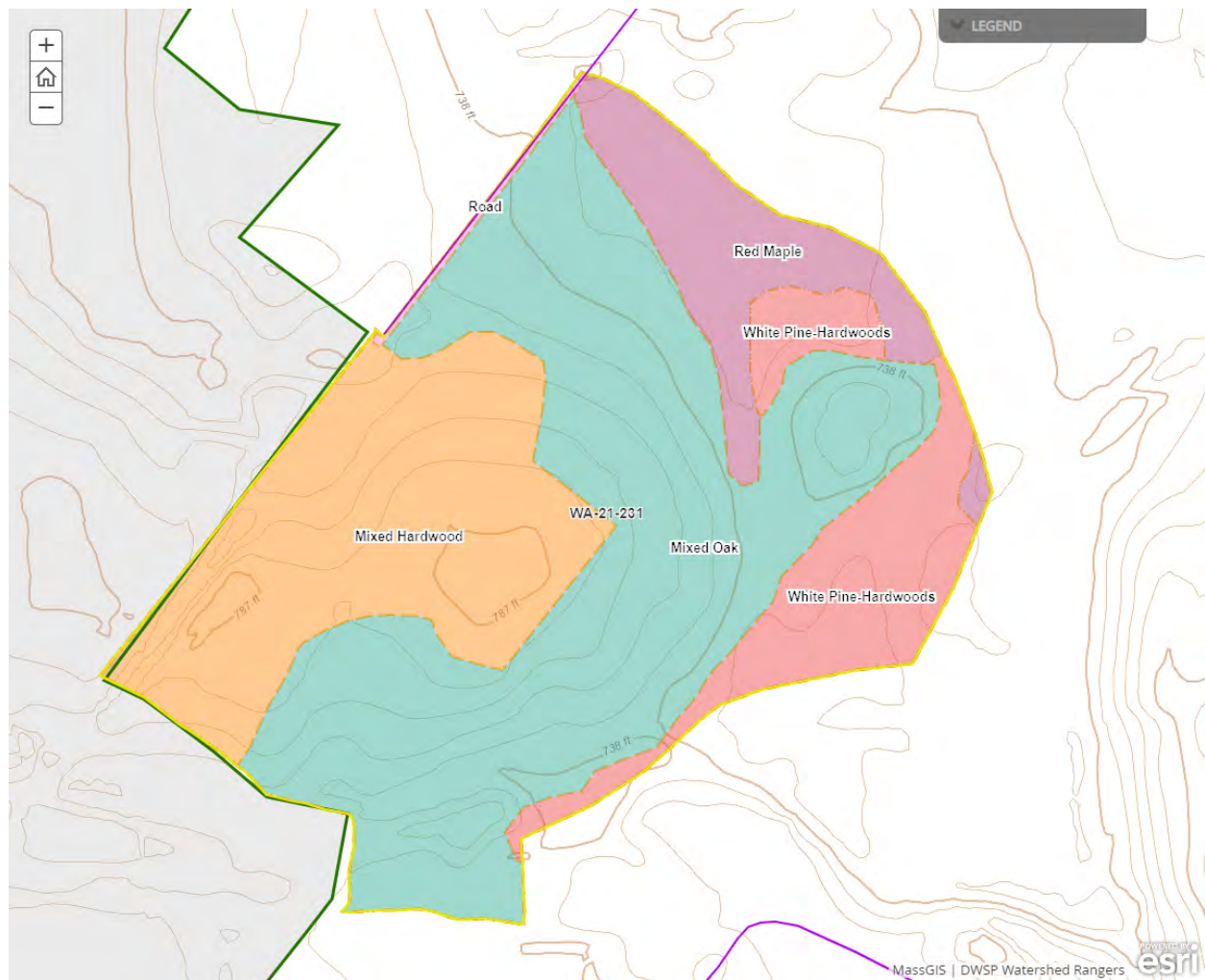
Description of forest composition/condition:

This property was purchased by the MDC in 1993 just about the same time that a severe wildfire burned through much of these 59 acres. This area had also been heavily logged prior to MDC acquisition. The result of these two disturbances was the establishment of an excellent understory of primarily hardwood regeneration although white pine is present as well. In fact, the forest cover type on 19 acres of this area is a 26-year-old mixed hardwood stand comprised of red, black and white oaks, paper birch, gray birch and red maple. There are scattered surviving white pine above this young stand. The overstory on the remaining 36 acres is a mixed oak stand comprised of red, black and white oaks, with fewer red maple, sassafras, white pine and hemlock. Many of the trees in this stand, except for the eastern and northern lower slopes nearer to Bear Swamp, have severe fire scars on the butts. The dominant understory shrub is mountain laurel along with witch-hazel and highbush blueberry.

On the minority of the 36-acre mixed oak stand where there is not thick advance regeneration, there is a thick mountain laurel understory, particularly in the northern end of the area. Witch-hazel is the dominant shrub on the lower, eastern slopes near Bear Swamp. The age structure of this working unit is as follows: 0%, 0-20 years old; 32%, 21-40 years old; 0%, 41-60 years old; 0% 61-80 years old; 8%, 81-100 years old and 60%, >100 years old. The 36-acre mixed oak stand originated in about 1914 making it 106 years old.

Assessment of Terrestrial Invasive Species:

Sampling found no invasive species present in these 59 acres.

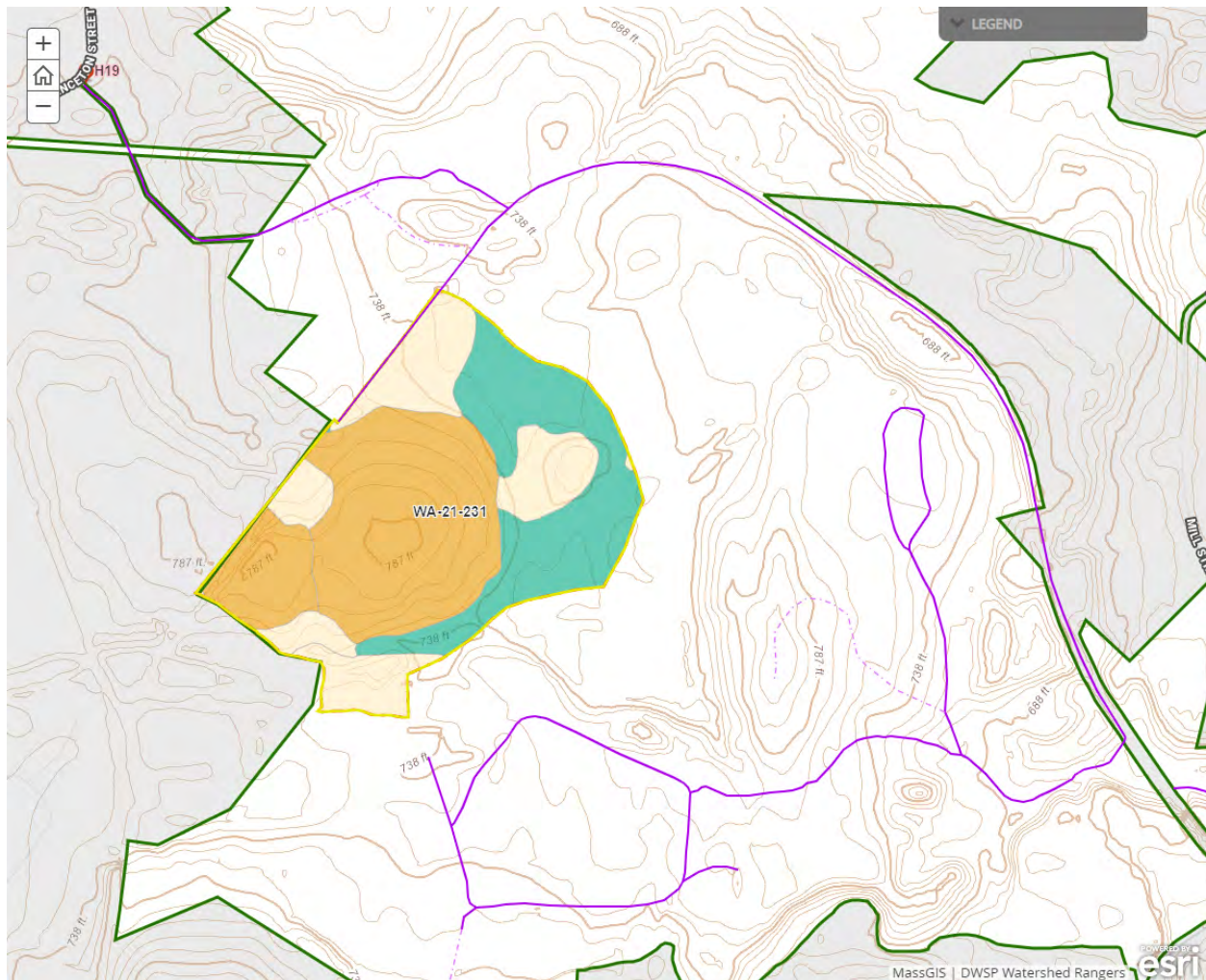


Soils

Drainage Class	%
Excessively Drained	46
Well Drained Thin	0
Well Drained Thick	54
Moderately Well Drained	0

Poorly to Very Poorly Drained	0
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The Canton fine sandy loam, a well-drained, thick till soil is on the top of the hill and partly down the slopes. The Hinckley sandy loam, an excessively-drained outwash soil is on the lower slopes and the small knoll on the east side of the proposed sale area.

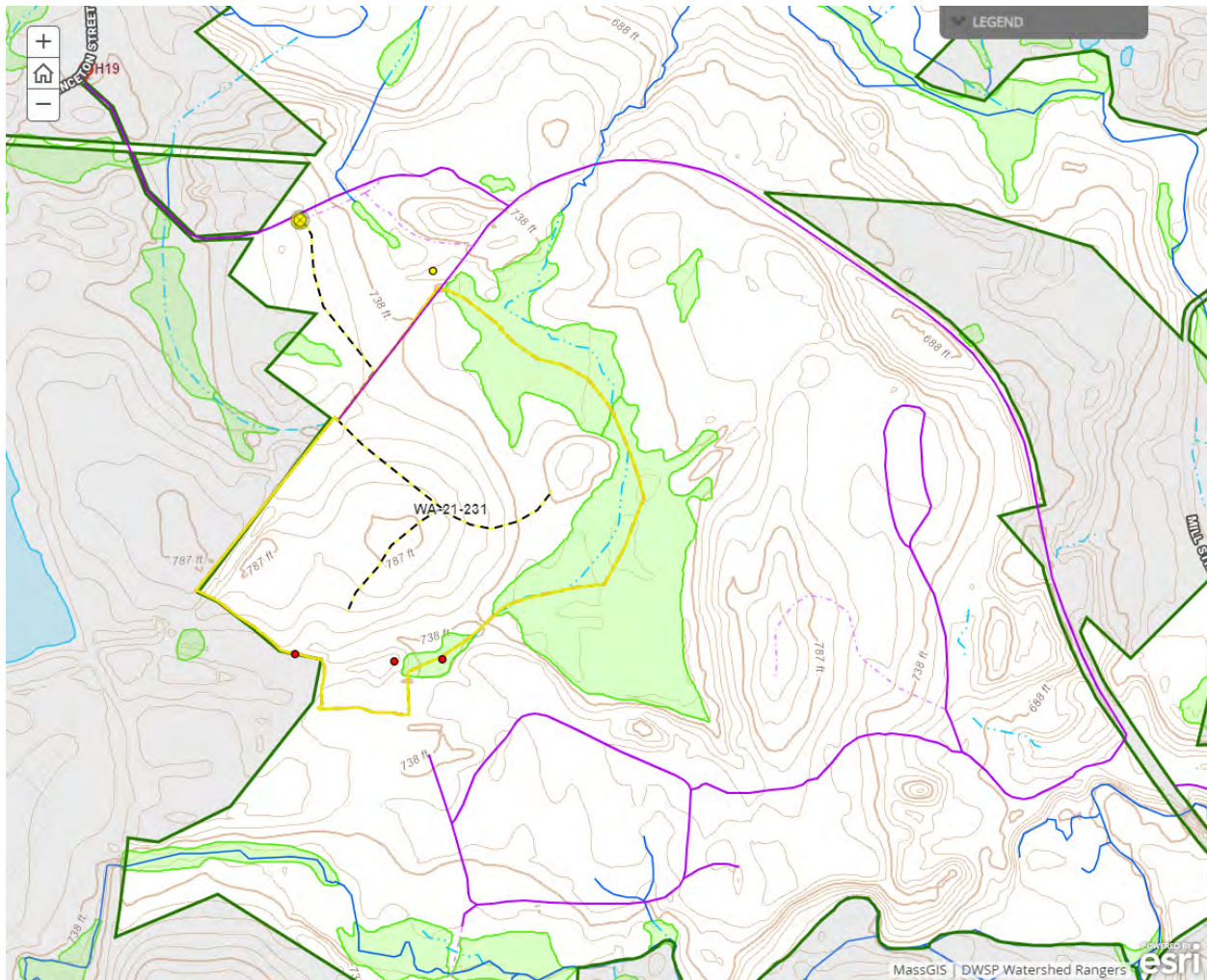


Wetlands

- Wetlands present? - **Yes**
- Streams present? - **Yes**
- Vernal pools present? - **Yes**
- Seeps present? - **None known**
- 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**

Bear Swamp and Bear Brook form the eastern boundary of this sale area. There are 3 verified vernal pools (#73, 74, 473) at the far south end of this area.



Silviculture

Acres in Intermediate cuts: **0**

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

Acres in Regeneration cuts: **19**

Average regen opening size: **1**

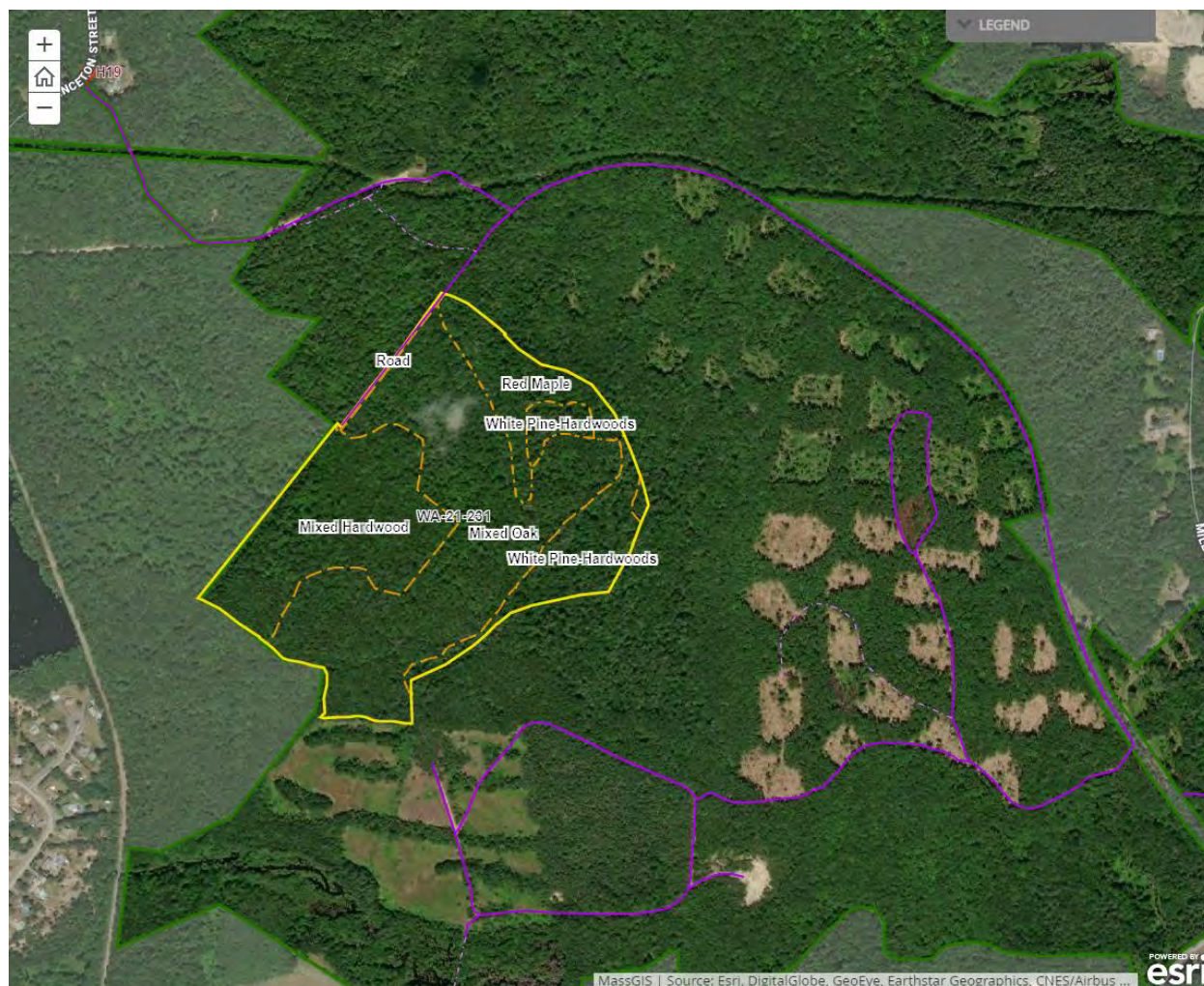
Maximum regen opening size: 2

Description of advance regeneration in proposal area:

There is an excellent understory of hardwoods and white pine throughout most of this area. Sampling found adequate regeneration on 80% of the plots. Most of the plots where adequate advance regeneration is not present there was interfering levels of mountain laurel...this was the case on 10% of the plots. The regeneration is dominated by white oak, red oak and black oak along with white pine, red maple, sassafras and paper birch.

General comments on silviculture proposed:

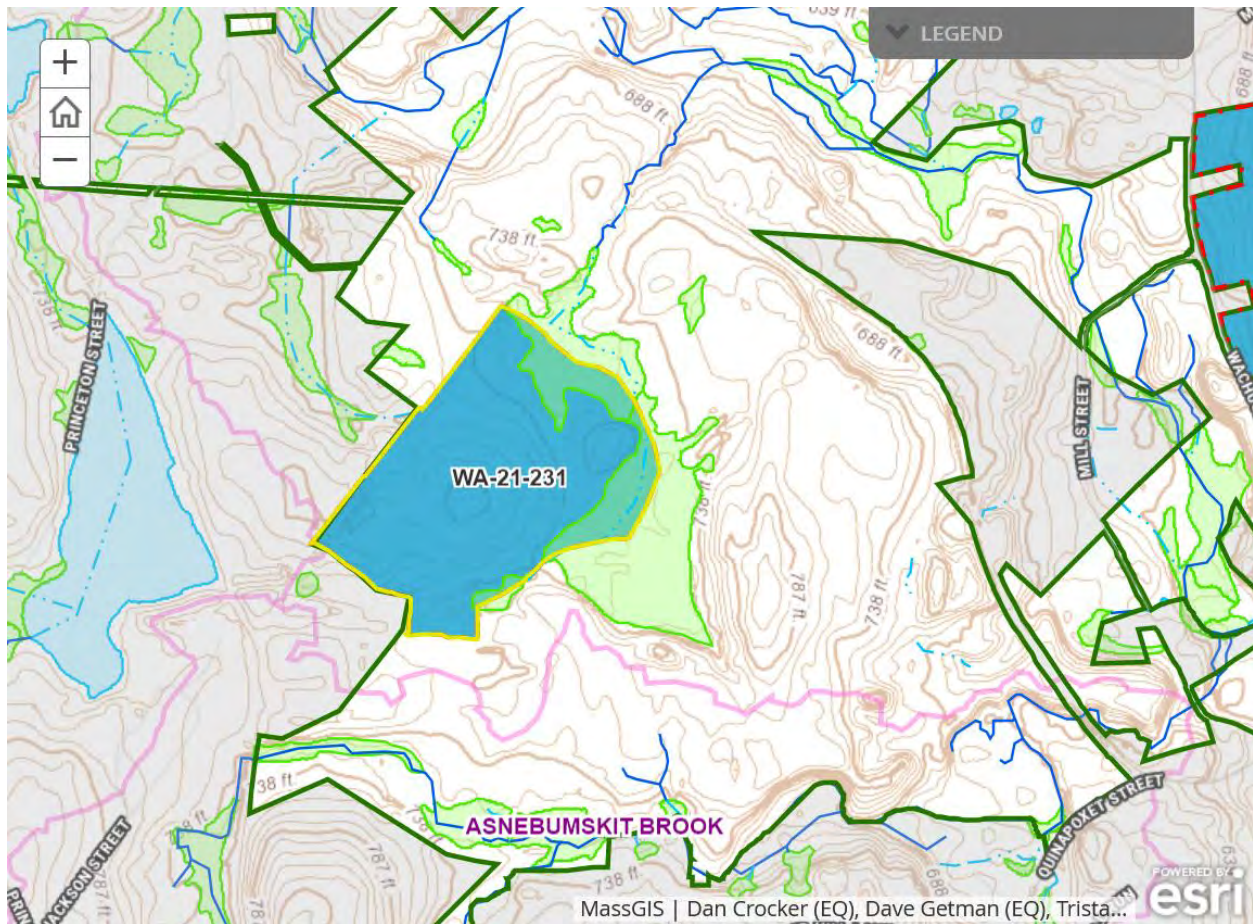
Given the excellent and diverse understory of saplings, openings will be made in the overstory throughout this area totaling up to 19 acres. This will result in the establishment of a new age class on 1/3rd of this management unit. These openings will range in size up to about 2 acres and average about 1 acre. Following this harvest, the age structure of this area will be approximately as follows; 33%, 0-20 years old; 32%, 21-40 years old; 0%, 41-60 years old; 0%, 61-80 years old; 8%, 81-100 years old and 60%, >100 years old. This will be one of the first management units where the goal of having 3 age classes of young, middle-aged and old forest has been achieved.



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
14 (Quinapoxet River)	2464	92	523	59

The proposed level of cutting falls below the 25% threshold.



