

FY 2019/2020 Oak Salvage

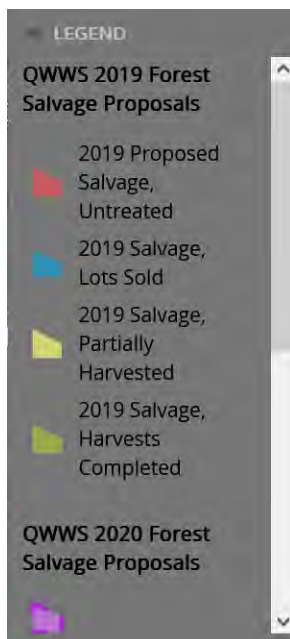
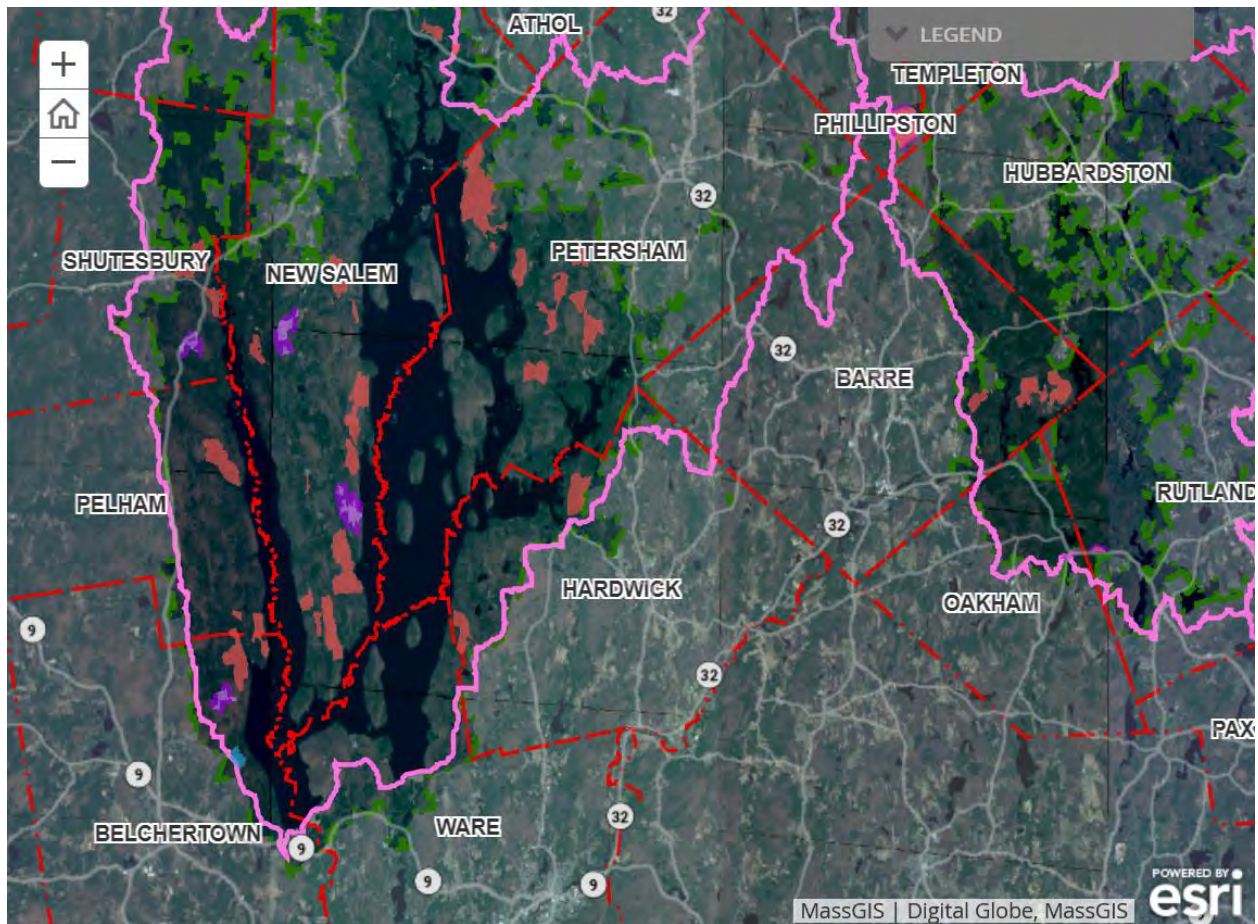
Gypsy Moth Related Oak Salvage

A combination of stresses from a multi-year drought repeated gypsy moth defoliation events, and outbreaks of native boring beetles has resulted in widespread oak mortality throughout the Quabbin and Ware River forests. The degree of damage varies from place to place, but there are unfortunately some significant areas with near complete mortality. While a large amount of the dead oak will remain in place to add to wildlife habitat and forest structural diversity, DWSP intends to temporarily shift its forest management focus to harvesting in areas of significant oak mortality. These areas would have otherwise been harvested through normal practices many years from now.

This map identifies approximate areas of special concern for oak salvage. Beginning in 2018 (for fiscal year 2019) these areas have been identified through a combination of satellite imagery analysis ([performed by Pasquarella, Bradley, & Woodcock, 2017](#)), and flown and field surveys by DWSP foresters. The locations mapped here do not represent all areas with concentrated oak mortality, but those areas with the best access and operability for the amount of oak present for salvage. With these criteria, DWSP is salvaging the dying oak for the least cost and impact. Ultimately, the full extent of these mapped areas will not be salvaged due to restrictions on operations (terrain, extreme slope, streams, etc.) and limited time before tree decay. It should also be understood that within each of these mapped areas salvage work will reflect the level of mortality; there will likely be scattered removals, similar to a thinning operation, mixed with pockets of near complete removals similar to our typical regeneration patch cutting operations. Some pockets of high mortality and low species diversity may have widely scattered residual trees. DWSP will also salvage affected interior roadside trees to maintain access and address public safety concerns.

This map shows areas identified for fiscal year 2019 which have been: identified but as yet untreated (red), contain at least one lot sold to be salvage but so far unharvested (blue), contain at least one lot which has been partially harvested (yellow), and have had the full all potential salvage harvests completed (green). Areas identified as potential areas of extensive oak mortality for fiscal year 2020 are in purple. Click on any polygon for further information.

All of [DWSP's standard management policies](#) apply to these salvage operations. The DCR Commissioner will need to approve any salvage work that will create openings >5 acres, as is the case for other DWSP silvicultural operations. There will be an accelerated proposal and sale schedule of these areas. Each of the locations mapped here has been reviewed by DWSP Natural Resources and Environmental Quality staff and, is here, undergoing public review prior to sale



Wachusett Harvest Proposal WA-20-53

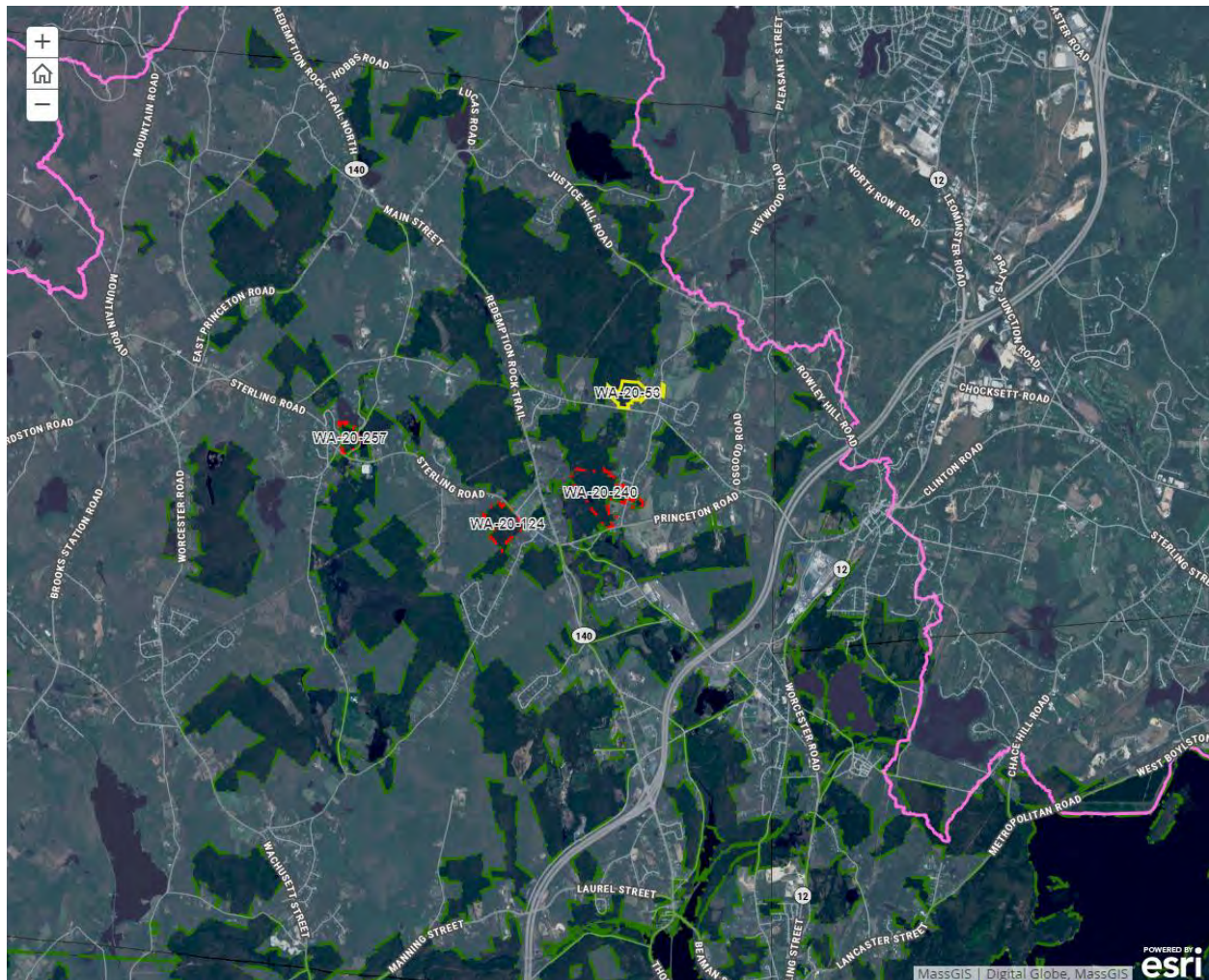
Proposal Goals

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.

Proposal Location

Starting at Beaman road then following Rocky Brook upstream northeasterly into and along a wetland, thence westerly along a stonewall for 2,700'. Then south along a blazed line for 100' then east for 150' to a stone wall. Follow the stonewall easterly to the point of beginning.

Total Acres: 31



General Description

	Overstory Type(s)	Acres
Dominant	White pine	11
Secondary	Mixed hardwoods	8
Secondary	White pine/hardwood	4

	Understory Type(s)
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Dominant	Tree seedlings/saplings dominate site
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Description of forest composition/condition:

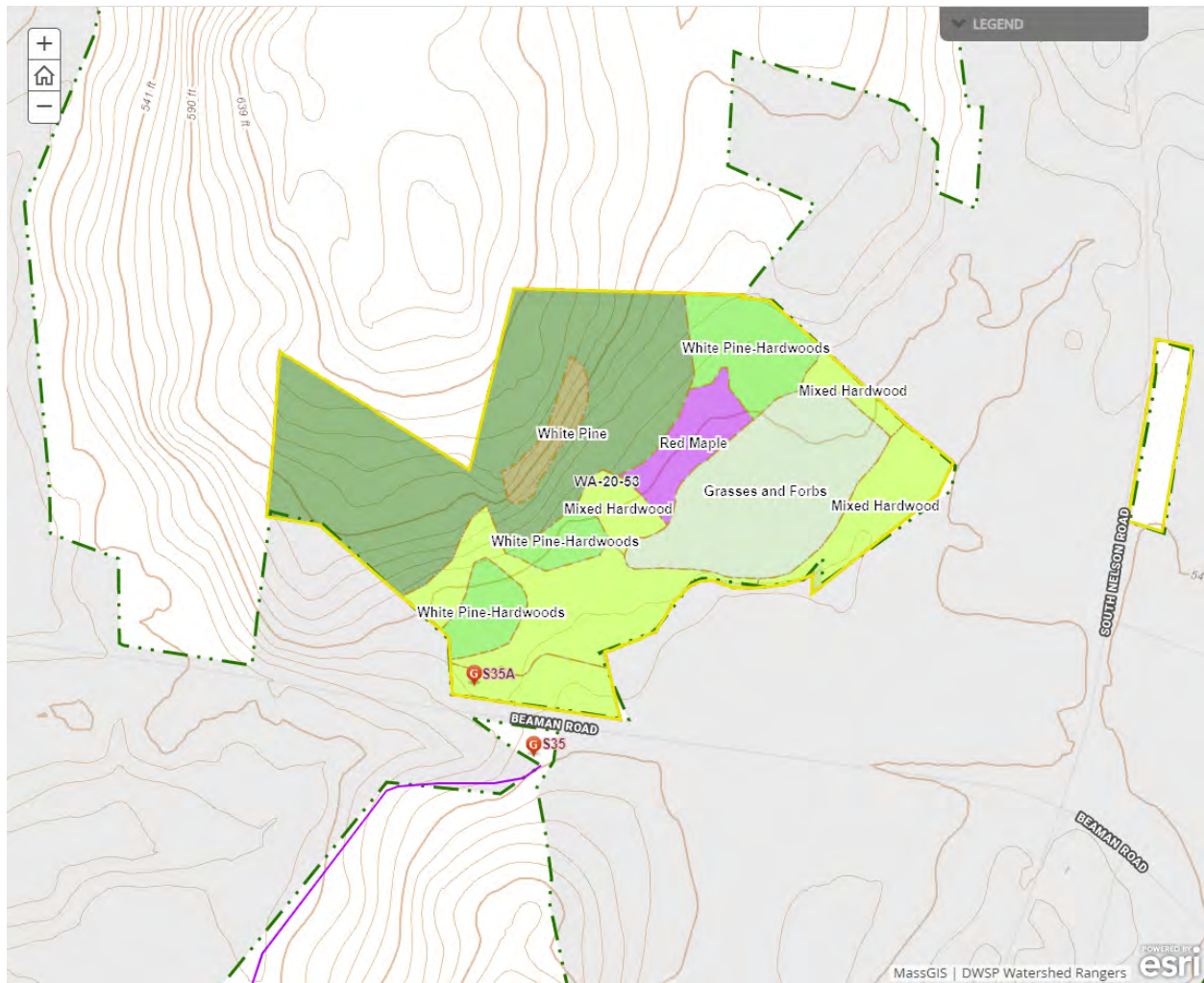
This forest is distinguishable by its bouldered slope and diverse regeneration. This parcel was purchased in 1998 and has had no forestry work done since it was acquired. Although recent harvesting has taken place directly abutting this lot and the recent disturbances suggest hardwoods will come in thick and diverse on this lot. In the southern portion, Rocky Brook appears to have been dammed previously on this lot and then the dam was taken down at some point. Beaver activity is current with a large beaver dam next to the field and now the beaver have flooded a small section of timber in the southern portion of the lot. The field is well maintained and has five crab apple trees in it; it was recently restored from a heavy infestation of invasive autumn olive.

The primary species in the overstory is white pine with smaller amounts of red oak, black oak, white oak, pignut hickory, shagbark hickory, sugar maple, bigtooth aspen, trembling aspen, yellow birch, willow, red maple, hemlock, eastern hophornbeam, striped maple, Norway spruce and basswood. The white pine ranges from good to poor vigor. White oak regeneration is strong with some red oak and white pine along a set of tiered hills and at the top. The lower and flatter sections are much more diverse in regeneration with black cherry, sugar maple, hickory, white pine and red oak. Shrubs are mostly winterberry and dogwood by the brook, highbush blueberry and hawthorn at the bottom of the slope, and mountain laurel, sheep laurel and mapleleaf viburnum throughout the rest of the lot. Mapleleaf viburnum (a deer density indicator) is numerous and of good height, suggesting minimal deer pressure.

The age structure of the working unit is as follows: 5% (0-20 years old), 1% (21-40 years old), 35% (41-60 years old), 0% (61-80 years old), 59% (81-100 years old), 0% (>100 years old).

Assessment of Terrestrial Invasive Species:

During reconnaissance the following invasive species were seen within close proximity to the brook and wetland: Autumn olive, oriental bittersweet, bush honeysuckle, multiflora rose, buckthorn, winged euonymus and Japanese barberry. The invasives appear tied to the wetter soils where harvesting will not take place.

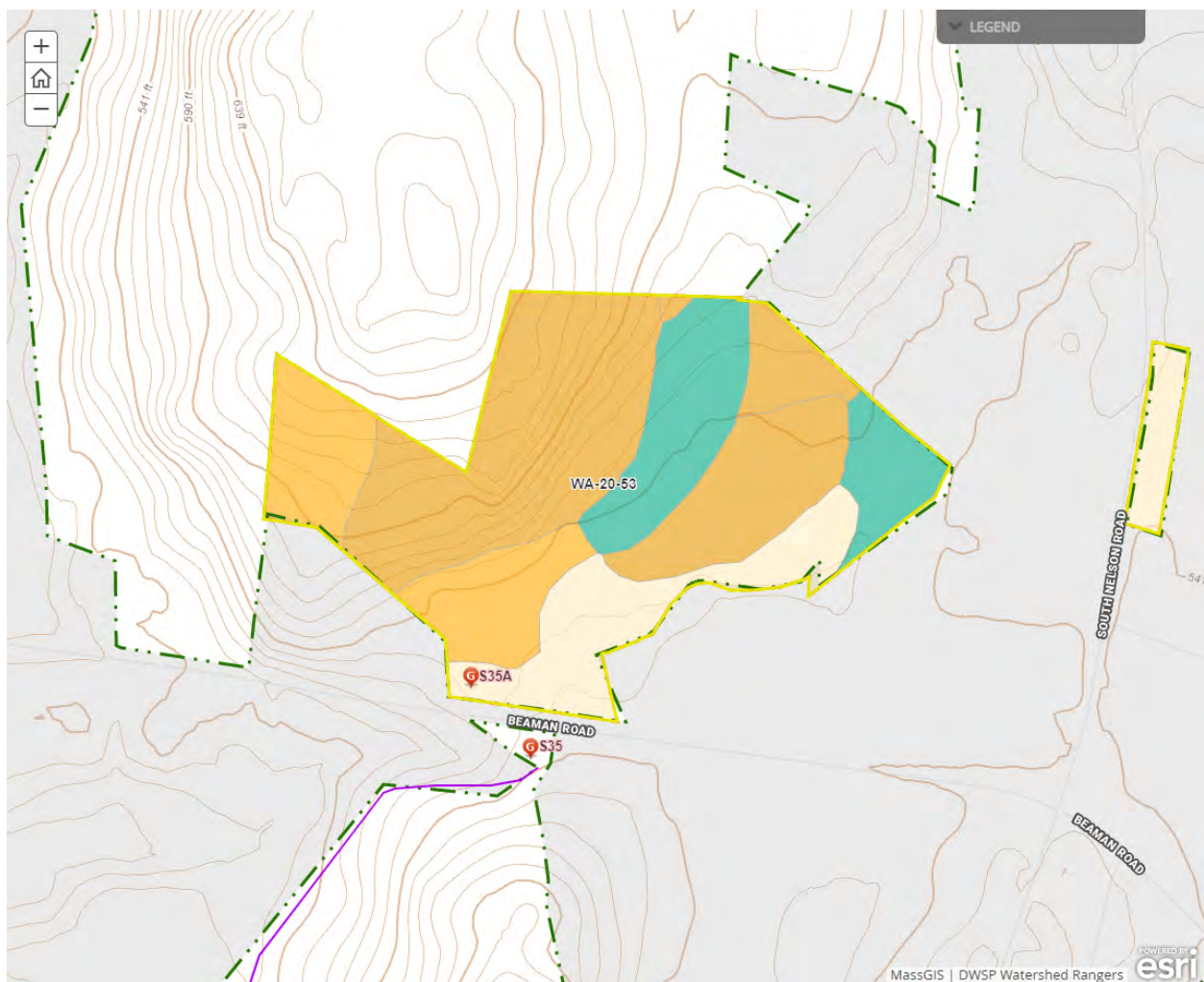


Soils

Drainage Class	%
Excessively Drained	19
Well Drained Thin	17
Well Drained Thick	47

Moderately Well Drained	0
Poorly to Very Poorly Drained	18

Excessively drained Hinckley and Merrimac make up 19%, Chatfield-Hollis_Rock outcrop on about 17%, about half the working unit is well-drained thick Canton soils, and the remaining 18% is poorly to very poorly drained Whitman and Walpole.

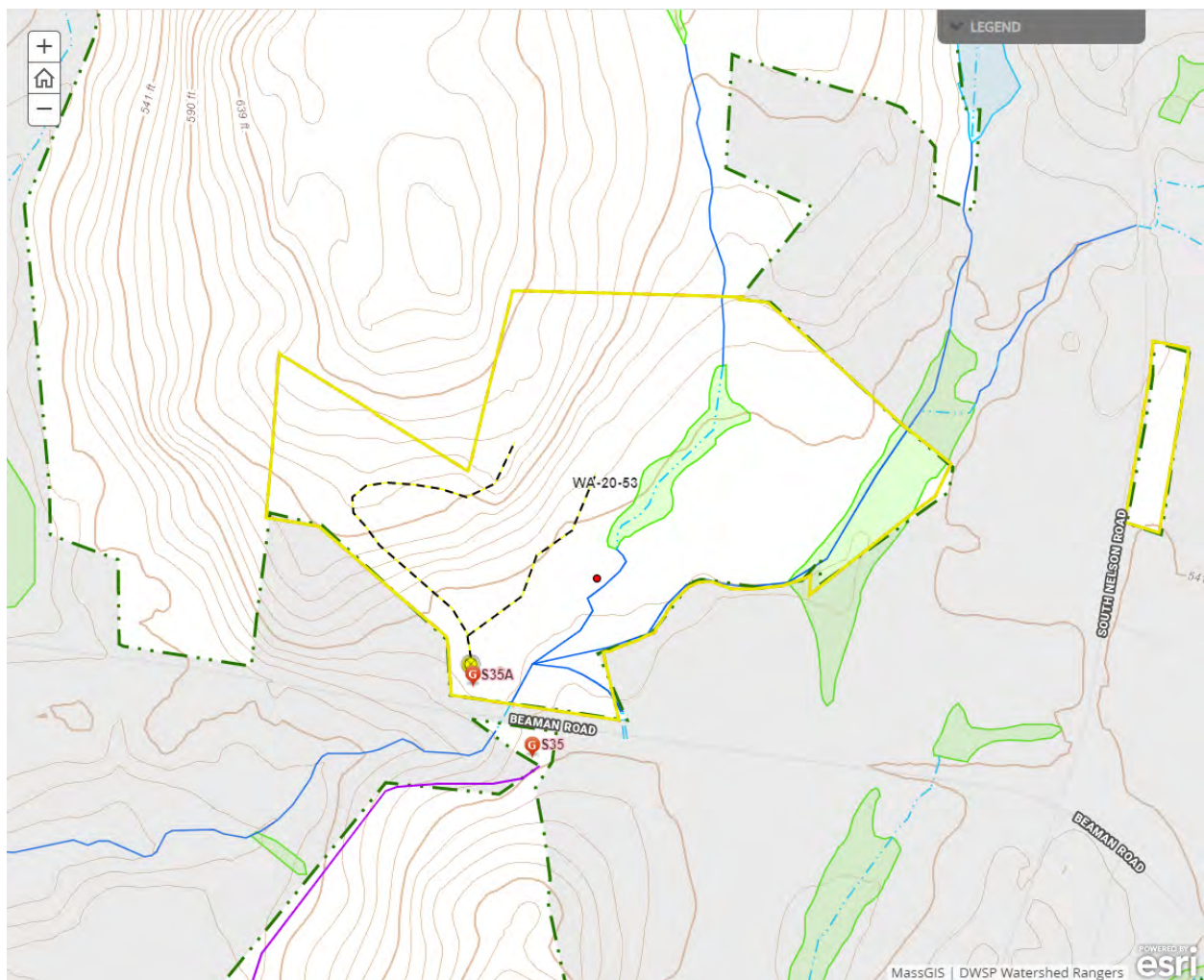


Wetlands

- 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**
- Is logging in wetlands planned? - **No**

With such a small portion on the east side of the working unit in manageable forest the focus will be on the western half of the working unit which will help avoid stream crossings. There is a vernal pool just north of the pond area above the dam on the east side of the intermittent stream (west of Rocky brook).



Silviculture

Acres in Intermediate cuts: **0**

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

Acres in Regeneration cuts: **10**

Average regen opening size: **1**

Maximum regen opening size: **2**

Description of advance regeneration in proposal area:

Regeneration sampling shows 68% of the plots regenerated or with marginal regeneration. While 27% had no regeneration, oak was present on 63% of the manageable plots. For more information, see the regeneration discussion in forest composition/condition section.

General comments on silviculture proposed:

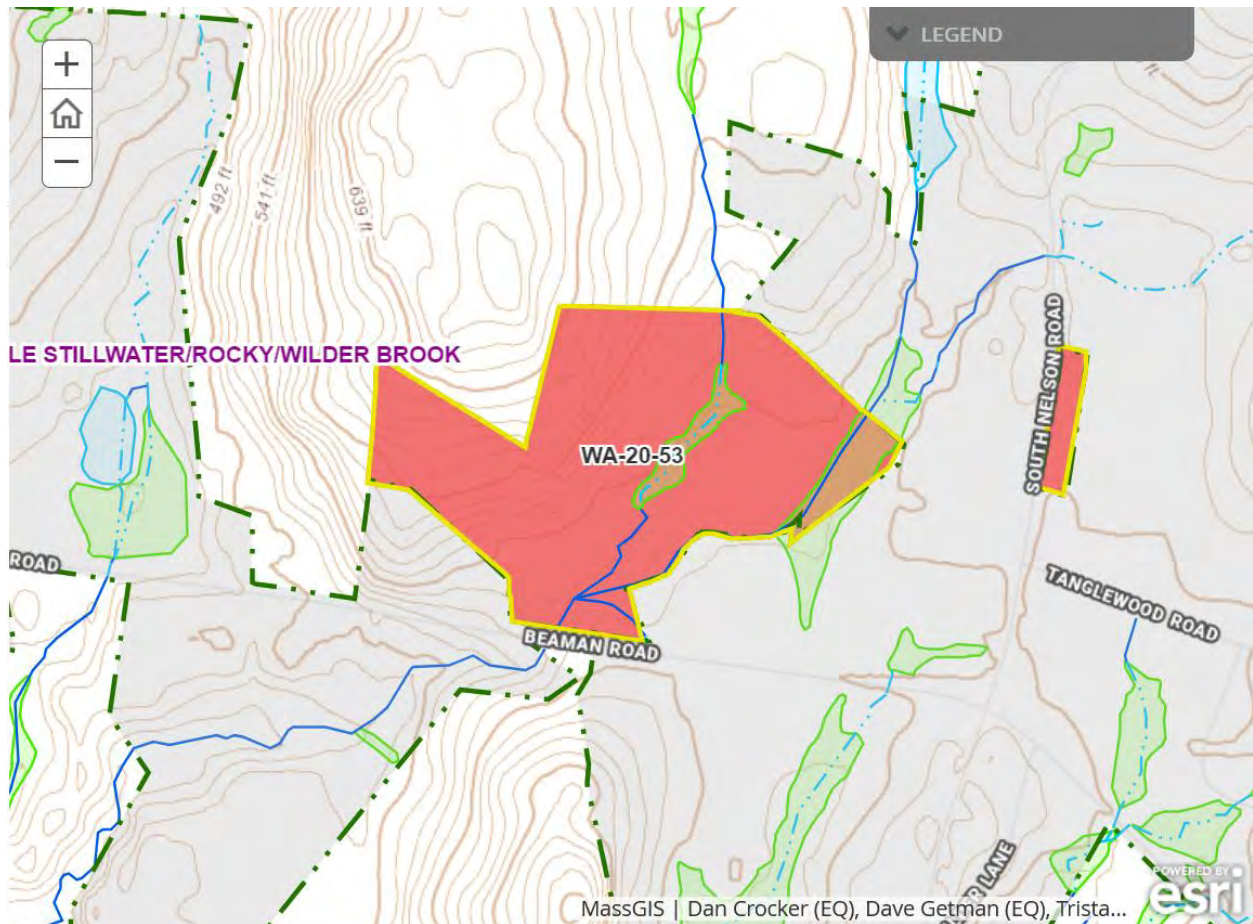
Given the excellent understory of diverse regeneration, it should not be difficult to place appropriate openings throughout the manageable areas. These openings will remove the overstory in patches that average about one acre with a maximum size of about 2 acres and totaling about 10 acres. The species composition of this new cohort will be much more diverse than the current overstory since the lot is currently white pine and/or hardwoods with a great variety of hardwoods regenerating underneath. The challenge on this site will be tailoring openings to the topography, which may impact the number, shape and or size of the openings.



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	99	448	31

The proposed acreage of regeneration cuts falls below the 25% threshold.



Harvesting Limitations

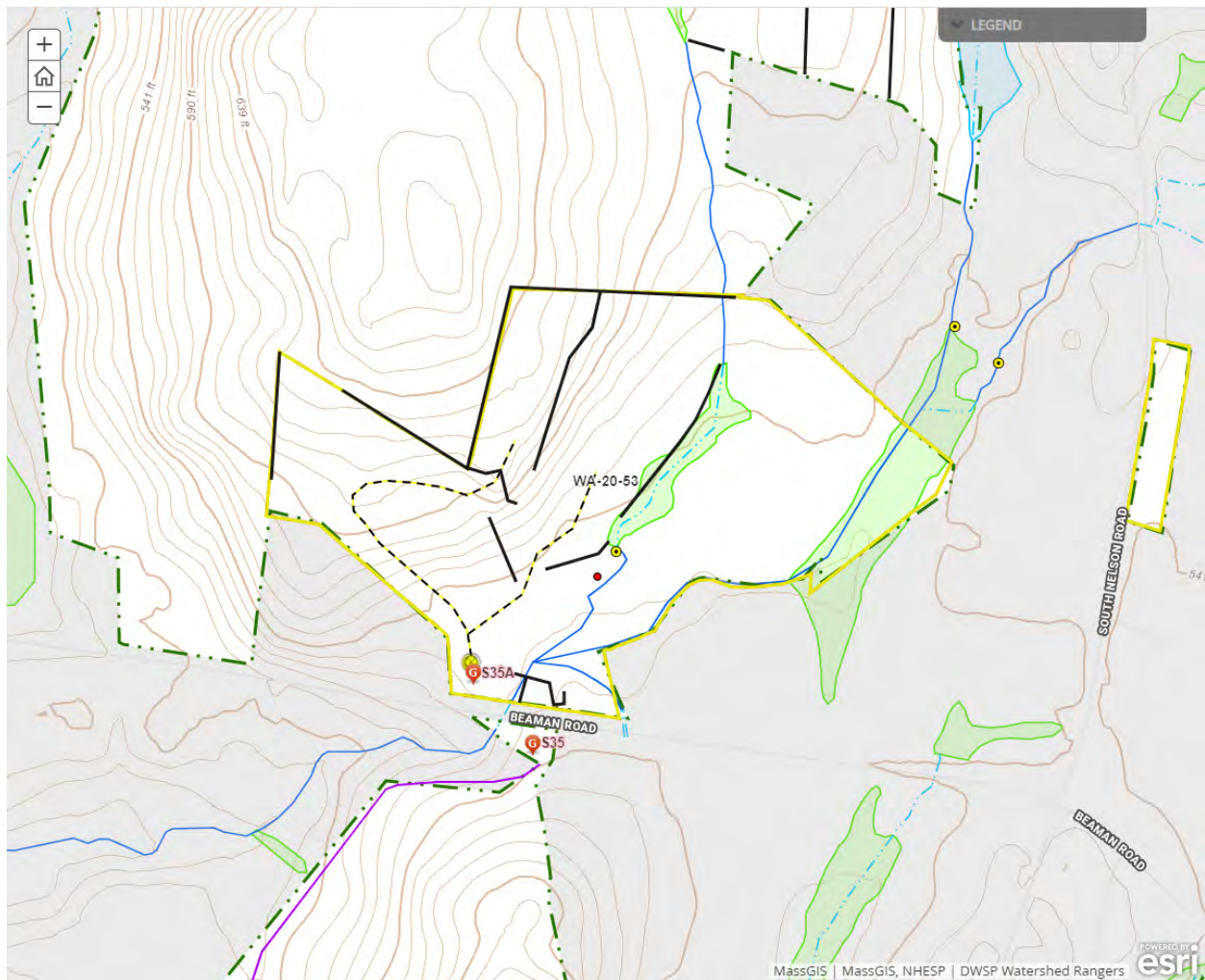
Forwarder required: **Yes**

Feller/processor required: **Yes**

Steep slopes present: **No**

Comments on harvesting limitations:

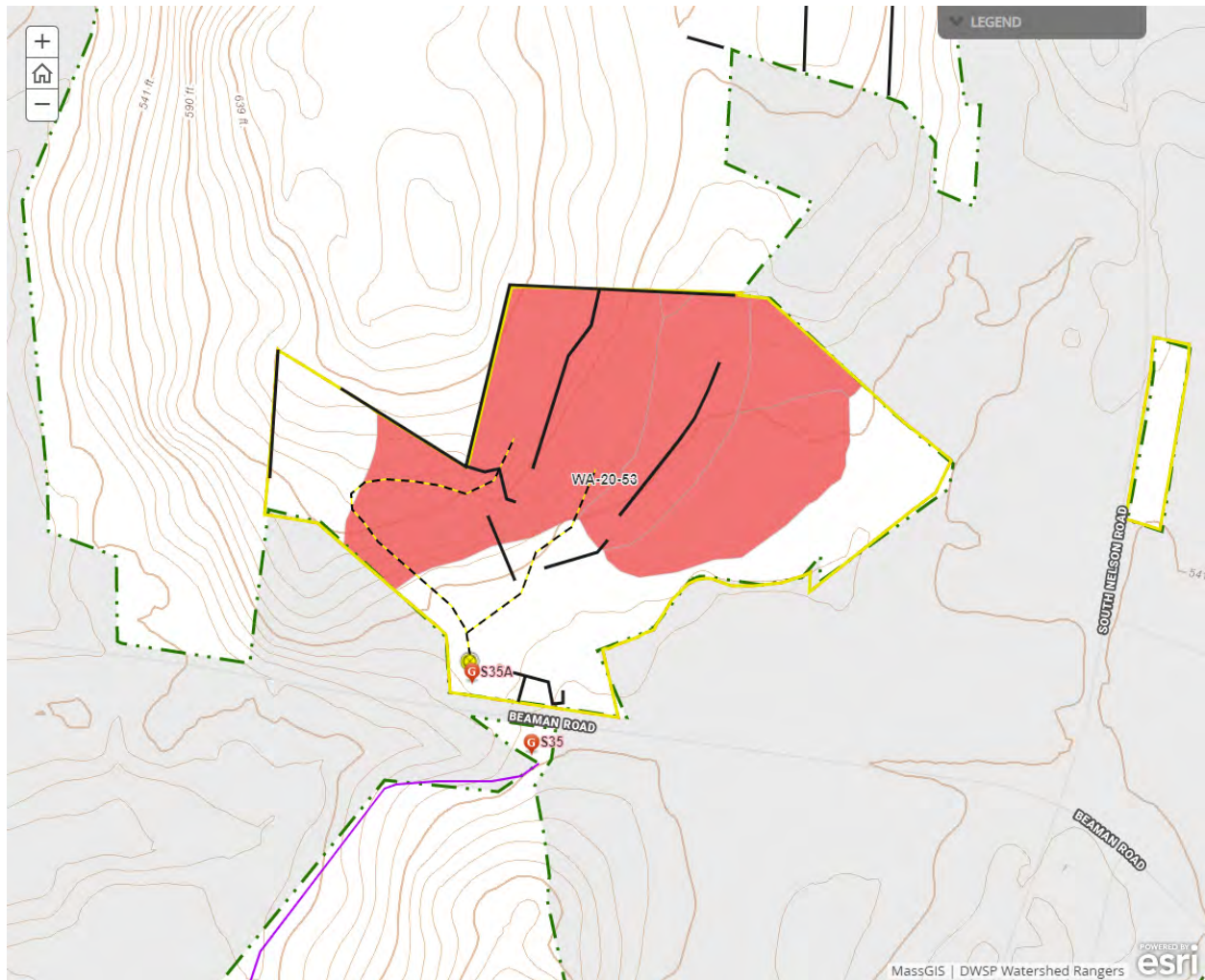
With advance regeneration present and a desire to protect as much of it as possible during the harvest, a cut-to-length harvesting system will be employed.



Cultural Resources

Comments on Cultural Resources:

No known or significant historic or archaeological resources in the proposal site. Stone walls will be flagged and avoided as much as possible. Existing barways will be used where feasible and harvest layout will protect walls as much as possible. If applicable DWSP will follow any additional recommendations from DCR's Archeologist regarding protection of sensitive sites.



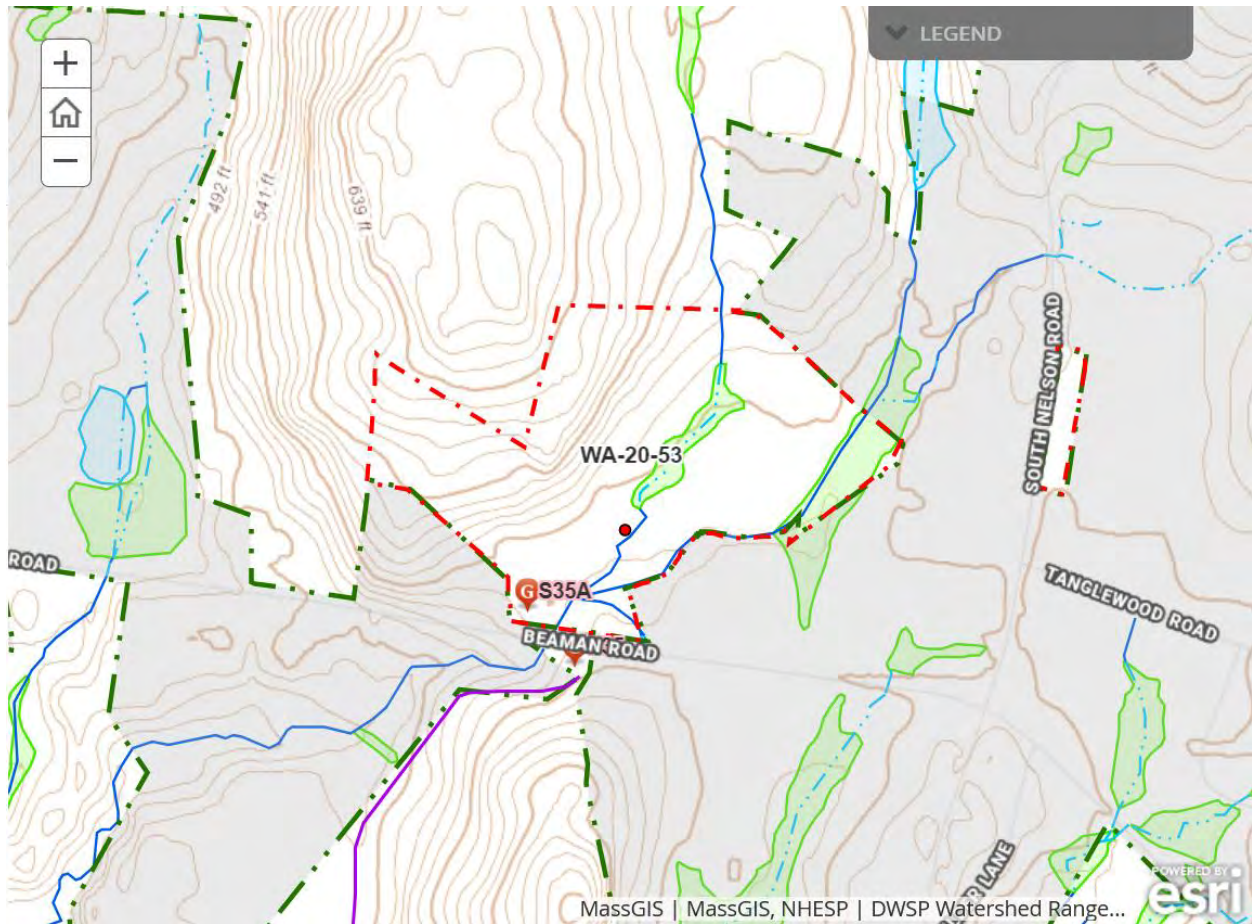
Wildlife Resources & Rare and Endangered Species

General Wildlife Comments:

Beaver have flooded a small section of woods on the east side of the working unit. The bouldered slope has been used by turkey vultures for nesting. This operation may provide an opportunity to remove a band of trees and connect nearly adjacent field habitats on two formerly separately owned parcels that are now owned by DWSP.

Comments on Rare Species/Habitats:

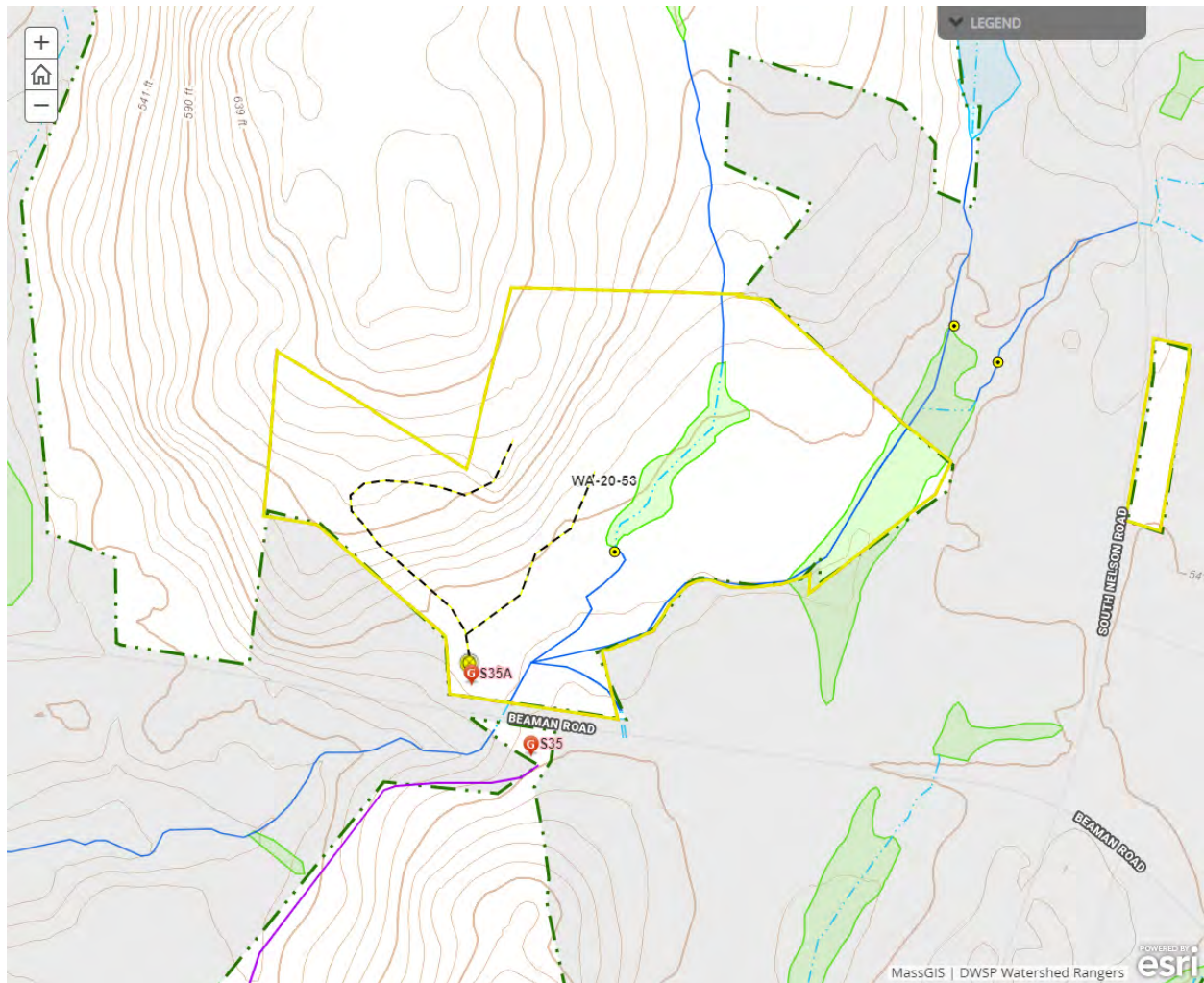
No NHESP mapped priority habitats. There is one verified vernal pool east of the road that accesses the field.



Environmental Quality Engineering

Comments on EQ Issues:

No stream crossings.



Forest Access Engineering

Gravel needed: No

Landing work needed: Yes

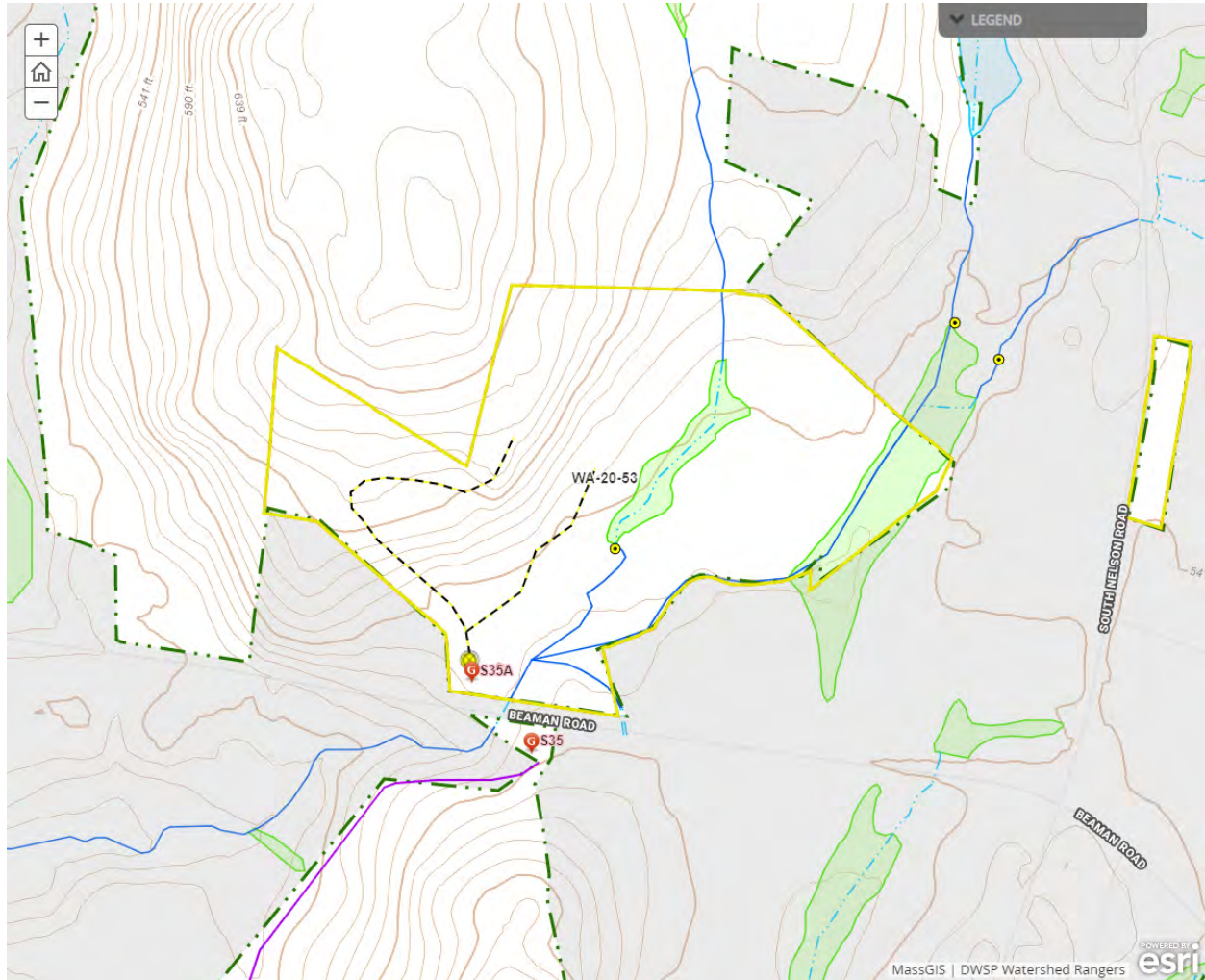
Culverts needed: No

Work needed on permanent bridges: No

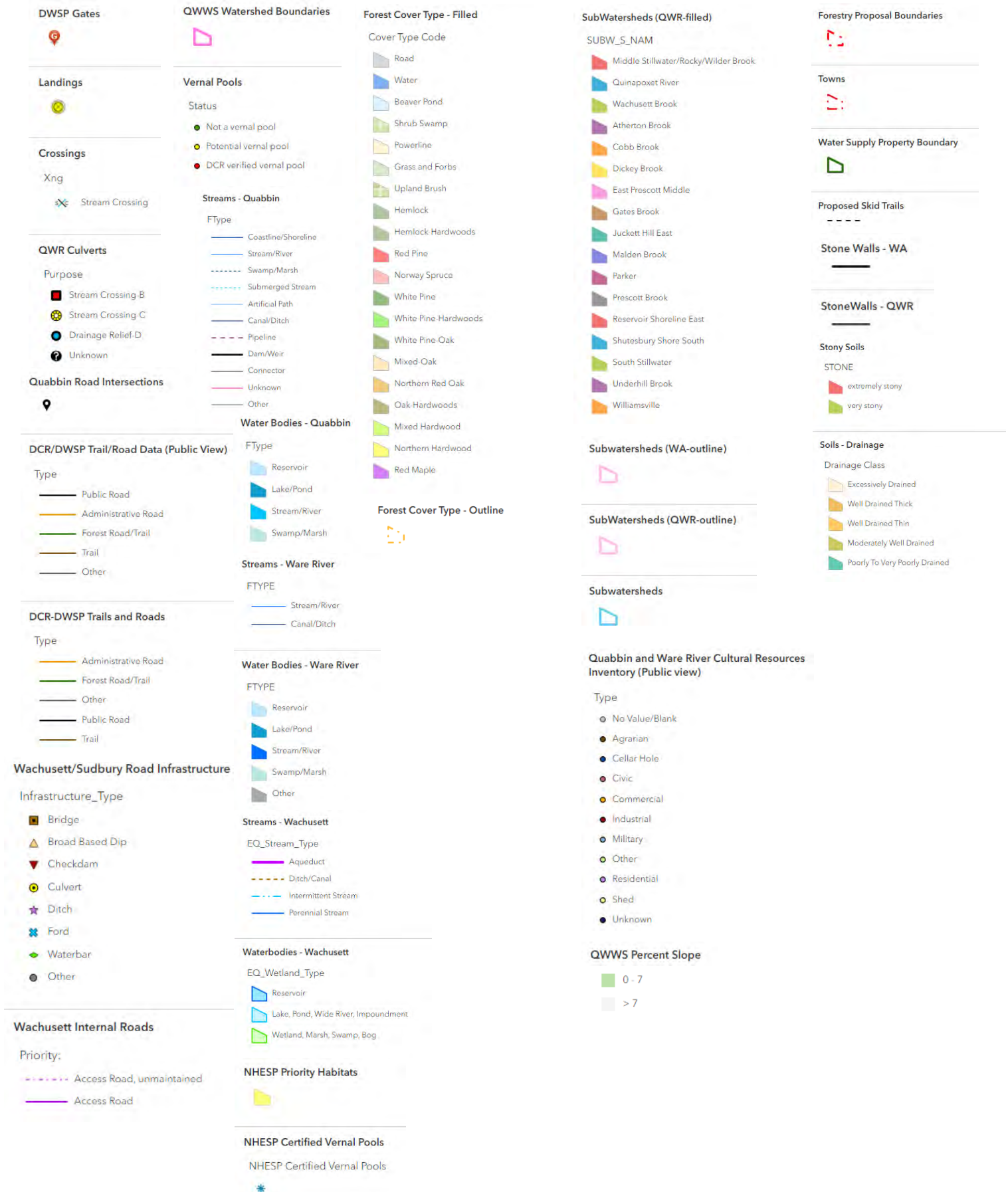
Beaver issue: No

Further comment on access needs:

Access into gate S35A might need some widening for trailers.



DWSP FY 2020 Forestry Proposals – Master Legend for story maps



Wachusett Harvest Proposal WA-20-113

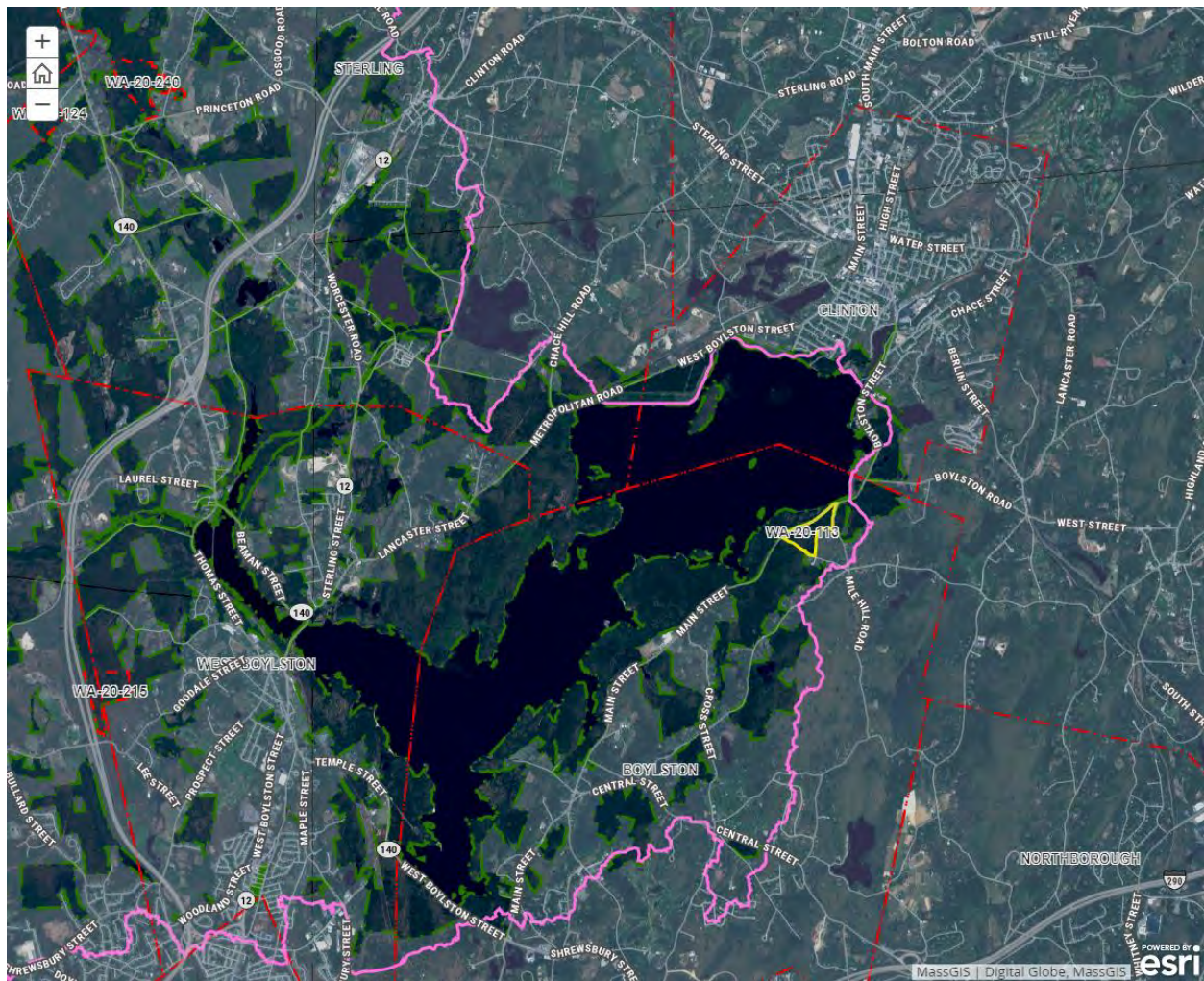
Proposal Goals

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.

Proposal Location

The north side of Working Unit #113 is bound by Route 70, the east side by Mile Hill Road, the southeast side by interior boundary line which has been blazed and tagged, and the southwest side is bound by the old stretch of Duffy Road inside Gate B8.

Total Acres: 43



General Description

	Overstory Type(s)	Acres
Dominant	Oak, mixed - dry site	25
Secondary	White pine	12
Secondary	Mixed hardwoods	6

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

Description of forest composition/condition:

All of this working unit is original watershed property that was taken in 1897 prior to construction of the Wachusett Dam. The portion farthest east, adjacent to Mile Hill Road was planted to white pine in 1920. The section adjacent to that on the west extending just to the east of the Gate B11 road was described as, "Pasture with birch sprouts planted fall 1903 Pines 10x10 with hickory nuts and pulled maple for filler. Thinned Nov.-Dec. 1907.". A block furthest south on the slope near Gate B10 was planted to white pine in 1915. The rest of the area was "Cleared under Contract Prior to 1927" and then planted to white pine in 1928. There is very little pine left in this 1928 area today. It is primarily red oak, white oak and hickory with scattered beech. Some of the red oak are quite large. Given that these oaks age to about 1915, what appears to have happened is that the trees that were "Cleared under Contract" were oaks that resprouted following the clearing and overwhelmed the planted white pines.

An MDC harvest took place in 1993, intended to encourage the establishment of regeneration. The understory today is primarily witchhazel with red maple and black birch saplings with much less oak regeneration. Evidence of a high deer population can be seen in the large numbers of maple-leaved viburnum, all of which are less than knee high. On the plus side, the viburnum is still there, evidence that deer numbers haven't been so high for long enough to have killed it all off.

The area in the south that was planted to pine in 1915 is still dominated by white pine along with black oak and red oak in the overstory. The understory is also primarily red maple and black birch saplings along with much shorter white pines. Being higher and drier than the area to the north, there is very little witchhazel.

The area east of the Gate B11 road is primarily white pine in the overstory along with black oak and red oak with white pine and witchhazel in the undestory.

A harvest in 1999 removed the 100' wide strip of white pine along Rt. 70 that was planted following the hurricane of 1938 and a block of pine just inside Gate B11. These areas are very

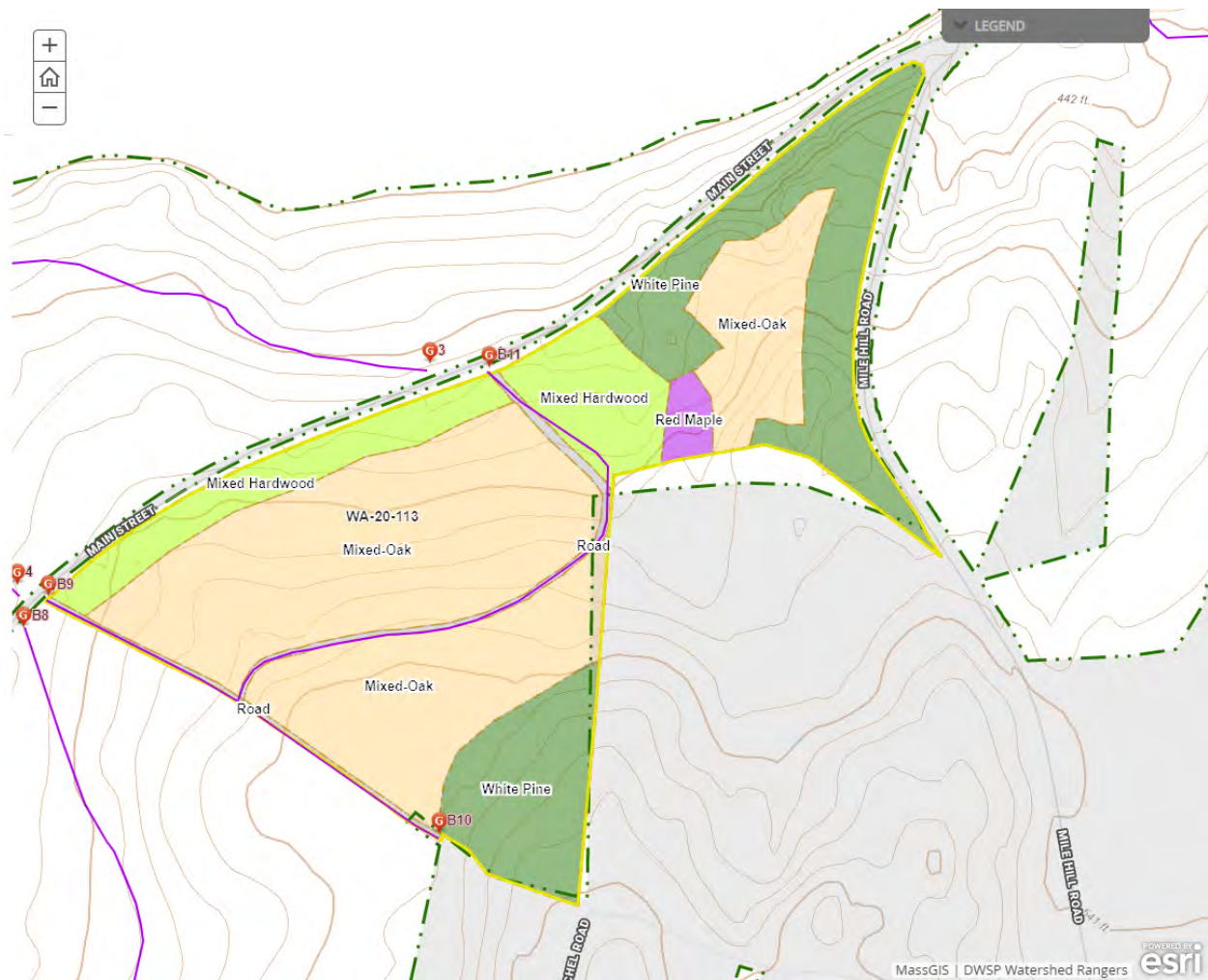
well regenerated to a dense and diverse mix of hardwood species...a happy result of a presumably lower deer population at the time.

The age structure of Working Unit #113 is as follows: 14%, 0-20 years old, 0% 21-80 years, 26%, 81-100 years and 60% > 100 years old.

Assessment of Terrestrial Invasive Species:

Sampling found invasive species present in 2 of the 94 plots taken. One of them had just a trace amount of buckthorn while the other had 51-75% coverage of Japanese knotweed. This plot is located in the far northern tip of this working unit at the very edge of the woods along Rt. 70 near the intersection with Mile Hill Road, and will likely not receive any disturbance from harvesting.

There was significant defoliation by the gypsy moth in 2018 and given the number of egg masses present, defoliation is expected to be significant in 2019 as well.

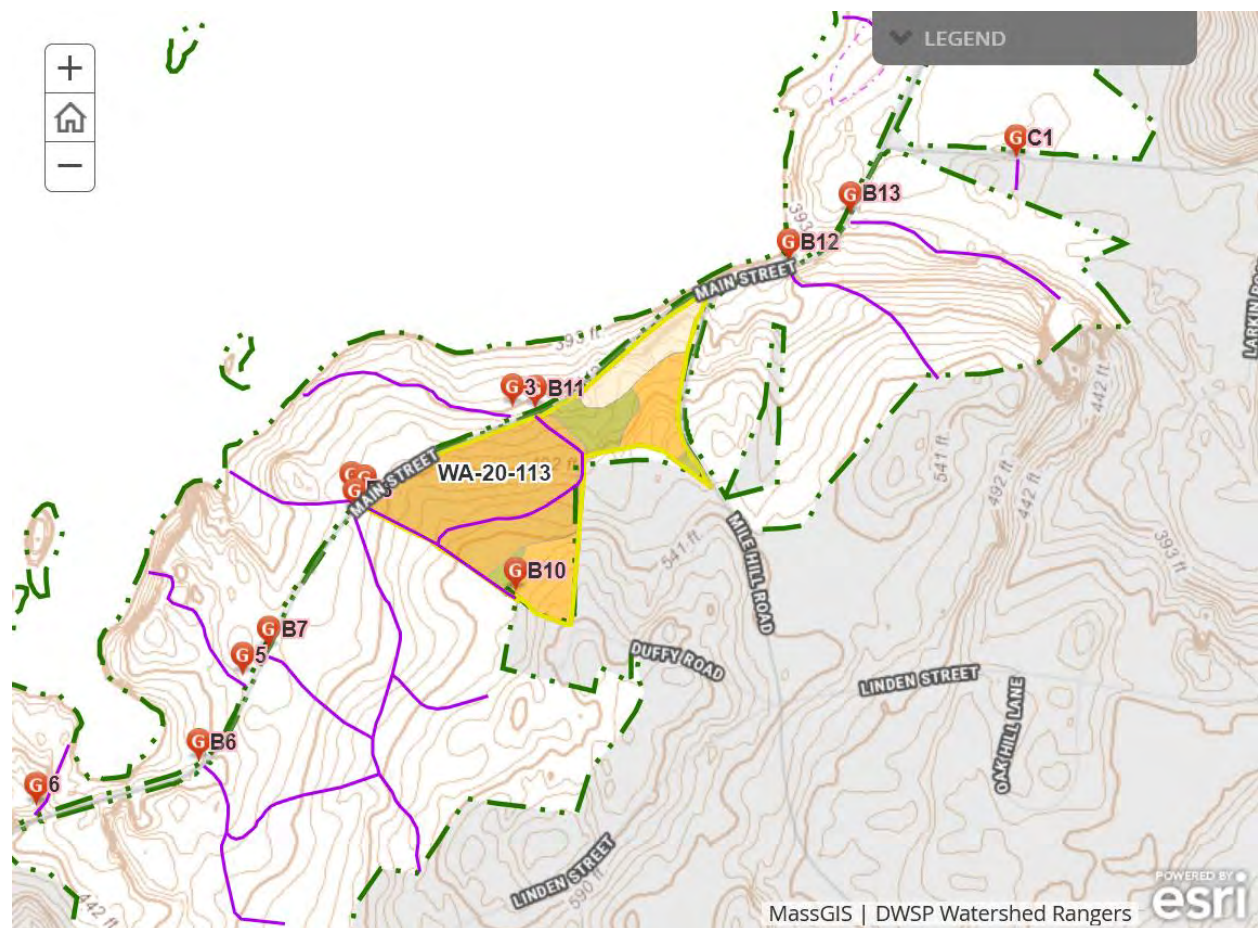


Soils

Drainage Class	%
Excessively Drained	12
Well Drained Thin	23
Well Drained Thick	54

Moderately Well Drained	11
Poorly to Very Poorly Drained	0

The well drained thick soil is the Paxton till and the thin soil is the Chatfield-Hollis-Rock outcrop complex.

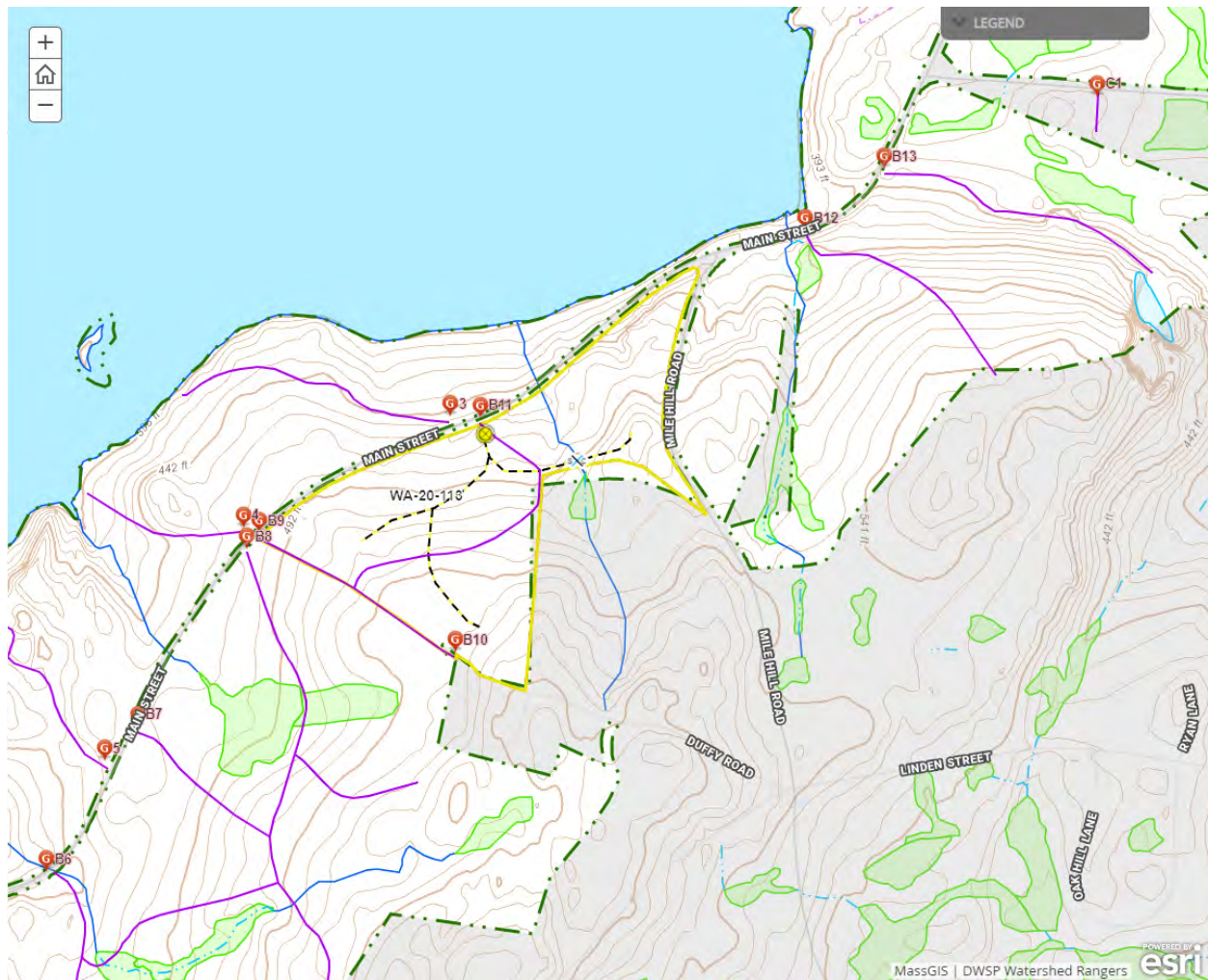


Wetlands

- Wetlands present? - **No**
- Streams present? - **Yes**
- Vernal pools present? - **None known**
- Seeps present? - **None known**
- 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 small stream to the east of the Gate B11 road will be crossed in the same location as Lot #103 in 1993 where the stream crosses the old fire break just inside the property boundary.