Harvesting Limitations

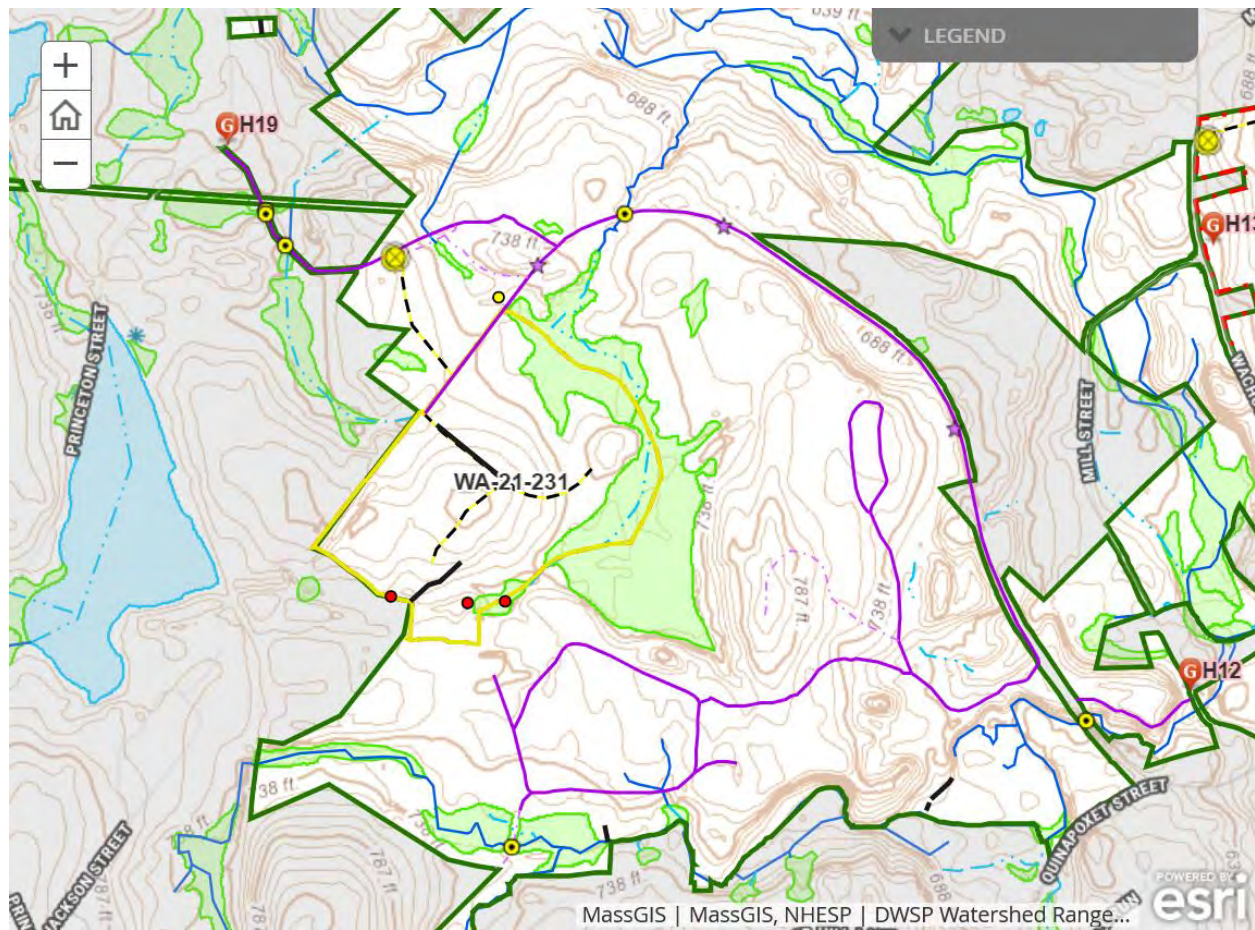
Forwarder required: **Yes**

Feller/processor required: **Yes**

Steep slopes present: **No**

Comments on harvesting limitations:

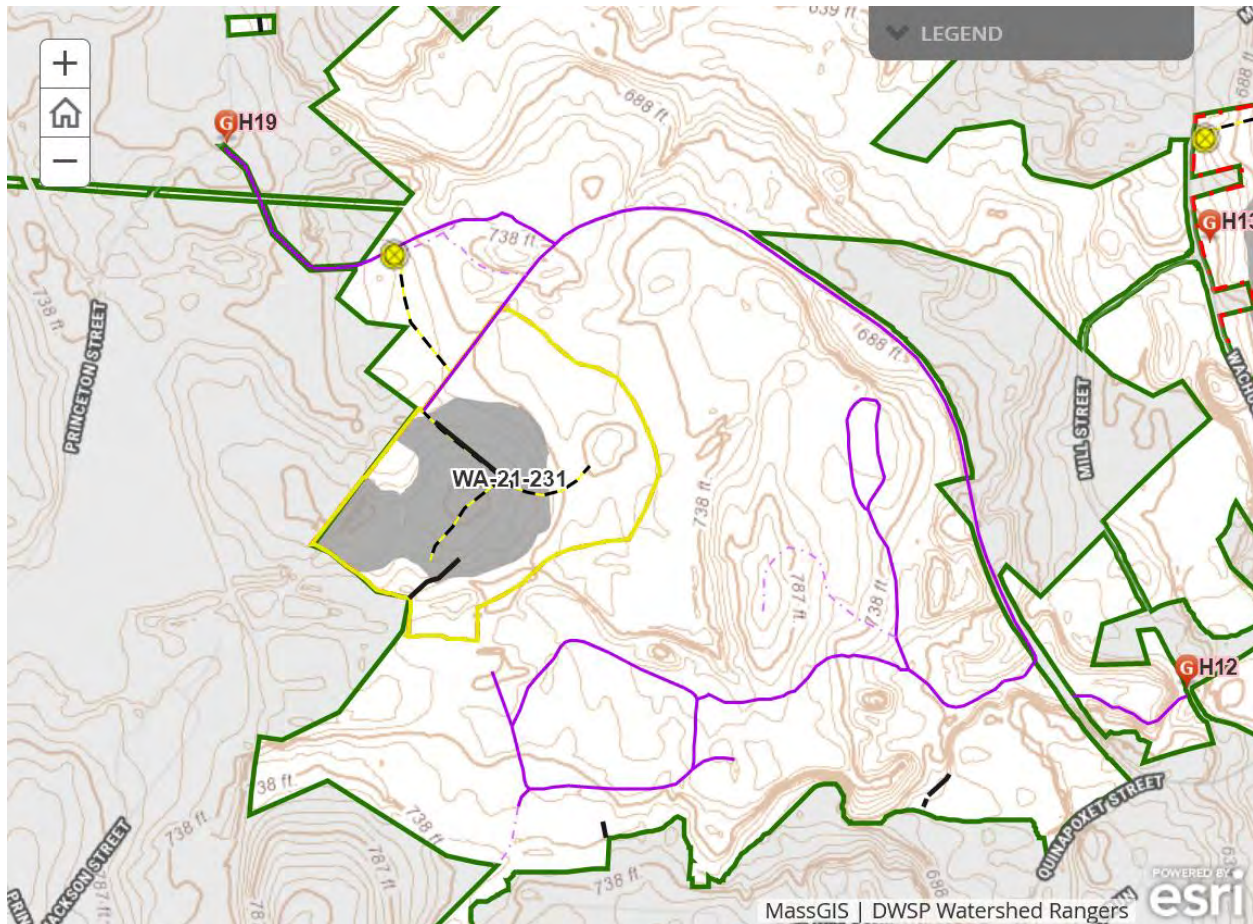
With advance regeneration present and a desire to protect as much of it as possible during the harvest, a cut-to-length harvesting system will be employed.



Cultural Resources

Comments on Cultural Resources:

There are few walls present in this lot. Surface stone is prevalent on the hill.



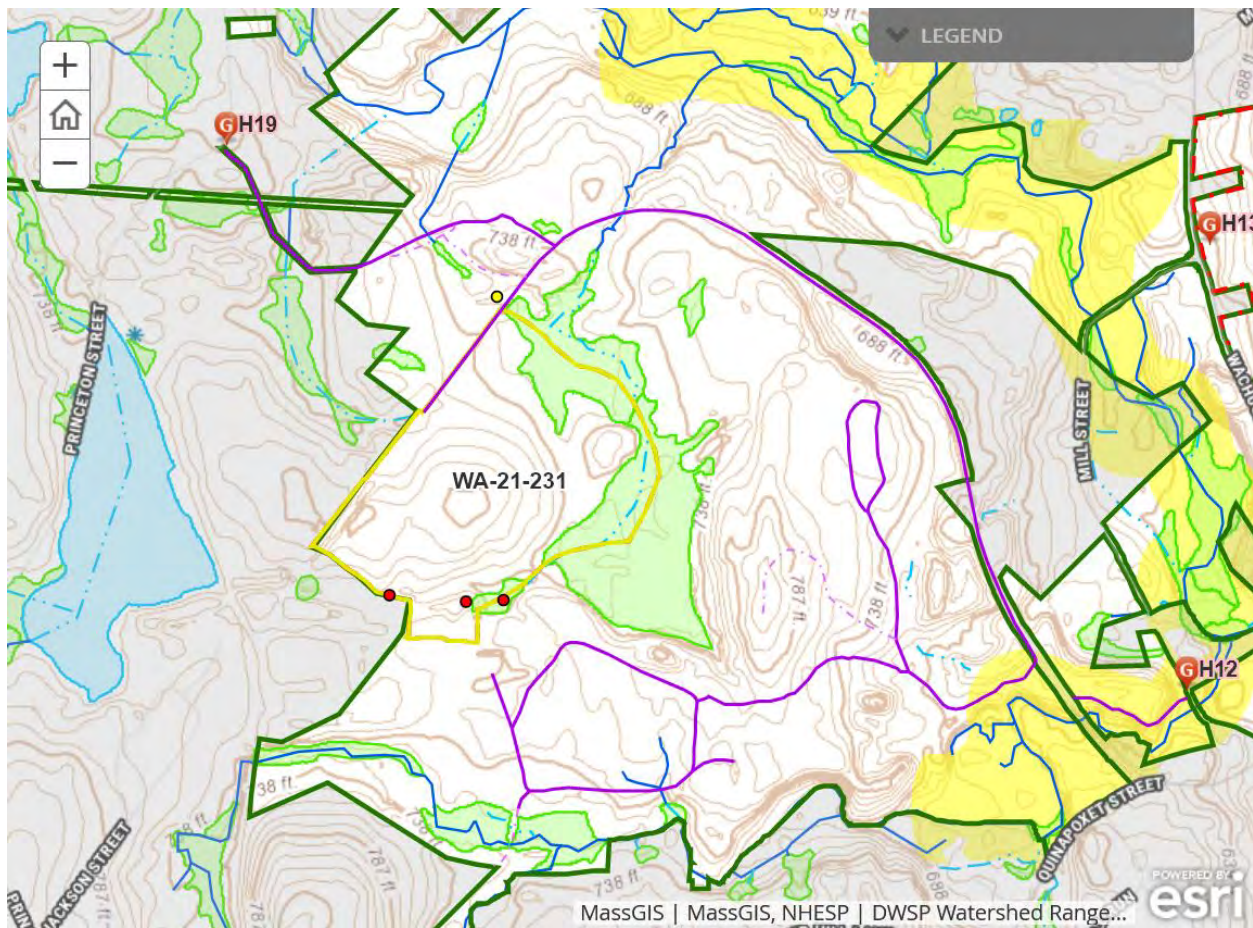
Wildlife Resources & Rare and Endangered Species

General Wildlife Comments:

Incidental pellet observations indicate that deer and moose utilize the lot. Deer browse was high on some plant species (e.g., maleberry), but tree regeneration did not seem significantly impacted. Cavities were noted in numerous trees, which may offer beneficial denning or nesting sites for species. If large cavities are observed or being used by wildlife, those trees should be retained when possible.

Comments on Rare Species/Habitats:

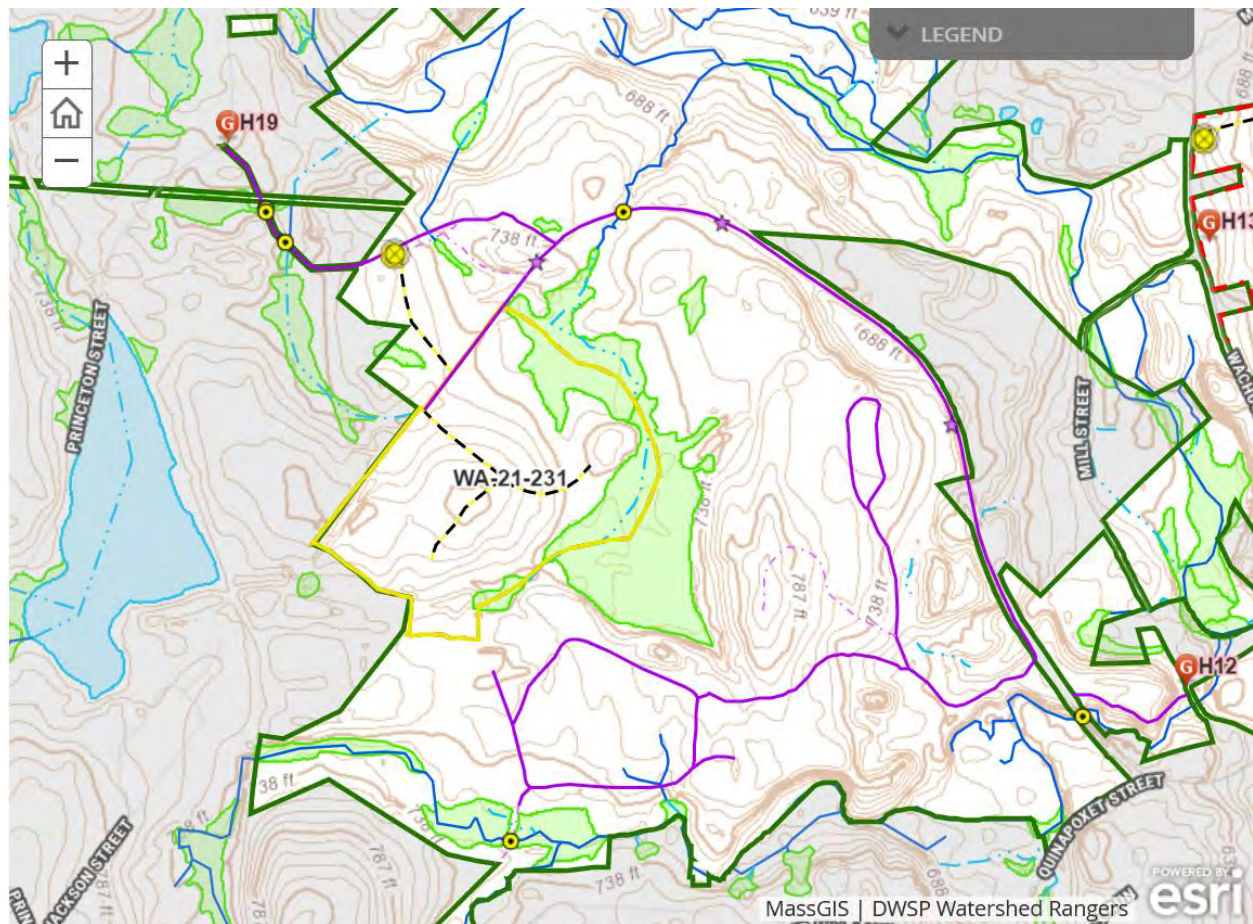
NHESP has determined that certain state-listed sensitive species or habitats may exist within the lot proposal area. To protect them from unnecessary disturbance, detailed information regarding affected species and their locations is not included in this report. DWSP will coordinate with NHESP and follow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



Environmental Quality Engineering

Comments on EQ Issues:

No stream crossings or EQ comments.



Forest Access Engineering

Gravel needed: No

Landing work needed: No

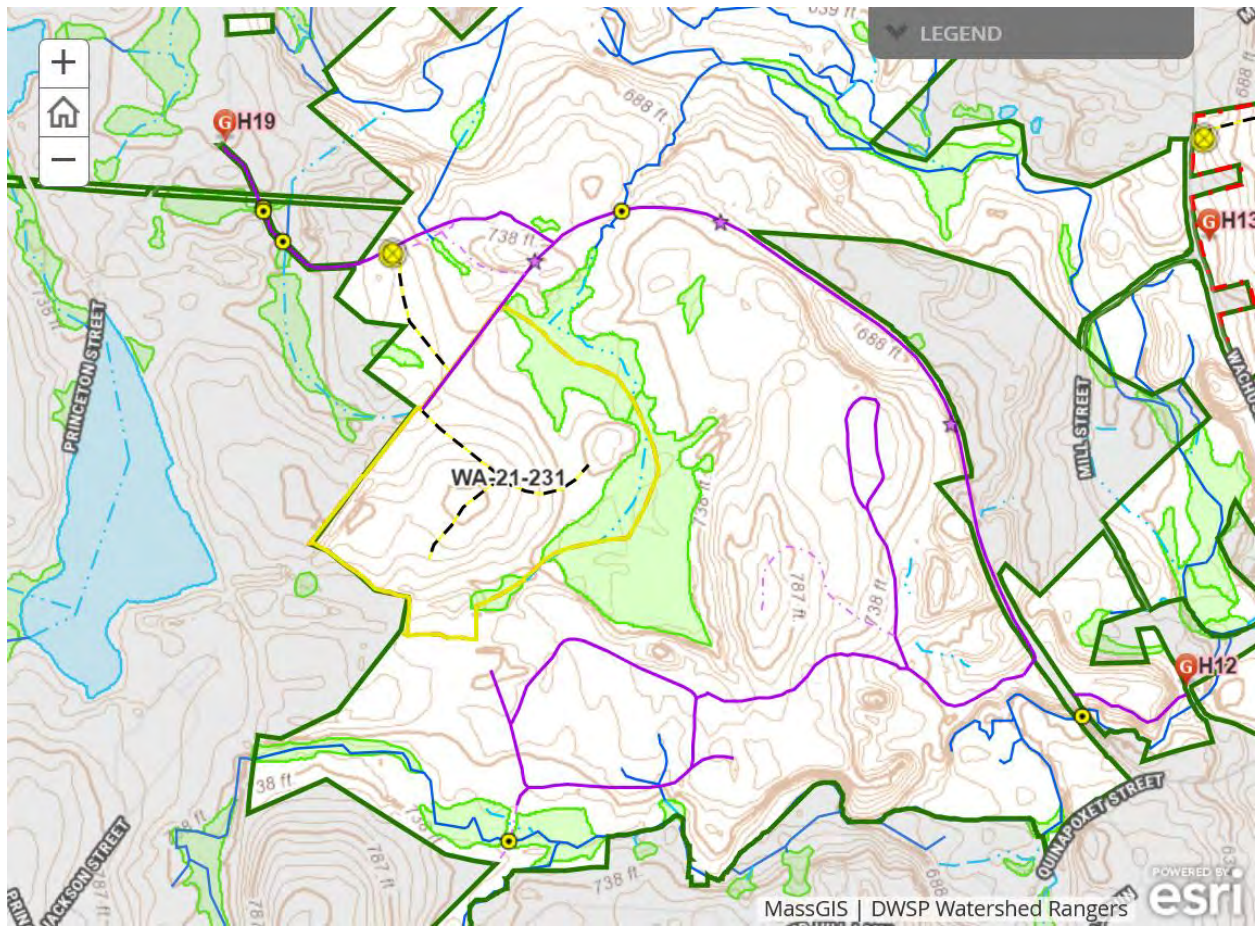
Culverts needed: No

Work needed on permanent bridges: No

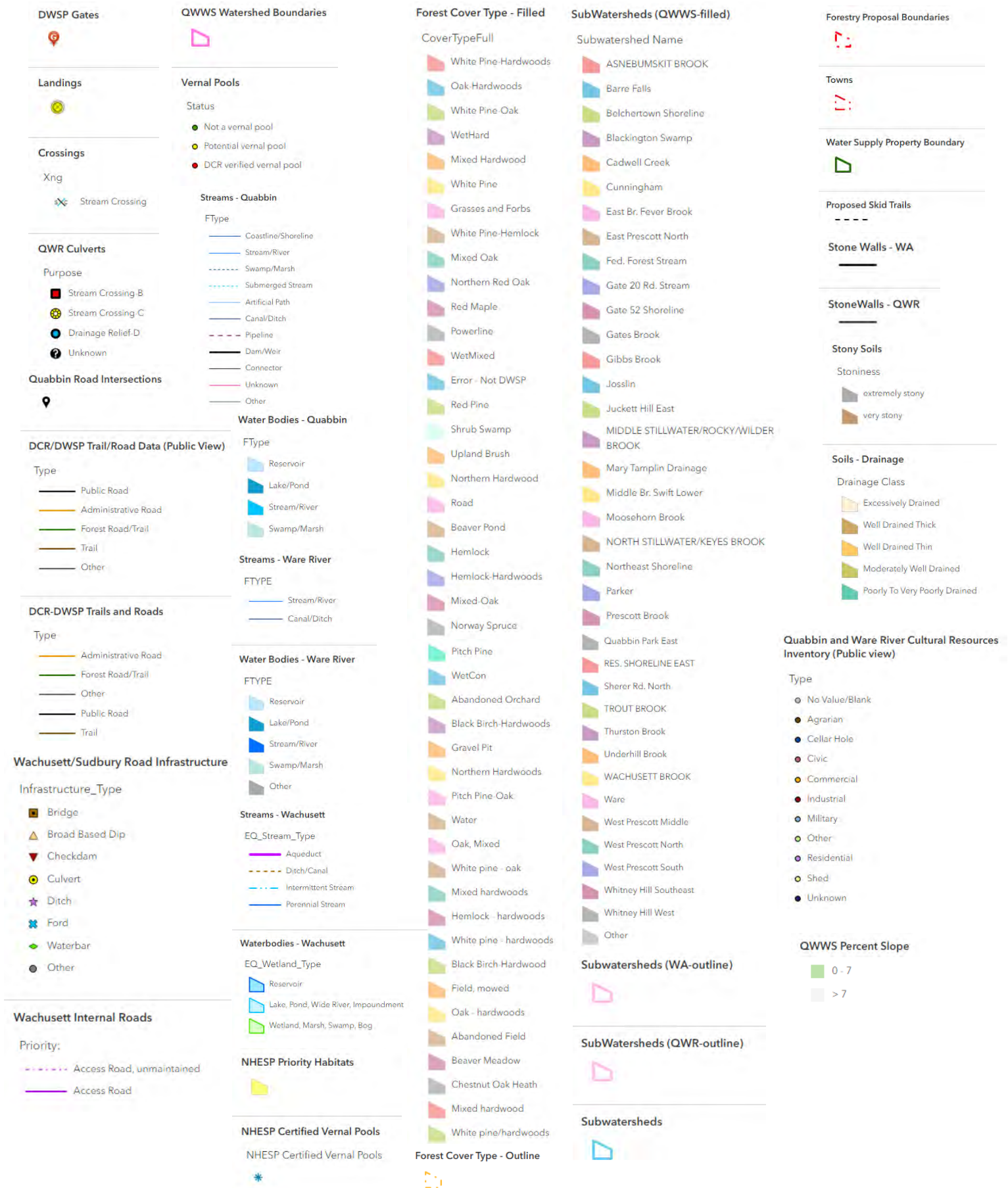
Beaver issue: No

Further comment on access needs:

No engineering work is anticipated to be needed prior to harvest.