Silviculture

Acres in Intermediate cuts: **15**

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:

Regeneration sampling found adequate regeneration present in 59% of the plots with marginal regeneration in another 27% of the plots. Oak was present in 30% of the plots. The advance regeneration is comprised of red maple, black birch, white pine, red oak, hickory and beech.

General comments on silviculture proposed:

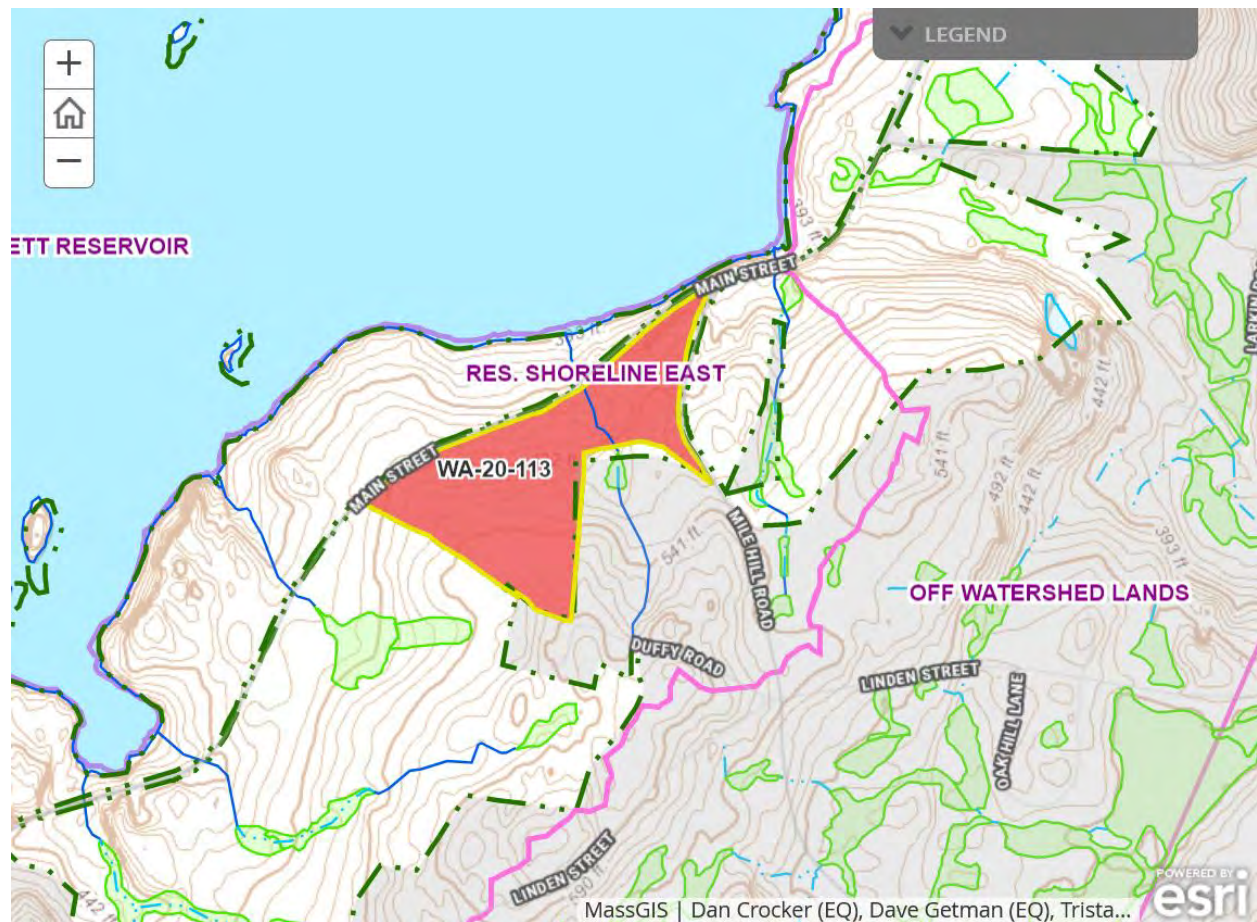
With adequate advance regeneration present throughout this working unit, openings will be made on up to 14.5 acres thereby achieving the goal of creating a new age class on 1/3rd of this area. This will be accomplished by the removal of the overstory in patches that average about 1 acre with a maximum size of about 2 acres. These will be well distributed throughout the proposed area taking advantage of where the advance regeneration is best. Following this cut, this working unit will have an approximate age structure as follows: 33%, 0-20 years old, 14%, 21-40 years, 0%, 41-100 years, 53%, >100 years old. Some partial cutting may occur between the openings on up to 1/3rd of the area focusing on the removal of trees of the poorest quality while maintaining species diversity.



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
3 (Reservoir Shoreline - East)	1164	109	182	43

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



Harvesting Limitations

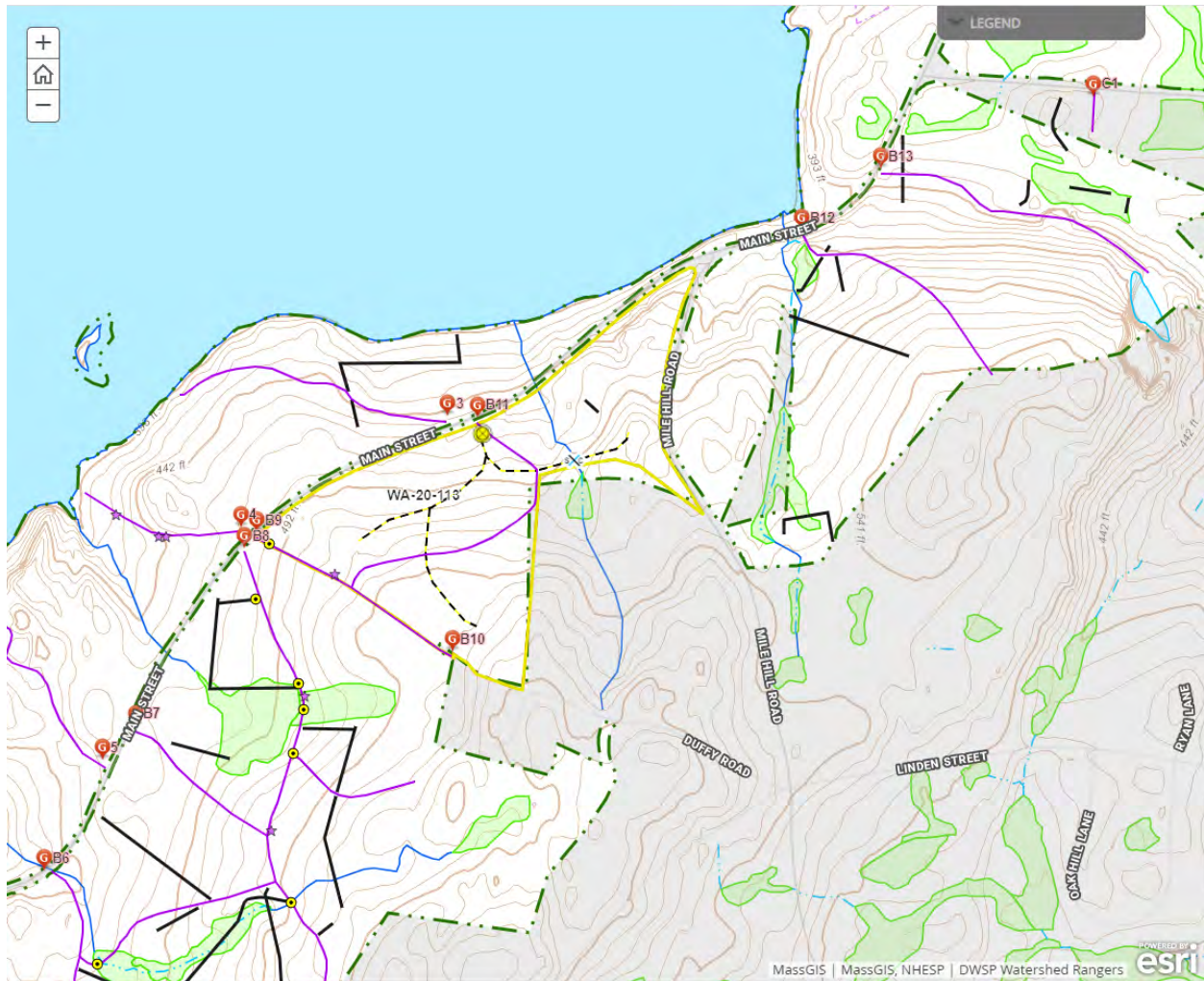
Forwarder required: **Yes**

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.



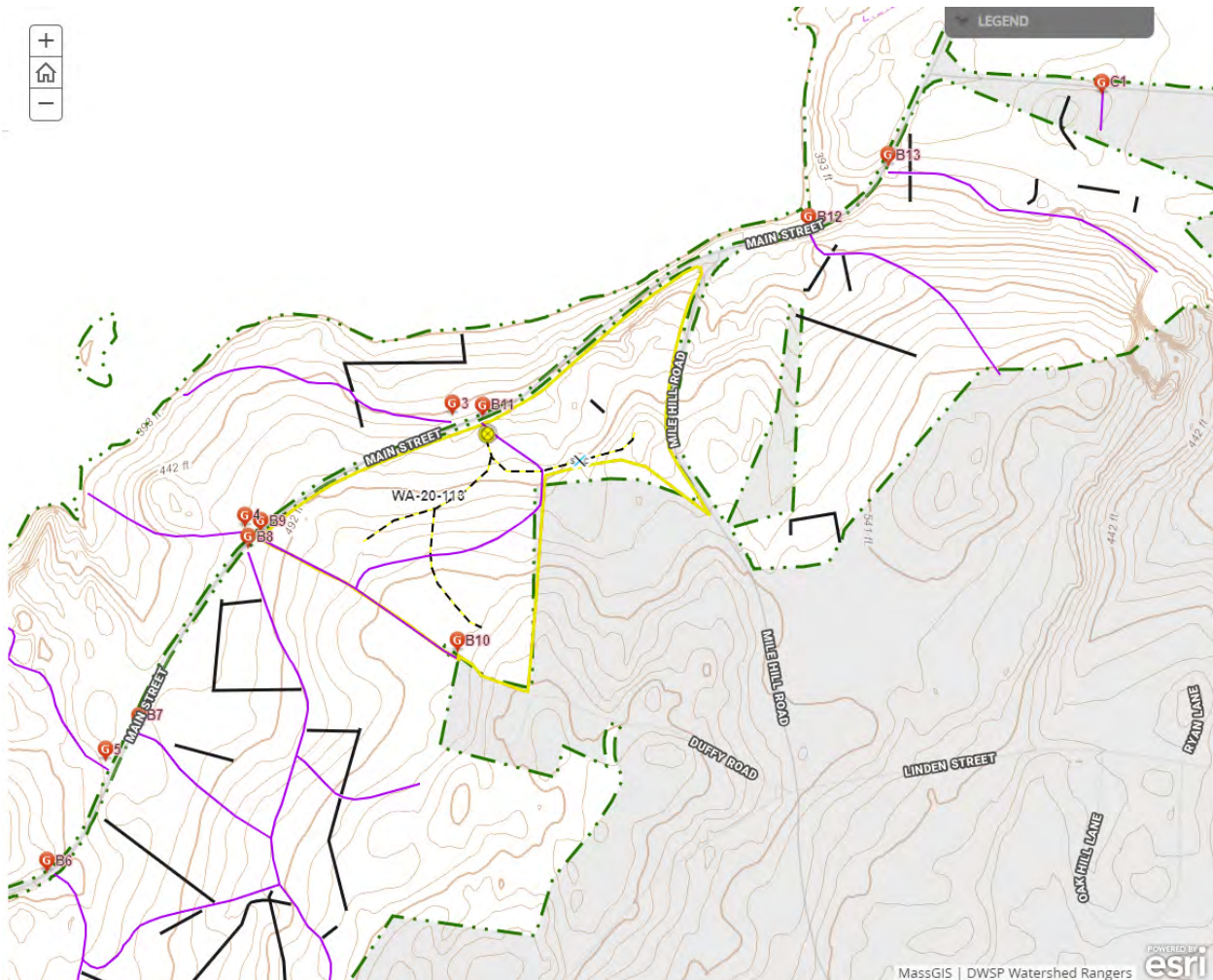
Cultural Resources

Comments on Cultural Resources:

This area has been assessed by the DCR Archaeologist for both known sites of cultural or archaeological importance as well as for potential use by pre-Contact Native Americans.

This area was owned by Henry C. Hastings prior to reservoir construction. His home was just north of the old Boston & Maine Railroad, all of which is now under water. There's an old, small cellar hole in the eastern part of the area not far from Mile Hill Road and very near the property boundary line. There's no indication of the cellar hole on the old M.D.C. land survey taking plans...perhaps the building was long gone by the time of Henry Hastings.

Stone walls will be avoided as much as possible. Existing barways will be used where feasible and harvest layout will protect walls as much as possible. DWSP will follow any additional recommendations from DCR's Archaeologist regarding protection of sensitive or potentially sensitive sites.



Wildlife Resources & Rare and Endangered Species

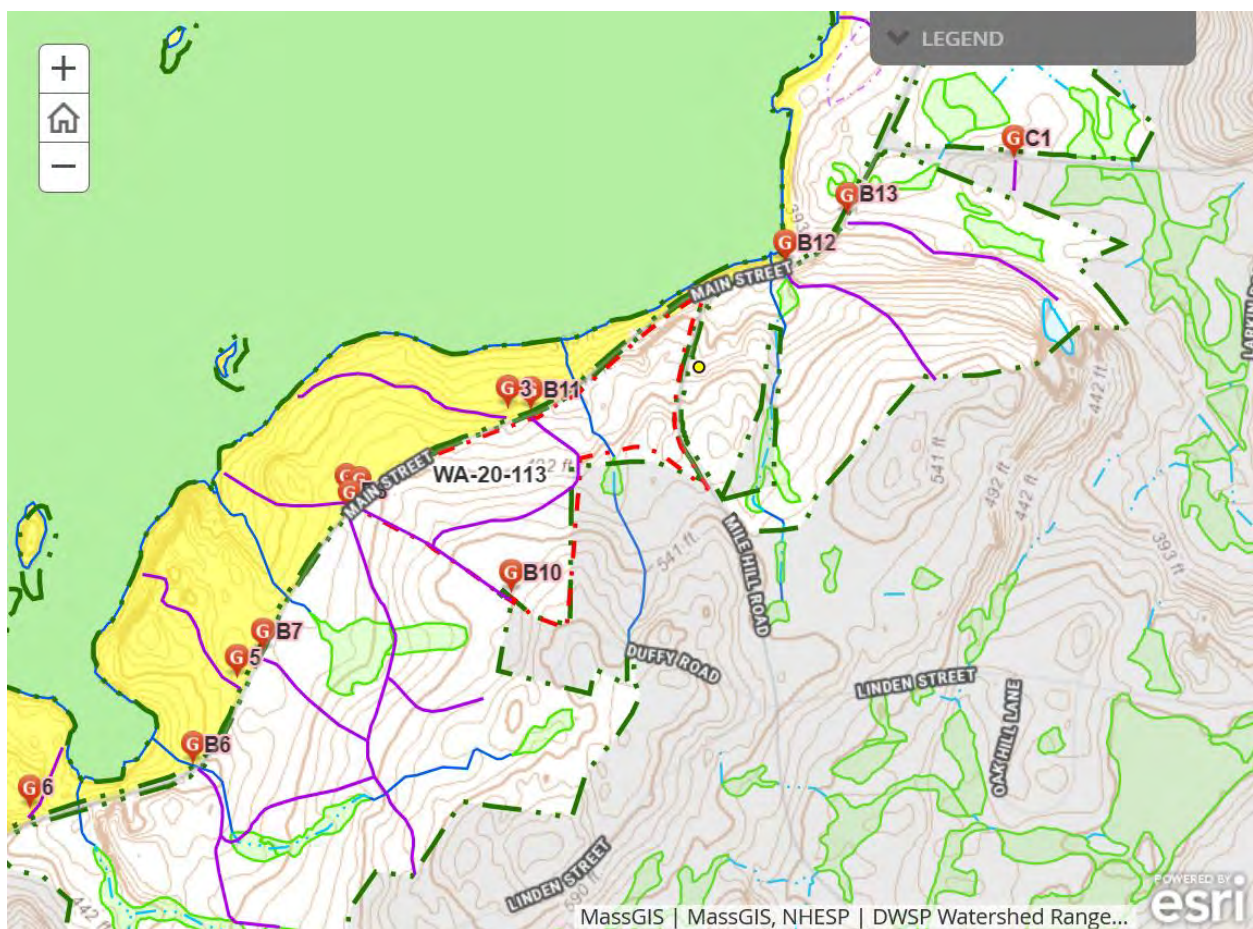
General Wildlife Comments:

The very short maple-leaved viburnum is evidence of a high deer population although the fact that the viburnum is still present suggests that the population has not been too high for an extended period of time. Hopefully the newly expanded deer hunt will address this issue.

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:

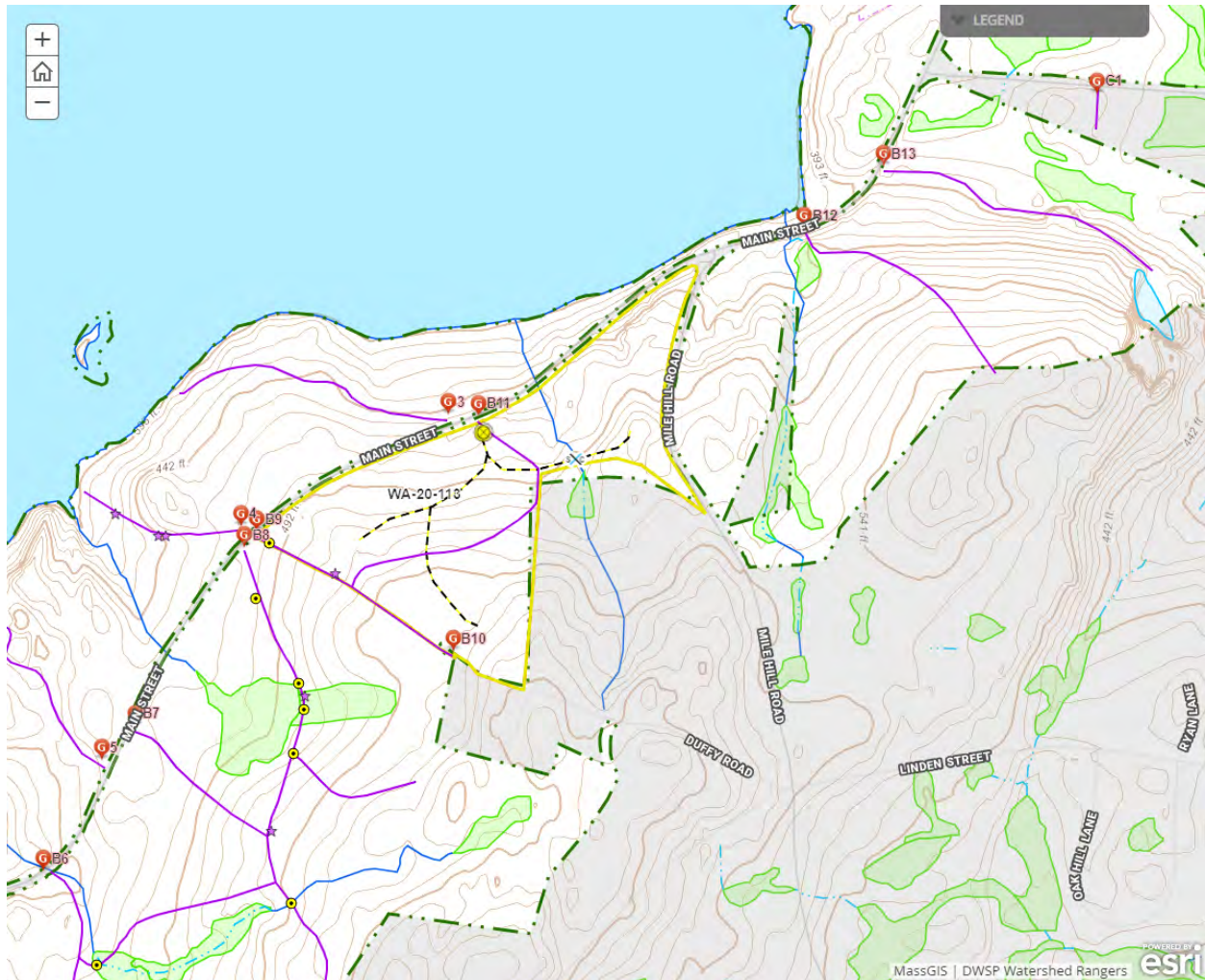
None known.



Environmental Quality Engineering

Comments on EQ Issues:

The small stream to the east of the Gate B11 road will be crossed in the same location of a previous crossing in 1993 where the stream crosses an old fire break. 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

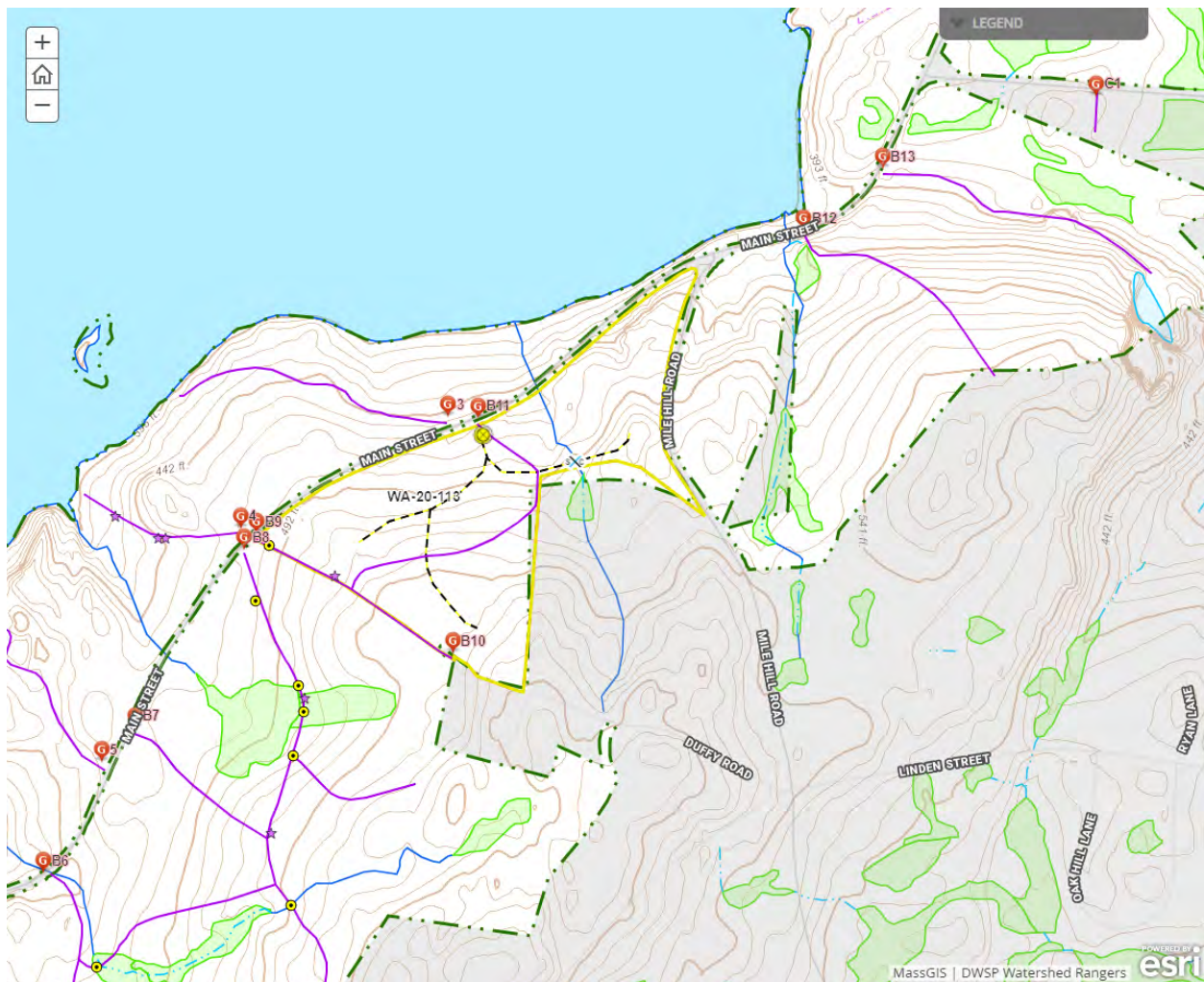
Culverts needed: No

Work needed on permanent bridges: No

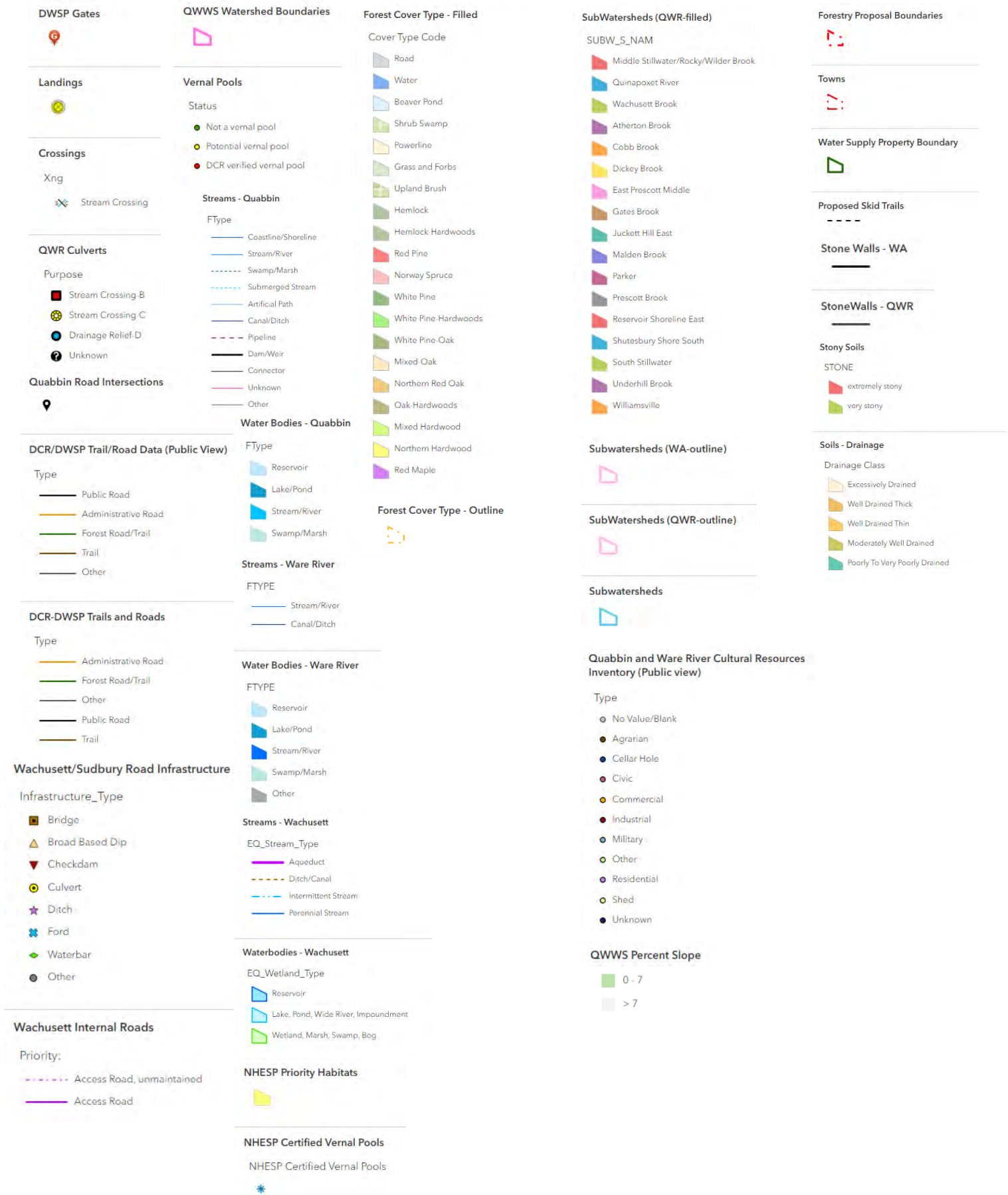
Beaver issue: No

Further comment on access needs:

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



DWSP FY 2020 Forestry Proposals – Master Legend for story maps



Wachusett Harvest Proposal WA-20-124

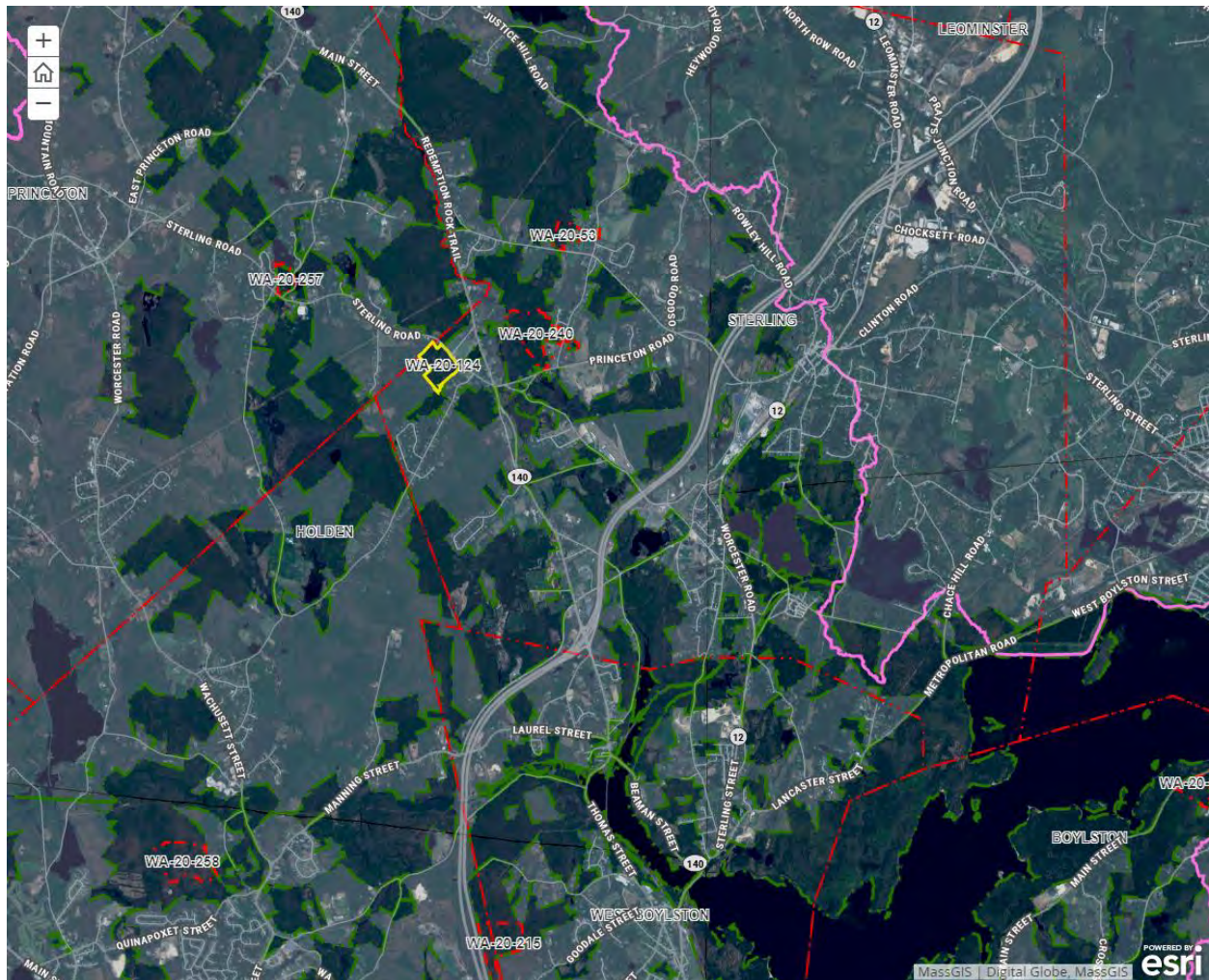
Proposal Goals

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.

Proposal Location

The east side is bound by Route 62, the north and west sides are bound by private property, the boundaries of which have been blazed and tagged. The south side is bounded by Ball Brook.

Total Acres: 41



General Description

	Overstory Type(s)	Acres
Dominant	White pine/oak	15
Secondary	Northern Red oak	13

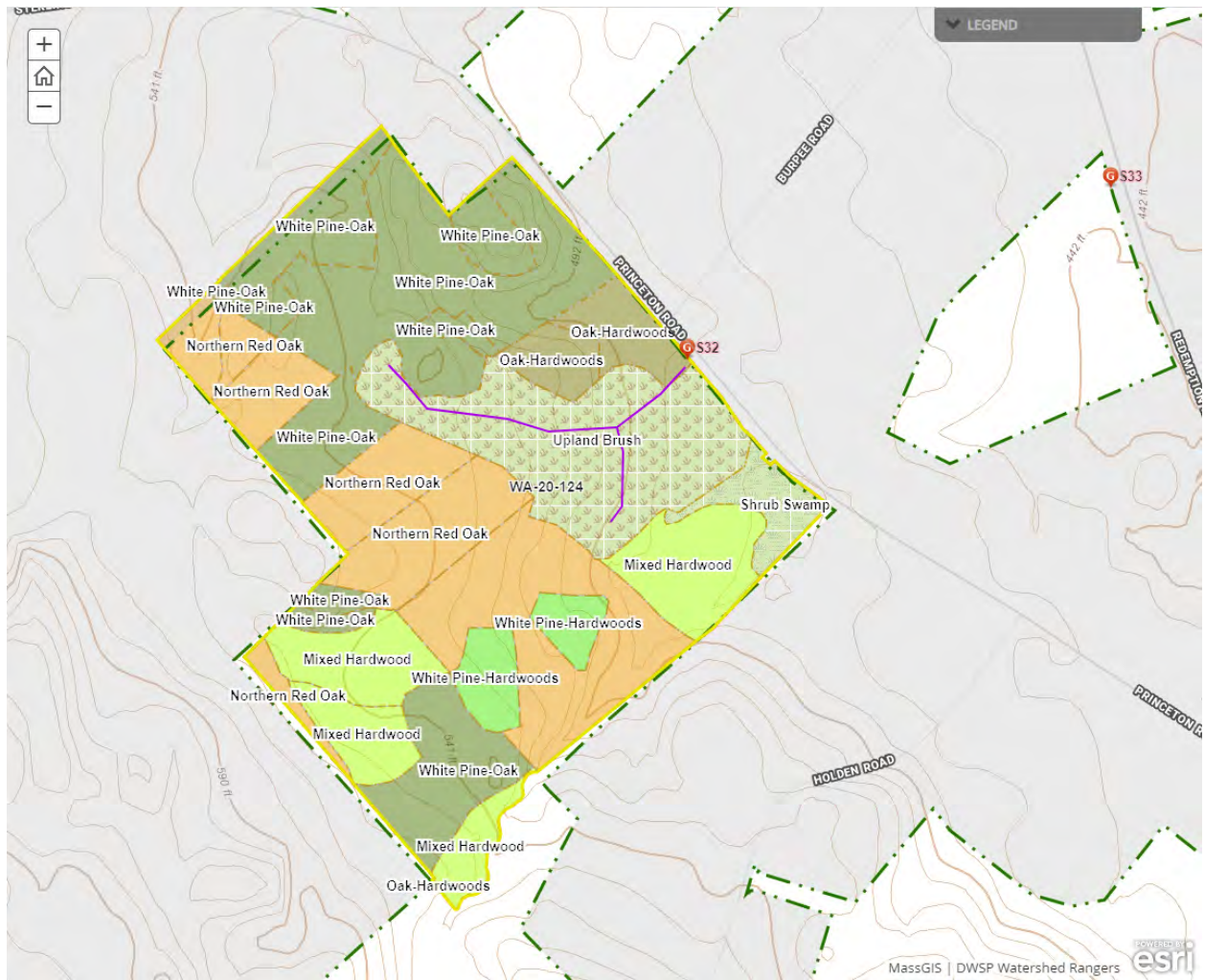
	Understory Type(s)
Dominant	Tree seedlings/saplings dominate site
Secondary	Mountain laurel prevalent

Description of forest composition/condition:

A forest management operation was performed in most of this area in 2006. At that time, the understory in the red oak stand was primarily mountain laurel with very few young trees. Fortunately the mountain laurel was not exceedingly thick at that time. There was less mountain laurel and more young trees in the white pine-oak stand. For this reason, 5 openings were made in the white pine-oak stand totally 4.7 acres. In the red oak stand, with the goal of encouraging the establishment of advance regeneration, the overstory was heavily cut, removing approximately 50% of the stocking while requiring that the mountain laurel be mechanically damaged as much as possible. This was done in 3 large blocks totalling nearly 5 acres. This was very successful, and today there is excellent numbers and diversity of seedlings and saplings in these 3 blocks. It's clear that not only was there the establishment of new seedlings following the harvest, but that the scattered regeneration that was struggling under the mountain laurel was able to take advantage of the increased light and has now grown above the laurel. The age structure for Working Unit #124 is as follows: 12%, 0-20 years old, 6%, 21-40 years, 9%, 41-60 years, 16%, 61-80 years, 0%, 81-100 years and 57%, >100 years old. The oldest stands originated in about 1910 making them 109 years old.

Assessment of Terrestrial Invasive Species:

Sampling found terrestrial invasive species present in 10 of the 70 plots. All of these plots are in or near the abandoned field inside Gate S32. Oriental bittersweet is the most common species, present in 6 of the plots, along with honeysuckle and multiflora rose.

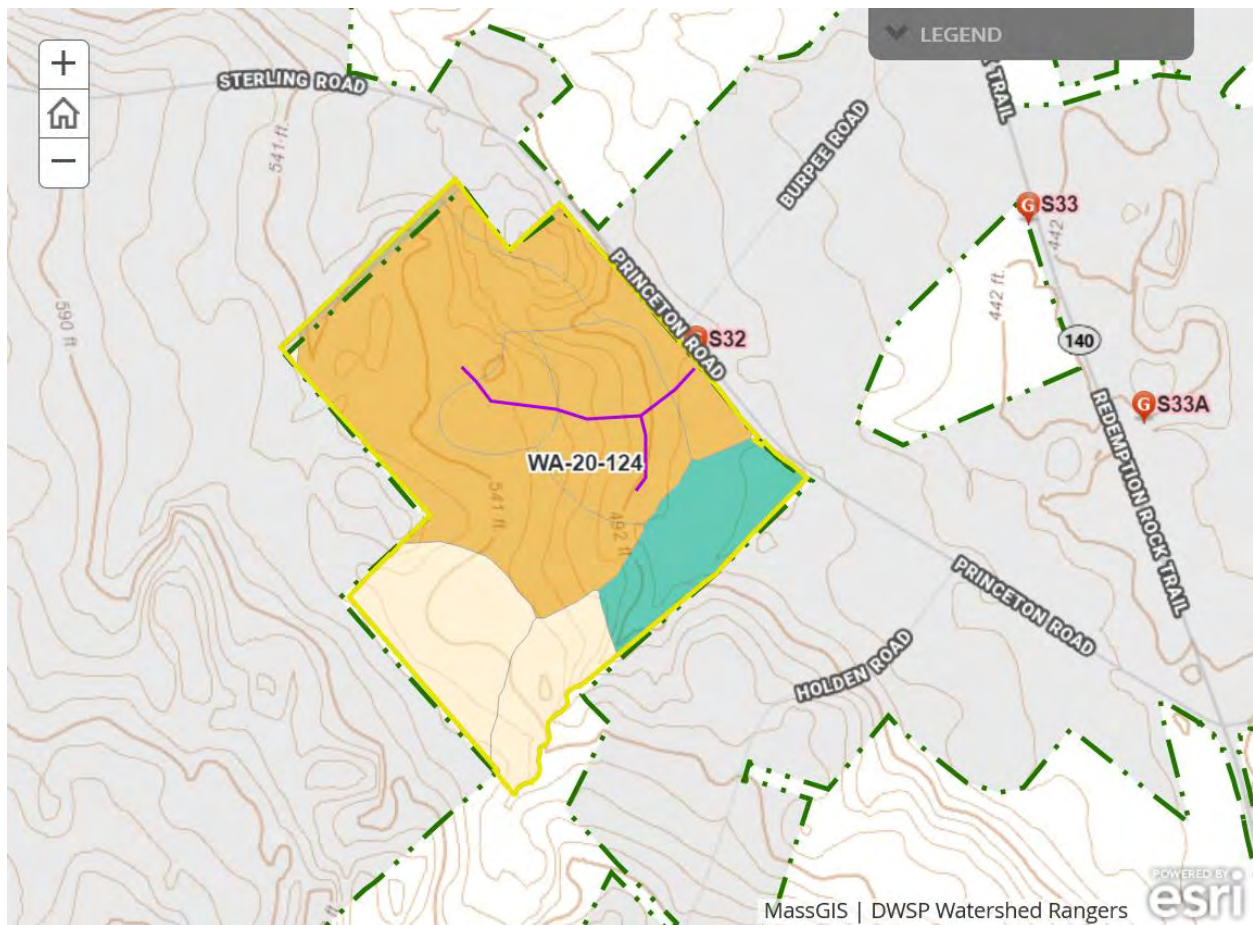


Soils

Drainage Class	%
Excessively Drained	26
Well Drained Thin	0
Well Drained Thick	64

Moderately Well Drained	0
Poorly to Very Poorly Drained	11

The Merrimac and Hinckley loamy sand outwash soils are the excessively drained soils and the well-drained thick soil is the Canton fine sandy loam, a soil of till origin.

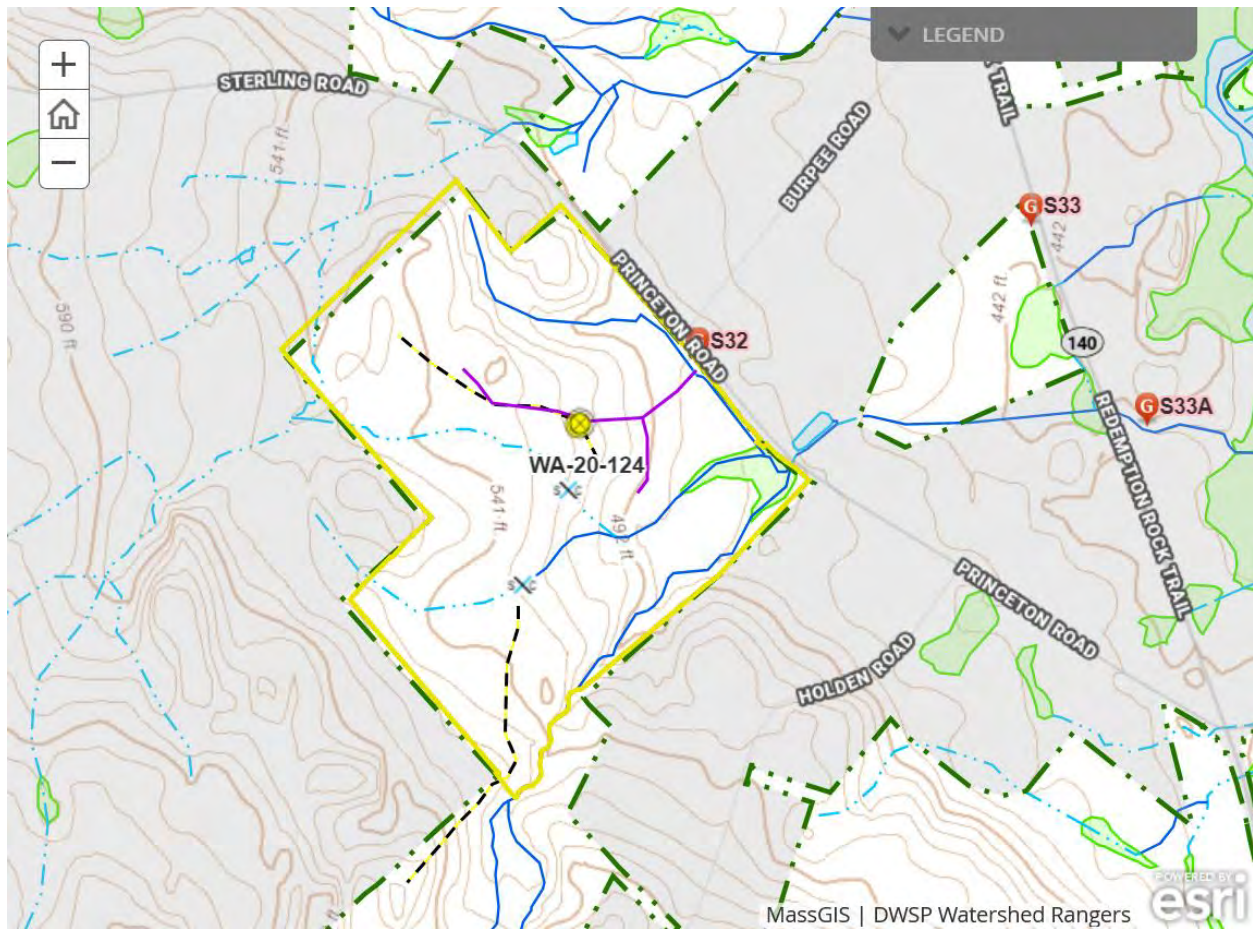


Wetlands

- Wetlands present? - **Yes**
- Streams present? - **Yes**
- Vernal pools present? - **None known**
- Seeps present? - **None known**
- Are stream crossings required? - **Yes**

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

The two small, intermittent tributaries to Ball Brook are crossed at old stone culverts on the interior forest road.



Silviculture

Acres in Intermediate cuts: **10**

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

Acres in Regeneration cuts: **9**

Average regen opening size: **1.5**

Maximum regen opening size: 2

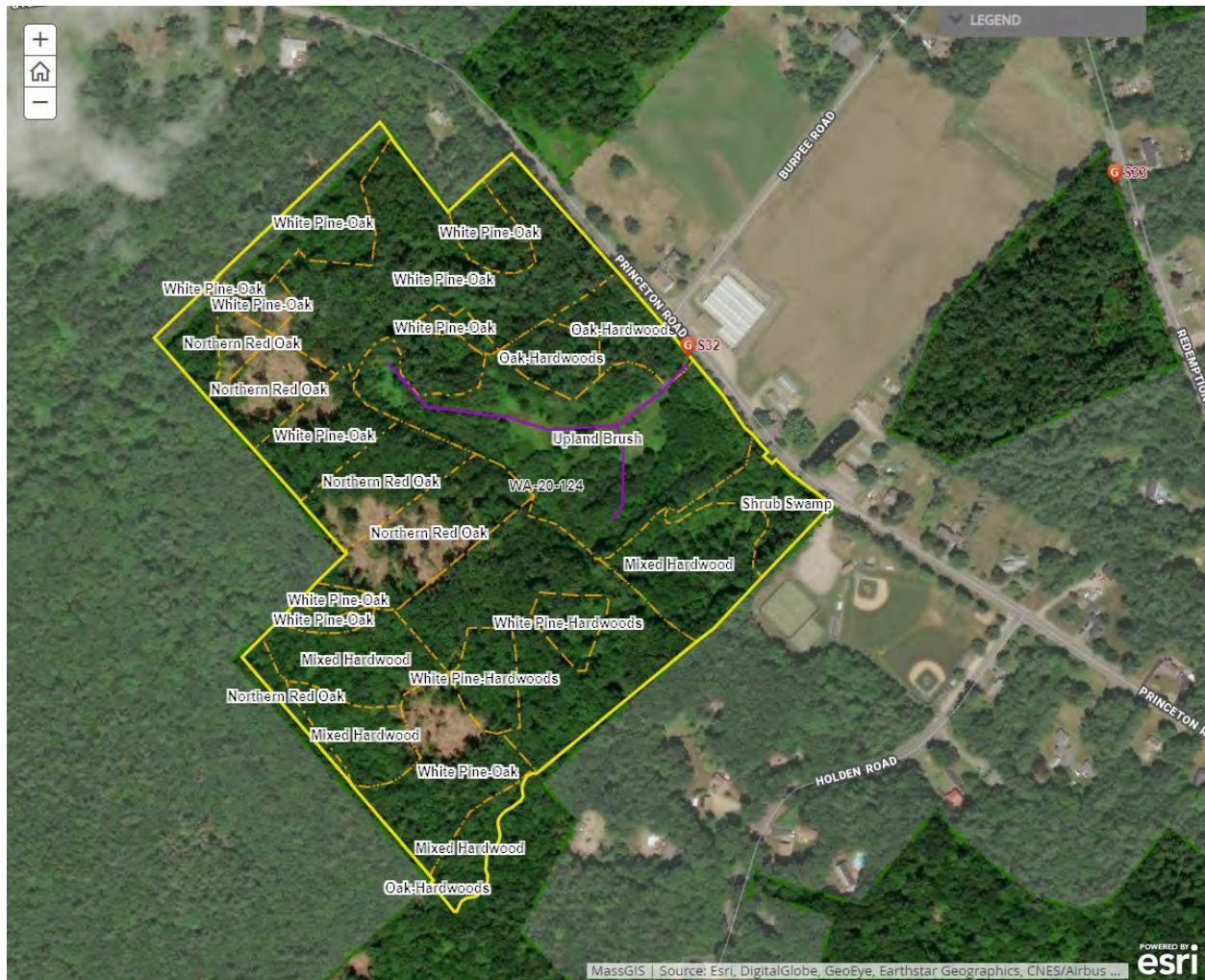
Description of advance regeneration in proposal area:

There is excellent numbers and diversity of seedlings and saplings through much of this area. Sampling found adequate tree regeneration present in 45% of the plots. This regeneration is comprised primarily of white pine, red oak, red maple and black birch along with black cherry. Oak was present in 44% of the plots. Where advance regeneration is lacking it is principally due to interfering levels of mountain laurel. This was the case in 36% of the plots.

General comments on silviculture proposed:

With the goal of forest management being the establishment of a young class on about 1/3rd or 13.5 acres in this working unit, the presence of good advance regeneration, well distributed throughout this area, should make this achievable. With 4.7 acres of young forest created in 2006, this operation will seek to create an additional 8.8 acres. This will come primarily from the 5 acres that were heavily cut in 2006. Given the location and spacing of the overstory removals in 2006 and where adequate advance regeneration is currently present, the remaining newly released young age class will primarily be the result of the expansion of the 2006 patches rather than new openings, surrounded by older forest. For this reason, the typical average opening size of 1 acre will likely be exceeded.

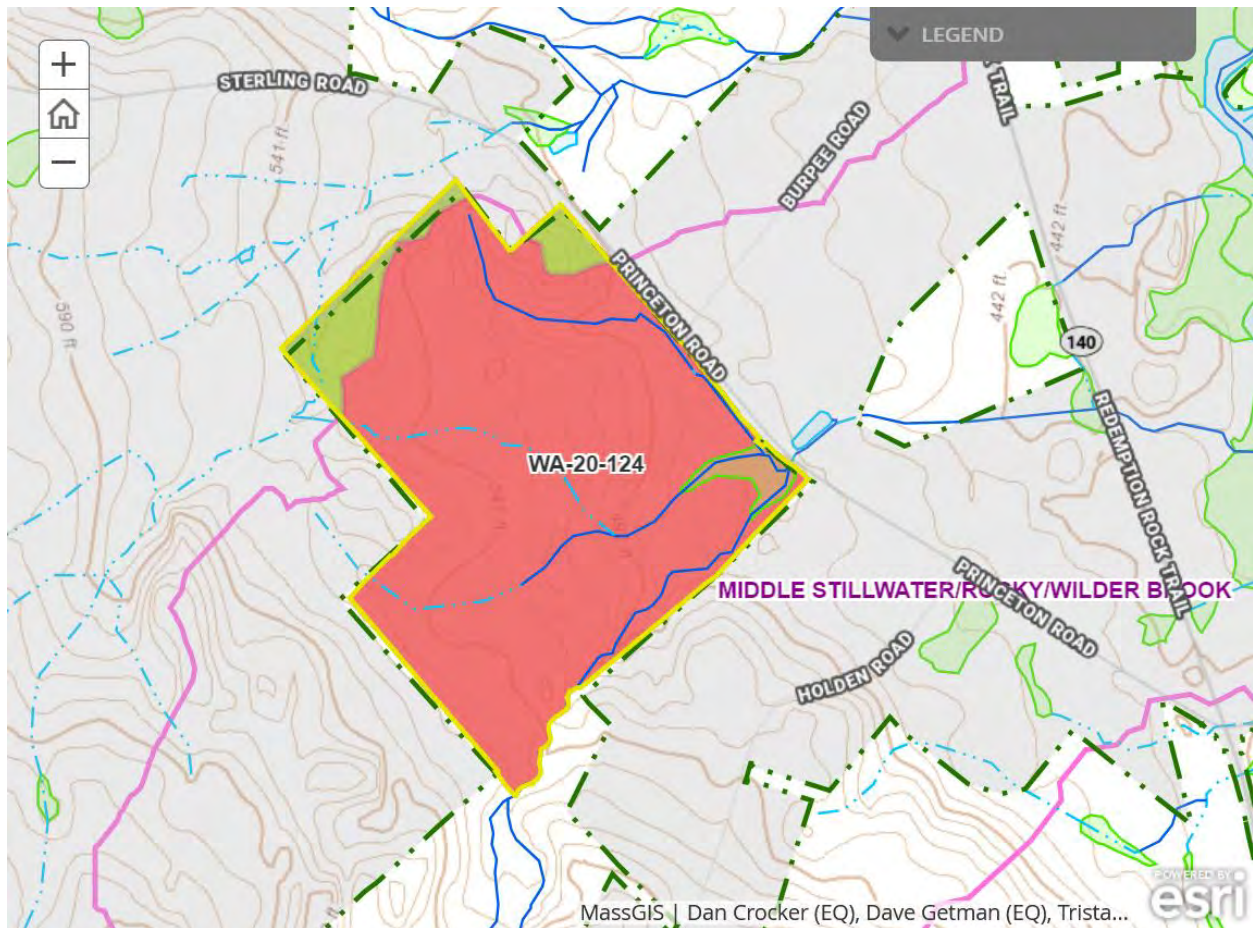
Additional partial cutting of the overstory between the openings may occur on up to 10 acres focusing on removing the trees of poorest vigor while maintaining as much species diversity as possible.



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	99	448	41

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



Harvesting Limitations

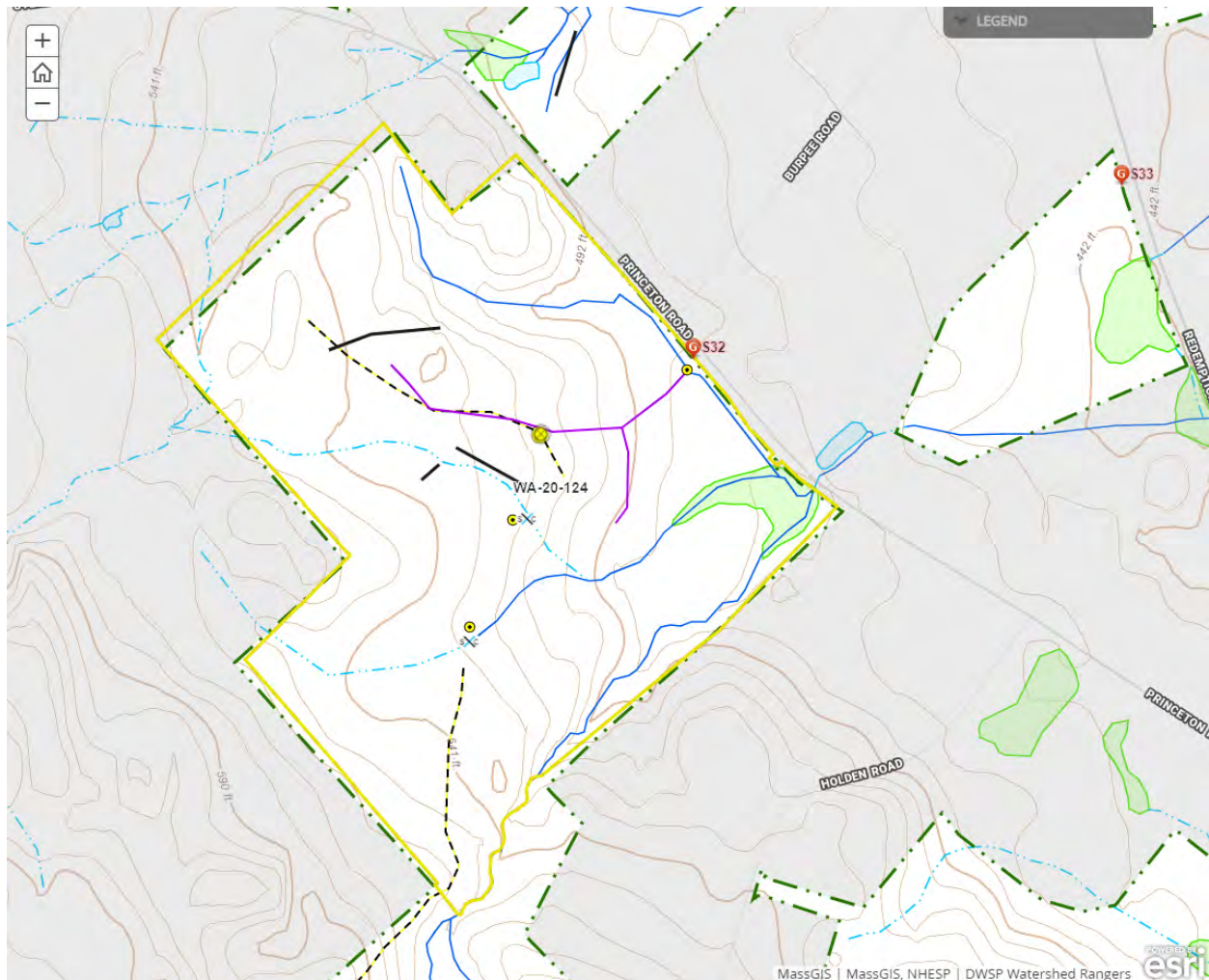
Forwarder required: **Yes**

Feller/processor required: **Yes**

Steep slopes present: **No**

Comments on harvesting limitations:

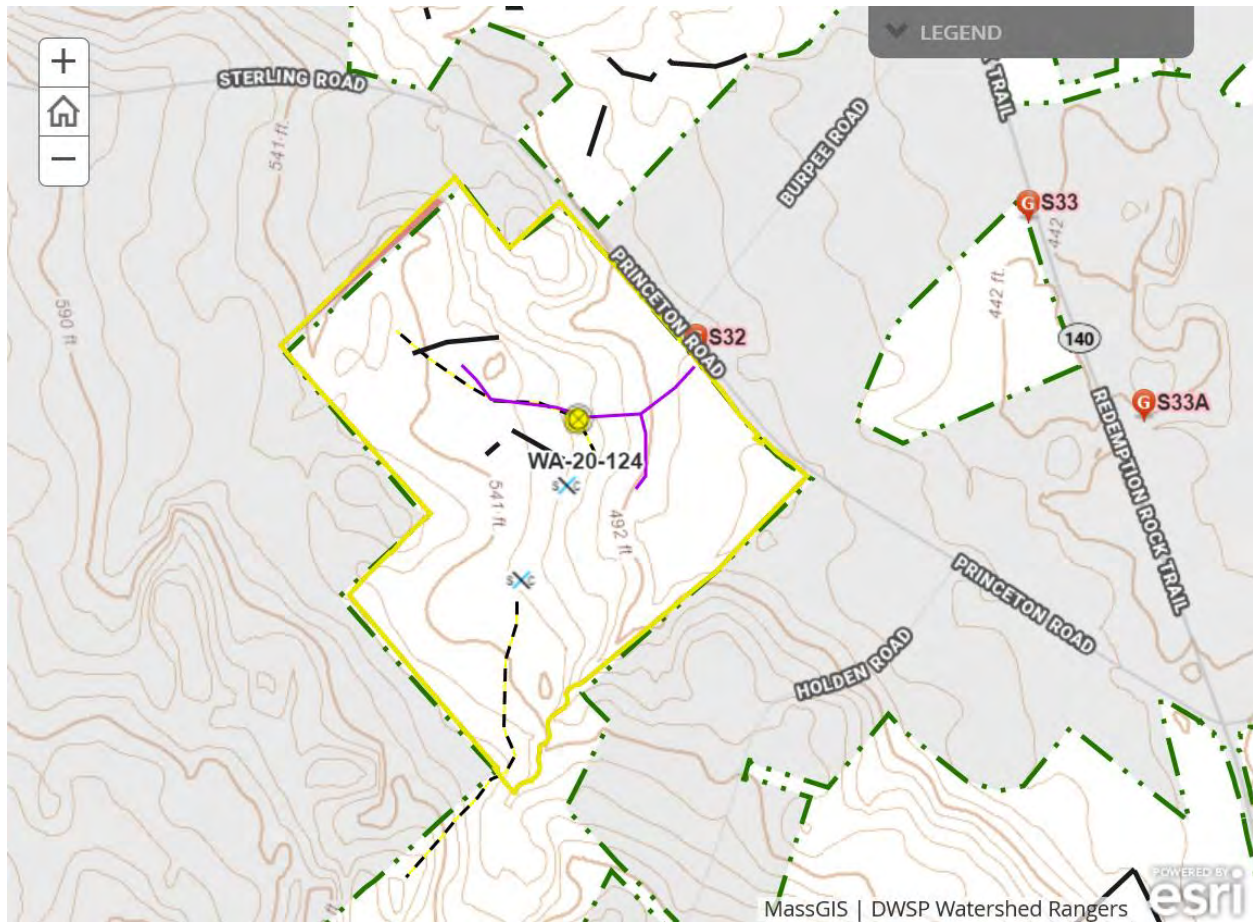
With advance regeneration present and a desire to protect as much of it as possible during the harvest, a cut-to-length harvesting system will be employed.



Cultural Resources

Comments on Cultural Resources:

This area has been assessed by the DCR Archaeologist for both known sites of cultural or archaeological importance as well as for potential use by pre-Contact Native Americans; none are known or documented, though the site is considered potentially sensitive for pre-Contact sites. DWSP will follow any additional recommendations from DCR's Archaeologist regarding protection of sensitive sites.



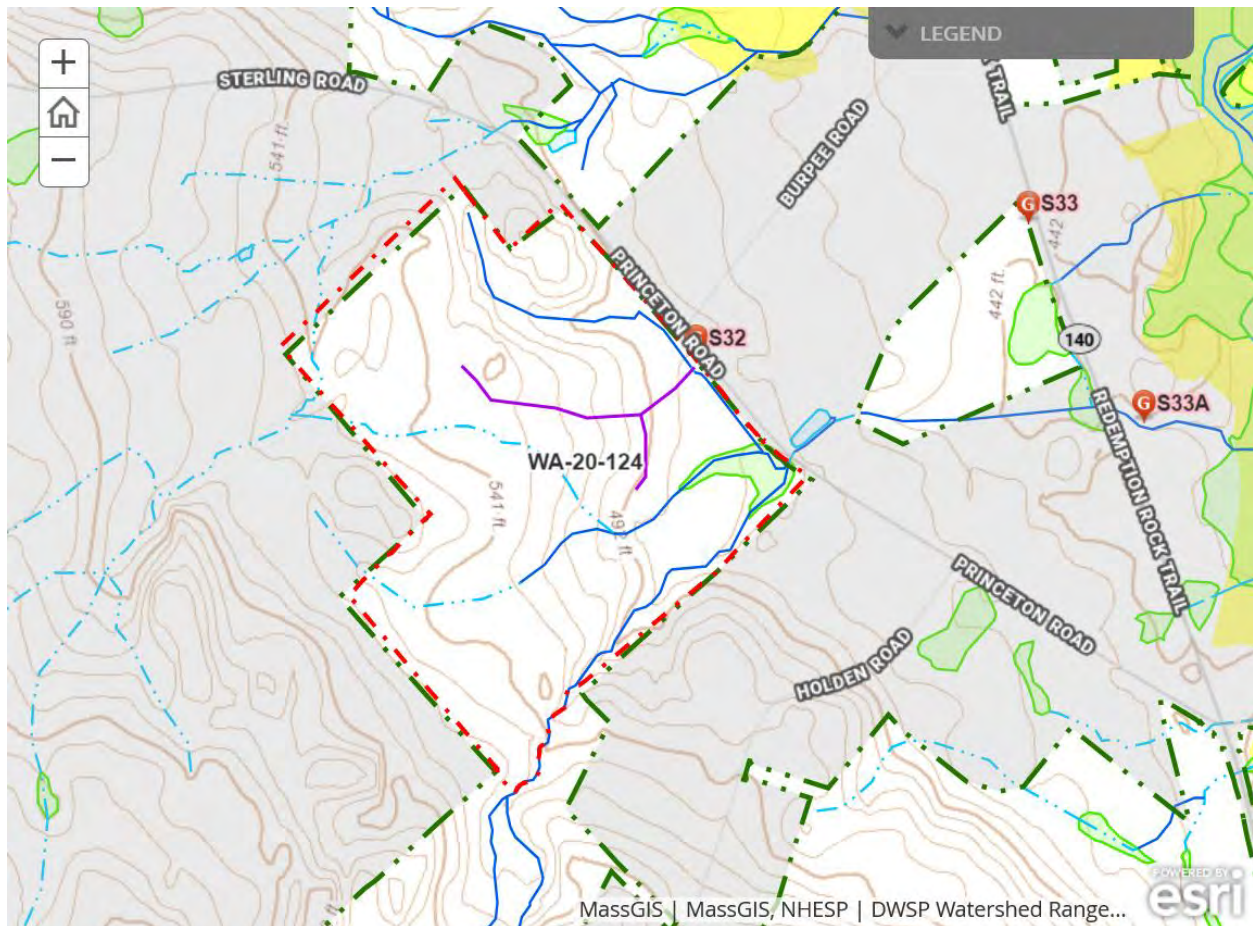
Wildlife Resources & Rare and Endangered Species

General Wildlife Comments:

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:

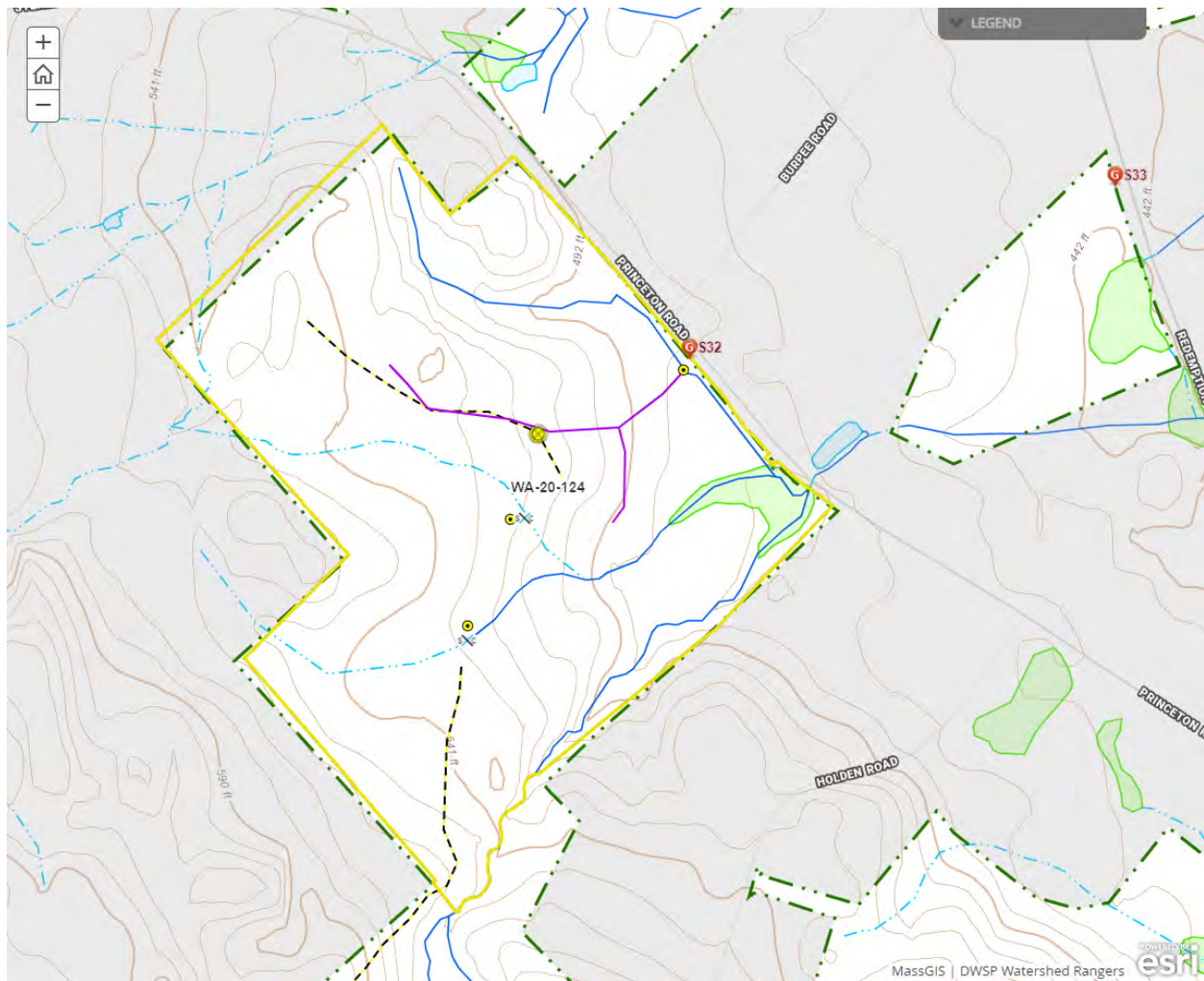
No rare species or habitats known. No vernal pools present.