DWSP FY 2021 Forestry Proposals – Master Legend for story maps



Wachusett Harvest Proposal WA-21-148

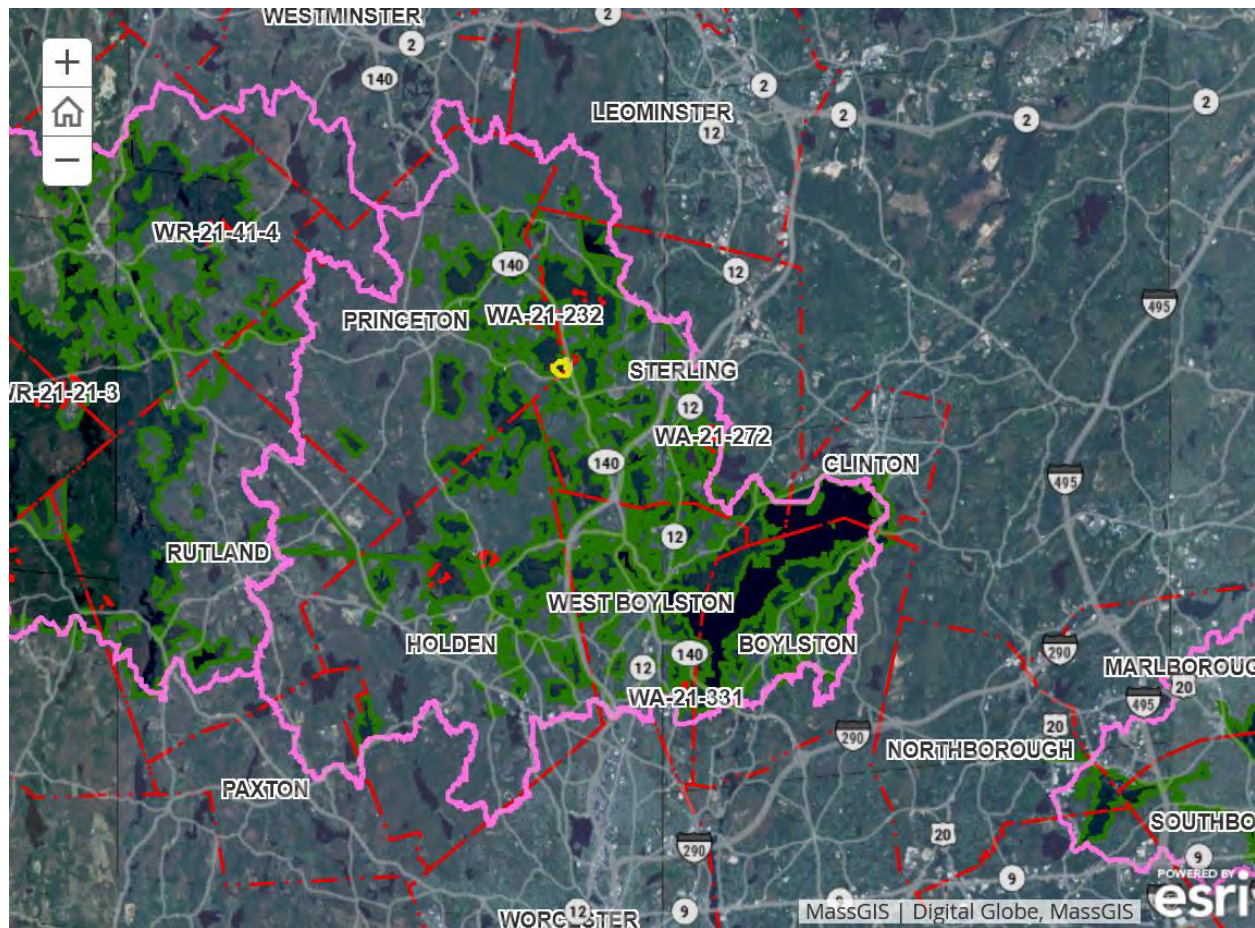
Proposal Goals

The primary goal is to promote a resilient, diverse forest through the creation of canopy openings that allow young forest to develop, release established healthy young trees, and remove groups of poor quality trees. Good regeneration was found to be spread fairly evenly throughout the working unit. With this in mind we will look to create about 11 acres of openings which will release the regeneration and create a new age class on the desired 1/3rd of the area.

Proposal Location

This property is located west of Redemption Rock Trail at the Princeton/Sterling town line. This proposal area is bounded by Redemption Rock Trail (Route 140) to the east, a powerline to the north, a wetland to the west and East Wachusett Brook to the south.

Total Acres: 46



General Description

	Overstory Type(s)	Acres
Dominant	White pine/oak	21
Secondary	White pine/hardwood	9
Other	Oak, mixed - dry site	4

	Understory Type(s)
Dominant	Tree seedlings/saplings dominate site

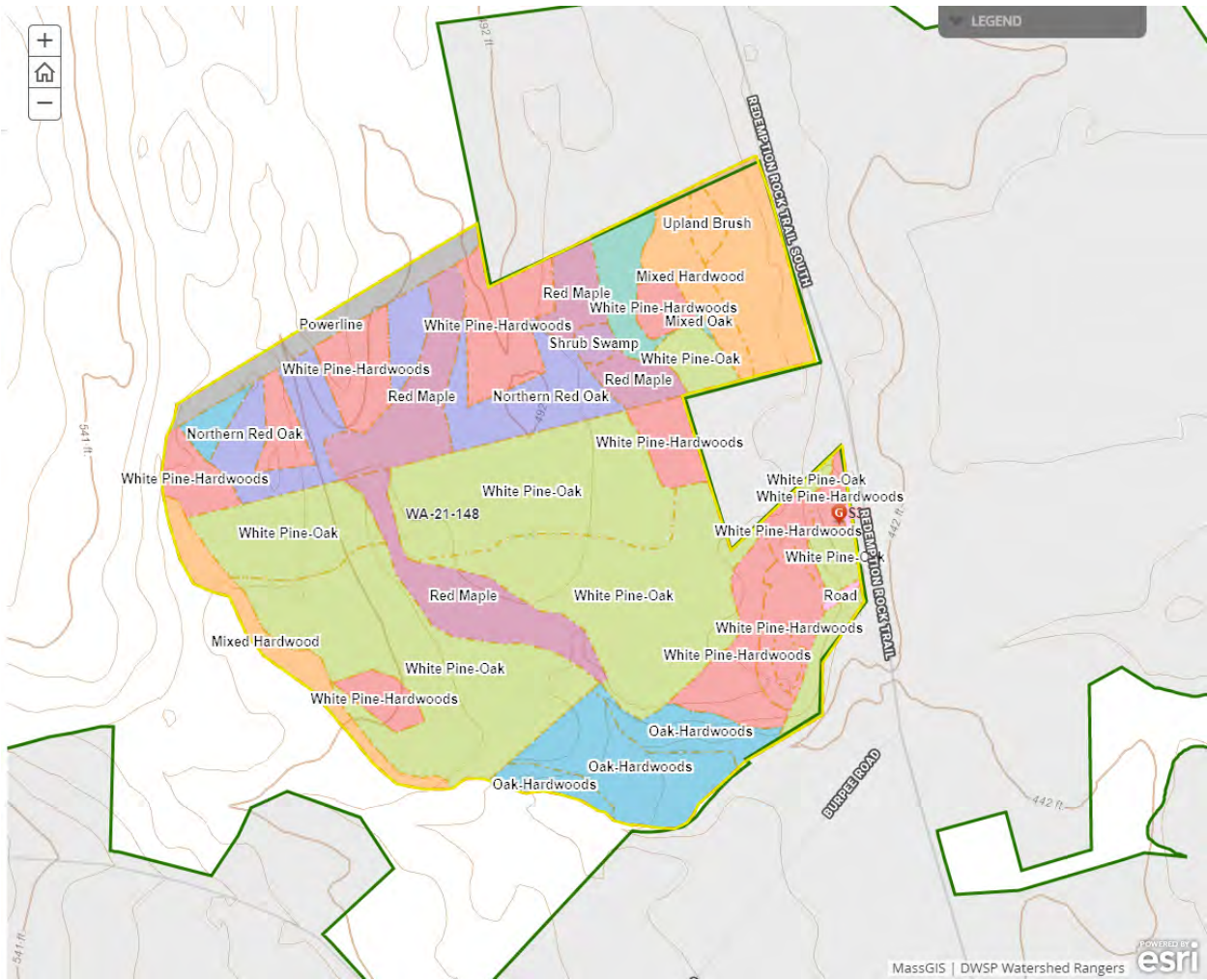
Secondary	Mountain laurel prevalent
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Description of forest composition/condition:

The working unit was acquired from different owners around 1992. This unit was harvested most recently in 2006 with the goal of creating 5 new regeneration patch openings totaling 4 acres in addition to 18 acres worth of thinning that created some disturbance within mountain laurel areas and brought in some sunlight. The thinning has resulted in good quality regeneration consisting of mostly white pine (which is ideal) and hardwoods including red maple, black birch, red oak, white oak, black oak, sassafras, American beech, black cherry and hemlock. The overstory is primarily comprised of good quality white pine along with smaller amounts of black oak, red oak, white oak, red maple, black birch and yellow birch. There are still some patches of witch-hazel and mountain laurel, along with some highbush blueberry occurring even on the higher ground of the working unit. Some boulder outcrops were noted, as was an old bridge over East Wachusett Brook made out of a telephone pole. The age structure is as follows; 10% 0-20 years old, 10% 21-40 years, 6% 41-60 years, 53% 61-80 years, 19% 81-100 years, 2% >100 years old.

Assessment of Terrestrial Invasive Species:

There were no invasives noted during regeneration plot sampling. One hundred and nine plots total were taken.

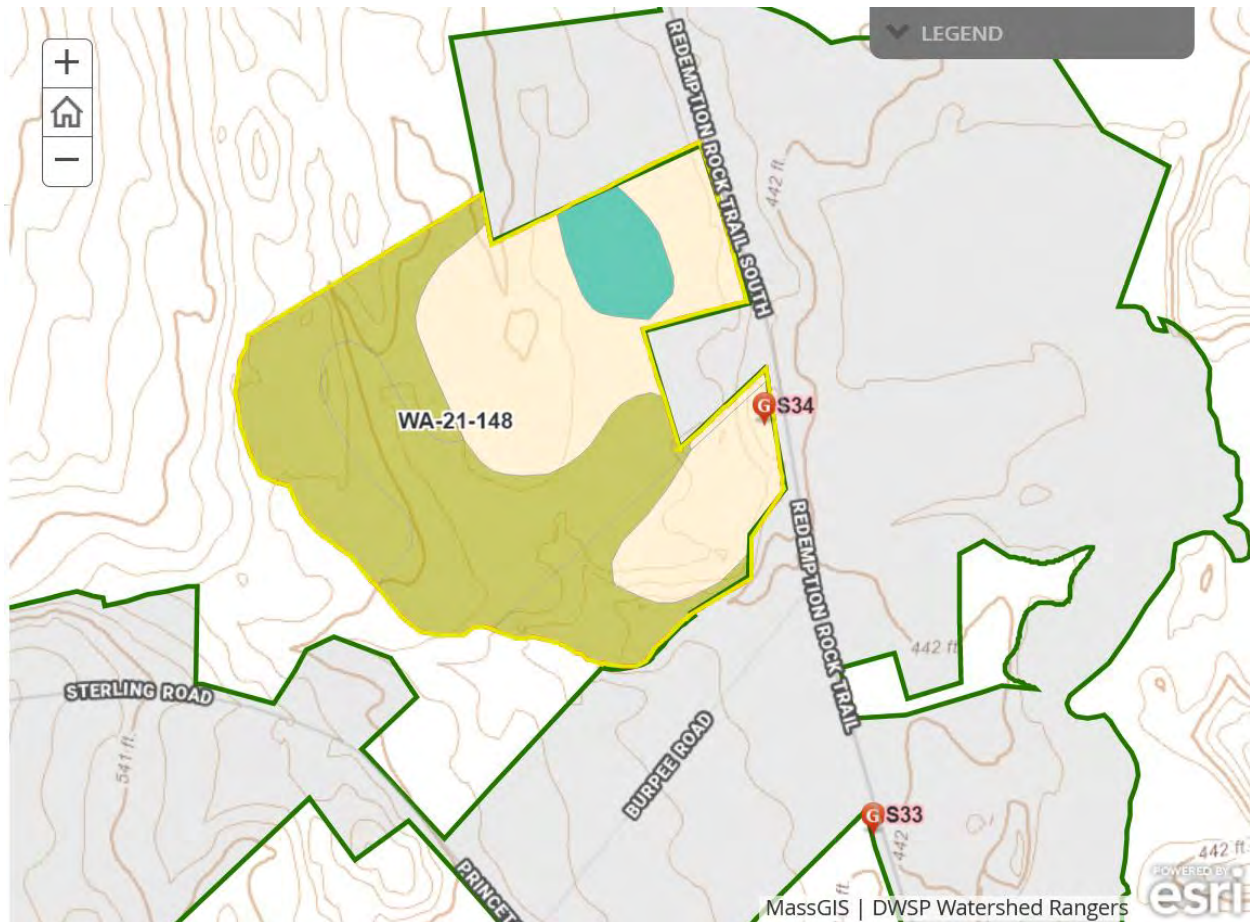


Soils

Drainage Class	%
Excessively Drained	42
Well Drained Thin	0
Well Drained Thick	19
Moderately Well Drained	35

Poorly to Very Poorly Drained	5
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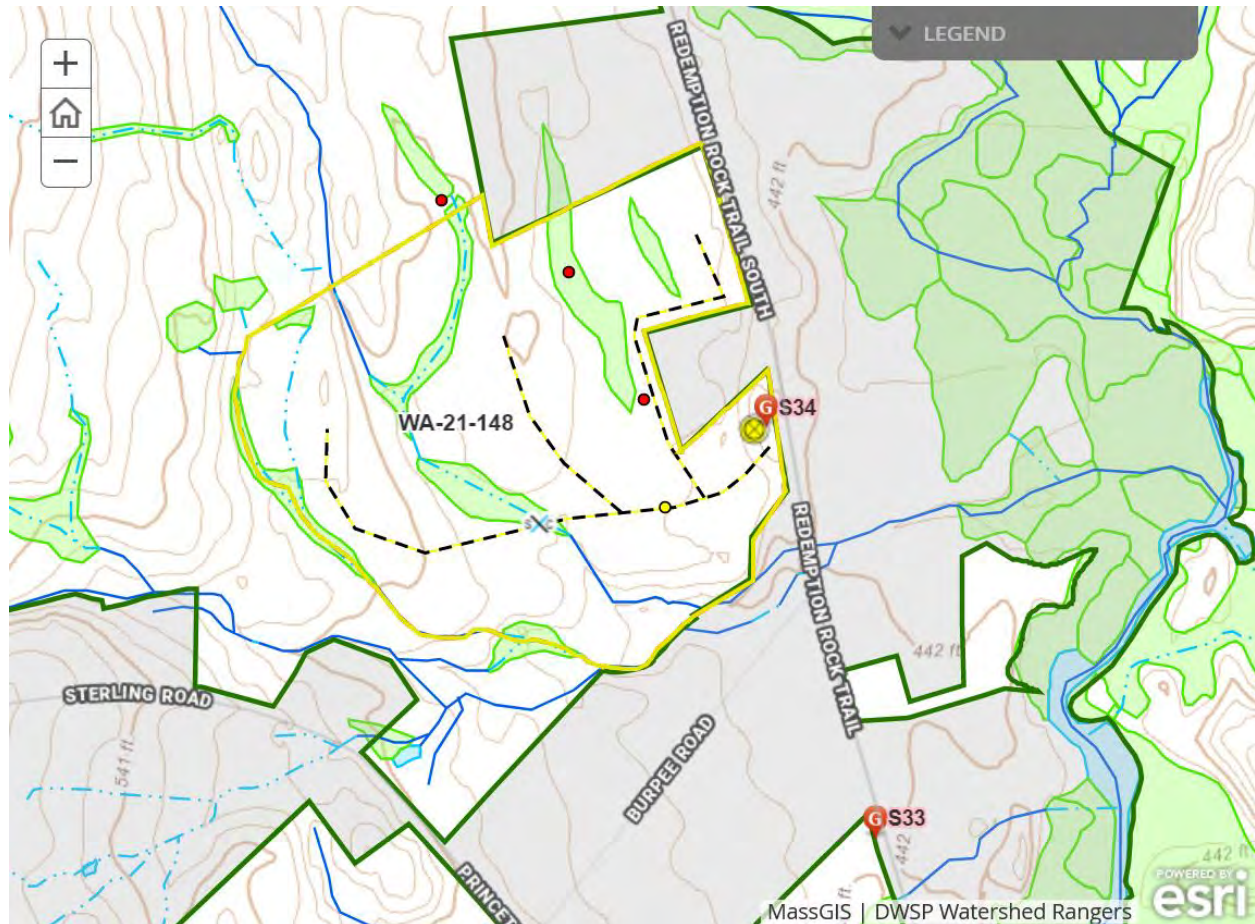
Hinckley Excessively drained soils made up 42% of the working unit. Followed by Moderately well drained Sudbury soils at 35%. Well-drained thick Montauk-Scituate-Canton soils cover 19% of the working unit and 5% of the working unit is a poorly drained Scarboro soil.



Wetlands

- Wetlands present? - **Yes**
- Streams present? - **Yes**
- Vernal pools present? - **Yes**
- Seeps present? - **None known**
- Are stream crossings required? - **Yes**
- Are wetland crossings required? - **Yes**
- Is logging in filter strips planned? - **No** ([Riparian Zone Mgt](#))
- Is logging in wetlands planned? - **No**

There are three verified vernal pools and one potential vernal pool within the proposal area. The stream crossing will be at a location previously used in 2006, and will be monitored by EQ.



Silviculture

Acres in Intermediate cuts: **0**

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

Acres in Regeneration cuts: **15**

Average regen opening size: **1**

Maximum regen opening size: **2**

Description of advance regeneration in proposal area:

Out of 109 sampling plots taken 57% were regenerated with another 20% having marginal regeneration. 14% were interfered with either mountain laurel or witch-hazel, while 9% had no regeneration. 57% of plots taken had oak present. The regenerated plots were spread throughout the working unit. The regeneration species sampled was discussed in the forest composition description.

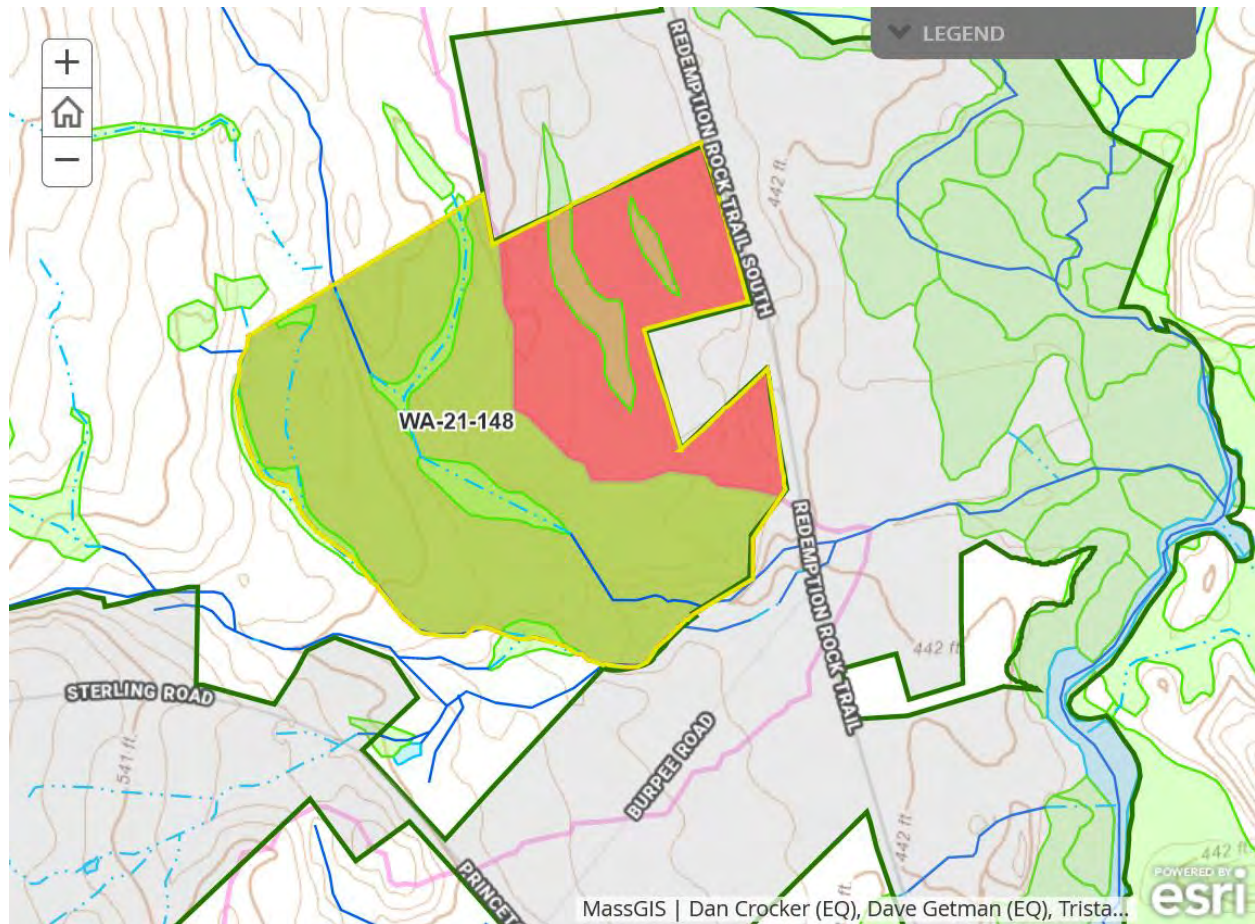
General comments on silviculture proposed:

This working unit has 46 manageable forested acres. Good regeneration was found to be spread fairly evenly throughout the working unit. There are already 4.7 acres of young forest resulting from the 2006 harvest. With this in mind we will look to create about 11 acres of openings which will release the regeneration and create a new age class on the desired 1/3rd (15 acres) of the area. The openings will be made using patch cuts averaging an acre in size. Regenerated areas will be targeted for release. Areas with interfering mountain laurel or witch-hazel are in pockets and might partially be included in some openings.



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
20 (Wachusett Brook)	1123	44	236	36
18 (Middle Stillwater/ Rocky/ Wilder Brook)	2189	62	485	17

The proposed level of cutting falls below the 25% threshold.