Environmental Quality Engineering

Comments on EQ Issues:

The two small intermittent streams will be crossed at the old stone culverts on the cart road. 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

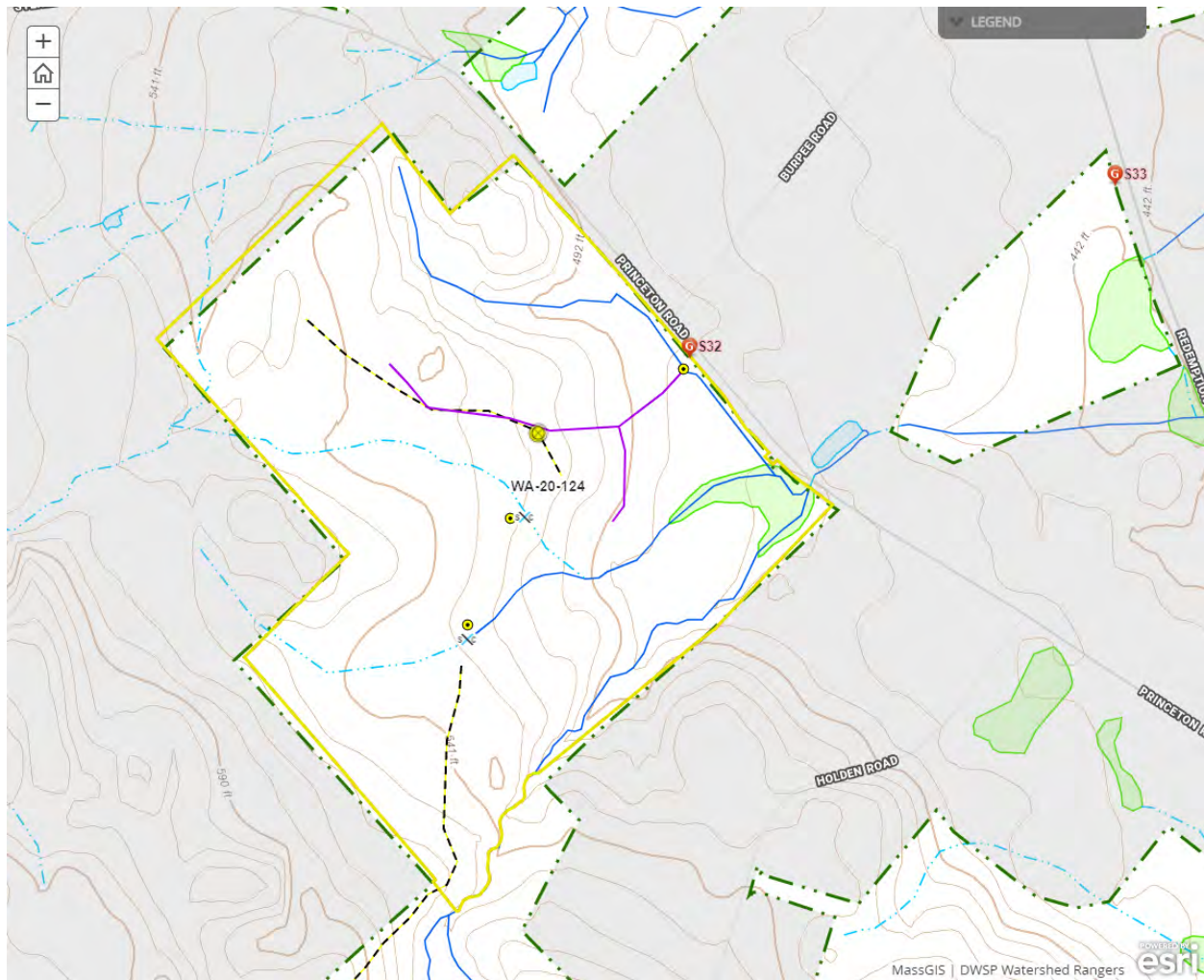
Culverts needed: No

Work needed on permanent bridges: No

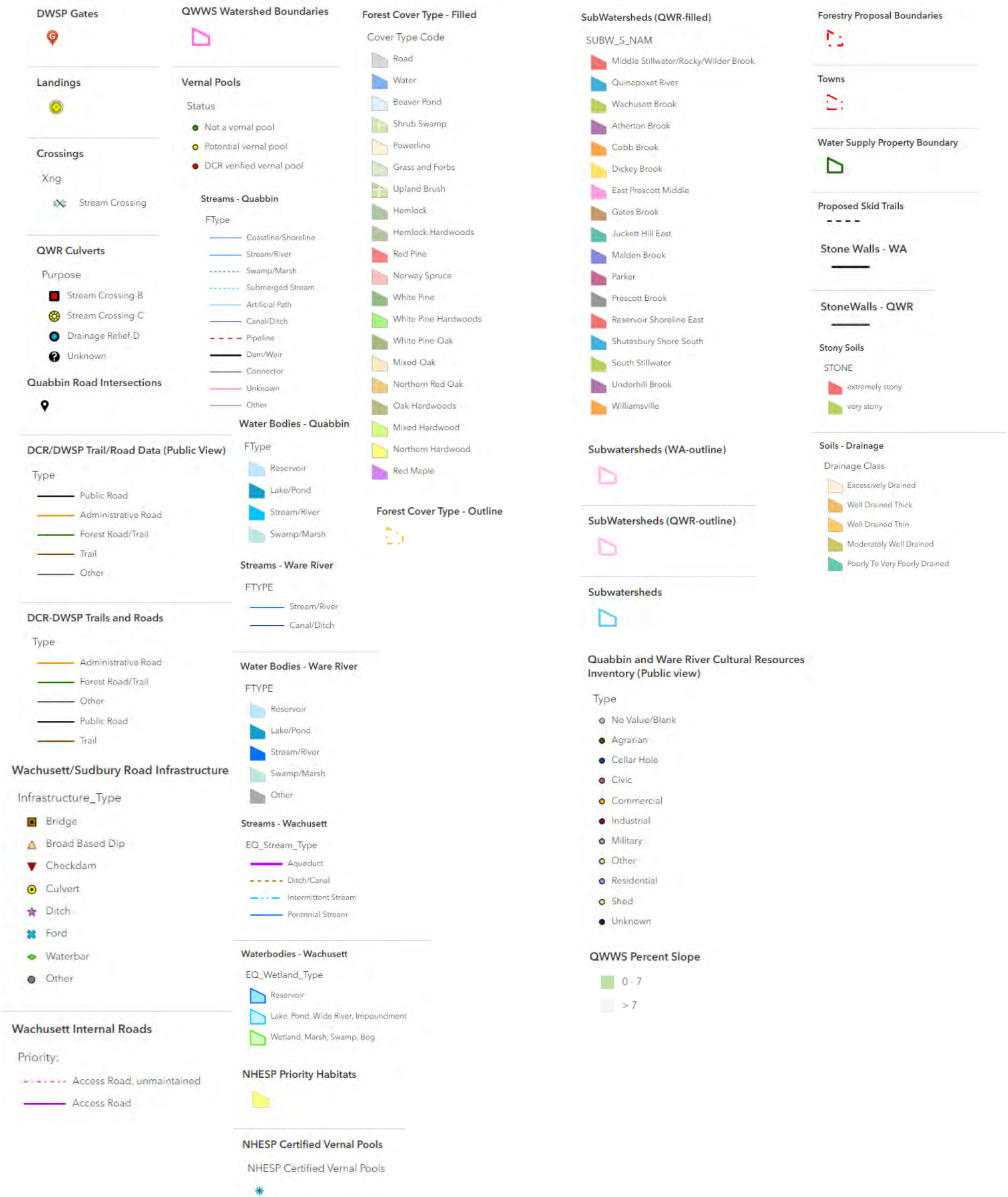
Beaver issue: No

Further comment on access needs:

An reassessment of the culvert just inside Gate S32 is needed to see if it's adequate for crossing by log trailers. The last time this area was worked, nothing larger than a tri-axle log truck crossed it.



DWSP FY 2020 Forestry Proposals – Master Legend for story maps



Wachusett Harvest Proposal WA-20-215

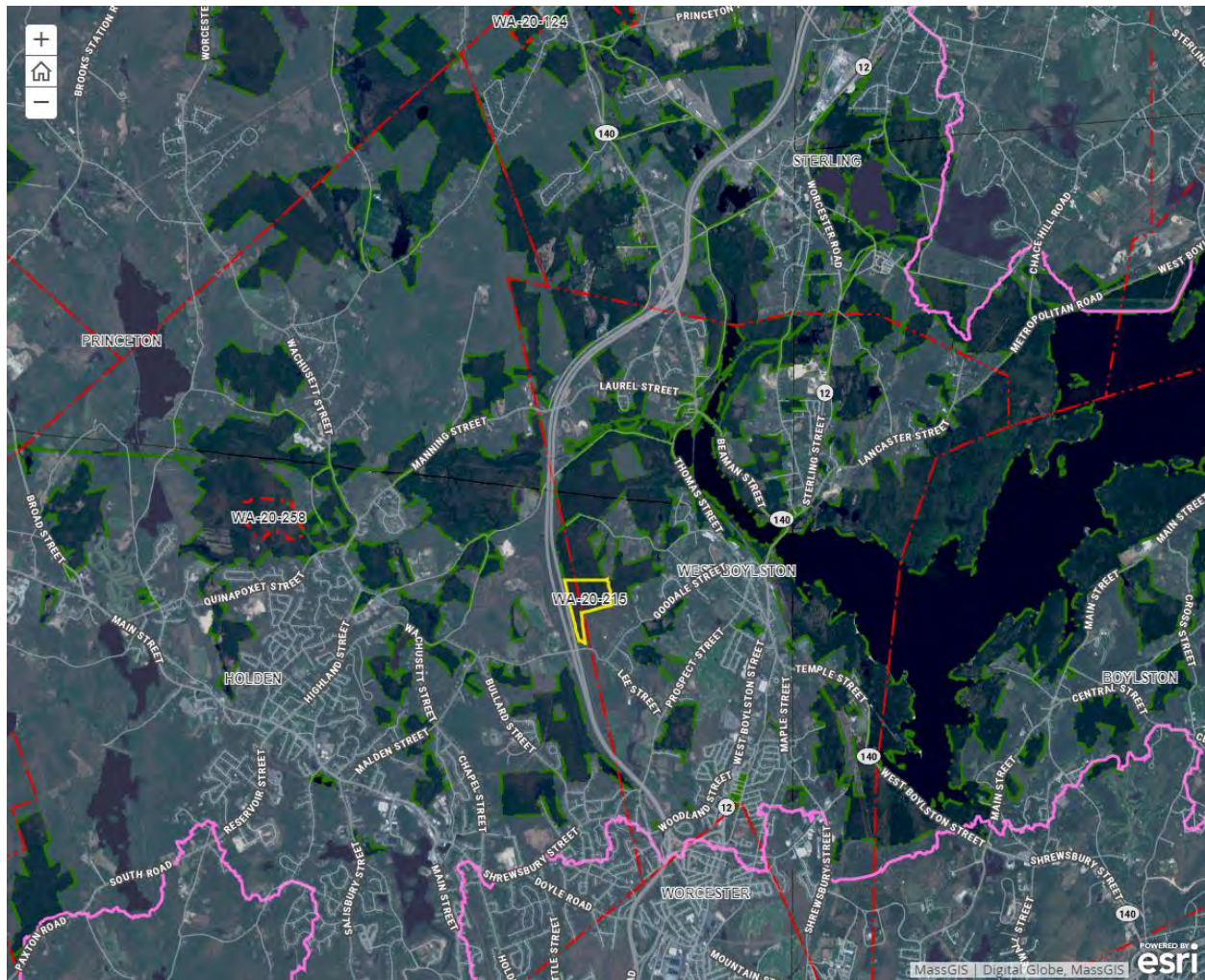
Proposal Goals

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.

Proposal Location

This property was purchased by the MDC in 1997 (most of the property is in West Boylston). The east side of this working unit is bound by a very steep slope (30% and greater) that runs north-south; the south is bound in part by private property (the boundary has been blazed and tagged) and in part by a short paved dead-end extension off of Malden St. in Holden; the west side is bound by Rt. 1190 and the north side is an arbitrary interior east-west line that connects to a property corner along a stone wall.

Total Acres: 62



General Description

	Overstory Type(s)	Acres
Dominant	Oak, mixed - dry site	41
Secondary	White pine/oak	21

	Understory Type(s)
--	--------------------

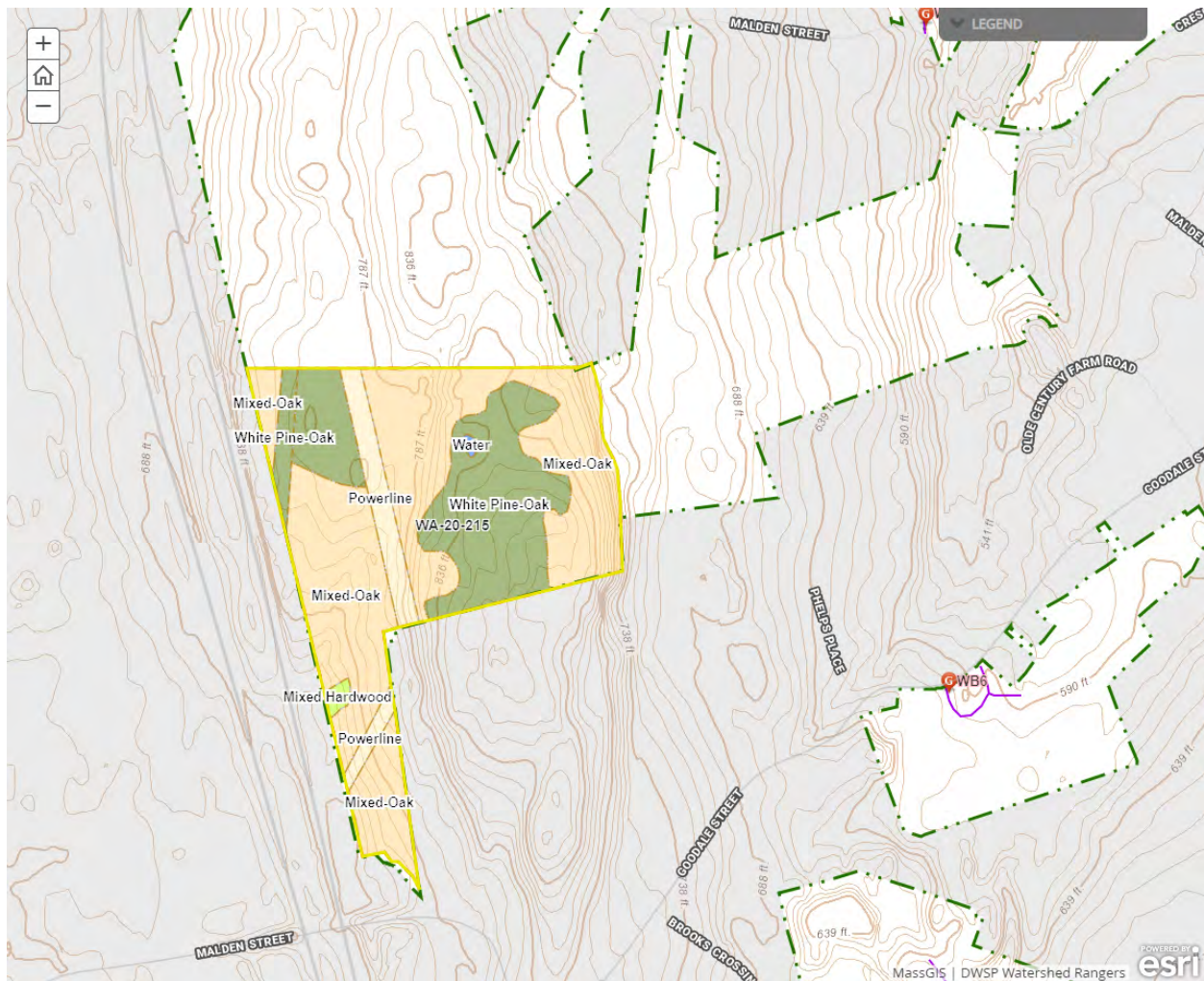
Dominant	Tree seedlings/saplings dominate site
Secondary	Dry site - blueberry/huckleberry

Description of forest composition/condition:

The working unit was proposed, marked, sold and cut in 2010. At that time, there was no advance regeneration in the mixed oak stand while there was decent regeneration in the white pine-oak stand on the top of the hill. While the proposal in 2010 call for the creation of some overstory openings in the white pine-oak stand, in the end, the decision was made to not make any openings. The white pine-oak stand was treated essentially the same as the mixed oak stand. Overall stocking was decreased by roughly 30% while every white pine in the overstory was daylighted by removing all trees from their immediate vicinity. All of this was done to encourage the establishment of white pine regeneration on this very dry site. This operation was successful and today there is excellent advance regeneration of white pine throughout this area. The age structure for this working unit is as follows: 0%, 0-20 years old; 3%, 21-40 years; 0%, 41-60 years; 39%, 61-80 years; 58%, 81-100 years, 0%, >100 years old.

Assessment of Terrestrial Invasive Species:

Sampling did not find any invasive plant species in the 134 plots taken. Given the number of egg masses present, defoliation by gypsy moths is expected to be significant this year.

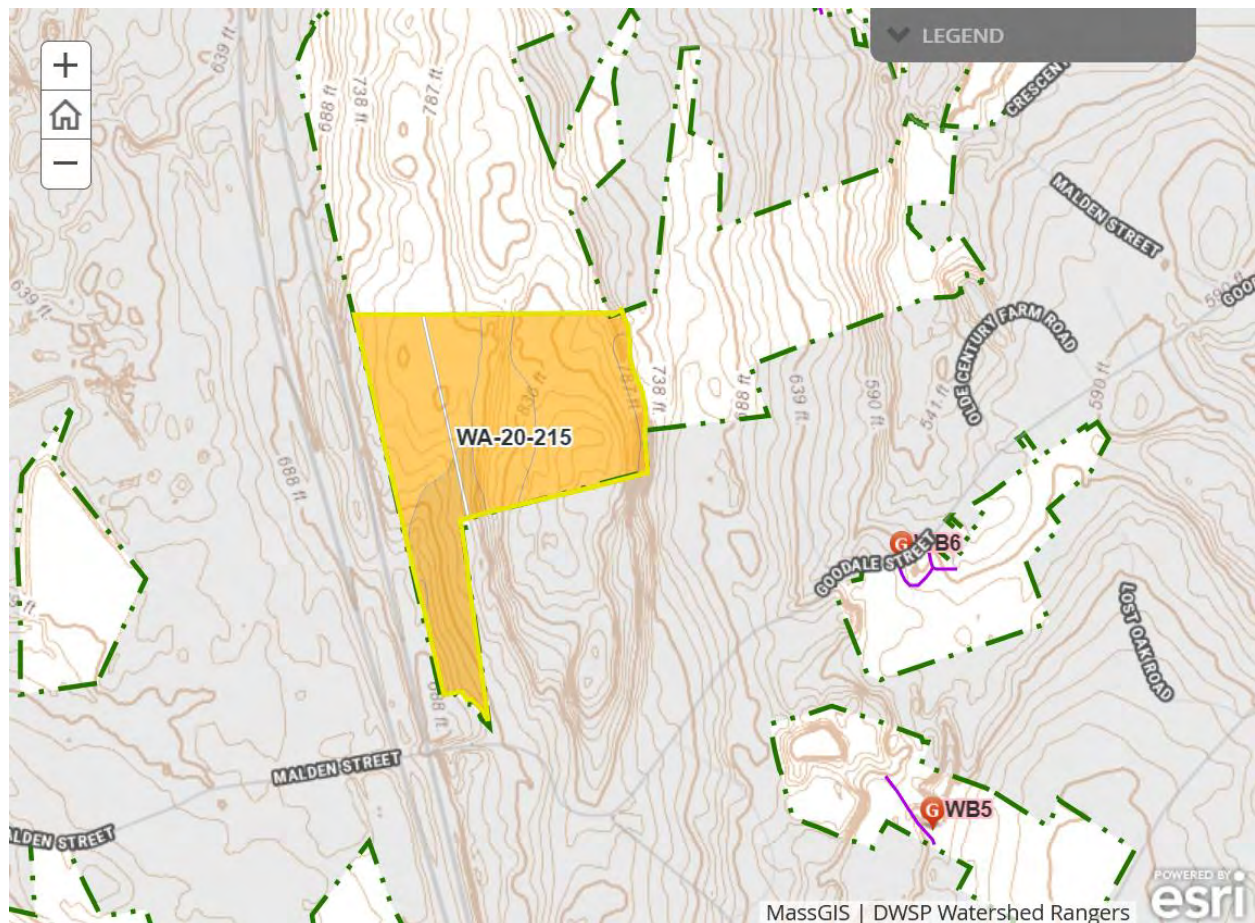


Soils

Drainage Class	%
Excessively Drained	0
Well Drained Thin	81
Well Drained Thick	19

Moderately Well Drained	0
Poorly to Very Poorly Drained	0

The well-drained thin soil is the Chatfield-Hollis-Rock outcrop complex. The well-drained thick soil is the Canton fine sandy loam.

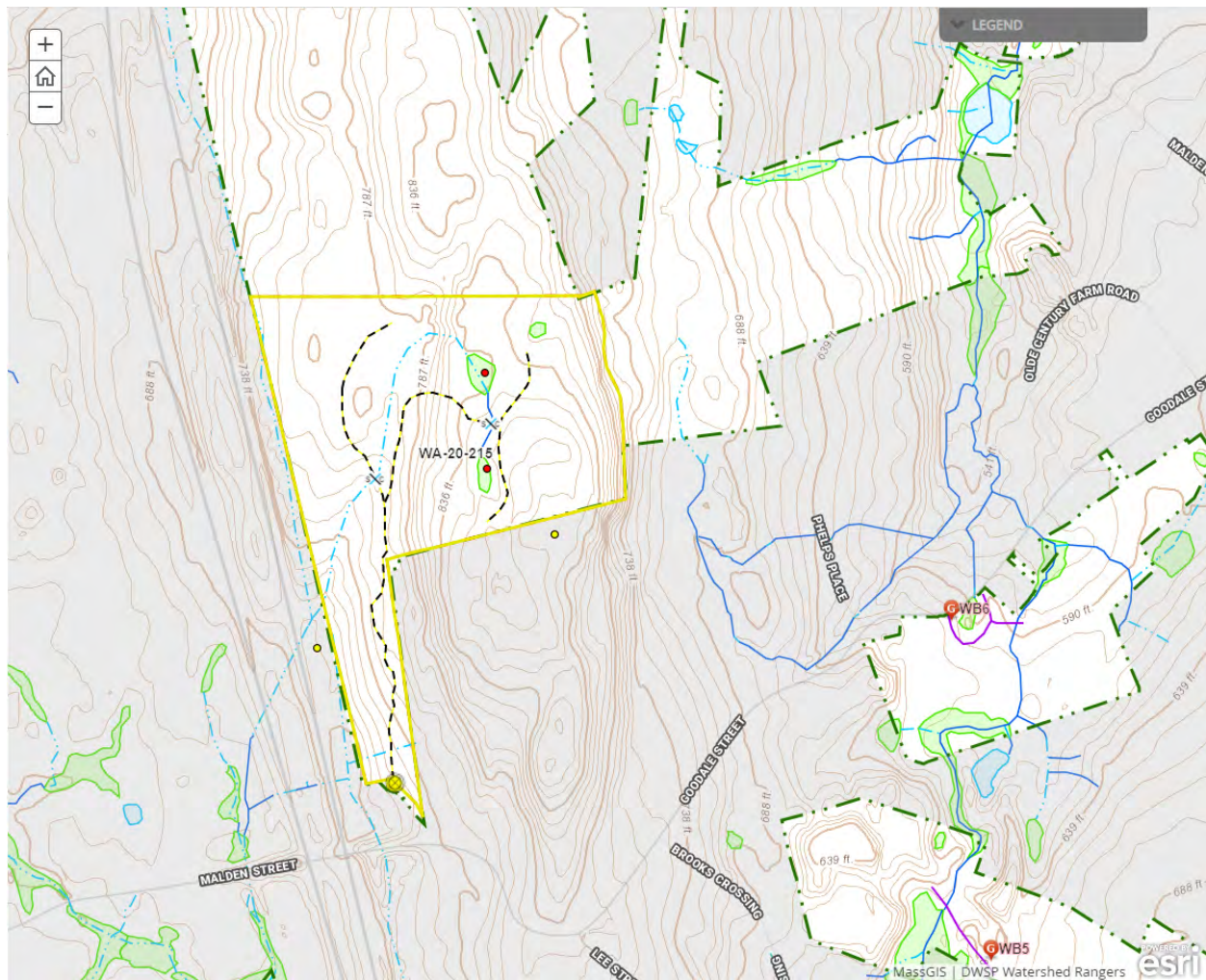


Wetlands

- Wetlands present? - **Yes**
- Streams present? - **Yes**
- Vernal pools present? - **Yes**
- Seeps present? - **None known**
- Are stream crossings required? - **Yes**

- Are wetland crossings required? - **No**
- Is logging in filter strips planned? - **Yes**
- Is logging in wetlands planned? - **No**

There are two small wetlands on the top of the hill connected by a small brook that then flows north before curving to the southwest. These two wetlands also contain verified vernal pools #129 and #130. There is also an unmapped small intermittent stream in the far south end of the area.



Silviculture

Acres in Intermediate cuts: **20**

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

Acres in Regeneration cuts: **21**

Average regen opening size: **1**

Maximum regen opening size: **2**

Description of advance regeneration in proposal area:

Sampling found adequate advance regeneration in 51% of the plots with marginal regeneration present in an additional 26%. White pine was present in 63% of the plots. Overall, the regeneration is comprised of white pine, red maple, white oak, black oak and red oak with less amounts of black birch, sassafras and chestnut. Where advance regeneration is not present, interfering levels of mountain laurel or witchhazel are usually present.

General comments on silviculture proposed:

With adequate advance regeneration now present throughout this working unit as a result of the harvest in 2010, openings will be made on up to 20.6 acres thereby achieving the goal of creating a new age class on 1/3rd of this area. This will be accomplished by the removal of the overstory in patches that average about 1 acre with a maximum size of about 2 acres. These will be well distributed throughout the proposed area taking advantage of where the white pine regeneration is best.

Any partial cutting that may occur between the openings on up to 1/3rd of the area will be focused on benefiting white pine.

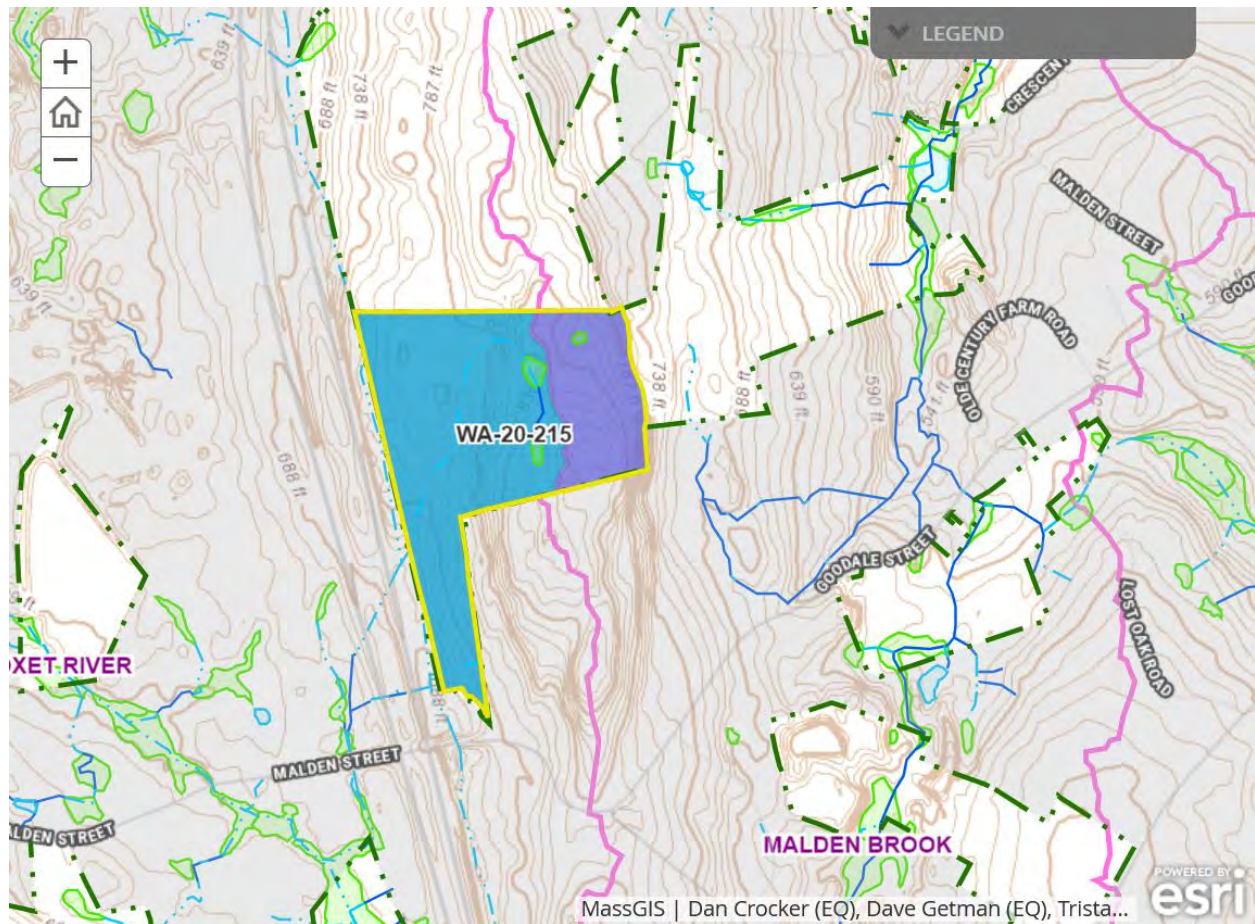
Following this cut, this working unit will have an approximate age structure as follows: 33%, 0-20 years old; 3%, 21-40 years; 0%, 41-60 years; 0%, 61-80 years; 64%, 81-100 years; 0%, >100 years old.



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
14 (Quinapoxet River)	2462	78	538	46
11 (Malden Brook)	481	5	115	16

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



Harvesting Limitations

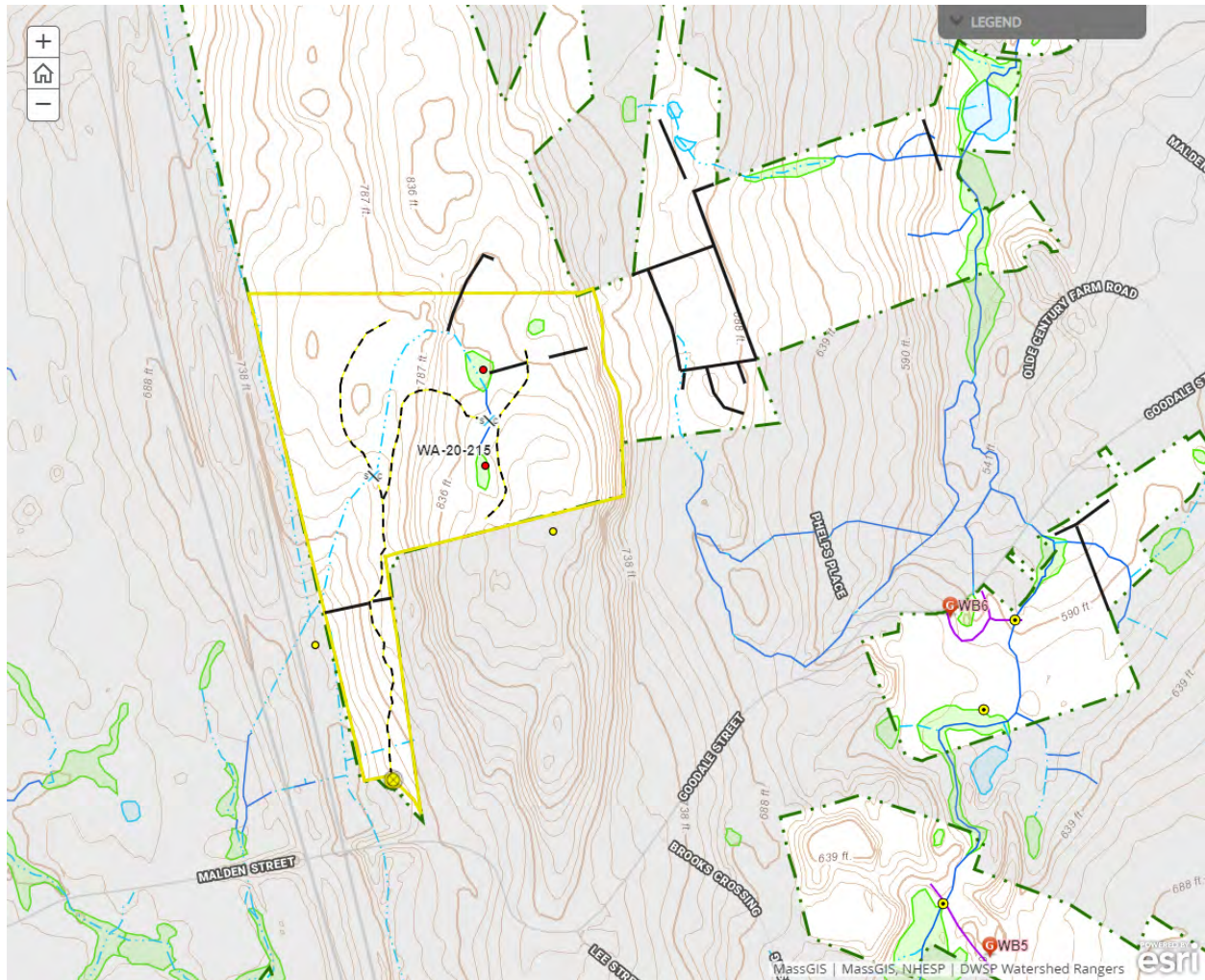
Forwarder required: **Yes**

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.

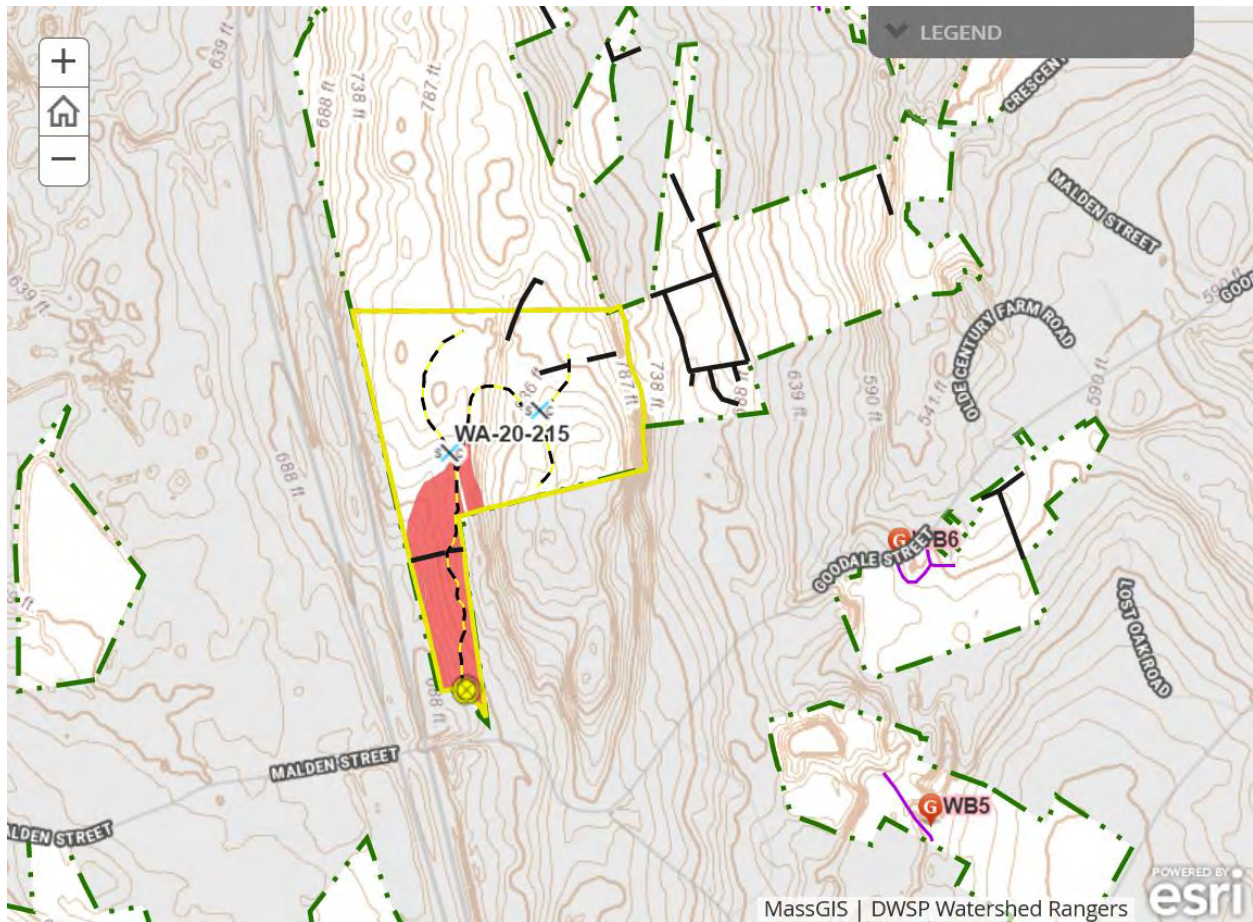


Cultural Resources

Comments on Cultural Resources:

Each of the two small wetlands has a small concrete weir with a v-notch that in the past would have allowed more water to be held in the wetlands. This was done to provide water for steam engines used in the quarrying activities that took place in the granite outcrops on this hilltop. The weirs do not currently affect the water flow out of the wetlands.

This area has been assessed by the DCR Archaeologist for both known sites of cultural or archaeological importance as well as for potential use by pre-Contact Native Americans; none are known or documented, though the site is considered potentially sensitive for pre-Contact sites. DWSP will follow any additional recommendations from DCR's Archaeologist regarding protection of sensitive sites.



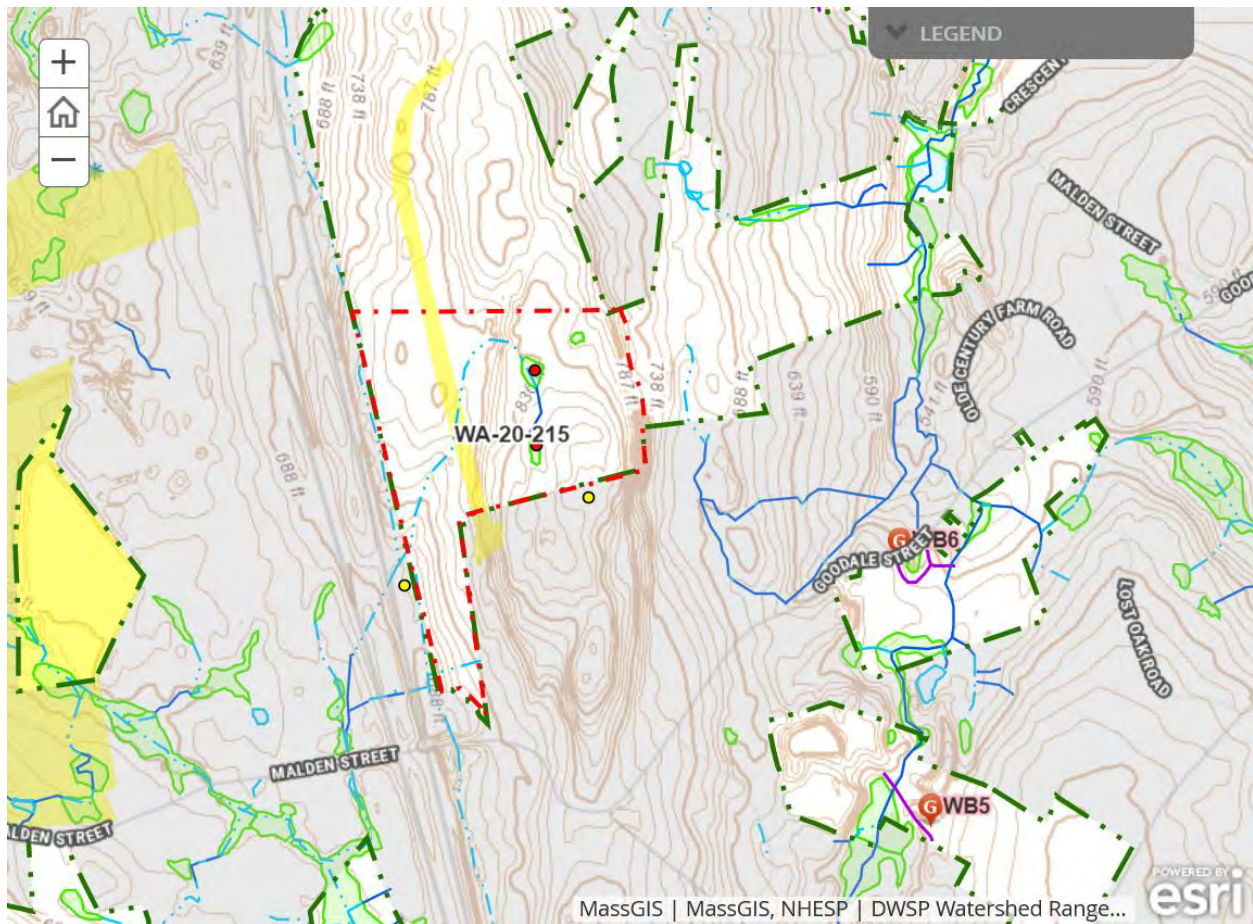
Wildlife Resources & Rare and Endangered Species

General Wildlife Comments:

As a result of the proposal of this working unit in 2010, the two vernal pools (#129 & 130) have been verified.

Comments on Rare Species/Habitats:

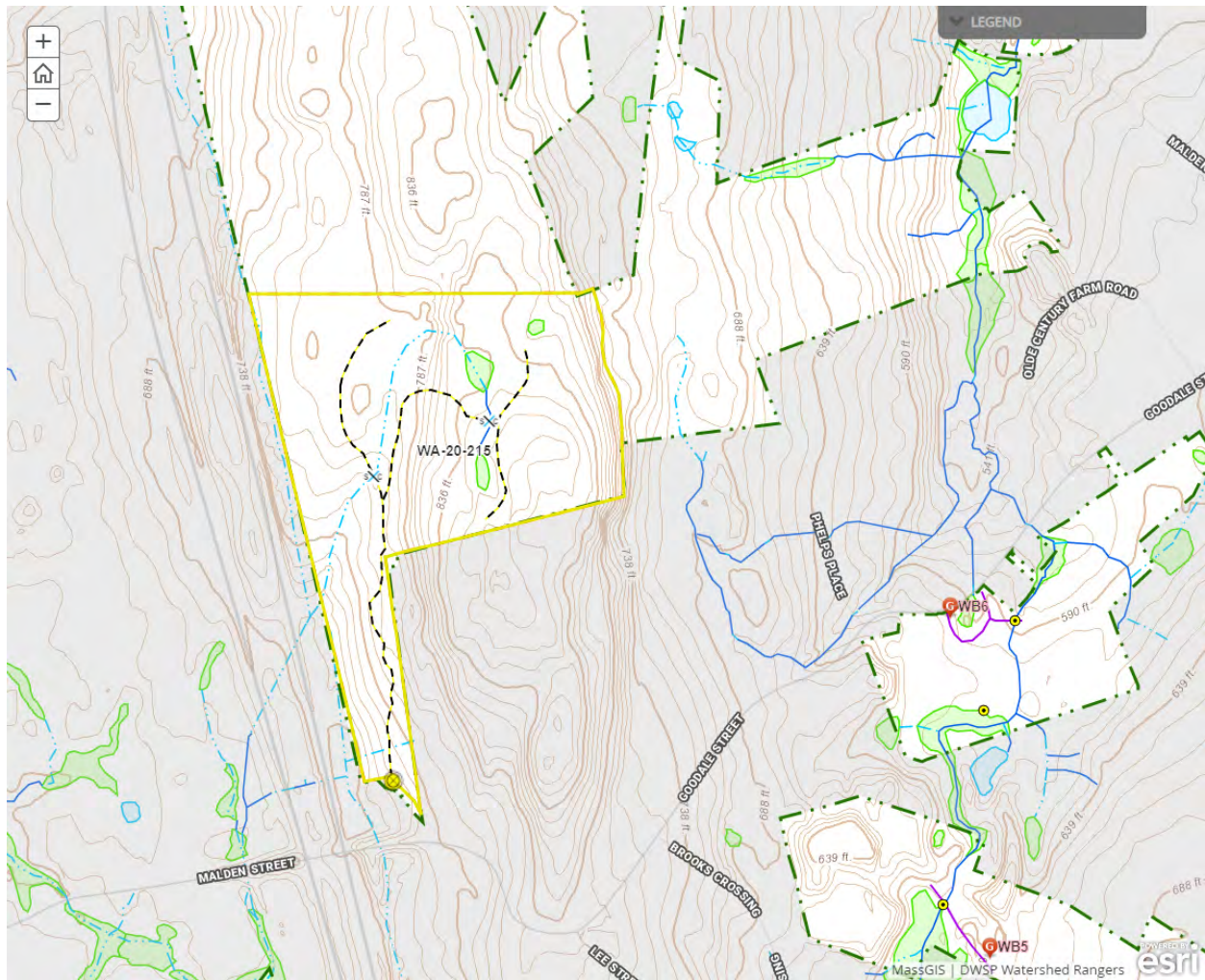
NHESP has determined that certain state-listed sensitive species or habitats may exist within the lot proposal area. To protect them from unnecessary disturbance, detailed information regarding affected species and their locations is not included in this report. DWSP will coordinate with NHESP and follow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



Environmental Quality Engineering

Comments on EQ Issues:

Both stream crossings will occur in the same locations as in 2010.



Forest Access Engineering

Gravel needed: No

Landing work needed: No

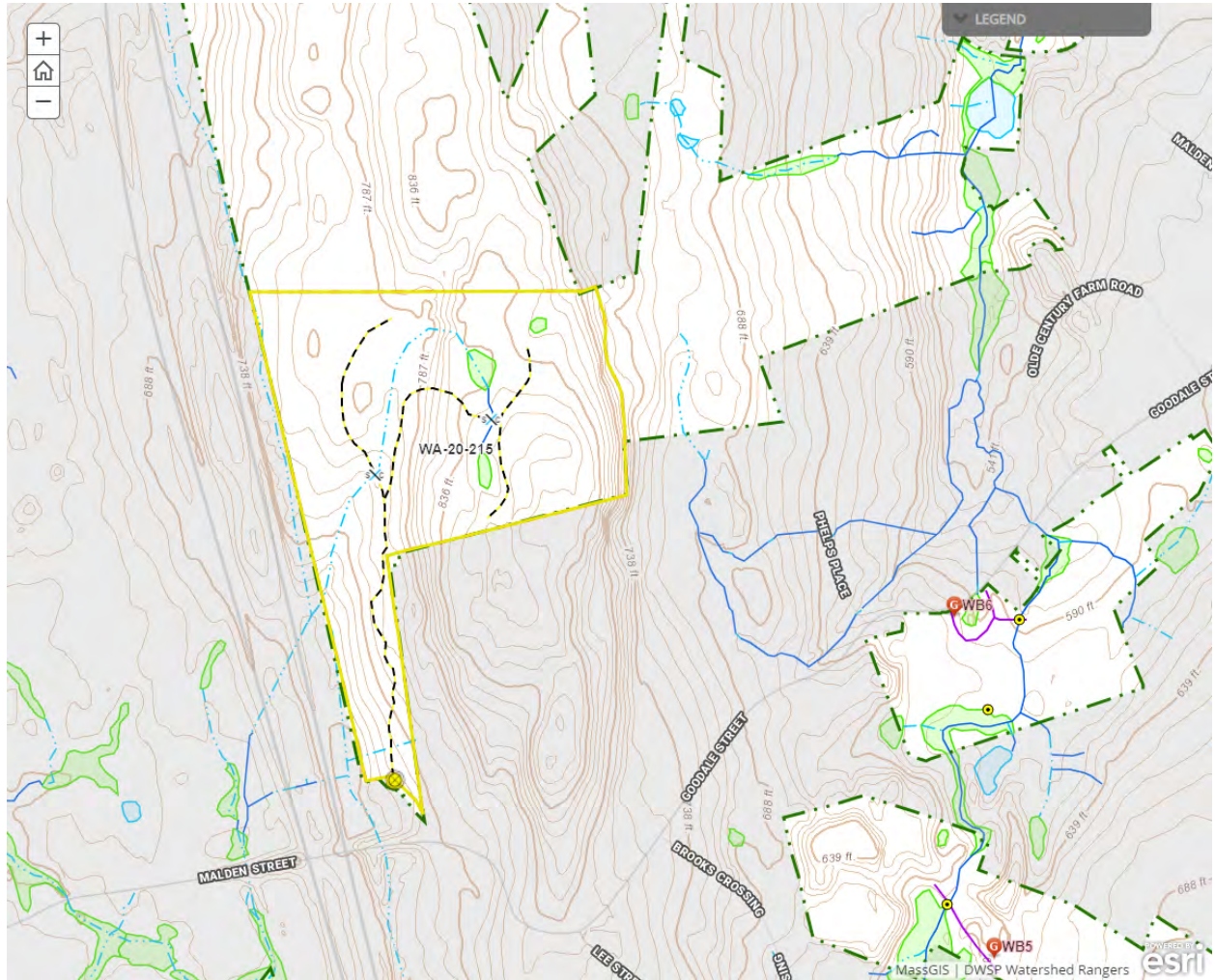
Culverts needed: No

Work needed on permanent bridges: No

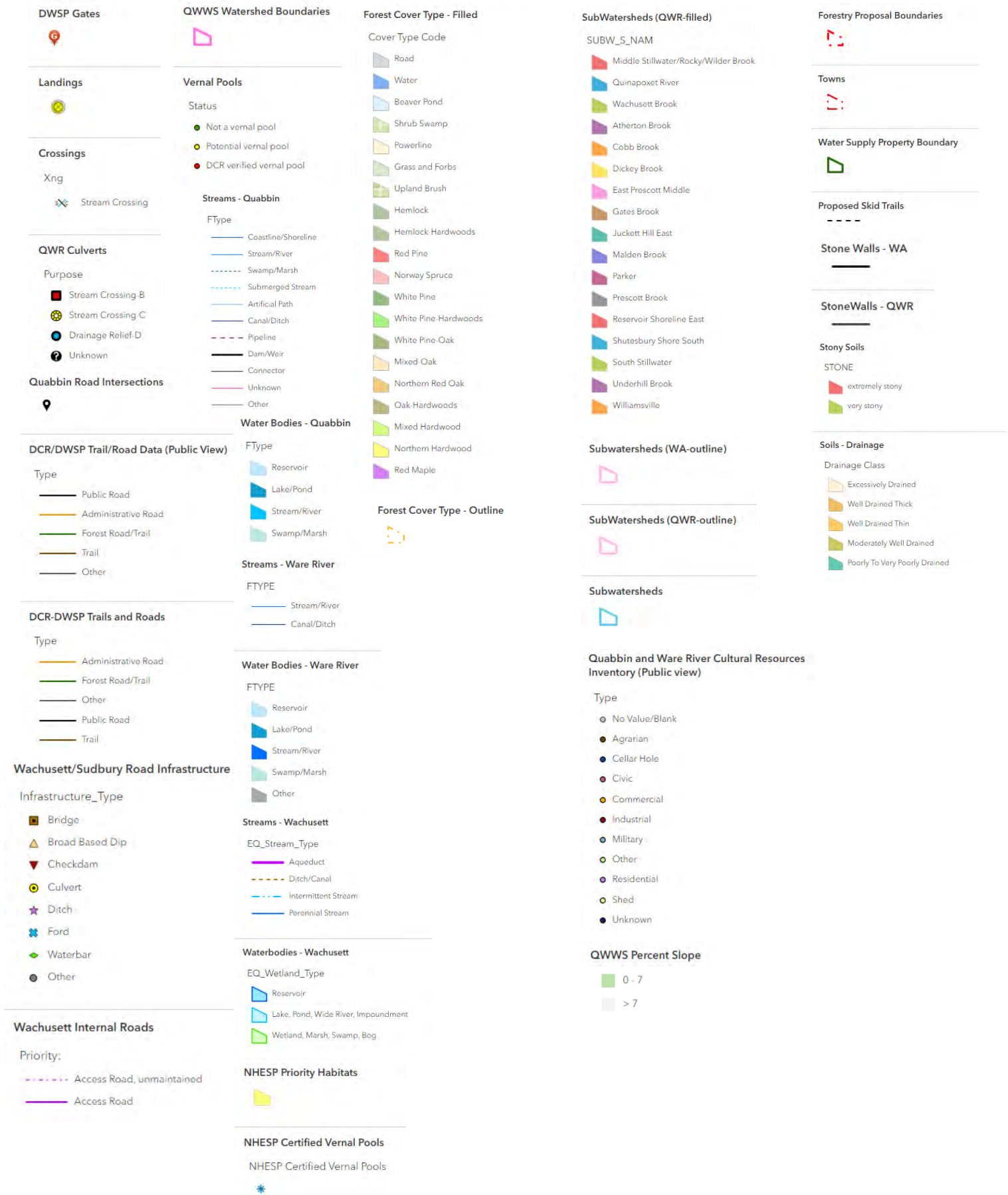
Beaver issue: No

Further comment on access needs:

None.



DWSP FY 2020 Forestry Proposals – Master Legend for story maps



Wachusett Harvest Proposal WA-20-240

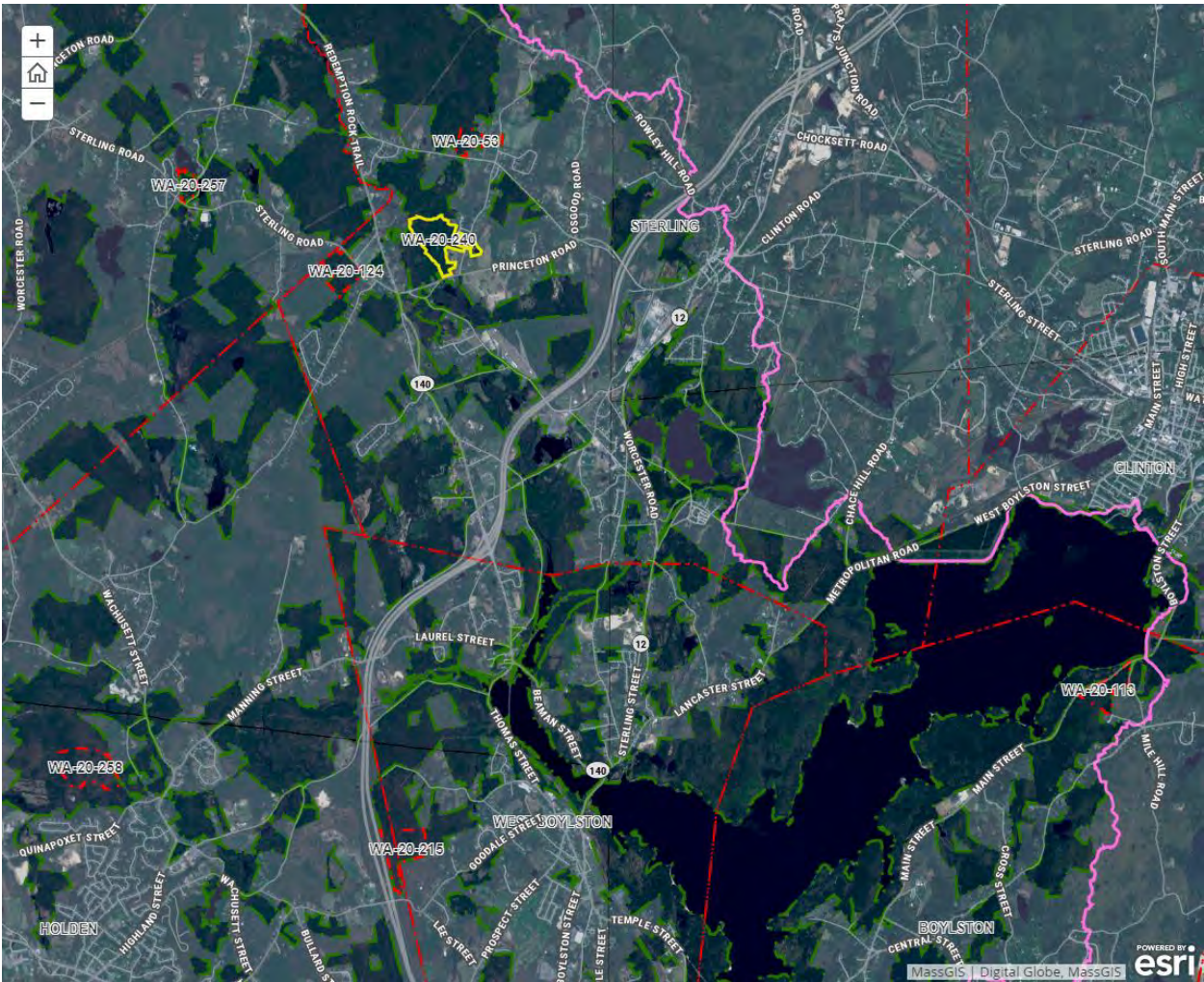
Proposal Goals

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.

Proposal Location

The west side is bound by Wilder Brook, the north side is bound by internal cart paths and an arbitrary line through the wetland, the east side is bound by private property boundary some of which is stone wall, the south side is bound by an unnamed intermittent stream. While this Working Unit includes land south of this intermittent stream, no work will occur in this area. Also, no work will occur in the piece of this Working Unit on the east side of Wilder Road.

Total Acres: 64



General Description

	Overstory Type(s)	Acres
Dominant	White pine/oak	27
Secondary	White pine	14
Other	White pine/hardwood	10

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

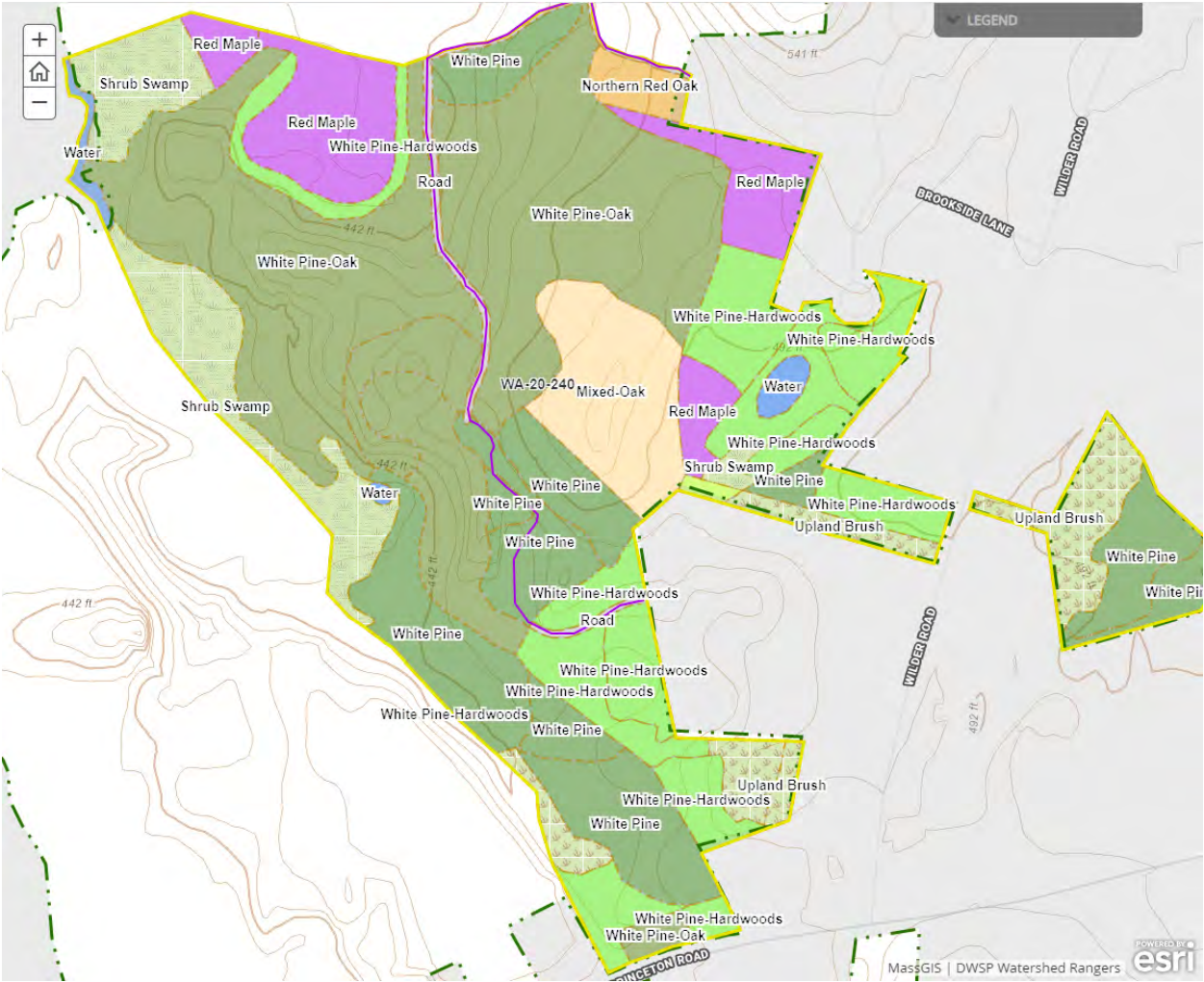
Description of forest composition/condition:

The primary species in the forest overstory in this area is white pine along with red oak, red maple and black birch. There is also black oak, white oak, black cherry, elm, white ash and hemlock. Much of the hemlock is found in the kettles in the peninsula of upland in the west side of the area and while it's probably not free of hemlock woolly adelgid, it appears pretty healthy at this point in time. The understory is comprised of excellent numbers and diversity of seedlings and saplings along with witch-hazel, lowbush blueberry, maple-leaved viburnum and shadbush. There is highbush blueberry and winterberry in the damper pockets in the topography. No forest management or other cutting has occurred in these stands that originated in 1920 and 1938 following abandonment of these pastures. Where a gravel removal operation took place in the south end of the area, there are now white pine dominated stands that date from the 1960s through the early 1990s.

The age structure of Working Unit 240 is as follows: 8%, 0-20 years old; 22%, 21-40 years; 11%, 41-60 years, 33%, 61-80 years, 26%, 81-100 years 0%, >100 years old.

Assessment of Terrestrial Invasive Species:

Sampling found terrestrial invasive species present in 13 of 105 plots. 9 of these plots are in the south end in the old gravel pit area, particularly associated with wetter soils near the stream. One of these plots had nearly 100% invasive cover made up of honeysuckle, multiflora rose, knotweed and bittersweet. The other 4 plots are in the east side of the area associated with a long, narrow, unmapped wetland. There is a small amount of buckthorn in these plots.

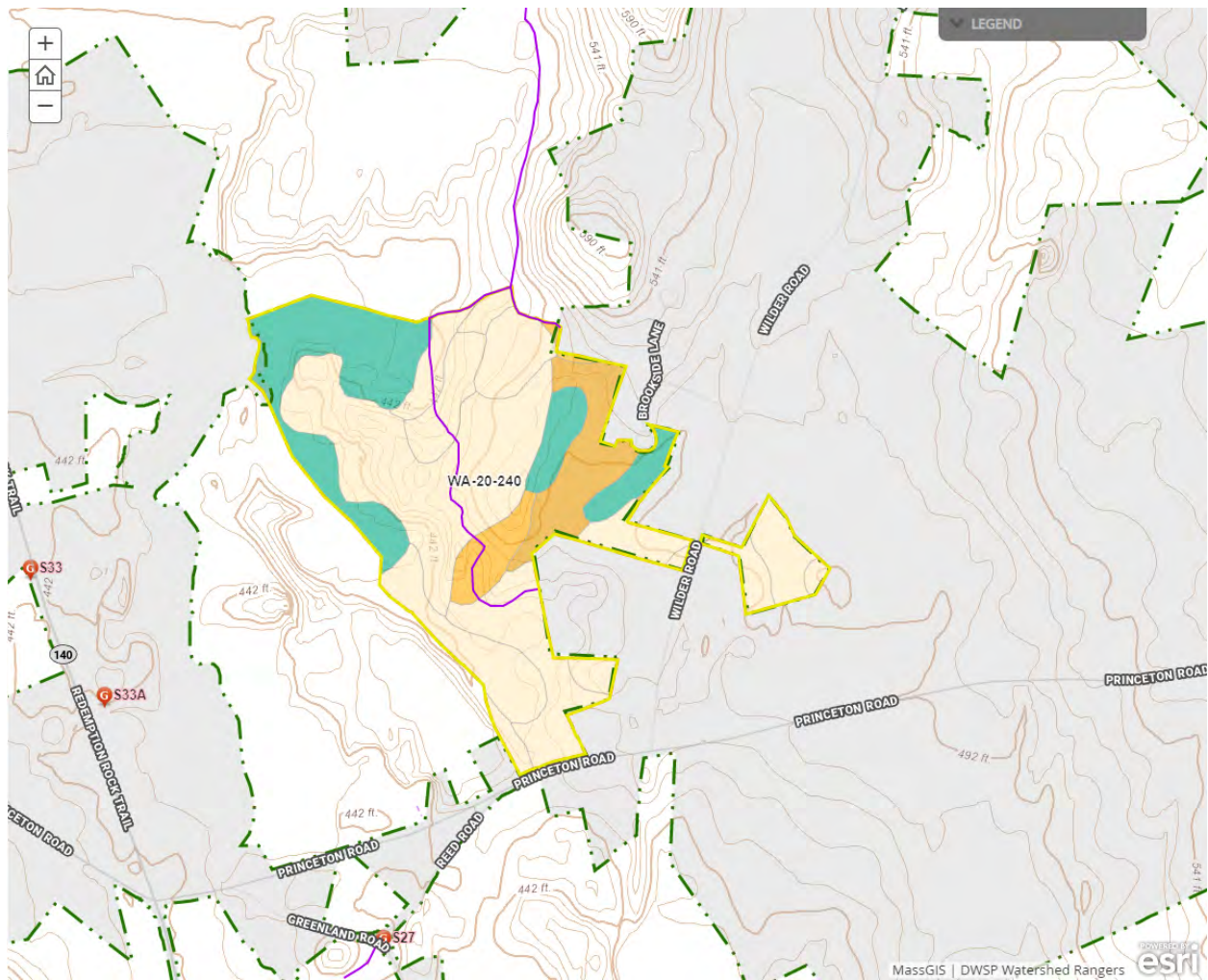


Soils

Drainage Class	%
Excessively Drained	76
Well Drained Thin	5
Well Drained Thick	10

Moderately Well Drained	0
Poorly to Very Poorly Drained	9

The excessively drained soil is primarily the Hinckley loamy sand. The well-drained thick soil is the Paxton fine sandy loam till.