Harvesting Limitations

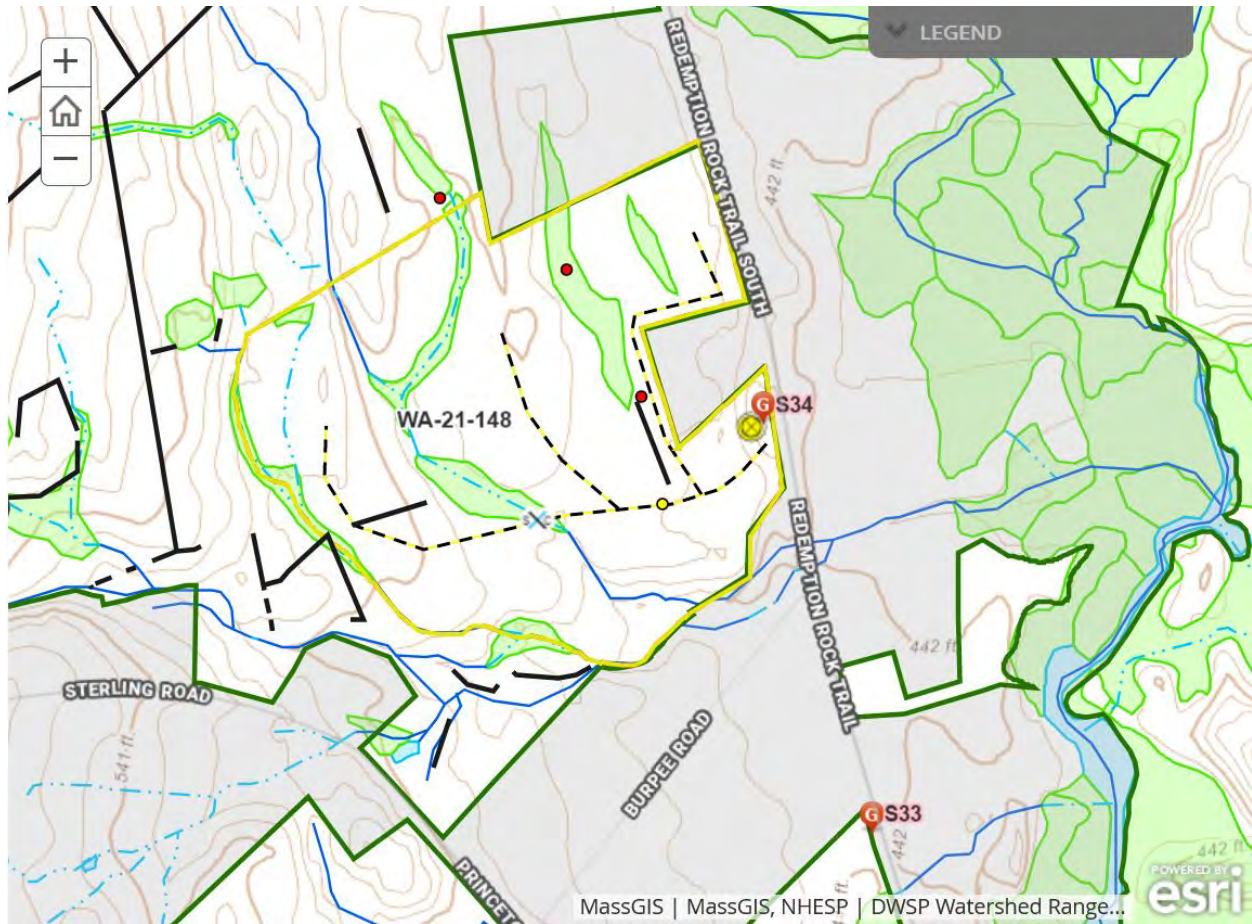
Forwarder required: **Yes**

Feller/processor required: **Yes**

Steep slopes present: **No**

Comments on harvesting limitations:

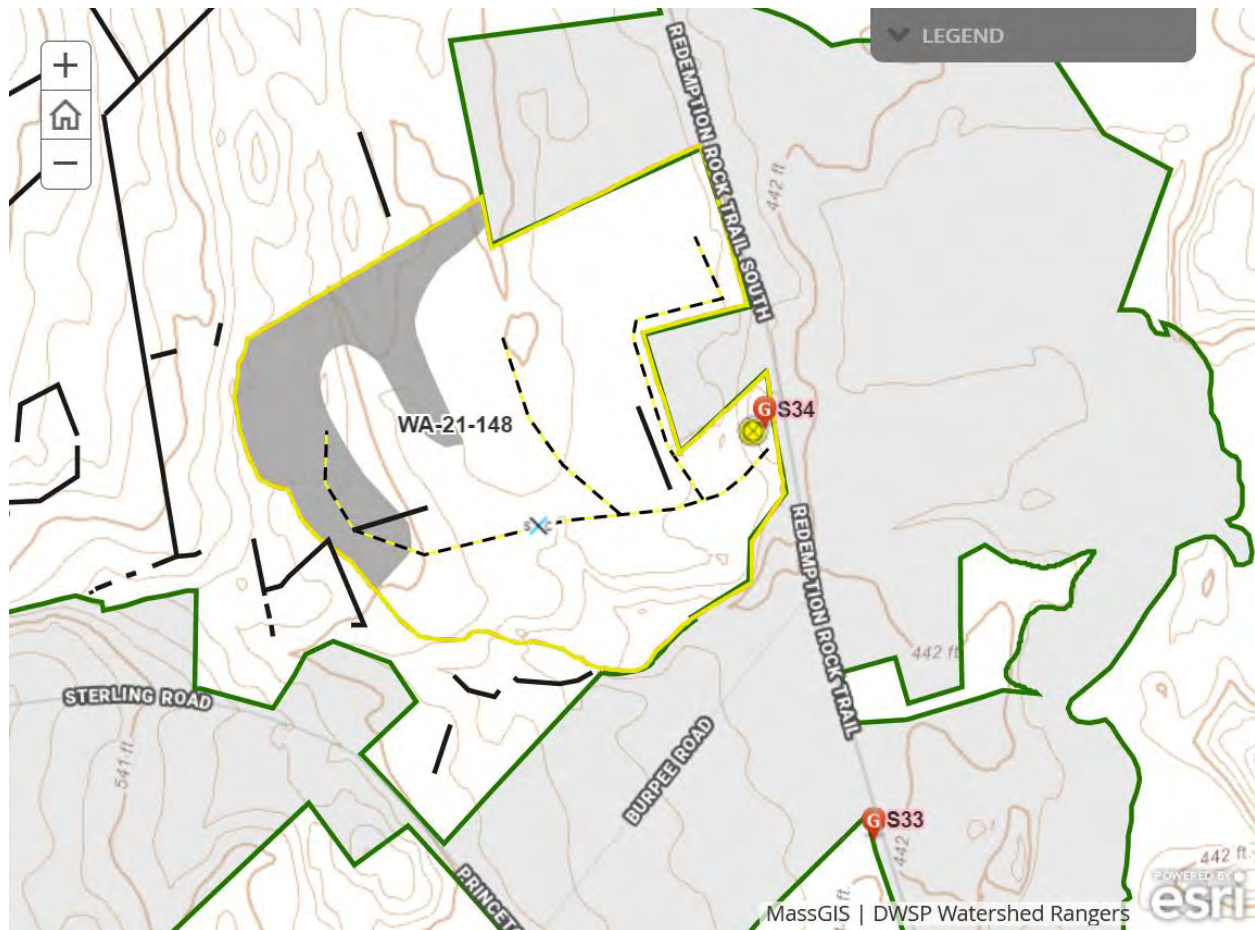
With patch openings being made and good regeneration present, the standard forwarder and processor operation will be utilized.



Cultural Resources

Comments on Cultural Resources:

No known cultural resources.



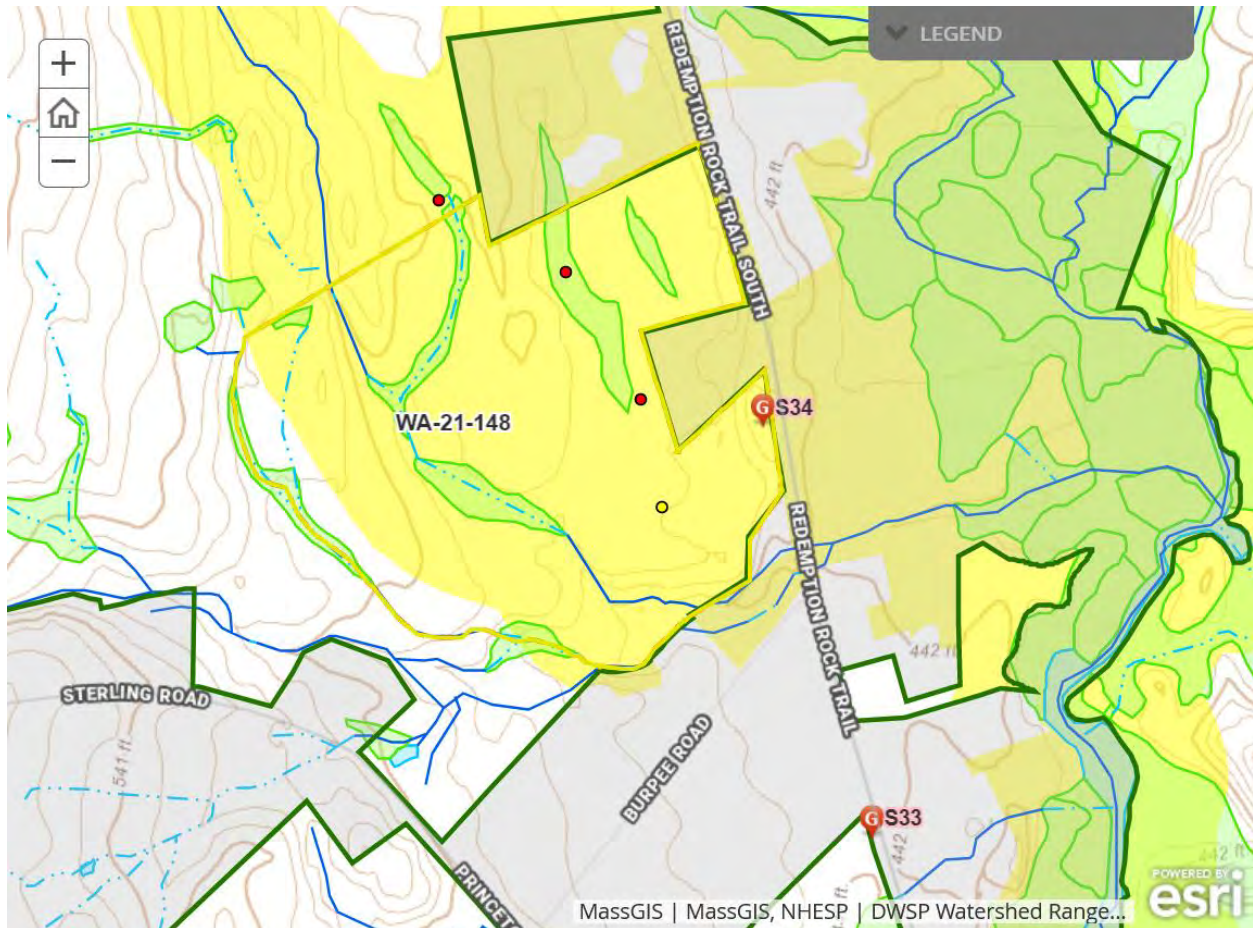
Wildlife Resources & Rare and Endangered Species

General Wildlife Comments:

There are three verified vernal pools in the lot, all appearing to be part of a larger wetland complex. All appropriate buffers will be followed for laying out of equipment travel roads.

Comments on Rare Species/Habitats:

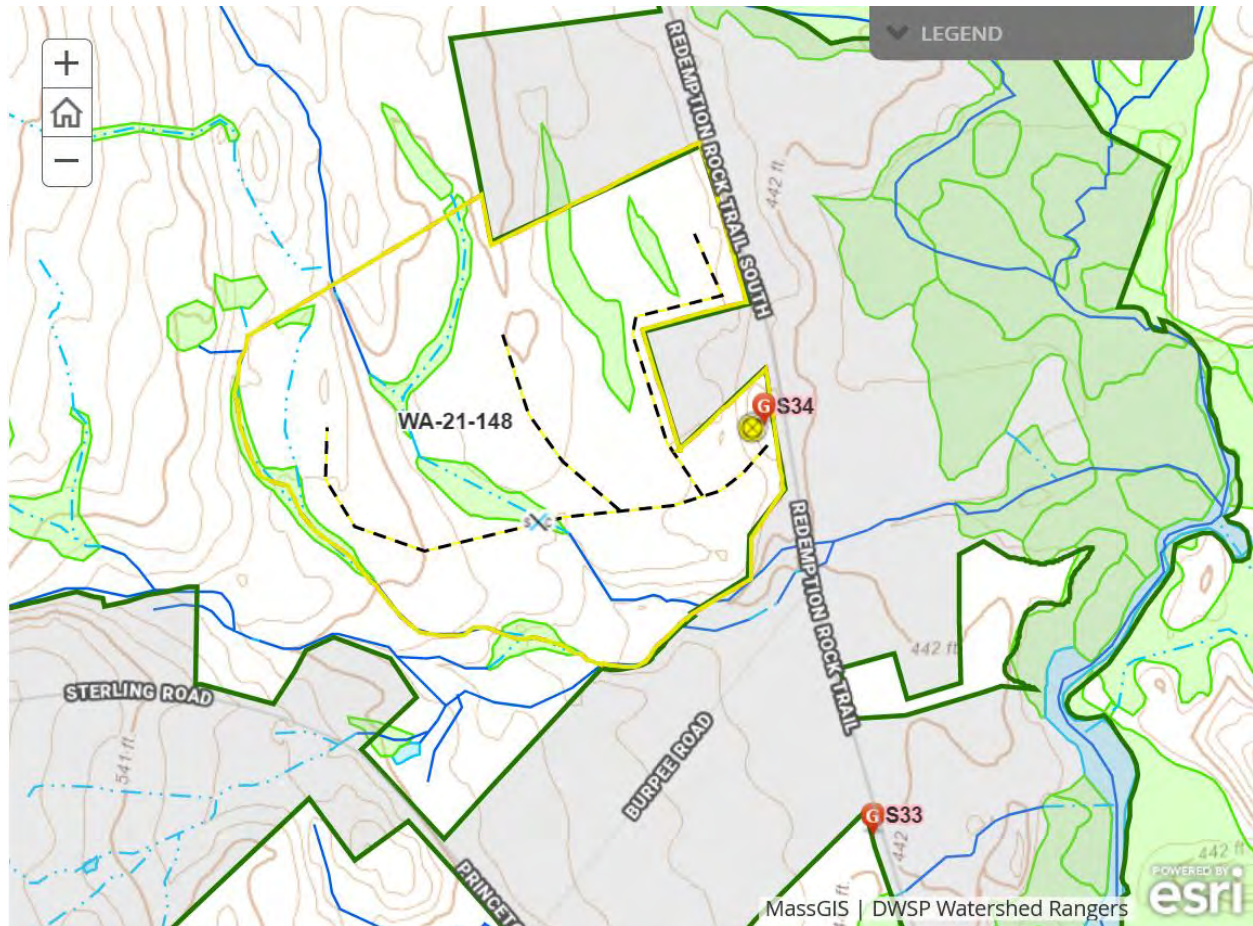
NHESP has determined that certain state-listed sensitive species or habitats may exist within the lot proposal area. To protect them from unnecessary disturbance, detailed information regarding affected species and their locations is not included in this report. DWSP will coordinate with NHESP and follow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



Environmental Quality Engineering

Comments on EQ Issues:

This crossing is proposed at the same location as was used in 2006. The site was walked on 04/07/20. The crossing was flagged in the field and a water quality sample was collected at the proposed crossing. EQ staff will collect water quality samples at the stream crossings. Background samples will be collected downstream from the proposed stream crossing prior to logging in order to establish baseline conditions, while downstream and upstream samples will be collected to measure the effects of ongoing logging operations, and after, to determine whether there are any measurable impacts.



Forest Access Engineering

Gravel needed: No

Landing work needed: No

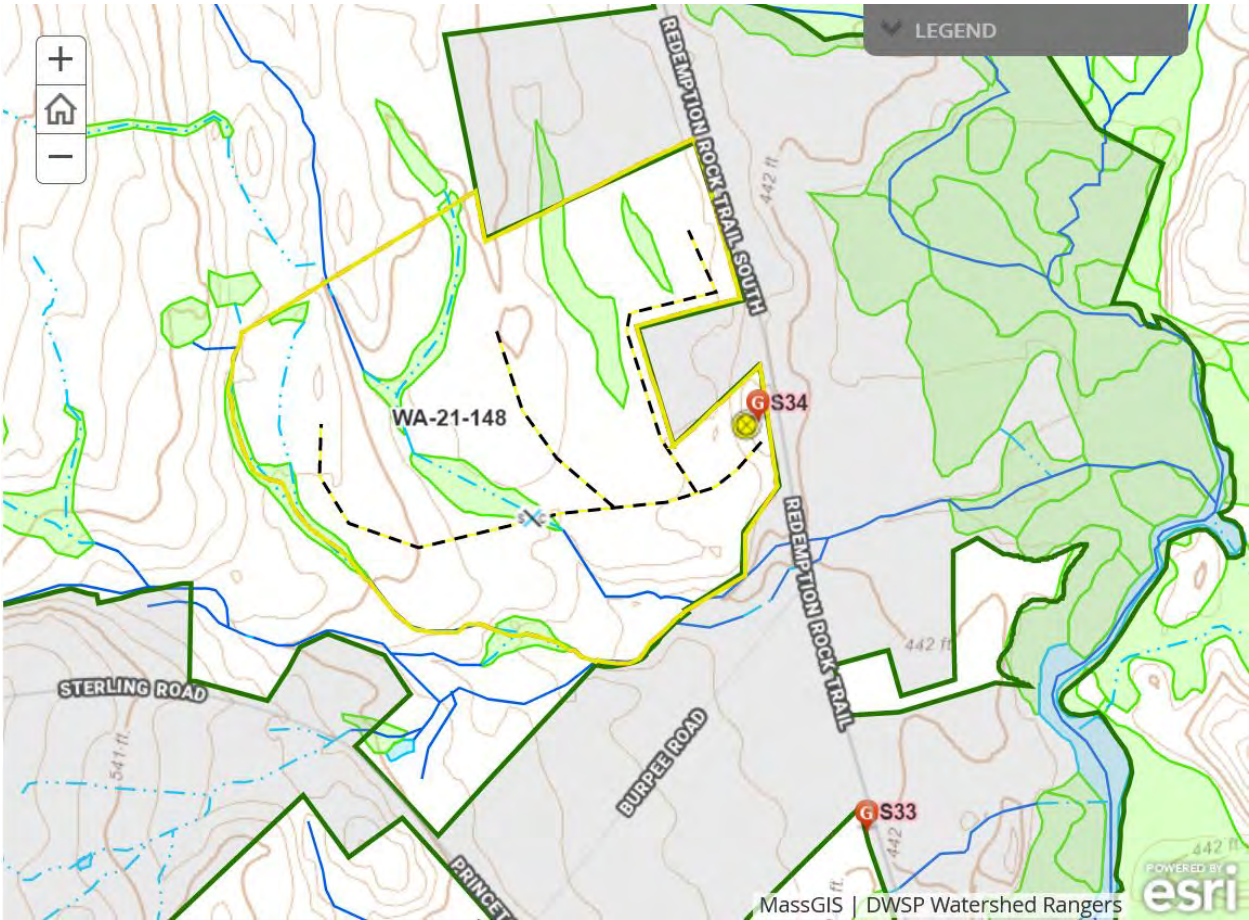
Culverts needed: No

Work needed on permanent bridges: No

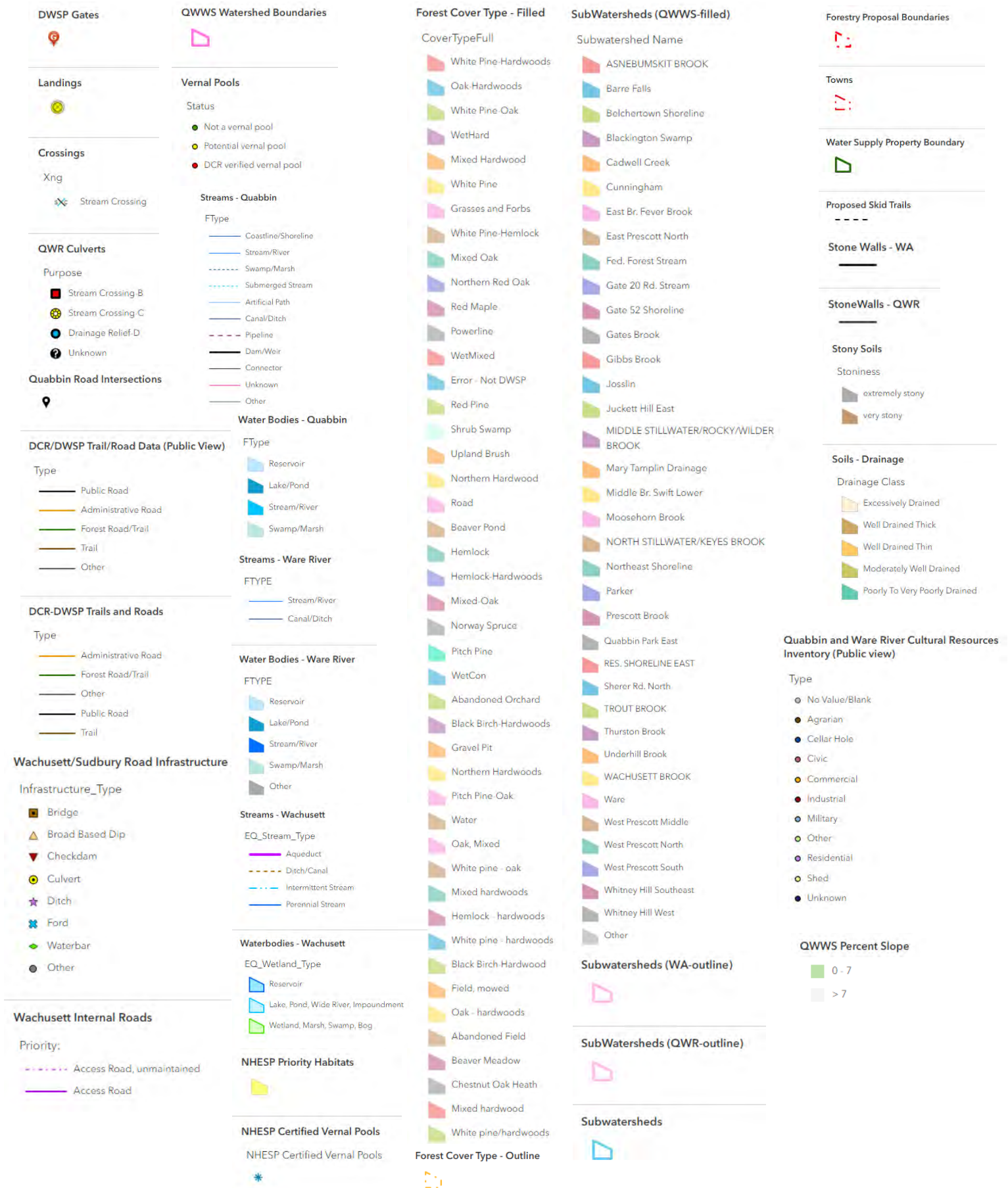
Beaver issue: No

Further comment on access needs:

No engineering work is anticipated to be needed prior to harvest.