Wetlands

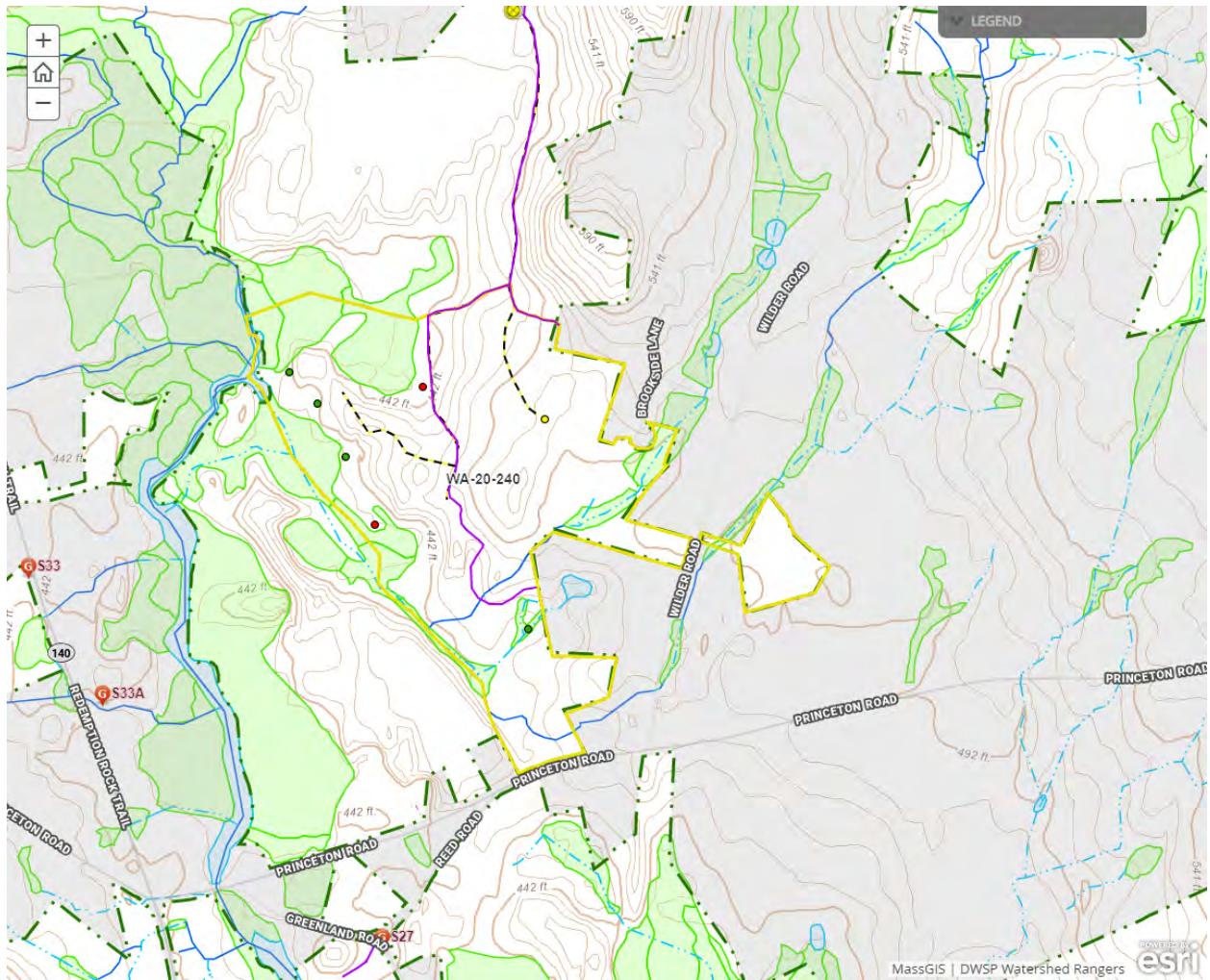
- Wetlands present? - **Yes**
- Streams present? - **Yes**
- Vernal pools present? - **Yes**

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

There is a long and narrow unmapped wetland in the east side of this area, behind the houses on Brookside Lane.

Verified vernal pool #334 is located in the far western edge of this area near the Wilder Brook wetland, but due to beaver activity in the Wilder Brook wetland is not currently functioning as a vernal pool.

Three other potential vernal pools to the north of Pool #334 on this kettlehole-pocked peninsula of upland were checked and although were holding water are not functioning as vernal pools. A new vernal pool was verified just to the west of the long and narrow unmapped wetland, and another needs to be rechecked in subsequent years to verify. (Updated vernal pool mapping is pending; only older pool locations are currently shown.)



Silviculture

Acres in Intermediate cuts: **25**

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

Acres in Regeneration cuts: **21**

Average regen opening size: **1**

Maximum regen opening size: **2**

Description of advance regeneration in proposal area:

Sampling found adequate tree regeneration present in 45% of the plots taken. Oak was present in 74% of the plots. This regeneration is diverse and comprised primarily of white pine, red oak, black birch and red maple along with white oak, black oak, hemlock, black cherry, hickory, elm and white ash.

General comments on silviculture proposed:

With good numbers and diversity of young trees present throughout this area, openings in the older forest overstory will be made on up to 21.3 acres thereby achieving the goal of creating a new age class on 1/3rd of this area. This will be accomplished by the removal of the overstory in patches that average about 1 acre with a maximum size of about 2 acres. These will be well distributed throughout the proposed area taking advantage of where the advance regeneration is best. Following this cut, this area will have an approximate age structure as follows: 41%, 0-20 years old; 22%, 21-40 years; 11%, 41-60 years; 0%, 61-80 years; 15%, 81-100 years; 11%, >100 years old.

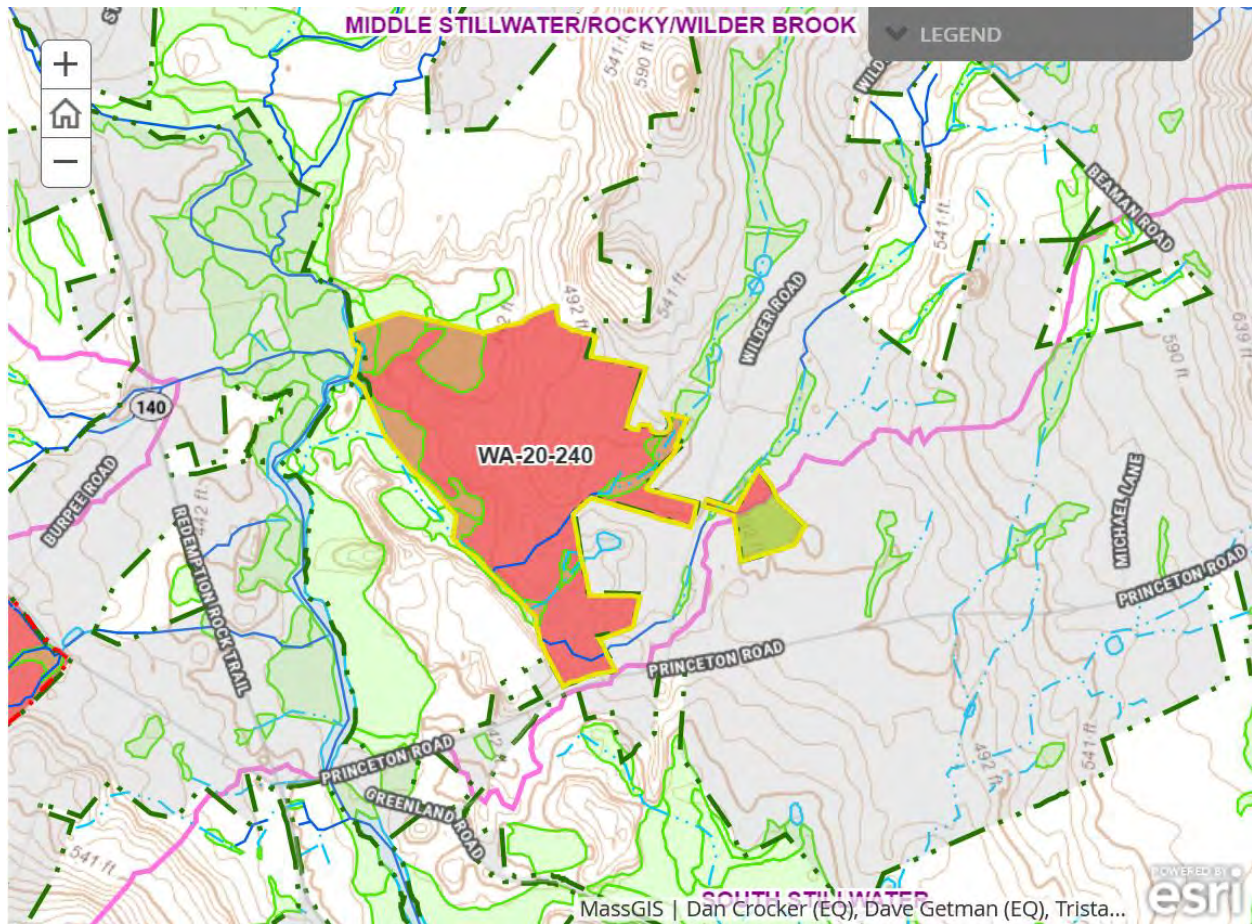
Some partial cutting may occur between the openings on up to 1/3rd of the area focusing on the removal of trees of the poorest quality while maintaining species diversity.



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	99	448	64

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



Harvesting Limitations

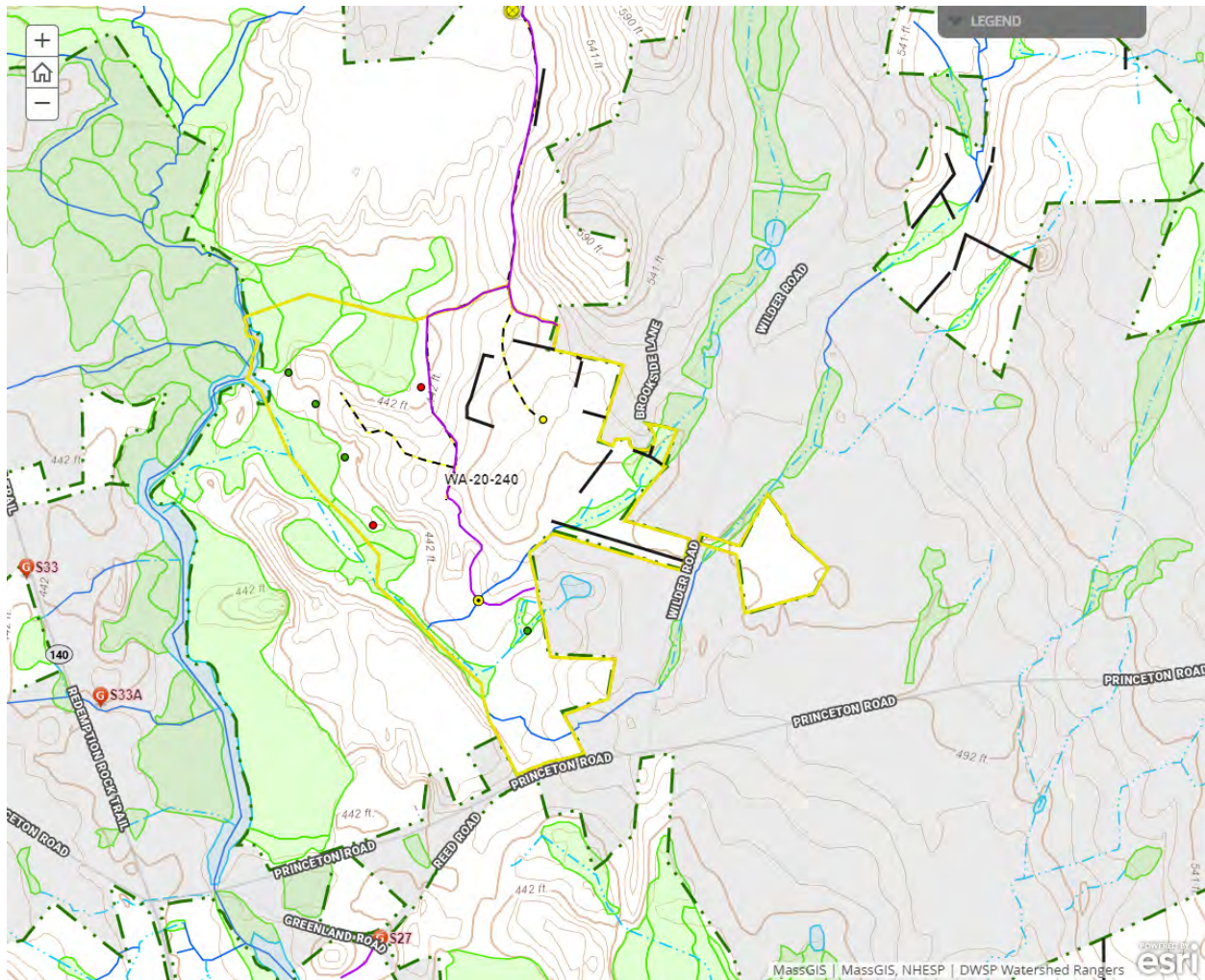
Forwarder required: **Yes**

Feller/processor required: **Yes**

Steep slopes present: **No**

Comments on harvesting limitations:

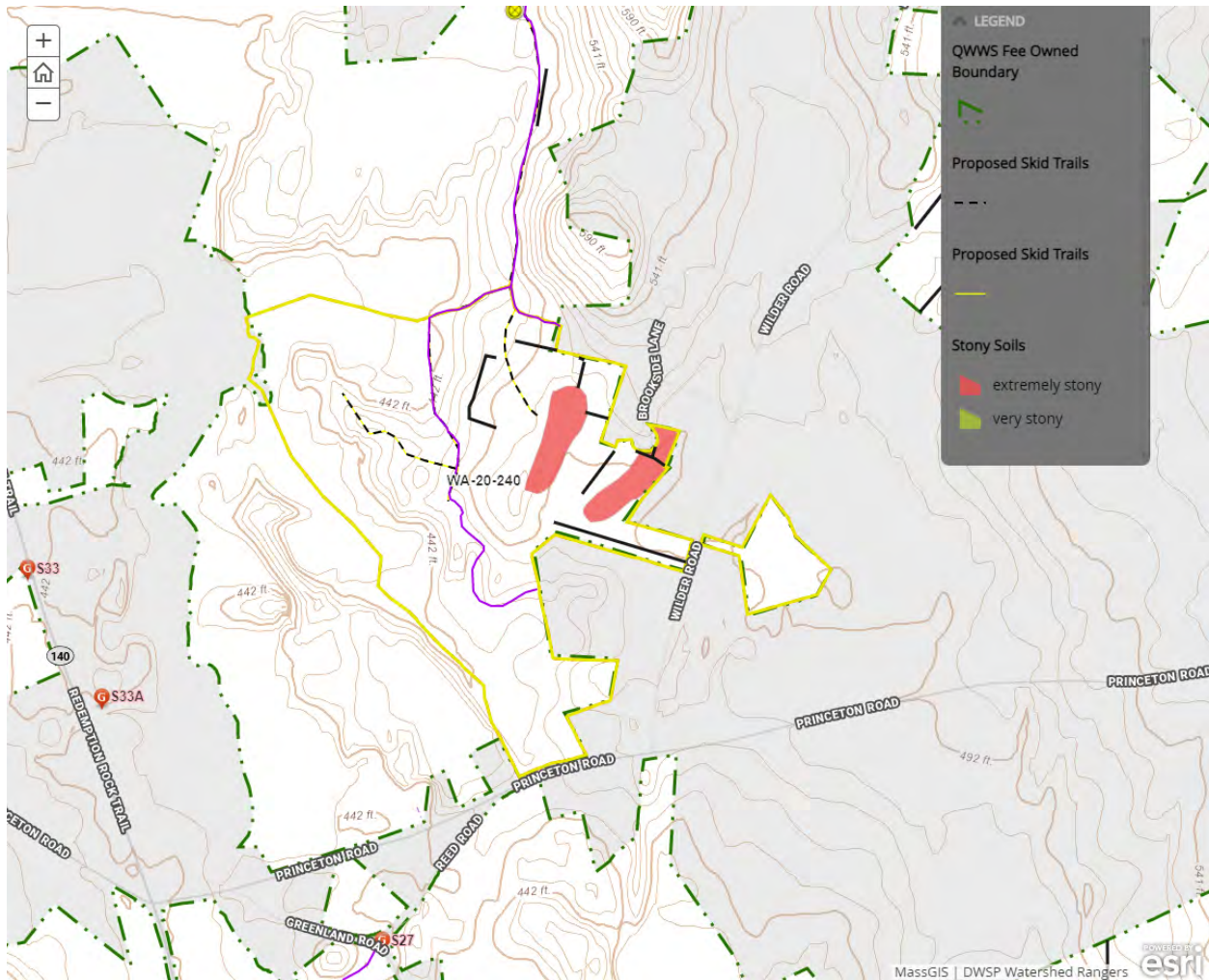
With advance regeneration present and a desire to protect as much of it as possible during the harvest, a cut-to-length harvesting system will be employed.



Cultural Resources

Comments on Cultural Resources:

This area has been assessed by the DCR Archaeologist for both known sites of cultural or archaeological importance as well as for potential use by pre-Contact Native Americans; none are known or documented. If applicable DWSP will follow any recommendations from DCR's Archaeologist regarding protection of sensitive sites.



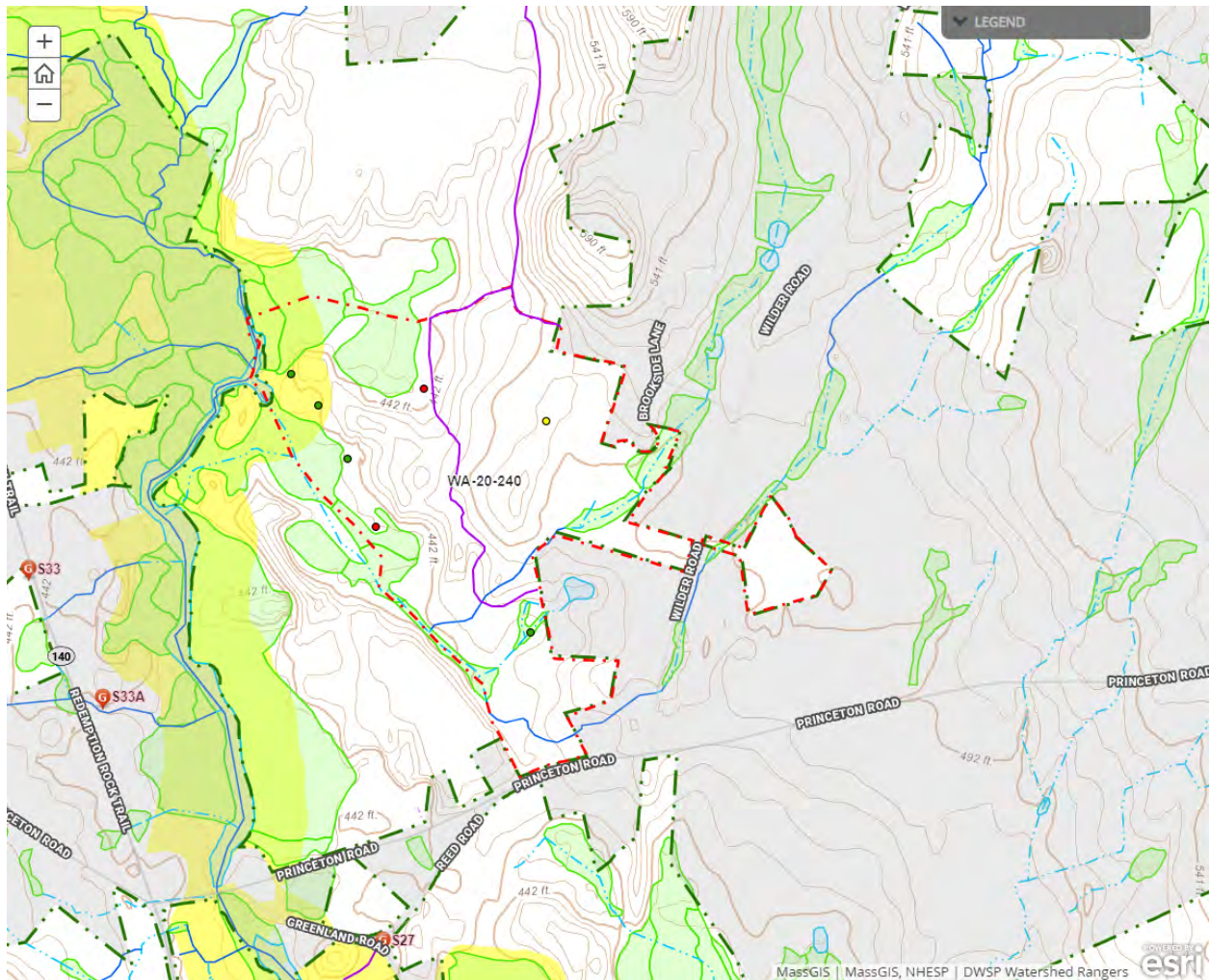
Wildlife Resources & Rare and Endangered Species

General Wildlife Comments:

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:

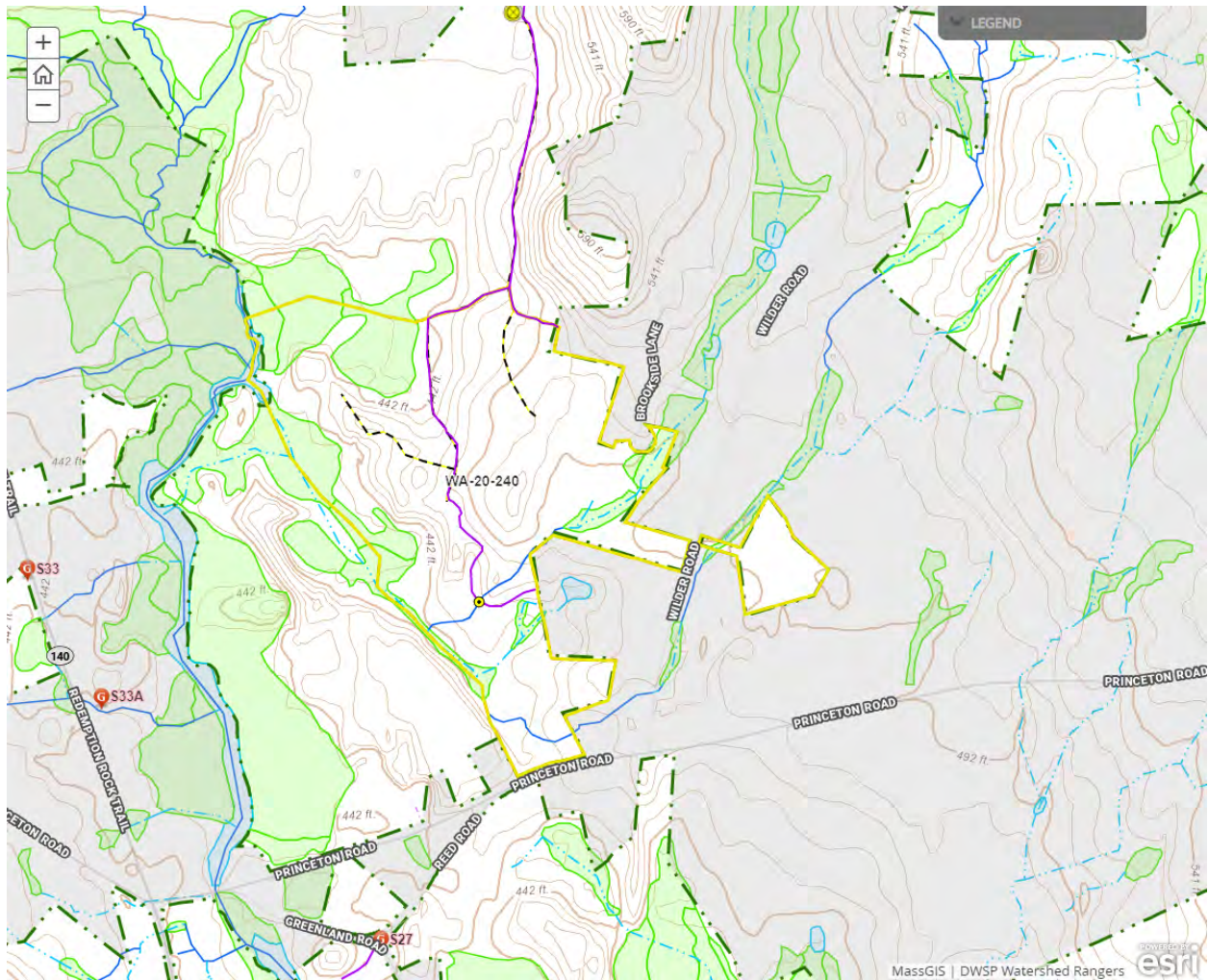
NHESP has determined that certain state-listed species or habitats may exist within a portion of the lot proposal area. To protect them from unnecessary disturbance, detailed information regarding affected species and their locations is not included in this report. DWSP will coordinate with NHESP and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



Environmental Quality Engineering

Comments on EQ Issues:

No stream crossings are planned.



Forest Access Engineering

Gravel needed: No

Landing work needed: No

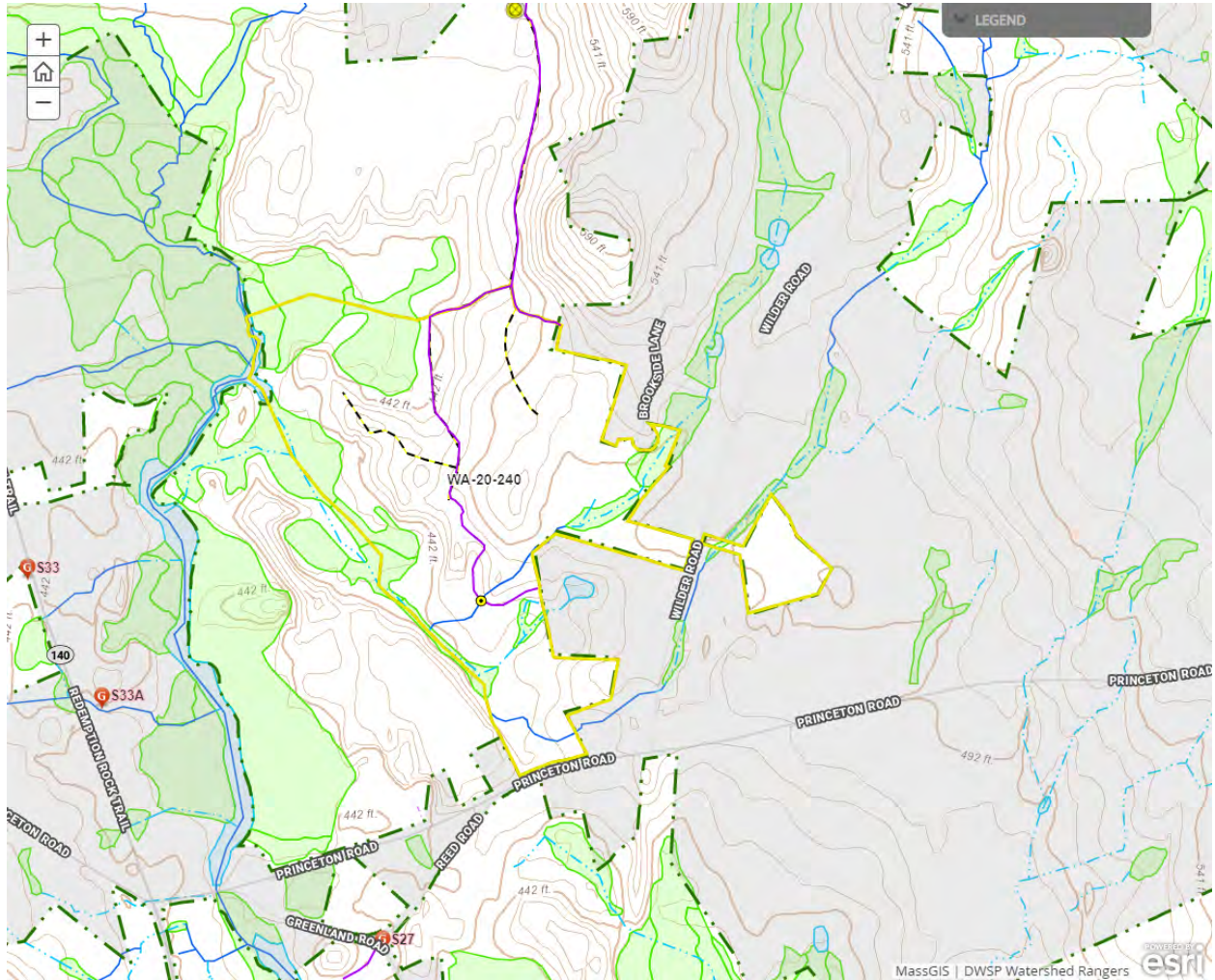
Culverts needed: No

Work needed on permanent bridges: No

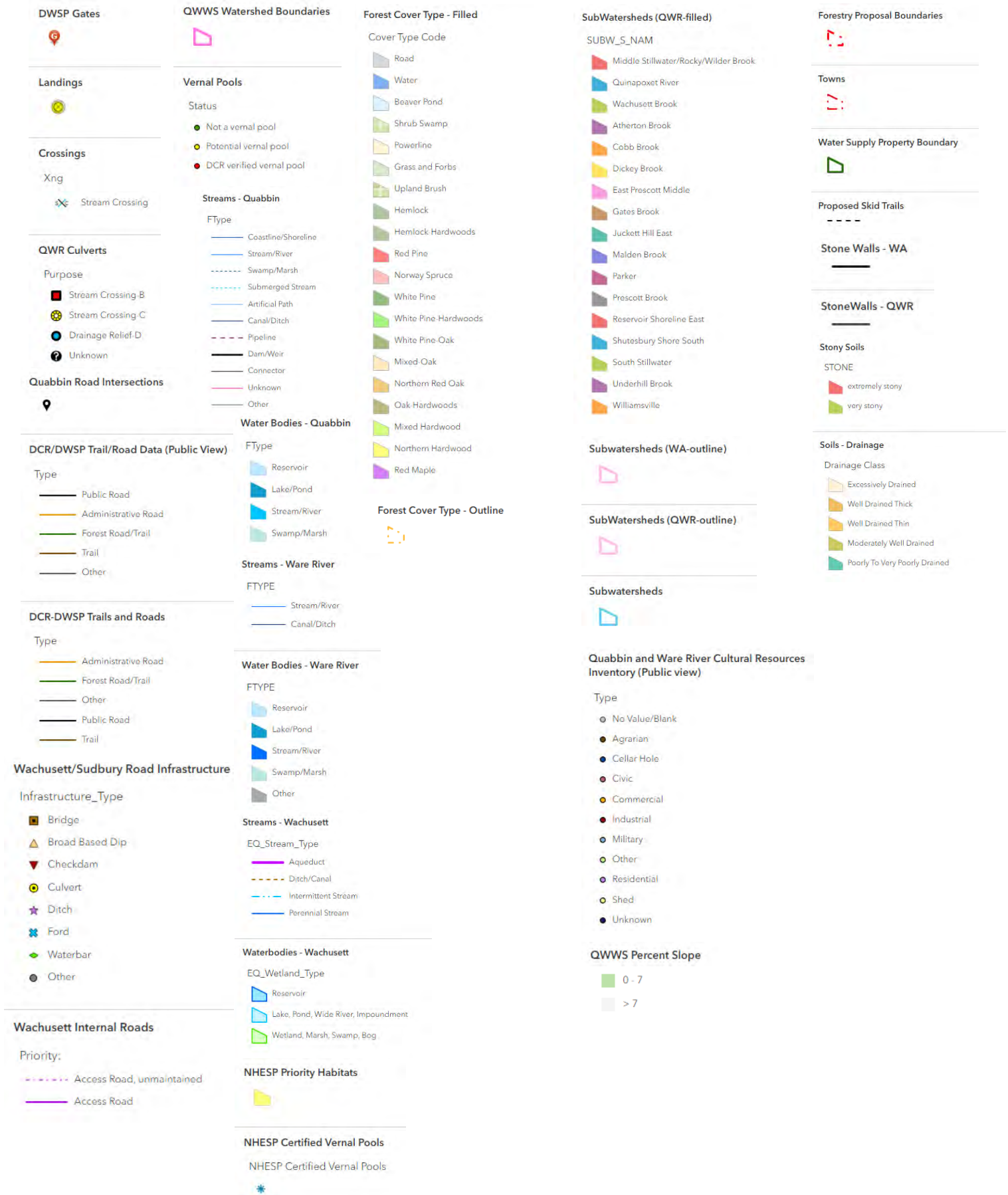
Beaver issue: No

Further comment on access needs:

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



DWSP FY 2020 Forestry Proposals – Master Legend for story maps



Wachusett Harvest Proposal WA-20-257

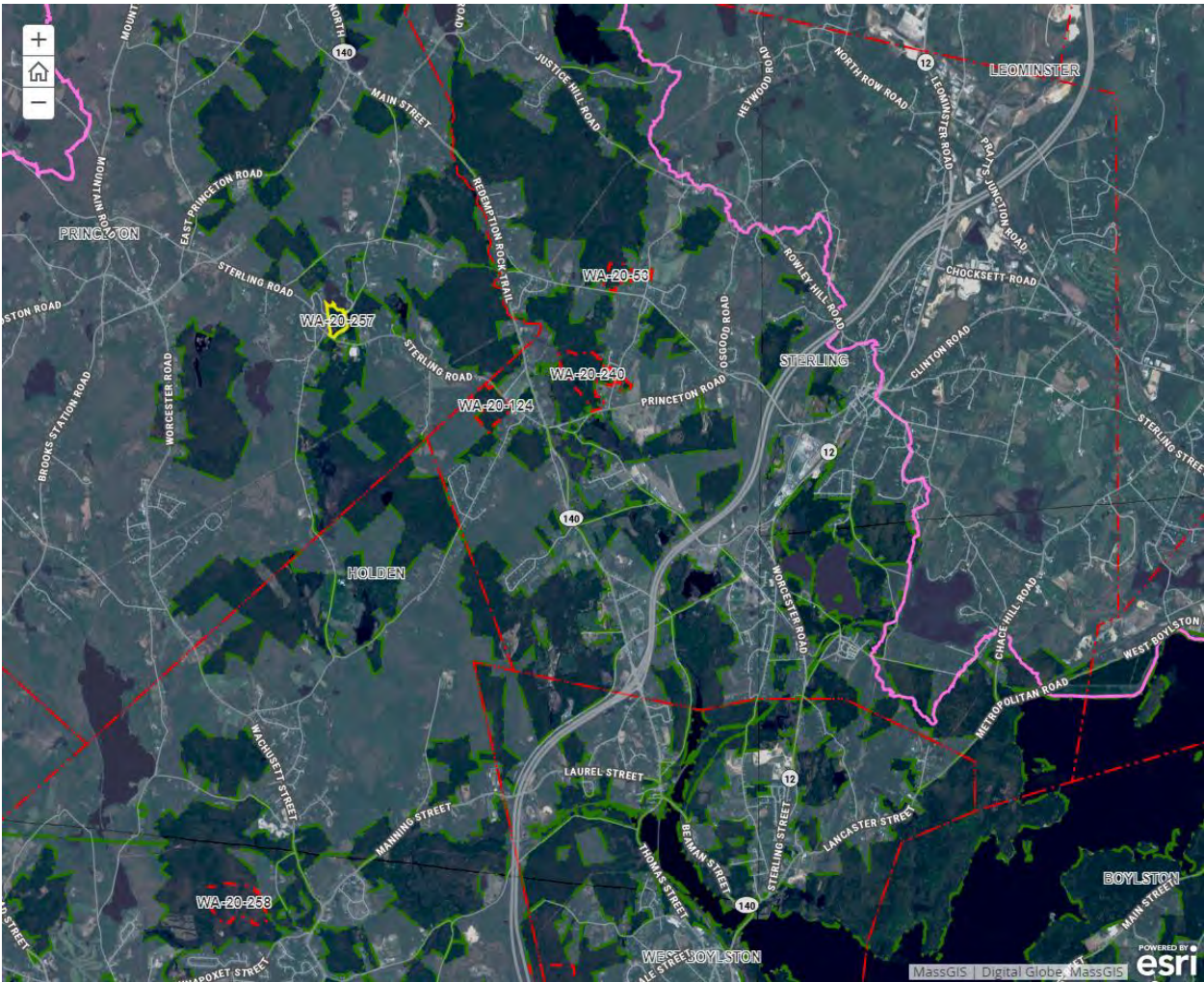
Proposal Goals

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.