DWSP FY 2021 Forestry Proposals – Master Legend for story maps



Wachusett Harvest Proposal WA-21-141/248

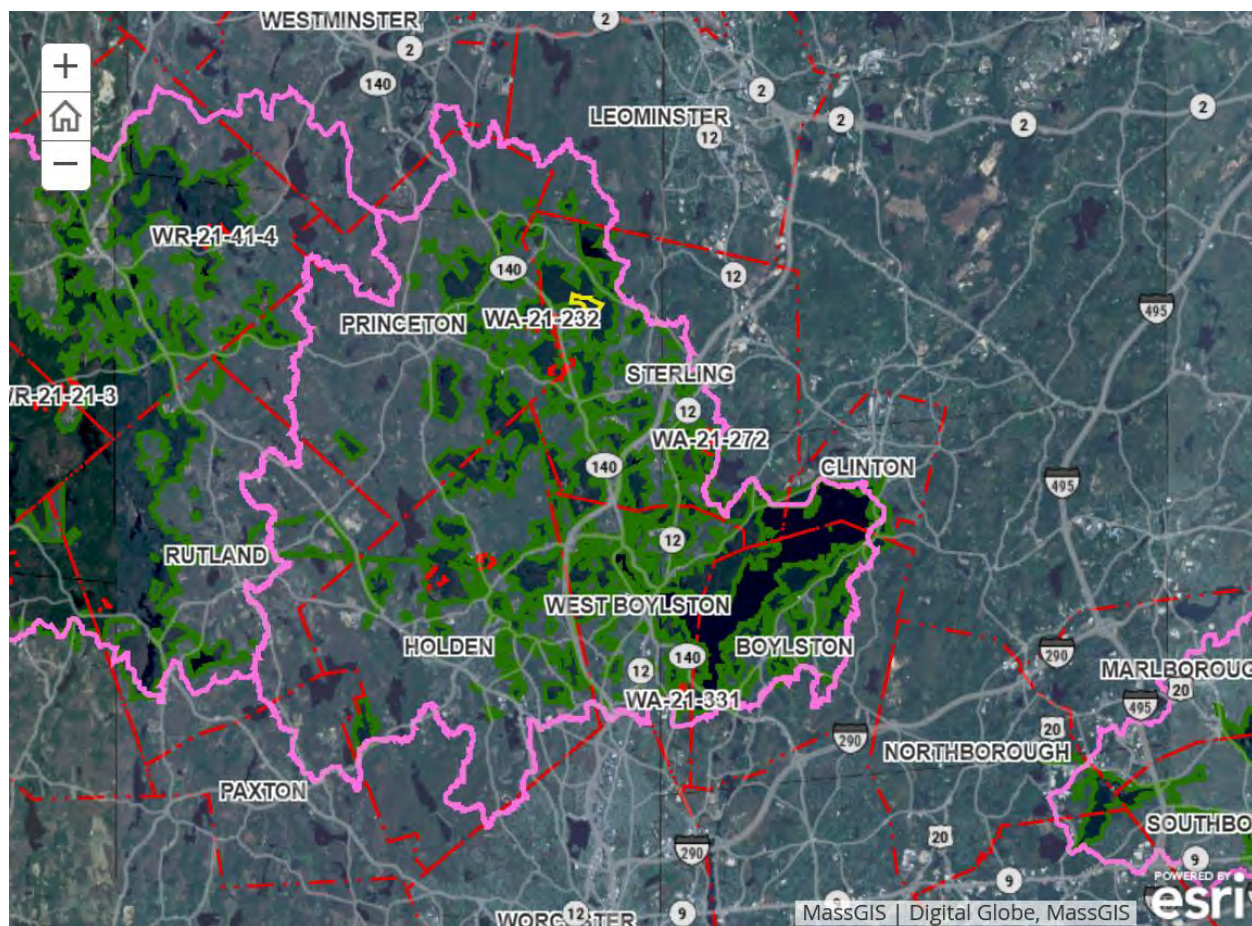
Proposal Goals

The primary goal is to promote a resilient, diverse forest through the creation of canopy openings that allow young forest to develop, release established healthy young trees, and remove groups of poor quality trees. With good advance regeneration present, openings will be made in this white pine dominated forest.

Proposal Location

This proposal is located south of Justice Hill Road in Sterling. Nearly all of this area is bound by interior stone walls with the exceptions of the east side which is bound by a power line and a short piece of the south side which is bound by a short stretch of an intermittent stream.

Total Acres: 73 An FY21 Forest Harvest Proposal



General Description

	Overstory Type(s)	Acres
Dominant	White pine/oak	35
Secondary	White pine/hardwood	14
Other	Mixed hardwoods	11

	Understory Type(s)
Dominant	Tree seedlings/saplings dominate site

Secondary	Mesic site - witch hazel, highbush blueberry
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Description of forest composition/condition:

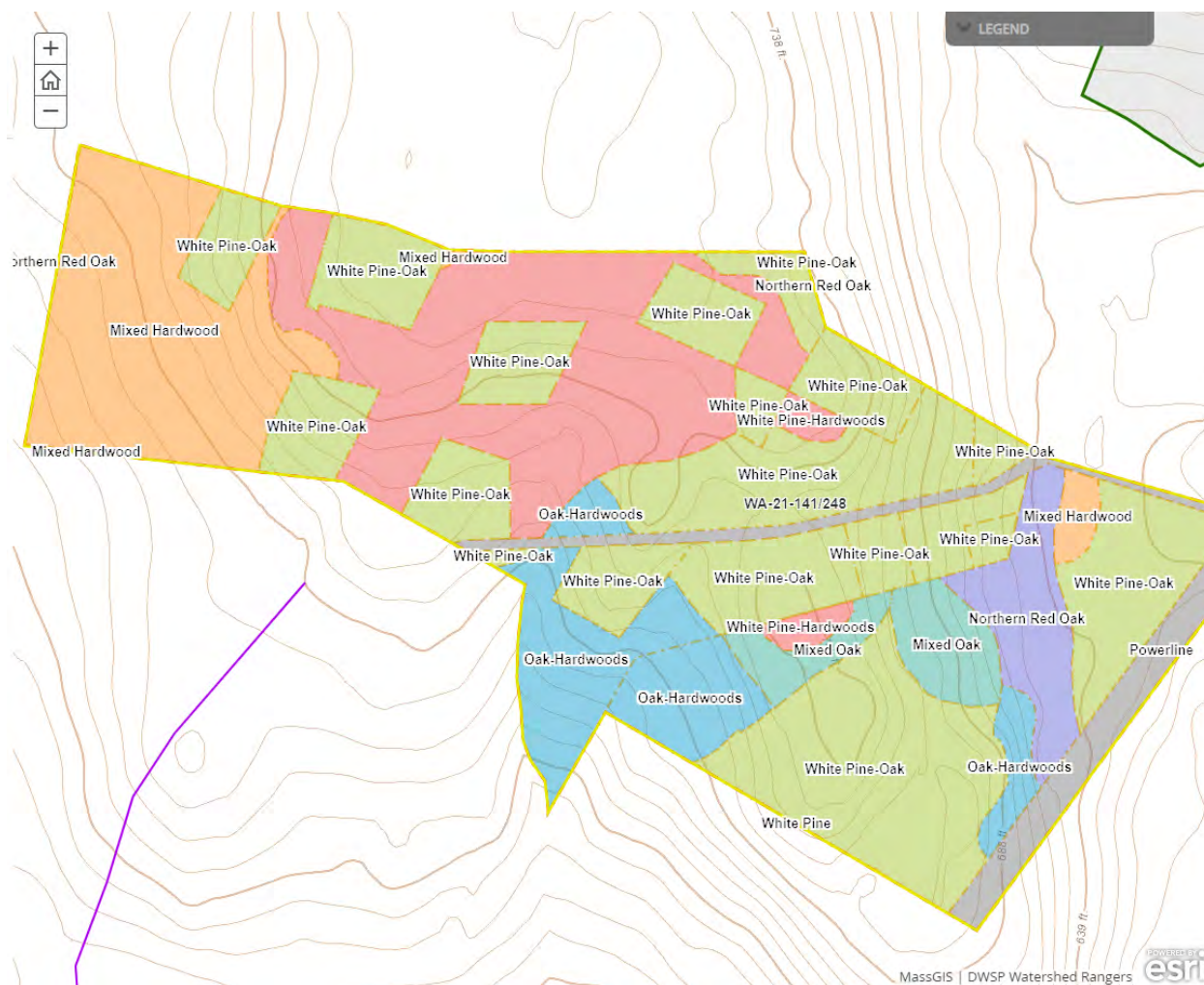
This proposed lot is the remnants of two previously reviewed proposed lots, WA-10-141 and WA-17-248. WA-10-141 was marked and sold as Lot #5248 in 2014 and was operated from June to November of 2016. Work only occurred in the portion of the lot south of the stone wall that divides this area in half. No cutting occurred in the 22 acres north of the wall. WA-17-248 was marked and sold as Lot 5264 in 2016 and was operated in May and June of 2017. Work primarily occurred in the north and north-central part of this area. Within the 51 acres in the south and southeast side of the lot, 3 of 9 overstory removal areas were completed. Since the remaining portions of these two lots directly abut each other, it seemed reasonable to combine them into one new operation.

Here's the description for WA-17-248: This working unit is part of the large Davis Farm property that was acquired in 1996. This specific piece of the Davis Farm is known as the Stuart Pasture and as is typical for abandoned pastures as it is dominated by low quality white pine. A timber sale in the early 1990s seems to have removed the best quality pines and left the trees with multi-stemmed crowns. Along with white pine, the overstory is dominated by black birch, red oak, red maple and black cherry. Paper birch and bigtooth aspen are found as well and are especially prevalent in the western part of the area. The logging in the early 1990s has led to a well developed midstory of black birch, red maple, red oak and paper birch poles. There is good advance regeneration present as well and is comprised of red oak, red maple, white pine, white oak, hickory, black cherry and white ash. Sampling found adequate regeneration in 66% of the plots with marginal regeneration in 17% of the plots. Oak regeneration was present in 75% of the plots.

The description for WA-10-141 is similar as it has a similar history as a former pasture and was logged prior to MDC acquisition leading to good advance regeneration. In general, the quality of the white pine is better than in the other area and there is some very good quality red oak on the northeast facing slope. The age structure of this combined area is as follows; 6%, 0-20 years old; 0%, 21-40 years; 0%, 41-60 years; 41%, 61-80 years; 53%, 81-100 years and 0%, >100 years old.

Assessment of Terrestrial Invasive Species:

When sampling occurred in 2009 and 2016 in these two areas, no invasivespecies were found.

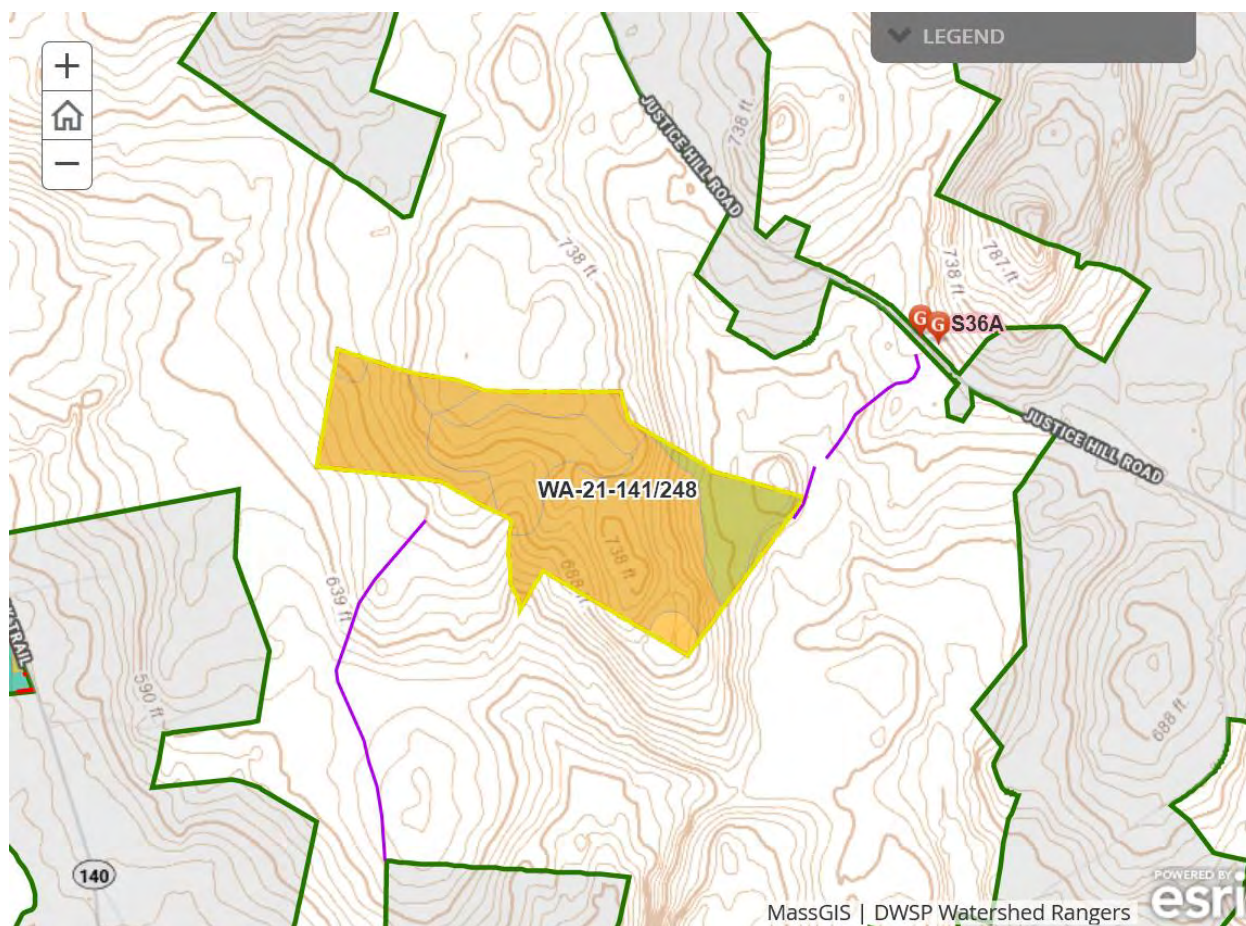


Soils

Drainage Class	%
Excessively Drained	0
Well Drained Thin	0
Well Drained Thick	88

Moderately Well Drained	12
Poorly to Very Poorly Drained	0

The well drained thick soil is the Paxton fine sandy loam. The moderately well drained soil on the base of the hill in the eastern corner of this area is the Woodbridge fine sandy loam.

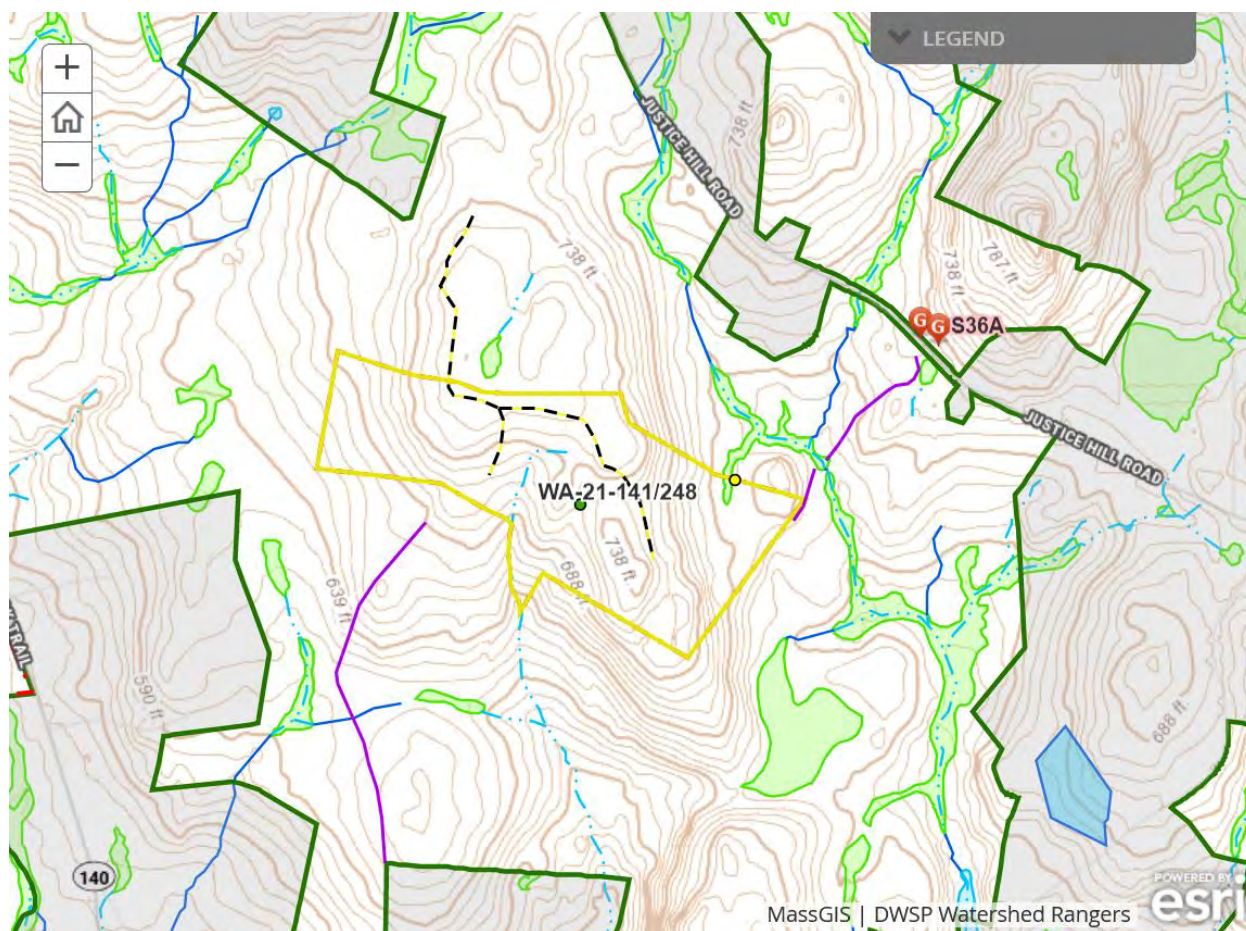


Wetlands

- Wetlands present? - **Yes**
- Streams present? - **Yes**
- Vernal pools present? - **None known**
- Seeps present? - **None known**

- 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**

A small intermittent stream originates in the central part of this area and flows south.



Silviculture

Acres in Intermediate cuts: **0**

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

Acres in Regeneration cuts: **16**

Average regen opening size: **1**

Maximum regen opening size: 2

Description of advance regeneration in proposal area:

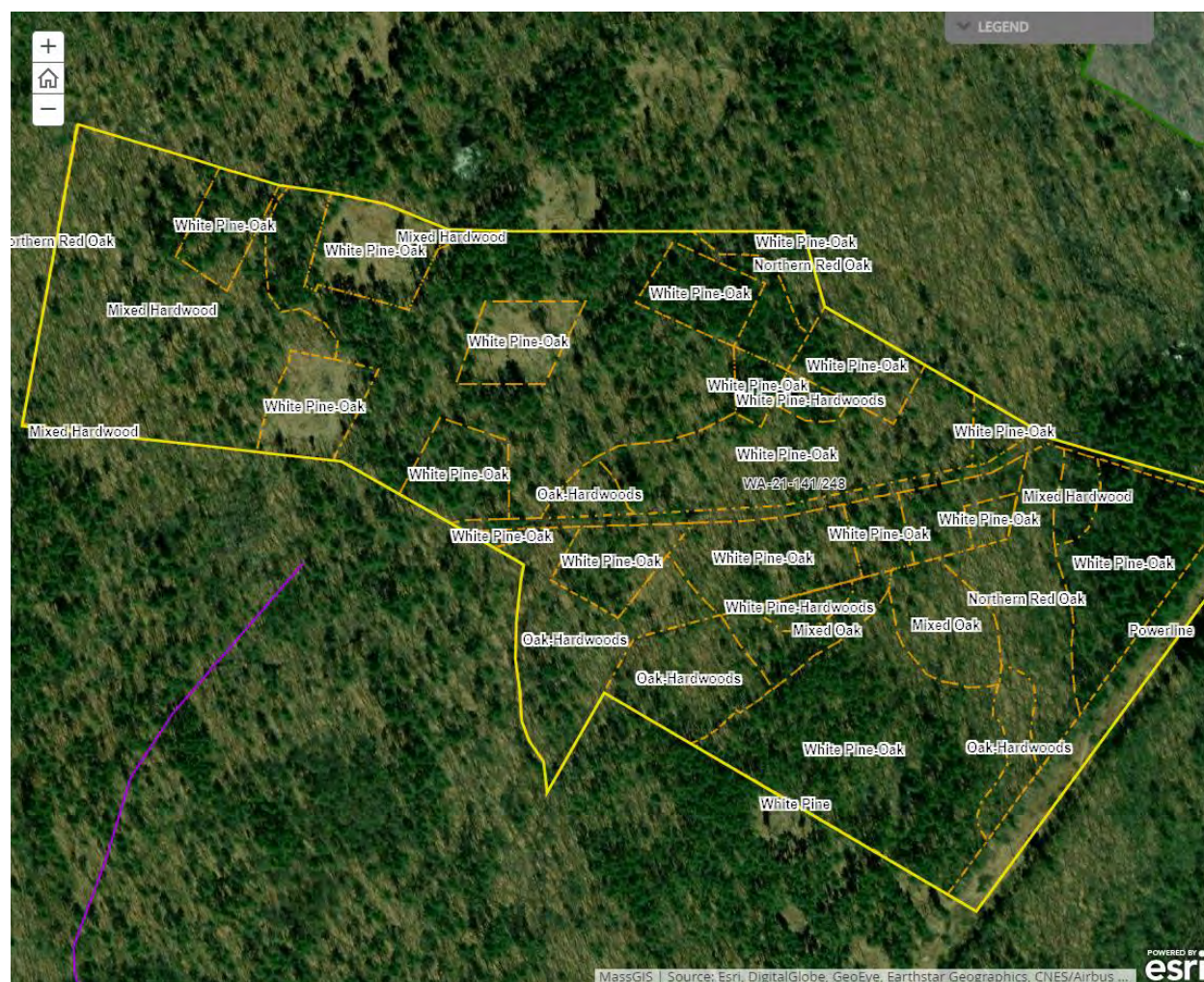
There is good advance regeneration present throughout this area comprised of red oak, red maple, white pine, white oak, hickory, black cherry and white ash.

General comments on silviculture proposed:

The plan for the remainder of Lot 5264 (WA-17-248) is to complete the harvesting of the overstory openings that remain.

There are 9 openings ranging in size from 1/3rd to 1.5 acres that total 8.6 acres. Three openings totalling 4.7 acres were cut in 2017. Following this operation there will be 13.3 acres (8.6+4.7) of young forest in these 51 acres which is 26% of the area.

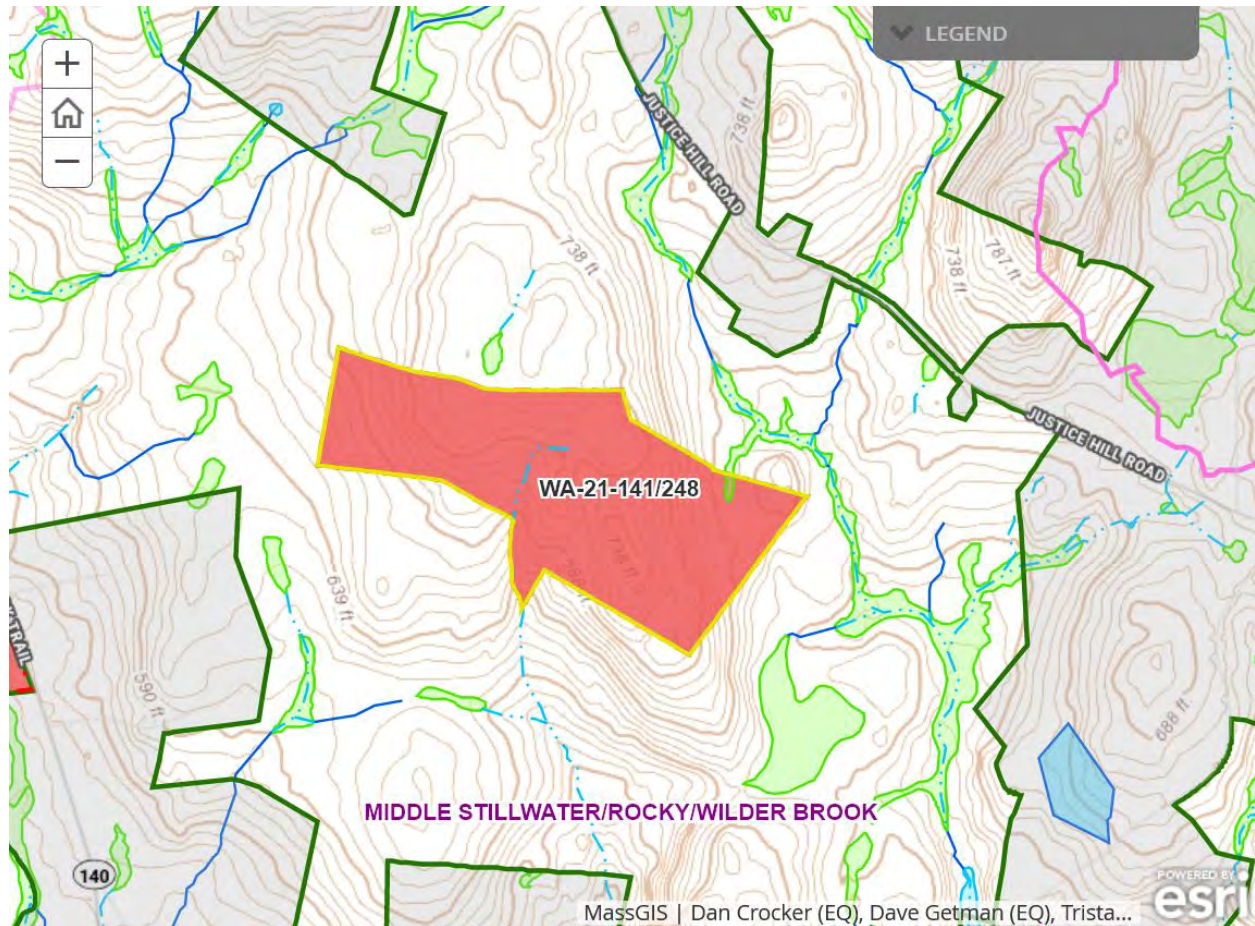
Lot 5248 was proposed for FY 2010 and the intent was to create overstory openings in the typical size range from about 1/5th to 2 acres in size in order to release advance regeneration resulting in a new young age cohort on up to 1/3rd of the area. When this lot was finally marked and sold in 2014 we were under silvicultural restrictions coming out of the moratorium that resulted in the STAC report and our response in the "From Here Forward" document. This temporary restriction limited all overstory openings to less than 1/2 acre. This restriction was lifted in time for the FY 2015 round of lot proposals. Given how faded the marking paint is in this area is, the prudent course is to mark all-new openings in these 22 acres. As was the original intent for this area, the advance regeneration will be released by removing the overstory in patches that range up to 2 acres in size. Up to 7 acres of openings will be created resulting in young forest present on 33% of the area.



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
18 (Middle Stillwater/ Rocky/ Wilder Brook)	2189	62	485	75

The proposed level of cutting falls below the 25% threshold.



Harvesting Limitations

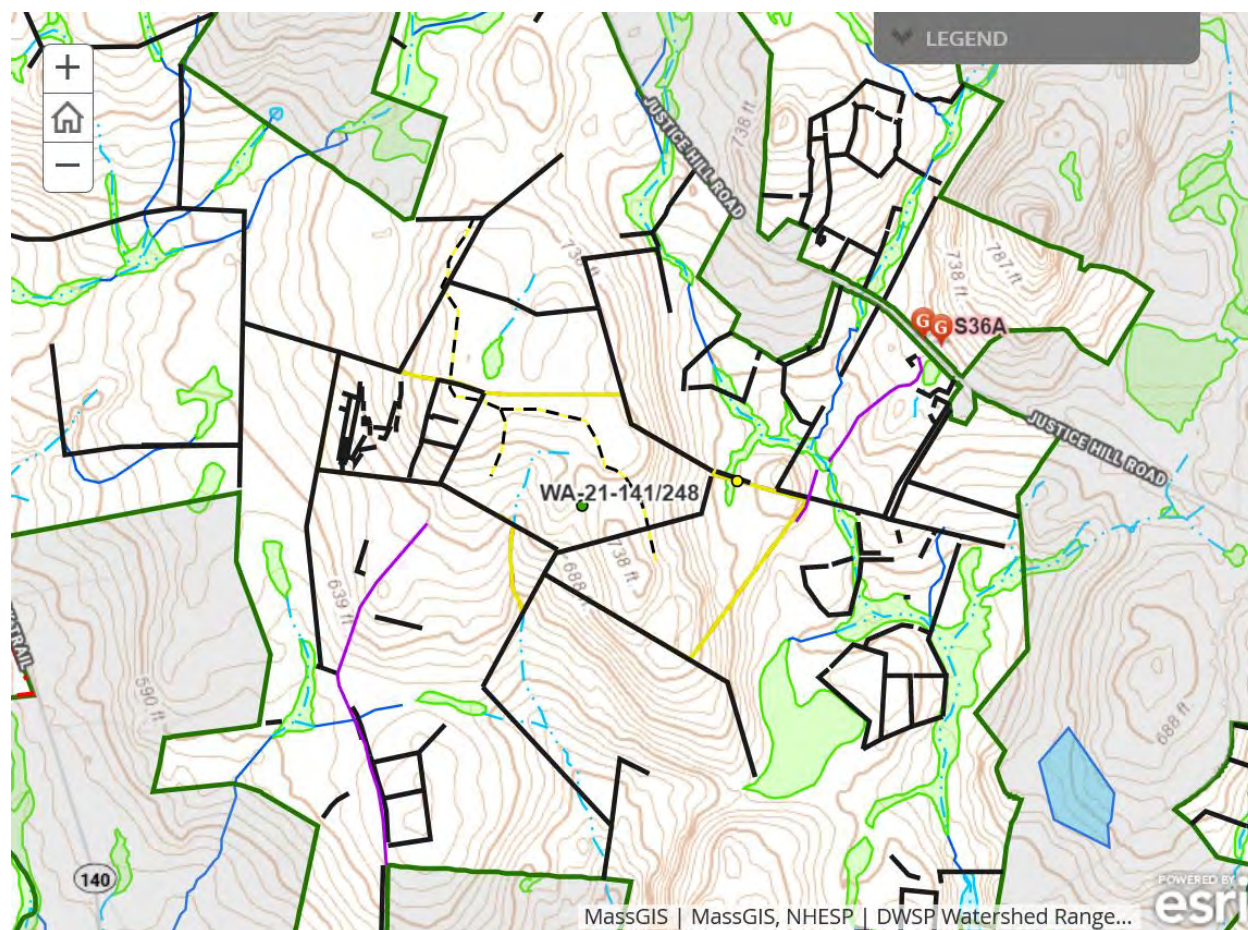
Forwarder required: **Yes**

Feller/processor required: **Yes**

Steep slopes present: **No**

Comments on harvesting limitations:

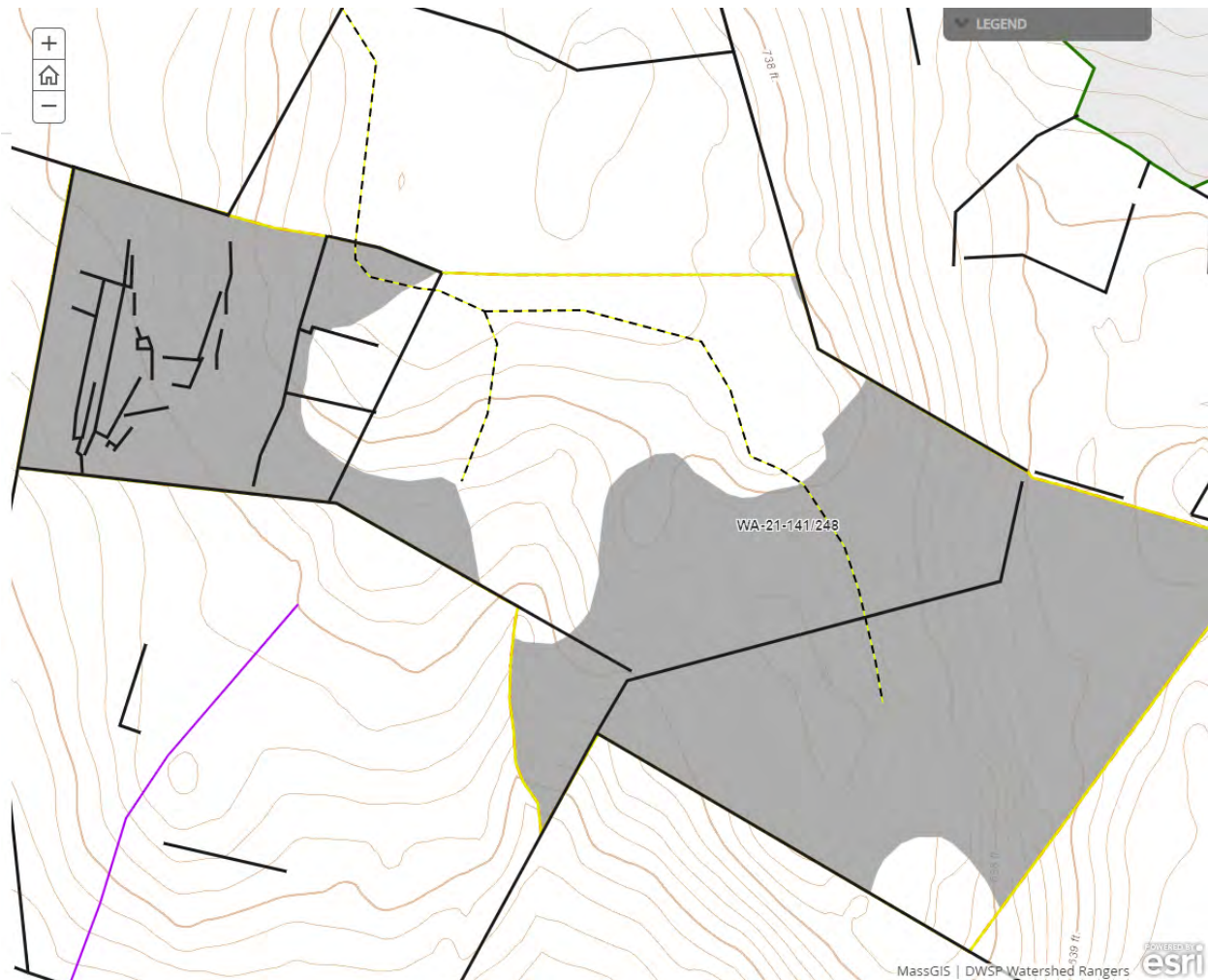
Cut-to-length harvesting will be required to protect as much of the advance regeneration as possible.



Cultural Resources

Comments on Cultural Resources:

WA-17-248 was deemed to be "Potentially Sensitive" due to the "bizarre assemblage" of stone walls and a cellar hole in the far western corner of the area. There is no plan to harvest trees in the area of these walls.



Wildlife Resources & Rare and Endangered Species

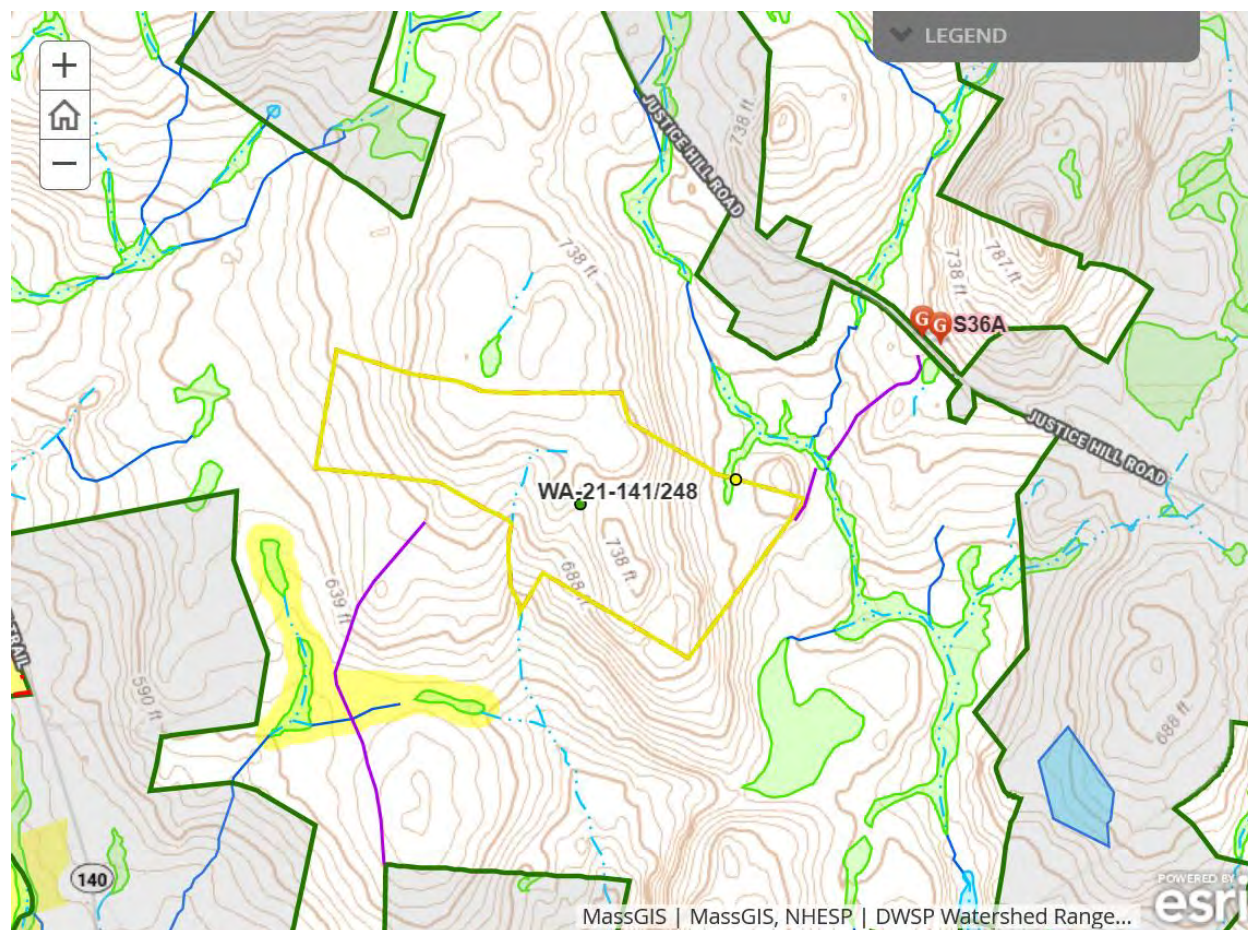
General Wildlife Comments:

Moose sign is routinely found on this hill; browse impacts do not appear to be significant at this time. No verified vernal pools in the lot area.

All DWSP Best Management Practices for wildlife management such as the protection and enhancement of wildlife habitat features will be an integral part of the silviculture and job layout. Diverse hard and soft mast species will be retained and the healthiest trees will be released to improve seed production, which will promote tree seedlings and food for wildlife. Large snags, den trees, logs and nest trees will be retained whenever possible as valuable habitat. Stick nests were observed and so they will be protected. Where they occur; streams, wetlands, seeps and vernal pools will be protected for water quality and wildlife habitat.

Comments on Rare Species/Habitats:

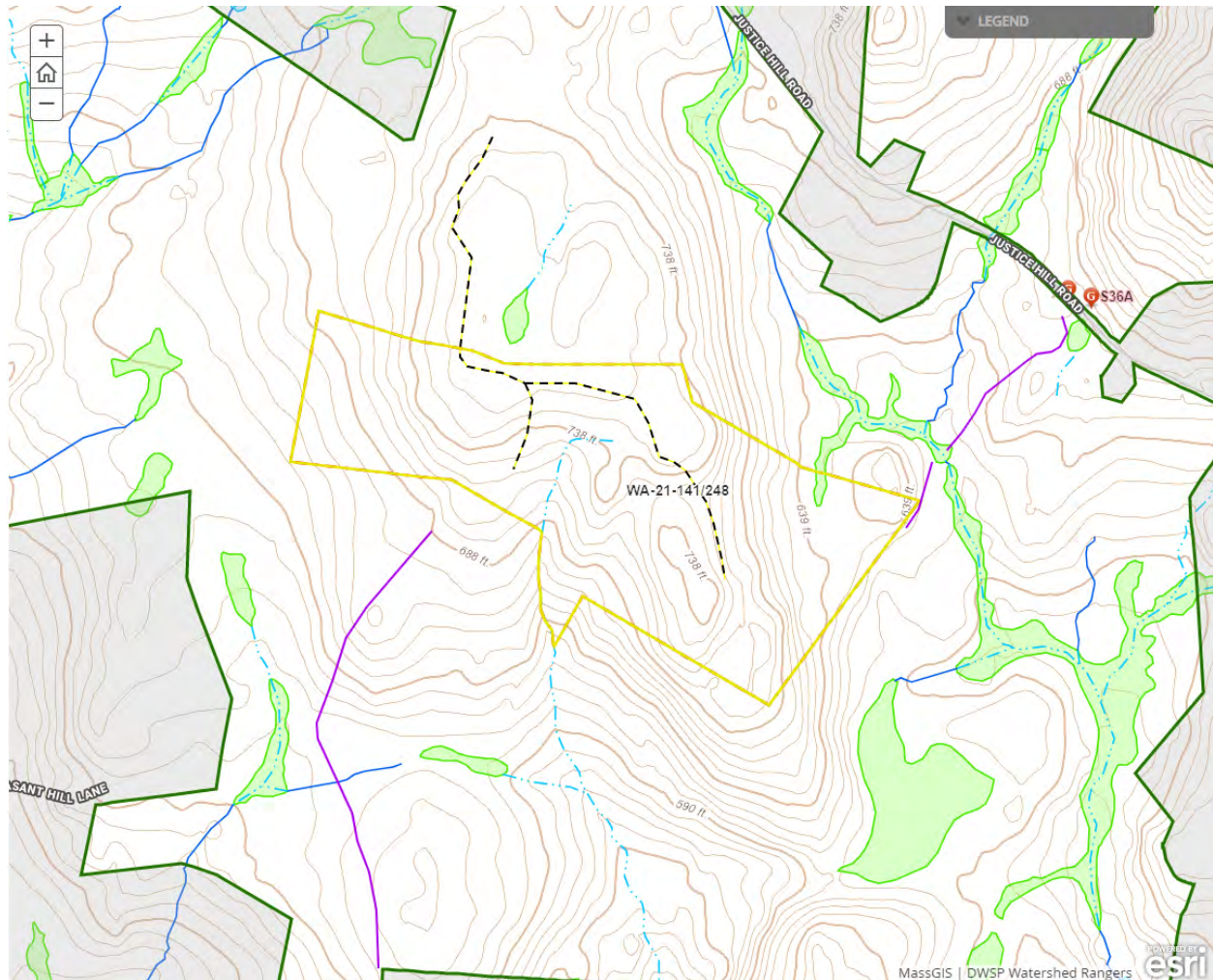
None known.



Environmental Quality Engineering

Comments on EQ Issues:

There are no stream crossings or EQ comments.



Forest Access Engineering

Gravel needed: No

Landing work needed: No

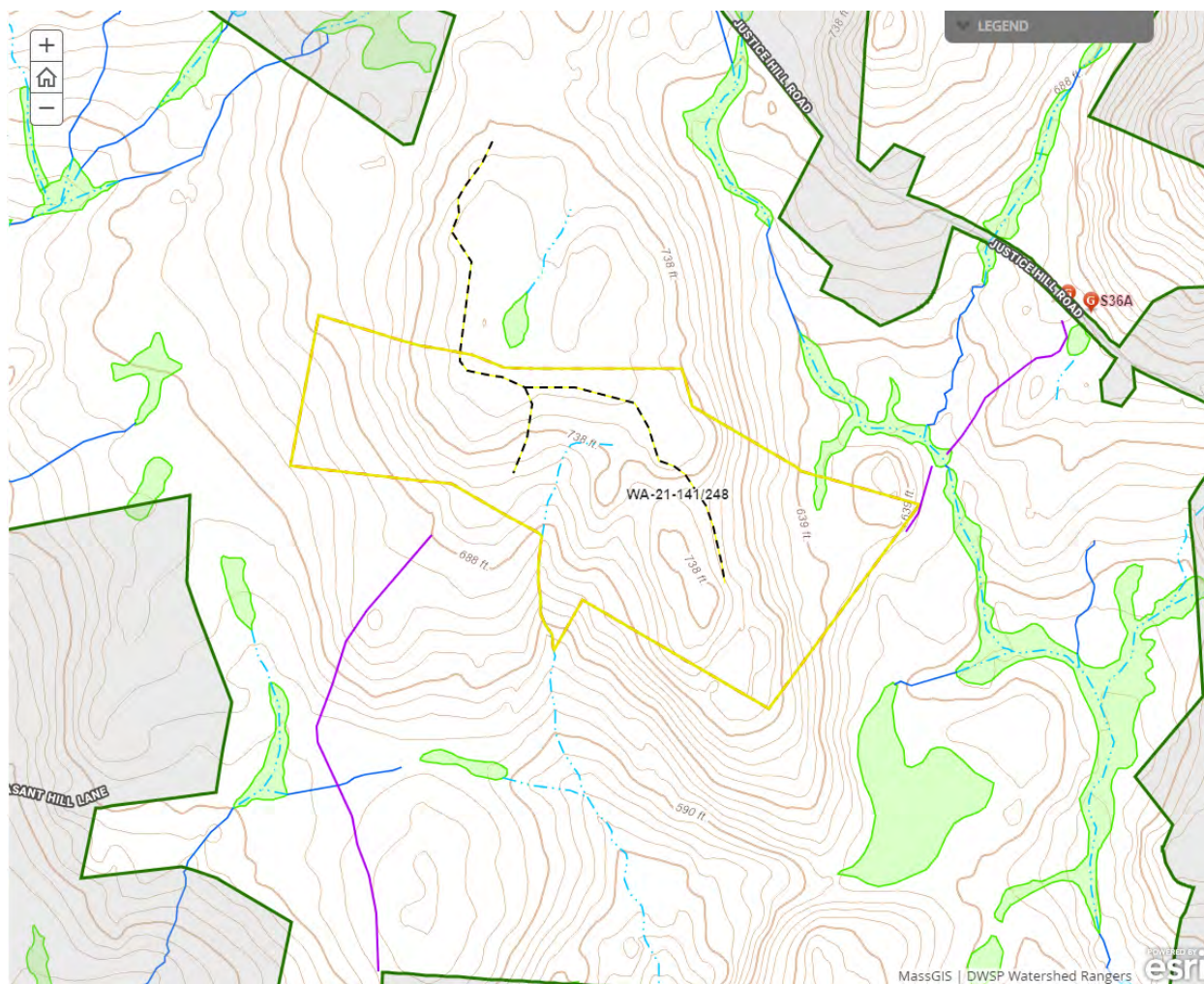
Culverts needed: No

Work needed on permanent bridges: No

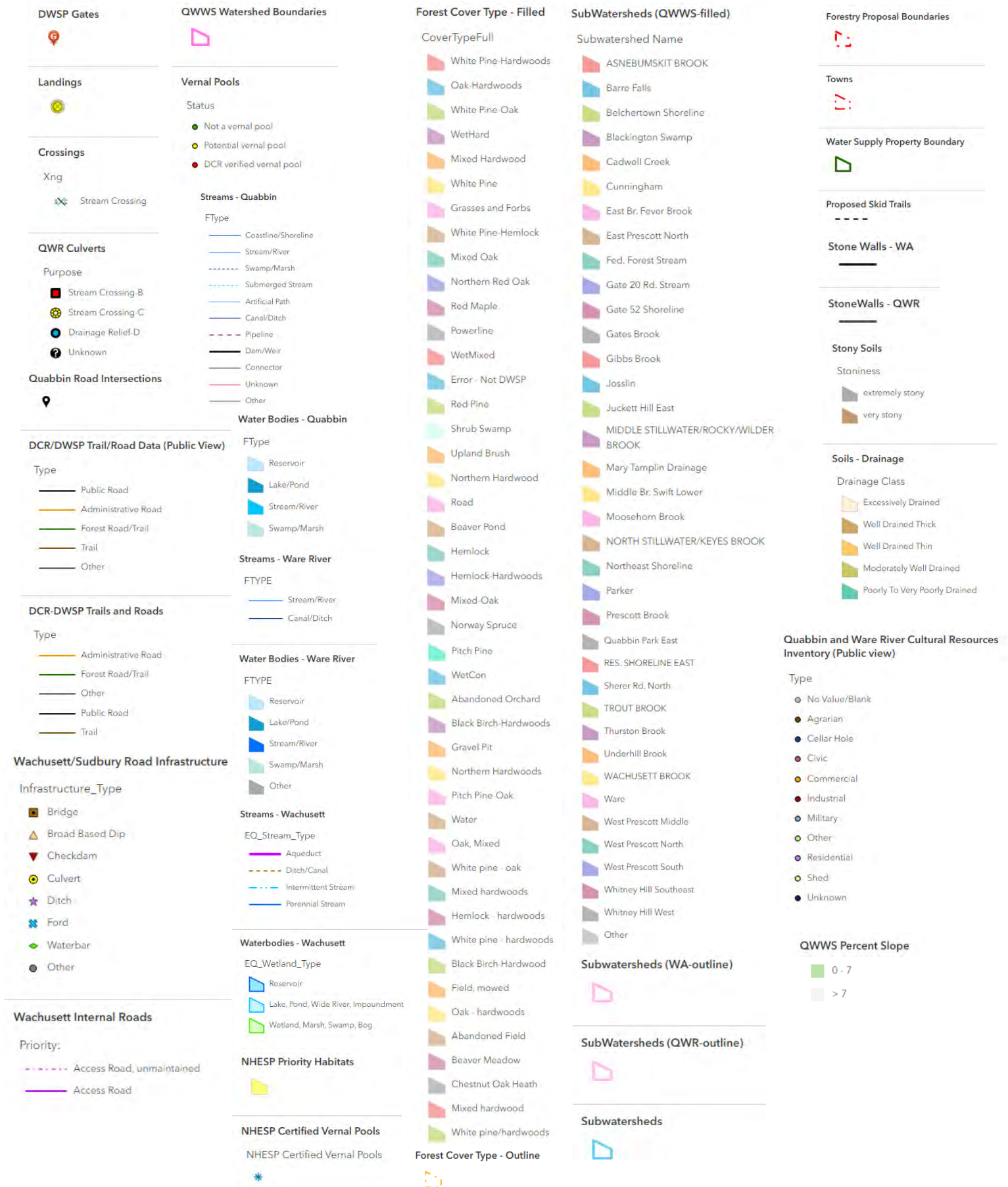
Beaver issue: No

Further comment on access needs:

No engineering work is anticipated to be needed prior to harvest.



DWSP FY 2021 Forestry Proposals – Master Legend for story maps



Wachusett Harvest Proposal WA-21-131

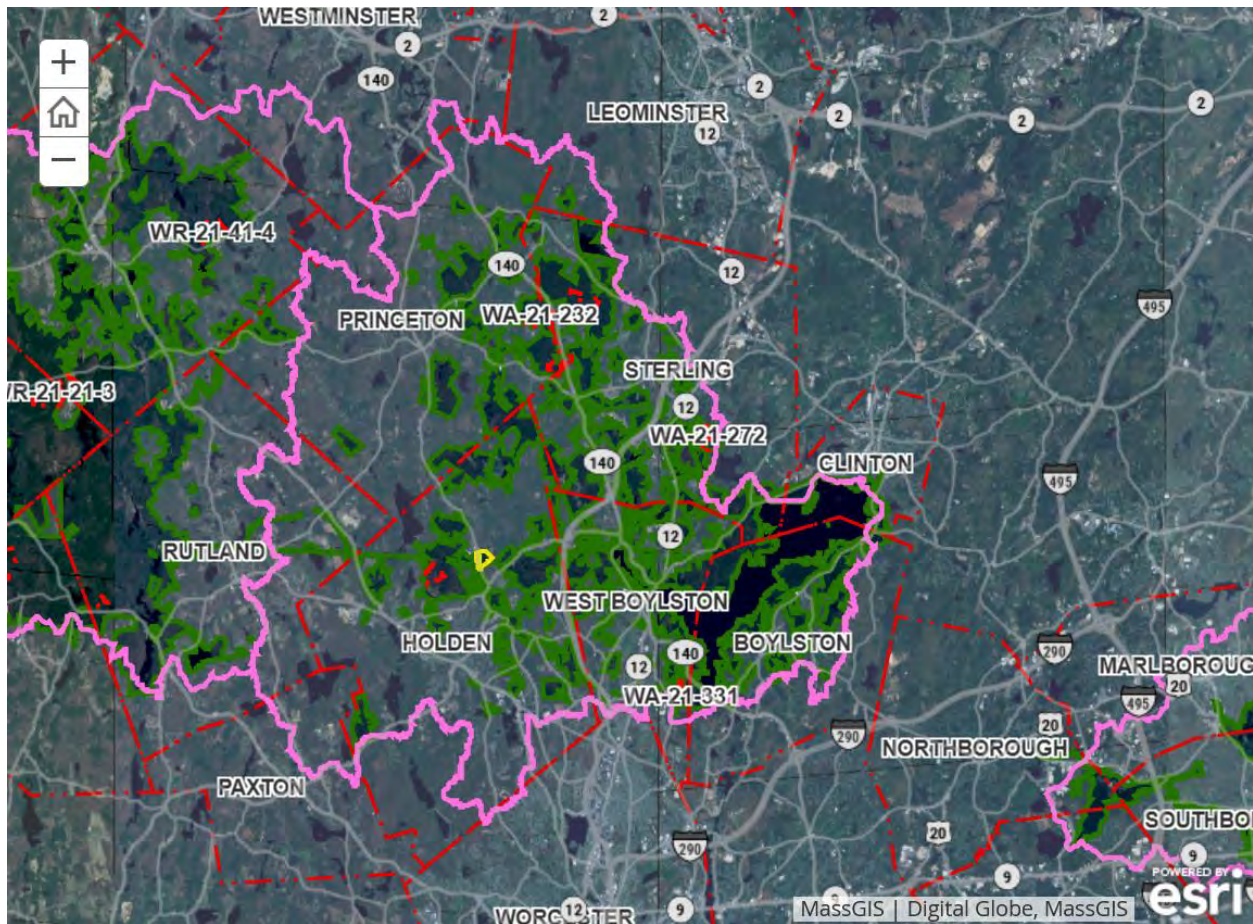
Proposal Goals

The primary goal is to promote a resilient, diverse forest through the creation of canopy openings that allow young forest to develop, release established healthy young trees, and remove groups of poor quality trees. There is good advance regeneration throughout this area that was, in part, the result of logging in 1999. Attention will be paid to any opportunity to encourage the presence of pitch pine wherever it occurs.

Proposal Location

This proposal is located on the eastern side of Route 31 (Wachusett Street) in Holden, across from the northern intersection with Mill Street. All of the boundaries were last maintained (i.e. blazed and tagged) in 2019. Only a large piece of the northern boundary is stone wall. The western boundary is Route 31.

Total Acres: 47



General Description

	Overstory Type(s)	Acres
Dominant	White pine/oak	16
Secondary	Mixed hardwoods	10
Other	White pine	8

	Understory Type(s)
Dominant	Tree seedlings/saplings dominate site

Secondary	Mesic site - witch hazel, highbush blueberry
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Description of forest composition/condition:

This property was purchased from the Quinapoxet Manufacturing Co. in 1928 along with the dam and mill buildings on the west side of Rt. 31 and along Mill Street. There are young stands at the lowest elevations along Rt. 31 that were in grass cover until they were either no longer mowed or finally succeeded on their own in the late 1960s. Today these are stands of nice young hardwoods comprised of sugar maple, white ash, elm and black cherry along with low-quality weeviled white pines.

The area uphill of these stands and north of the Quabbin aqueduct is a mix of white pine, white pine-oak, mixed oak and mixed hardwood stands. Overall, the species composition is dominated by white pine, white oak, black oak along with red maple and black birch. The white pine is of noticeably better form than the oaks. There are numerous scattered dead pitch pine near the top of the hill and to the north. A timber sale in 1999 created a handful of small openings in the overstory and these have regenerated well to a mix of hardwood species, although a couple of the smaller openings are dominated by red maple and black birch.

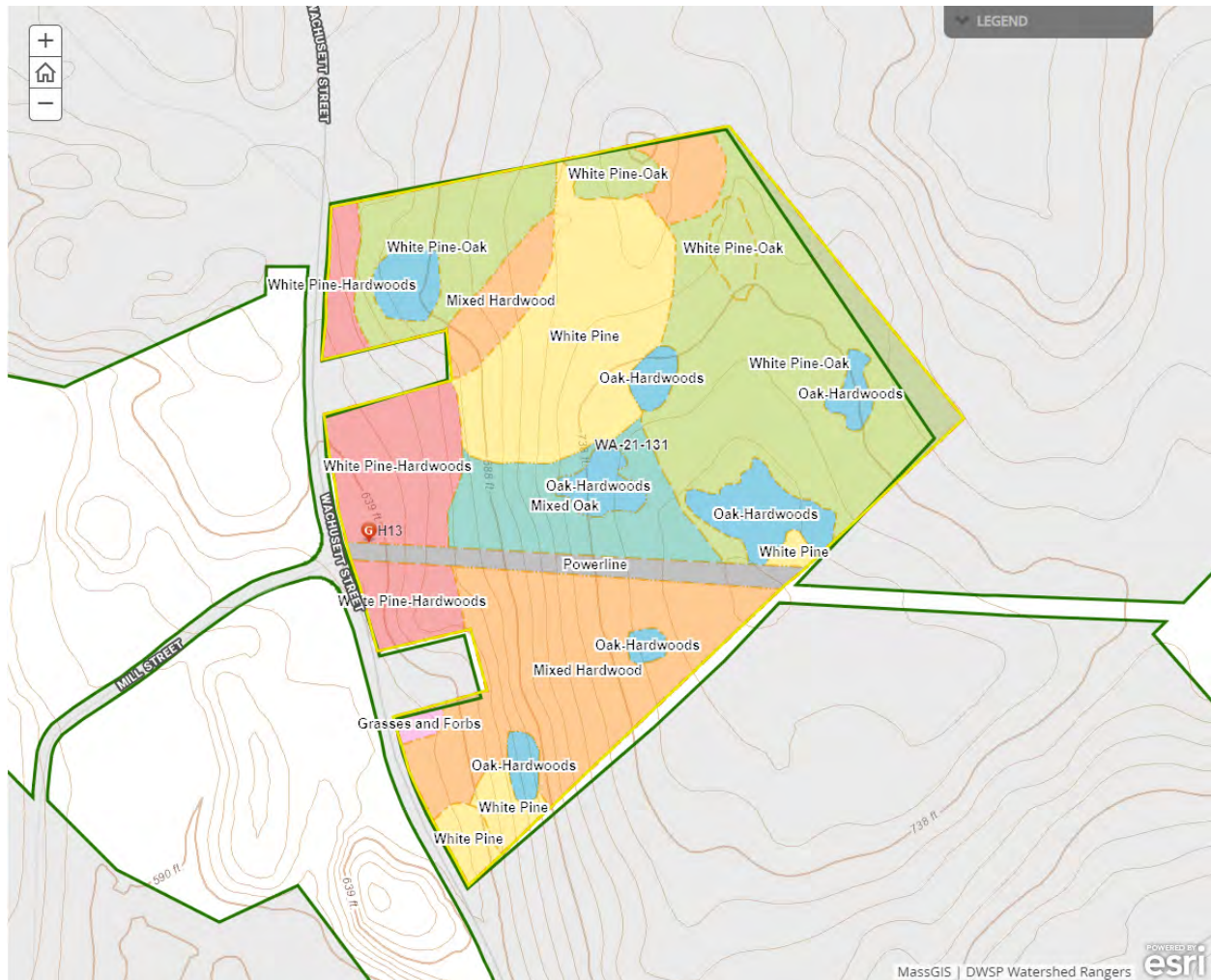
Very little work occurred in the area south of the aqueduct in 1999. The overstory here is dominated by red maple, red oak and white oak along with white pine. There is also a good component of pitch pine which are generally alive and well. There is a good understory of regeneration in this area as well with an increasing amount of white pine at the lower slopes. This area will be a challenge to manage due to the consistently steep and rocky slope.

The age structure of this working unit is as follows; 10%, 0-20 years old; 0%, 21-40 years; 11%, 41-60 years; 20%, 61-80 years; 42%, 81-100 years and 17%, >100 years old.

A stretch of the Wachusett Greenways trail system traverses this area. There are plans to expand this trail network on this property in the near future.

Assessment of Terrestrial Invasive Species:

Sampling found invasive species in just one of 100 plots taken. There was a small level of honeysuckle in a plot in the young stand near Rt. 31. There is more honeysuckle on the aqueduct.

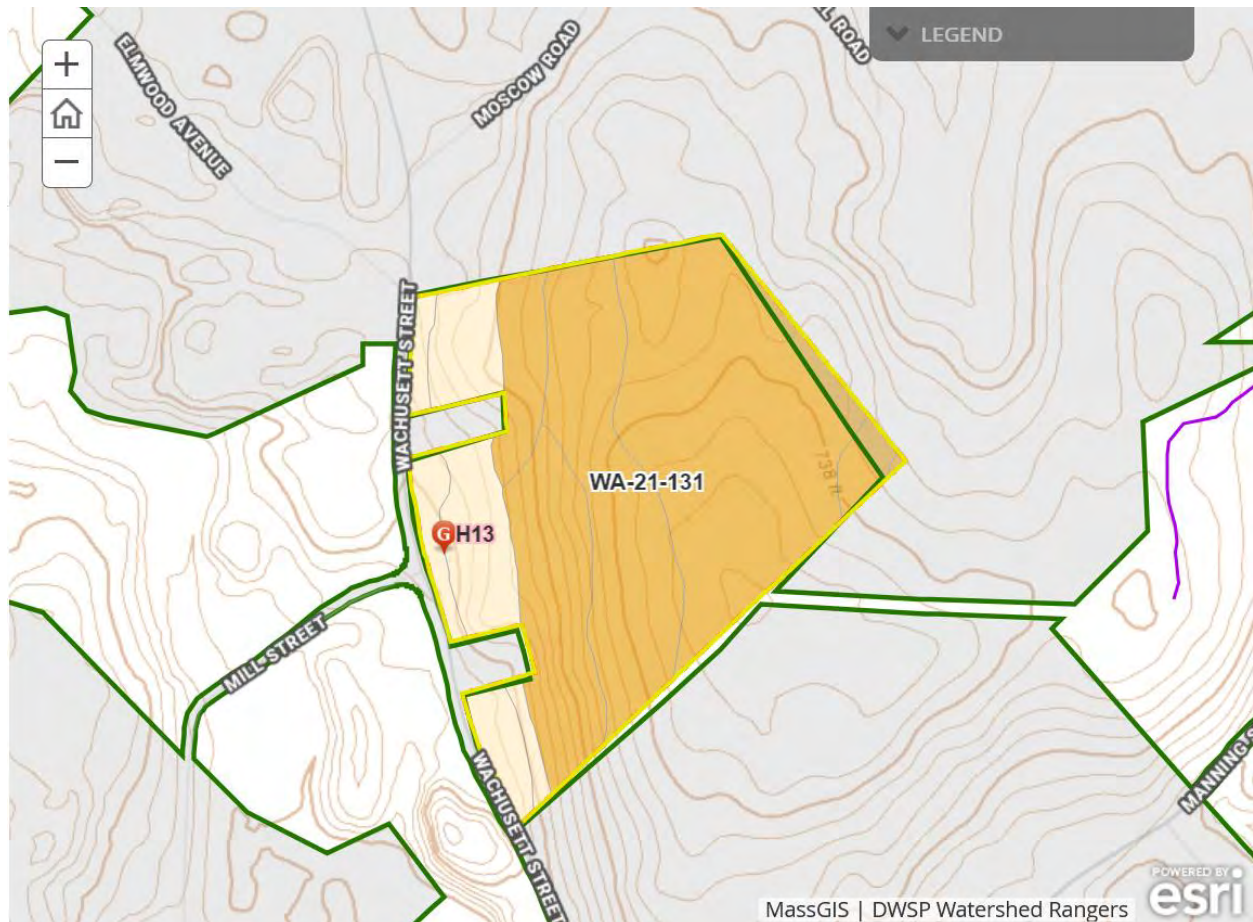


Soils

Drainage Class	%
Excessively Drained	19

Well Drained Thin	0
Well Drained Thick	81
Moderately Well Drained	0
Poorly to Very Poorly Drained	0

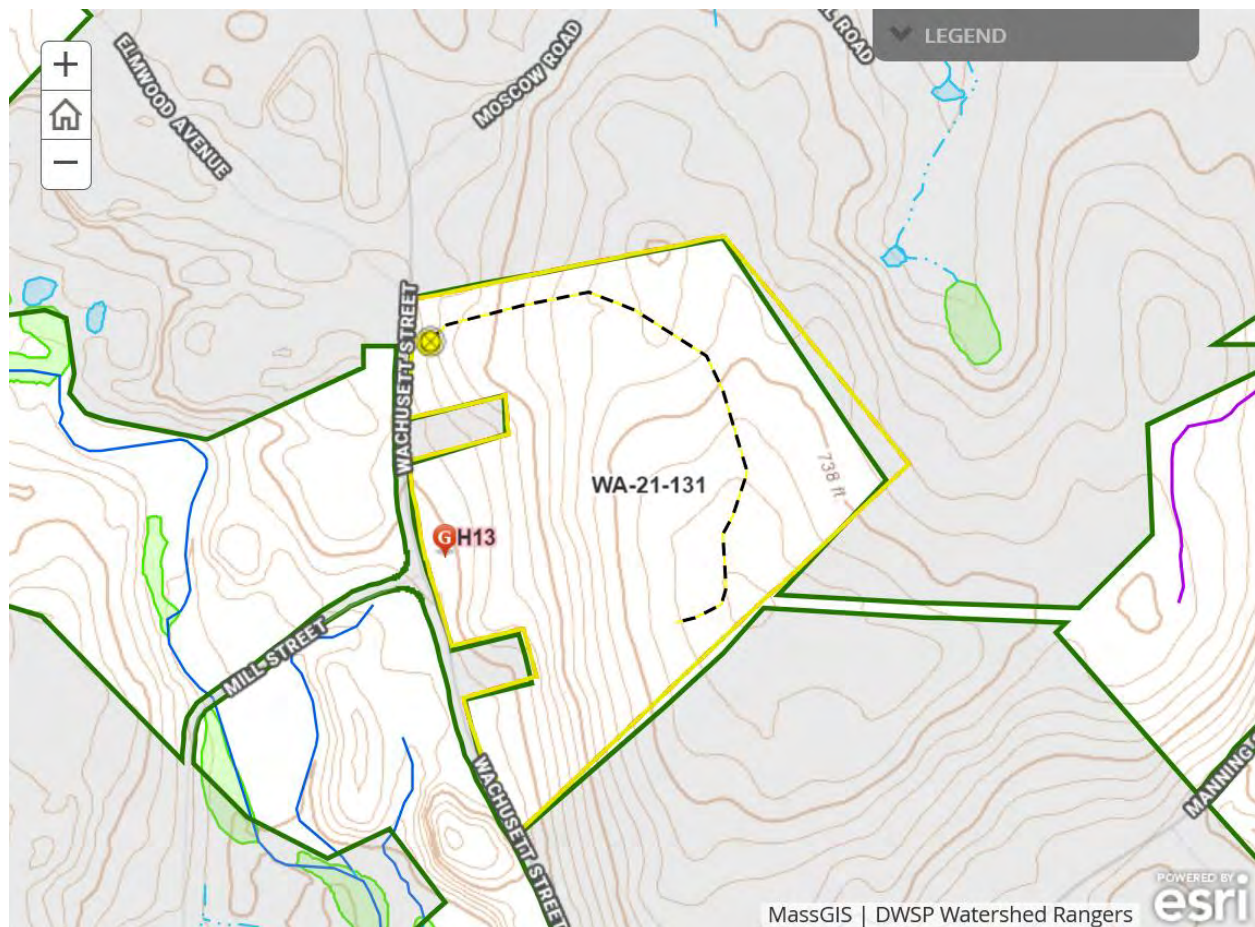
The excessively drained soils are located on the lower elevations along Route 31 and are both the Hinckley sandy loam and the Merrimac fine sandy loam. The primary well drained thick soil on the balance of the area is the Paxton fine sandy loam, extremely stony.



Wetlands

- Wetlands present? - **No**
- Streams present? - **No**
- Vernal pools present? - **None known**
- Seeps present? - **None known**
- 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**

No further comments on wetlands.



Silviculture

Acres in Intermediate cuts: **0**

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

Acres in Regeneration cuts: **15**

Average regen opening size: **1**

Maximum regen opening size: **2**

Description of advance regeneration in proposal area:

Sampling found adequate advance regeneration present on 51% of the plots taken along with marginal regeneration on 26% of the plots. There was interfering levels of witch hazel on 7% of the plots. This regeneration is similar in diversity as the overstory with white pine and red maple being the most common species along with black birch, black oak and white oak. Oak was present in 53% of the plots.

General comments on silviculture proposed:

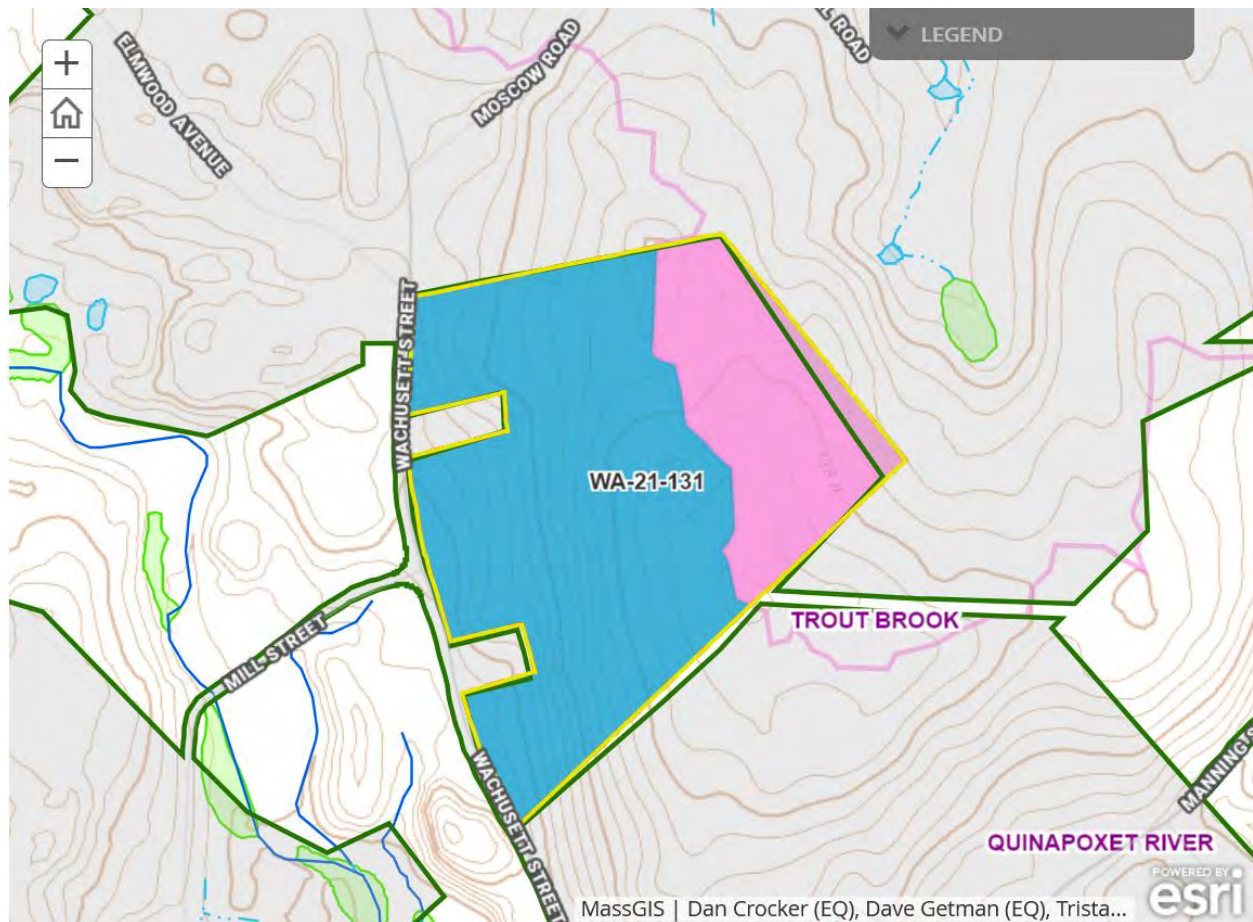
Given the good levels of advance regeneration present, the plan will be to create a new cohort of young forest on up to 15 acres or 1/3rd of the manageable forested acreage. While there is already nearly 5 acres (10%) in young forest, this was established in 1999 and will be well over 20 years old when this operation occurs. These 5 acres will be considered a separate older cohort. These openings will range in size up to about 2 acres and average about 1 acre. Following this harvest, the age structure of this area will be approximately as follows; 33%, 0-20 years old; 10%, 21-40 years old; 11%, 41-60 years old; 0%, 61-80 years old; 62%, 81-100 years old and 17%, >100 years old.

Special attention will be paid to, at minimum, maintaining the level of pitch pine wherever it is found. Any opportunity to either regenerate pitch pine or release advance pitch pine regeneration will be pursued.



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
14 (Quinapoxet River)	2464	92	523	35
15 (Trout Brook)	1148	49	238	12

The proposed level of cutting falls below the 25% threshold.



Harvesting Limitations

Forwarder required: **Yes**

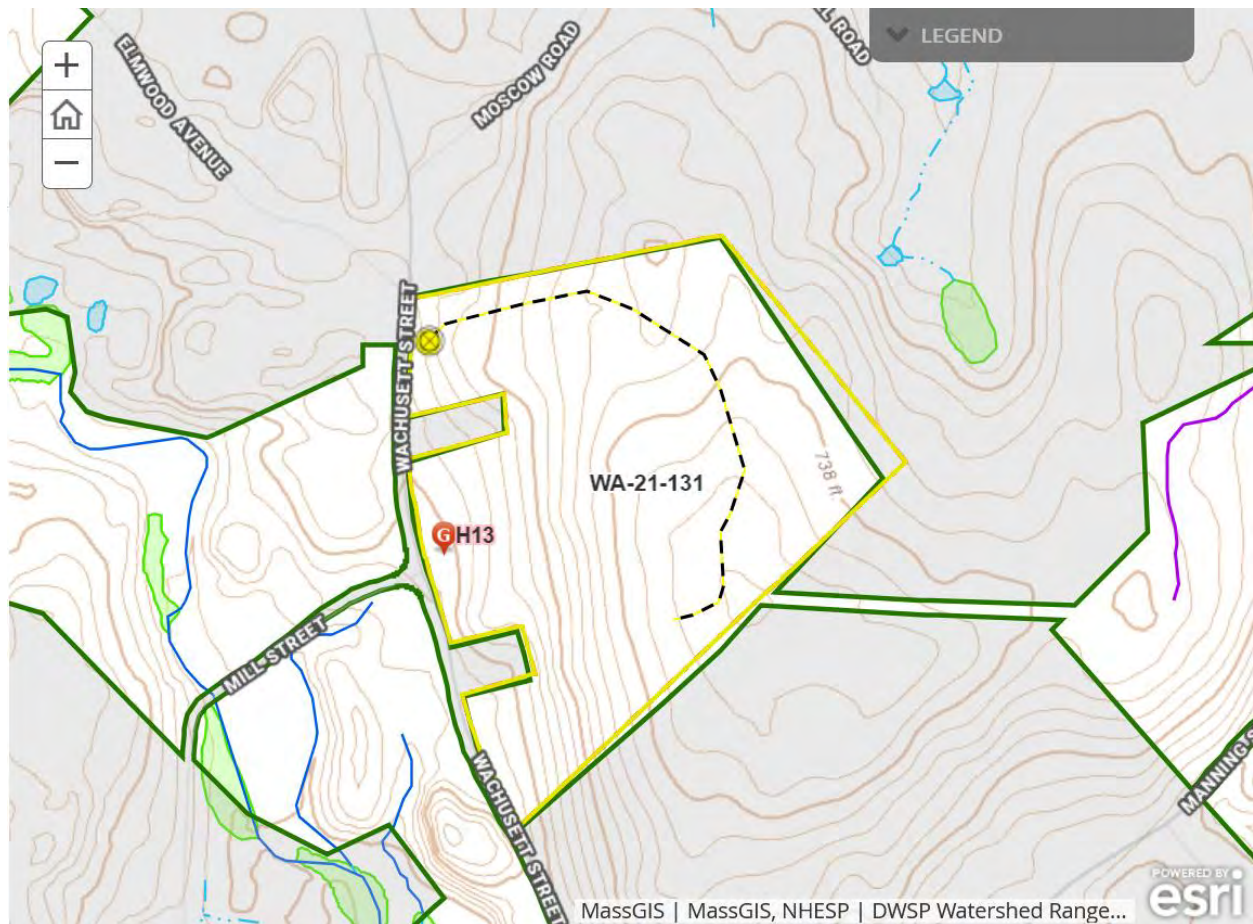
Feller/processor required: **Yes**

Steep slopes present: **Yes**

Comments on harvesting limitations:

With advance regeneration present and a desire to protect as much of it as possible during the harvest, a cut-to-length harvesting system will be employed.

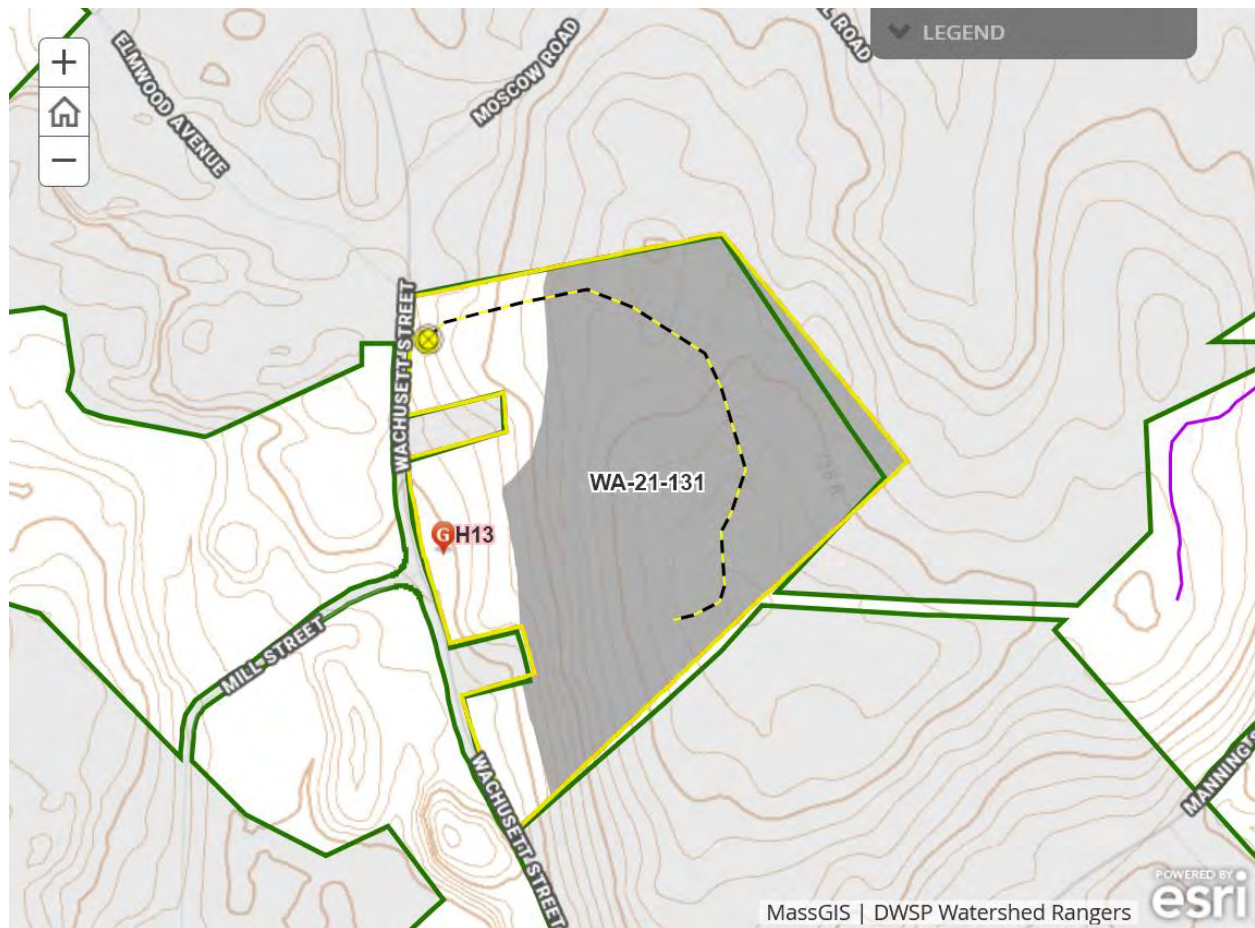
The western half of the portion south of the aqueduct meets the criteria for Steep Slopes.



Cultural Resources

Comments on Cultural Resources:

The foundations on this lot were the residence of Cyrus G. Wood, according to the 1898 atlas published by L. J. Richards. Cyrus Wood owned the Quinapoxet Manufacturing Co. mill across the road on Mill Street.



Wildlife Resources & Rare and Endangered Species

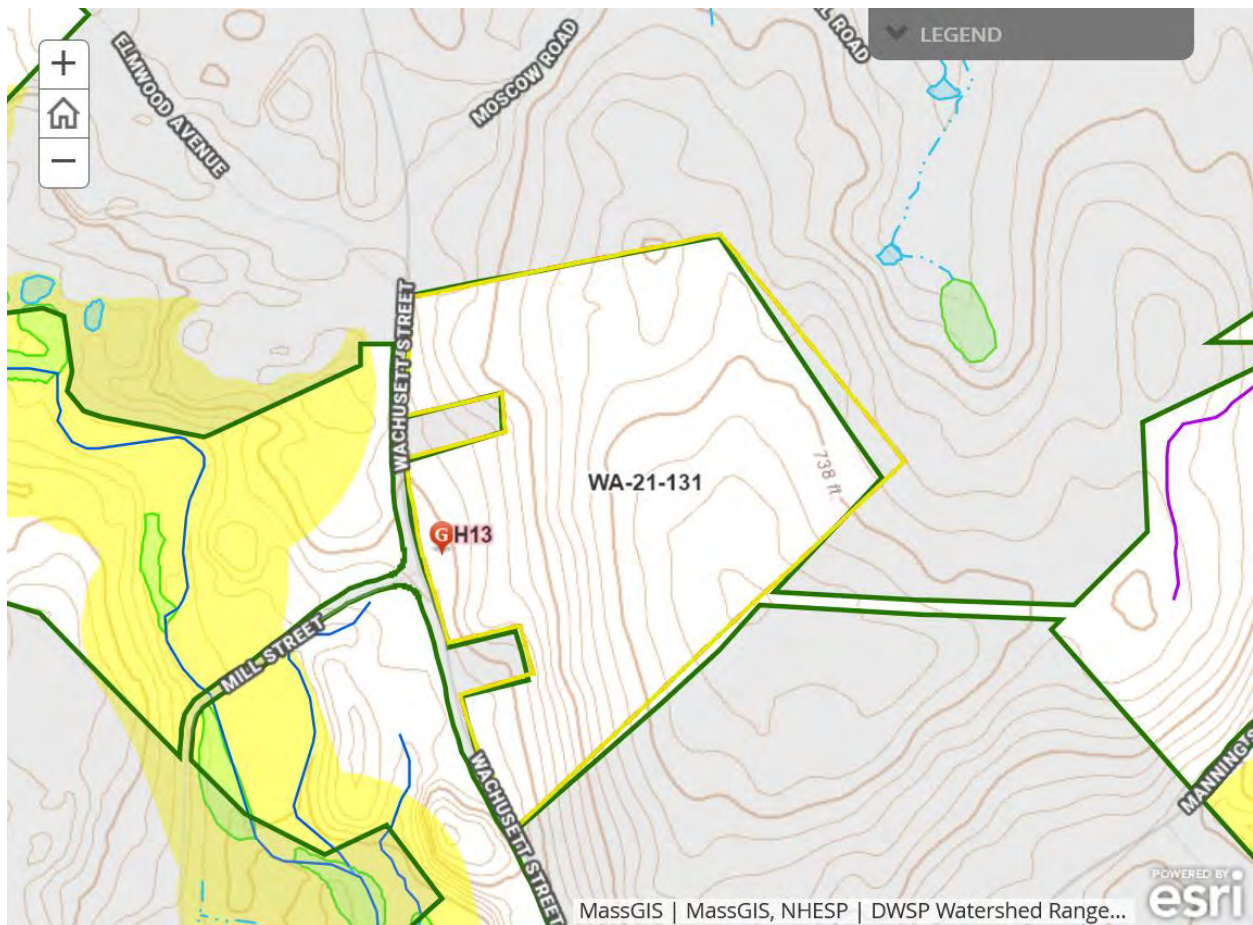
General Wildlife Comments:

There are good cavities on some of the white oaks, particularly toward the top of the hill.

All DWSP Best Management Practices for wildlife management such as the protection and enhancement of wildlife habitat features will be an integral part of the silviculture and job layout. Diverse hard and soft mast species will be retained and the healthiest trees will be released to improve seed production, which will promote tree seedlings and food for wildlife. Large snags, den trees, logs and nest trees will be retained whenever possible as valuable habitat. Stick nests were observed and so they will be protected. Where they occur; streams, wetlands, seeps and vernal pools will be protected for water quality and wildlife habitat.

Comments on Rare Species/Habitats:

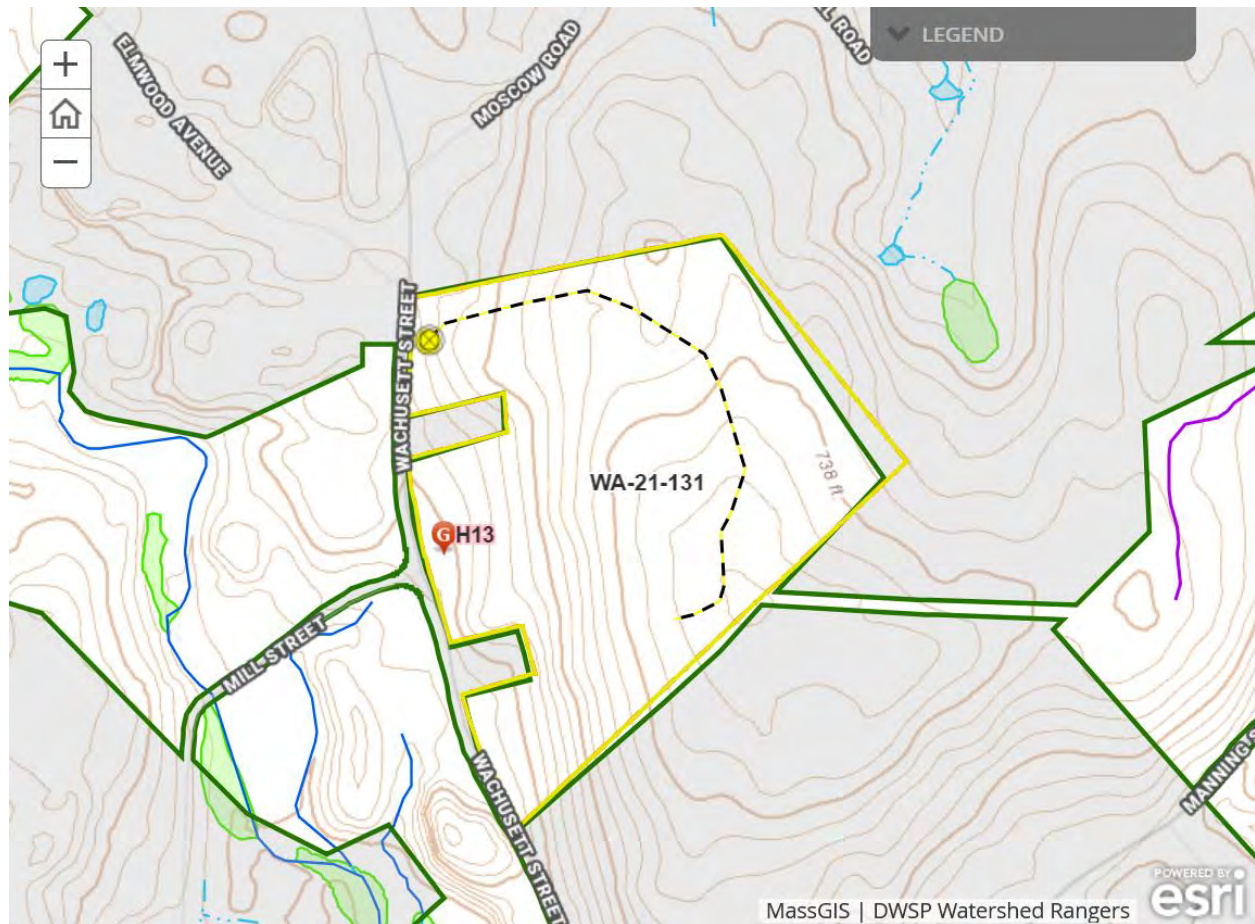
None known.



Environmental Quality Engineering

Comments on EQ Issues:

There are no stream crossings.



Forest Access Engineering

Gravel needed: No

Landing work needed: No

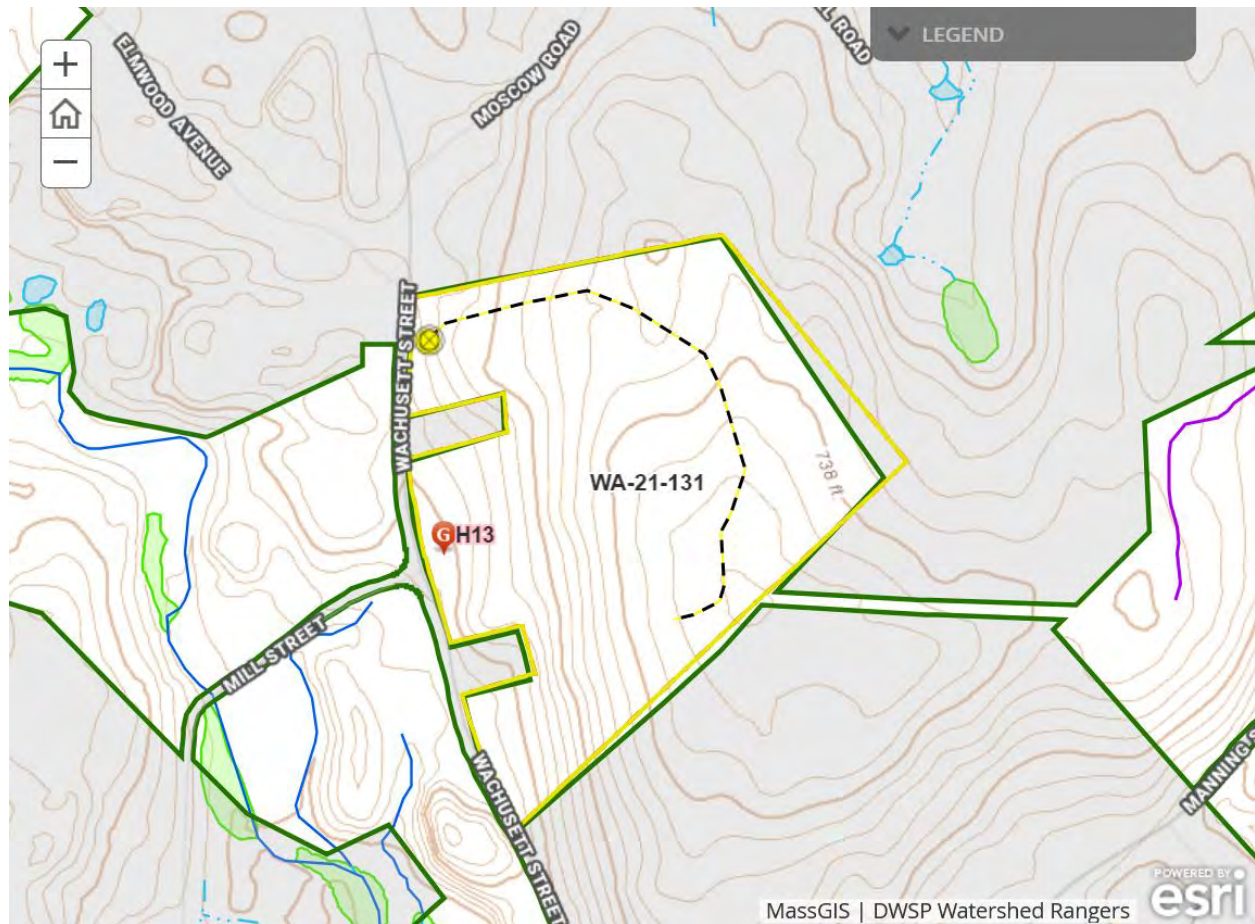
Culverts needed: No

Work needed on permanent bridges: No

Beaver issue: No

Further comment on access needs:

No engineering work is anticipated to be needed prior to harvest.



DWSP FY 2021 Forestry Proposals – Master Legend for story maps