Proposal Location

Starting at Bullard Road, follow along the shore of Snow Pond over to Pheasant Hollow Run, down to Sterling Road back to where it meets Bullard Road.

Total Acres: 20



General Description

	Overstory Type(s)	Acres
Dominant	White pine/oak	14
Secondary	White pine	3
Other	White pine/hardwood	2

	Understory Type(s)
Dominant	Tree seedlings/saplings dominate site
Secondary	Mountain laurel prevalent

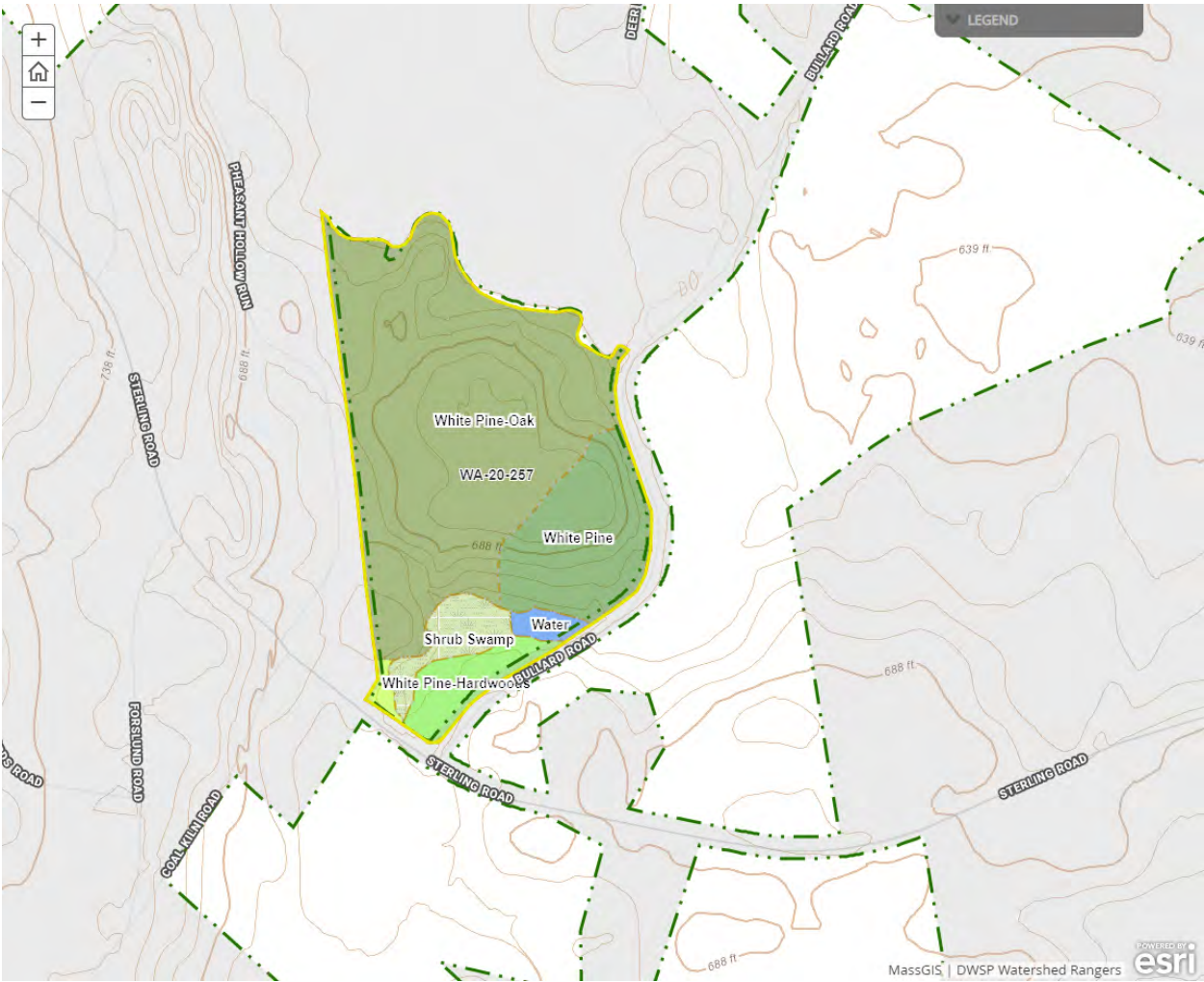
Description of forest composition/condition:

This forest is identified by its flat topography that slopes down on all sides gradually. It is a well drained site with a potentially high water table as evidenced by the highbush blueberry. The dominant species is white pine and red oak followed by black birch, black cherry, black oak, sugar maple, red maple, striped maple, american beech, and paper birch. The sugar maples are on the southwestern slopes and not on the table top. The white pine is of the best vigor on the site and the oak is of decent quality, although smaller oaks are now dying back. Fortunately, white pine is regenerating well and is for the most part spread out throughout the lot. There is some mixing of oak regeneration on the site and areas with chestnut sprouts and hemlock regen. Mountain laurel is present in small veins and patches throughout the site and becomes thick on the northern slopes where the hemlock is thinning out leading down to Snow pond.

The age structure of the working unit is as follows: 12% (0-20 years old), 22% (21-40 years old), 11% (41-60 years old), 6% (61-80 years old), 12% (81-100 years old), 37% (>100 years old).

Assessment of Terrestrial Invasive Species:

Sampling found invasives present on 4% of the total plots in the working unit. Multiflora rose and bush honeysuckle were located in the Southeastern corner of the lot boxed in by Babcock brook, wetland and Bullard road. Hemlock woolly adelgid, hemlock scale and beech scale are present.

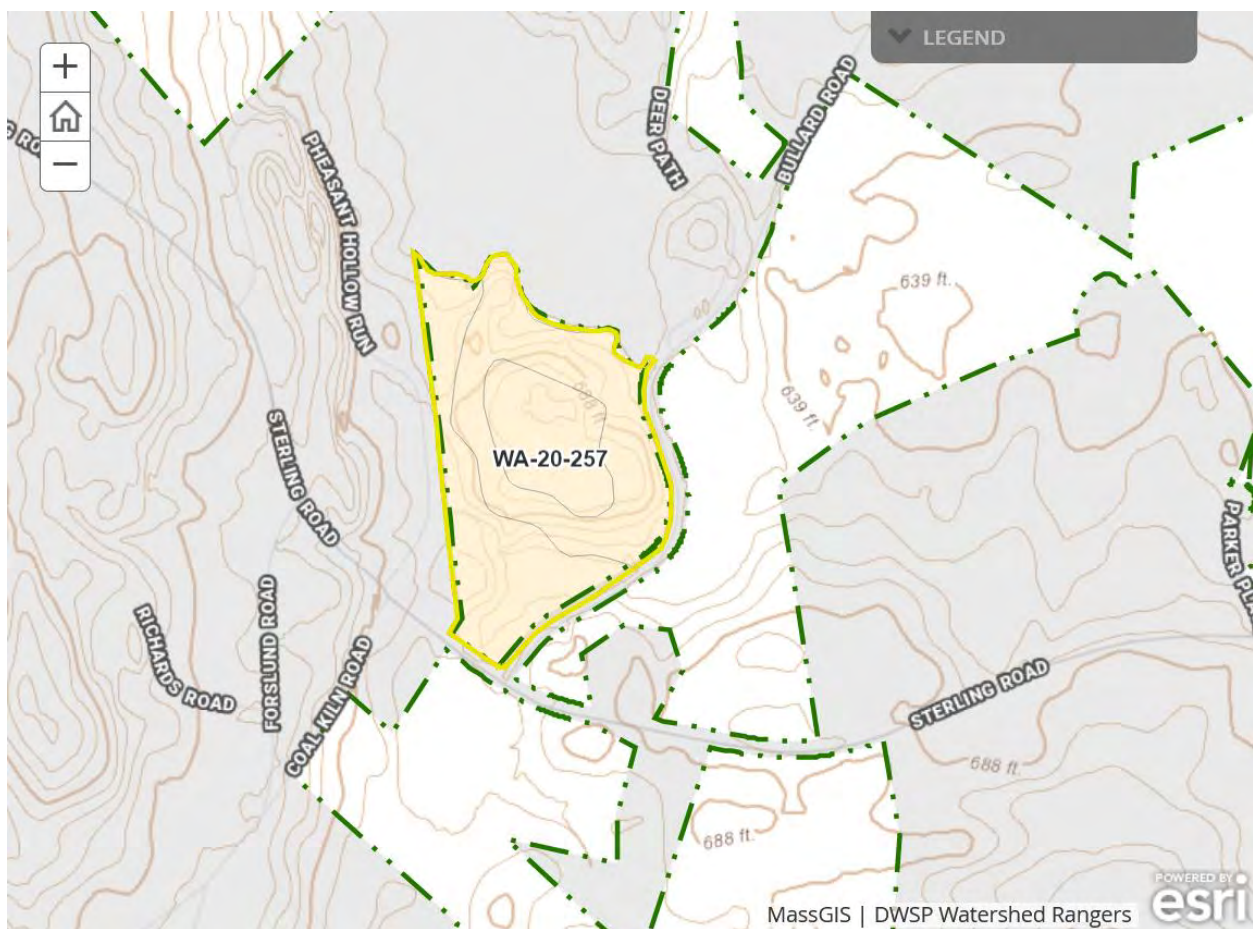


Soils

Drainage Class	%
Excessively Drained	100
Well Drained Thin	0
Well Drained Thick	0

Moderately Well Drained	0
Poorly to Very Poorly Drained	0

The primary soil in this portion of the working unit is the excessively drained Hinckley loamy sand, which is mapped as occurring on the hill as well as in the wetland and Babcock Brook. It's possible that other more poorly drained soil types exist as unmapped inclusions in these lower areas.

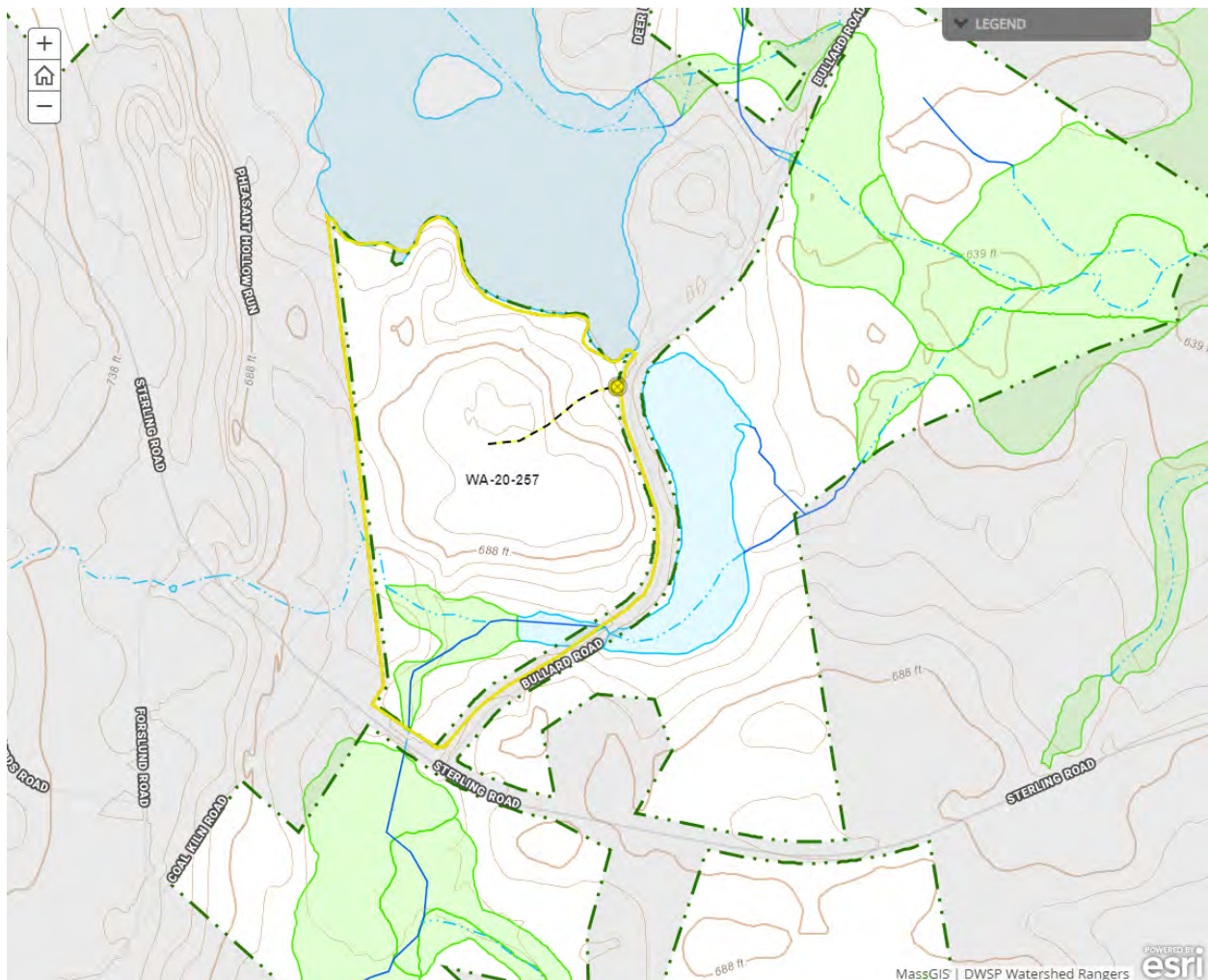


Wetlands

- 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**
- Is logging in wetlands planned? - **No**

Babcock Brook and associated wetlands cut through the southern portion of the lot. No work is proposed in those areas, and no crossings are proposed to access any areas cut off by those wetlands.



Silviculture

Acres in Intermediate cuts: **0**

Acres in prep/establishment cuts: 0

Acres in Regeneration cuts: 7

Average regen opening size: 1

Maximum regen opening size: 2

Description of advance regeneration in proposal area:

124 regeneration plots were taken in this lot. Species observed include hemlock, white pine, red oak, black oak, black birch, red maple, american chestnut, sugar maple, sassafras and black cherry. Oak was identified on 15% of manageable plots. 63% of manageable plots were either regenerated or had marginal regeneration. 30% showed no regen, with 6% being interferred. Deer browse was minimal.

General comments on silviculture proposed:

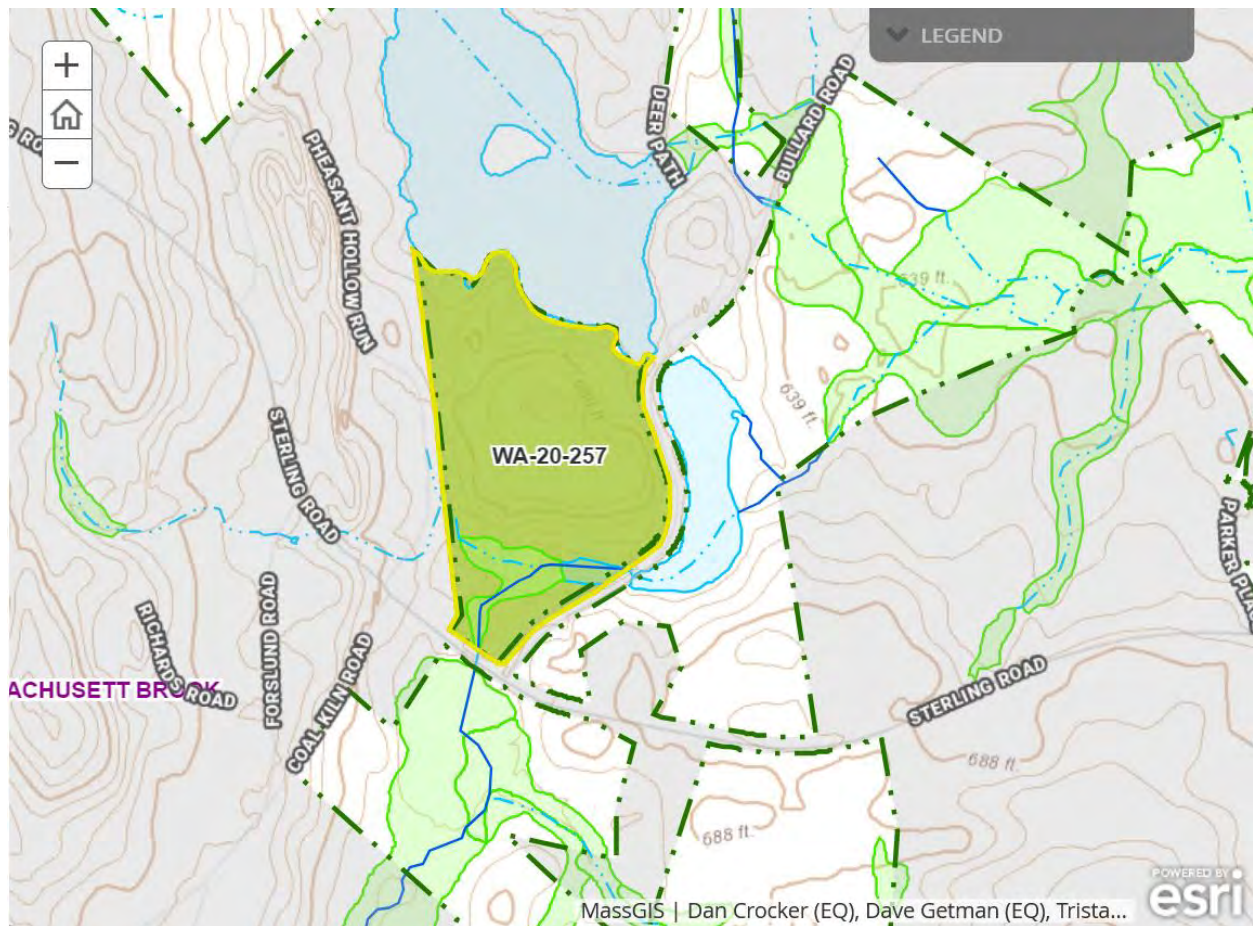
The working unit contains good advance regeneration or marginal regeneration on over 60% of the plots. Therefore, openings will be made to release advance regeneration. About one third of the working unit will be opened to create a new age class. These openings will be spread throughout the working unit specifically targeting areas with good regeneration present. Good white pine regeneration will be especially targeted since this site does better with pine, although a mix of hardwoods including oak will be released as well. This operation will focus on making openings shaped to the topography where advance regeneration characteristics are desirable.



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 (Wachusett Brook)	1123	55	225	20

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



Harvesting Limitations

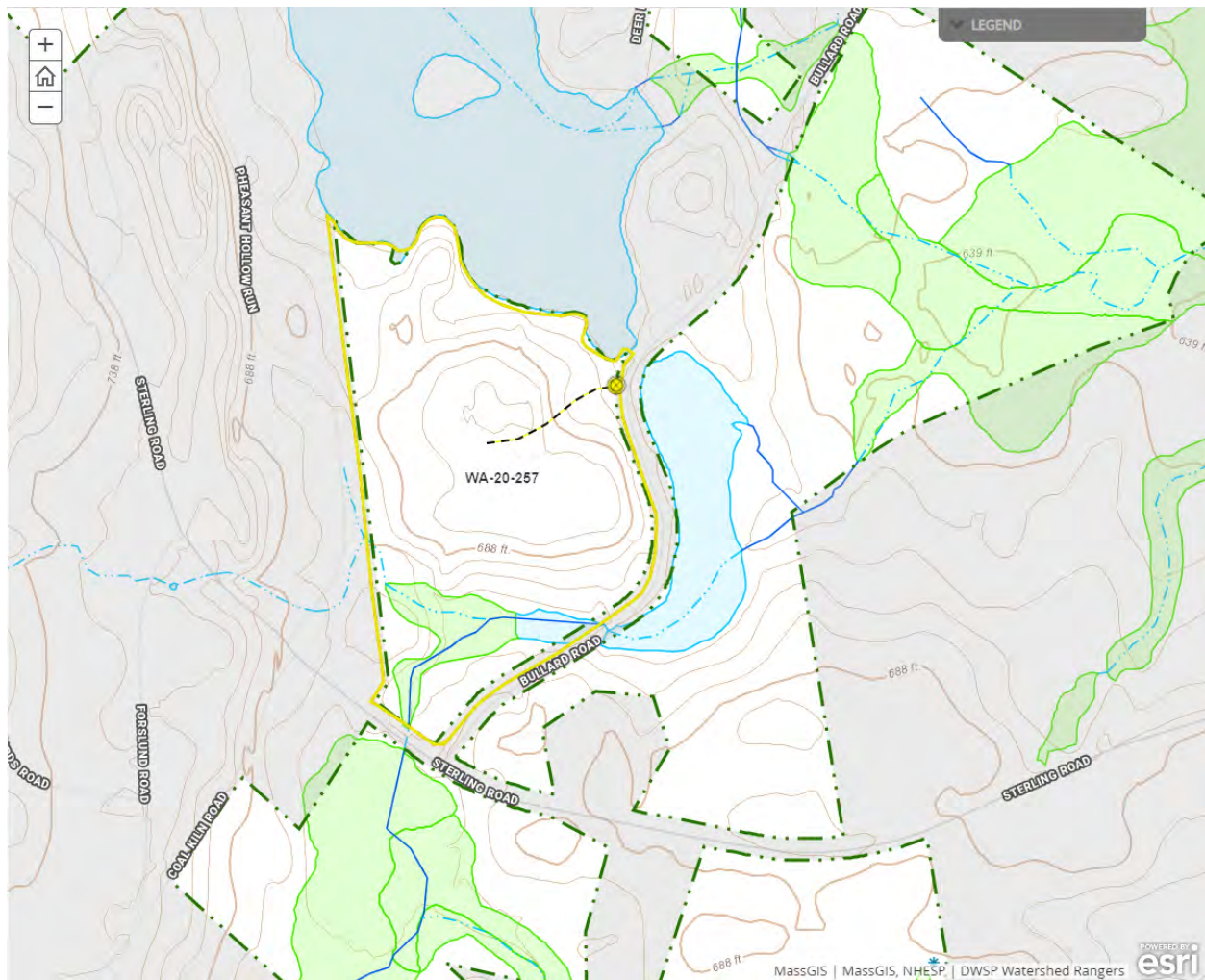
Forwarder required: **Yes**

Feller/processor required: **Yes**

Steep slopes present: **No**

Comments on harvesting limitations:

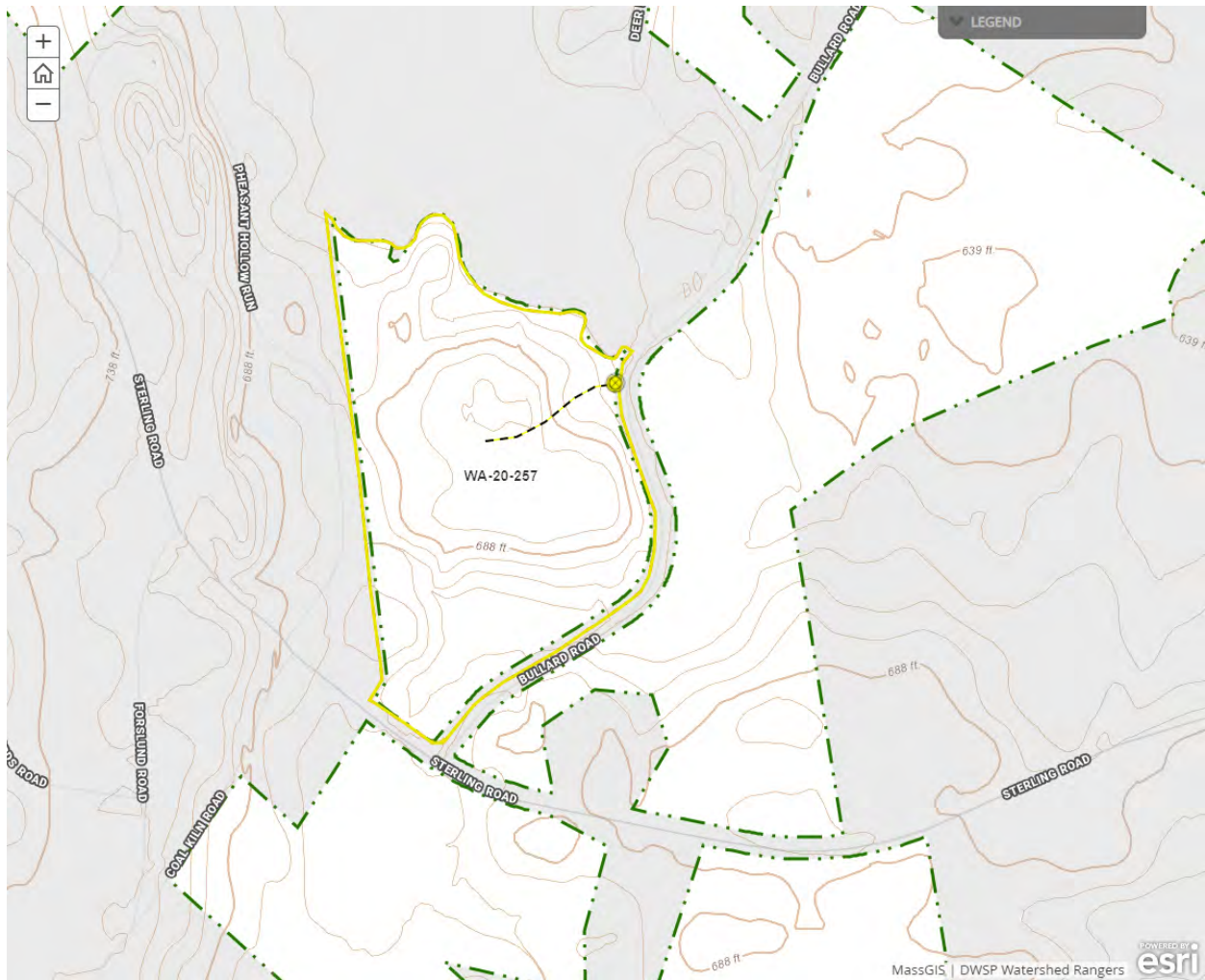
Releasing advance regeneration is the goal, so forwarders and processors will be required in order to aid in protecting the regeneration.



Cultural Resources

Comments on Cultural Resources:

This area has been assessed by the DCR Archaeologist for both known sites of cultural or archaeological importance as well as for potential use by pre-Contact Native Americans; none are known or documented, though the site is considered potentially sensitive for pre-Contact sites. DWSP will follow any additional recommendations from DCR's Archaeologist regarding protection of sensitive sites.



Wildlife Resources & Rare and Endangered Species

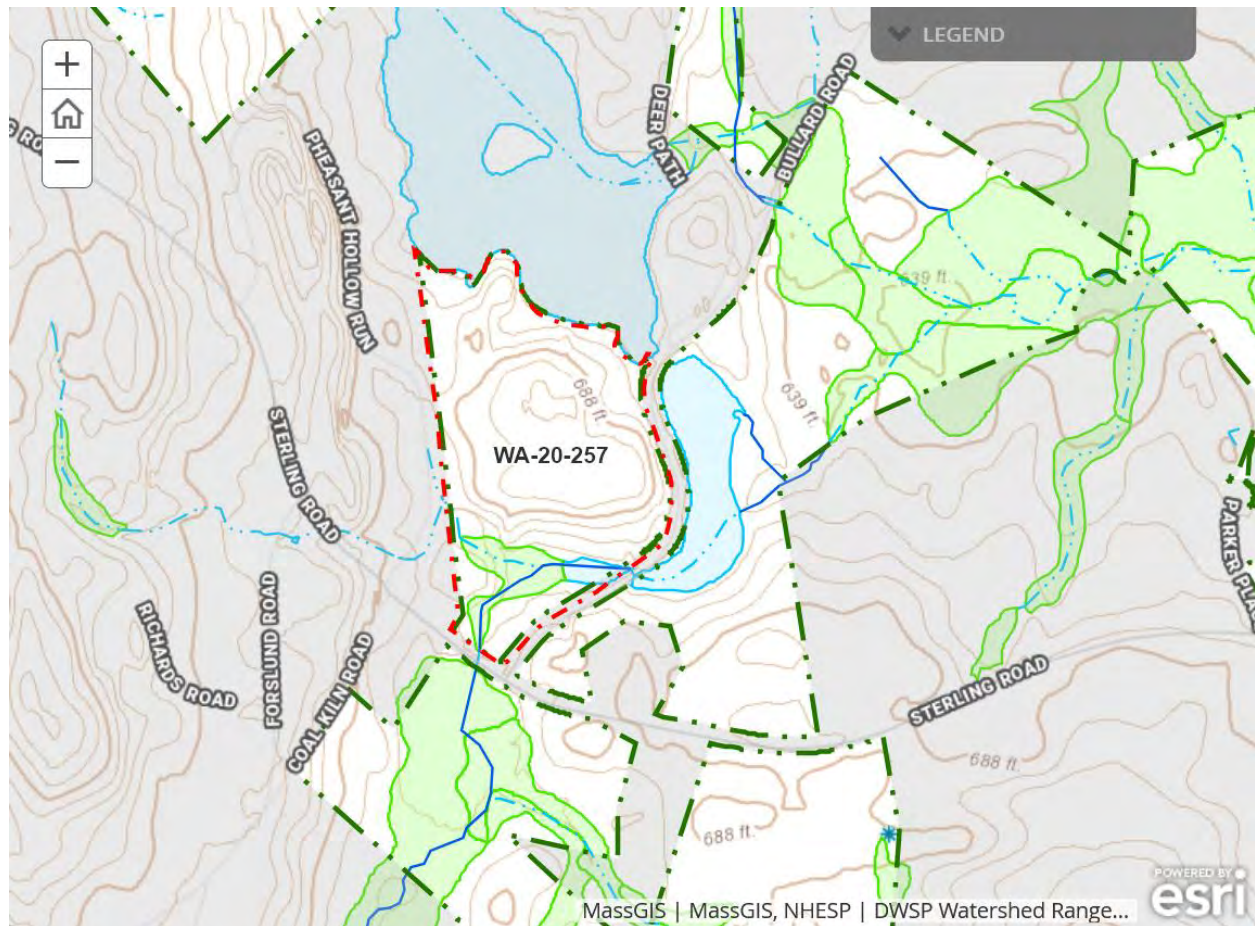
General Wildlife Comments:

There are some neat coves and nooks in the northern slopes leading down to Snow pond that are very thick with mountain laurel and closer to the shore sweet pepperbush, creating some very thick cover. There is some beaver activity along the shoreline of Snow pond.

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:

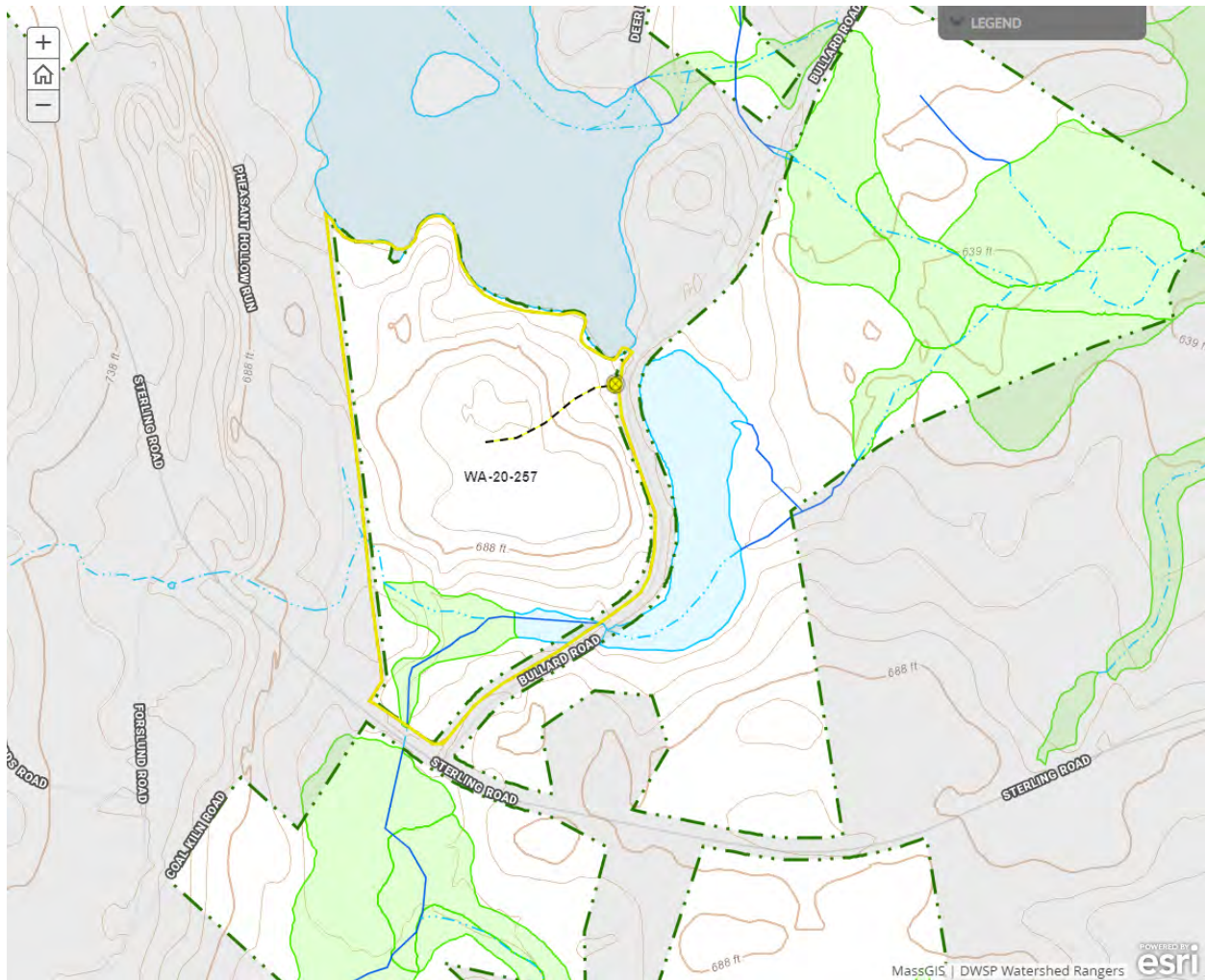
None known.



Environmental Quality Engineering

Comments on EQ Issues:

No stream crossings or other comments.



Forest Access Engineering

Gravel needed: Yes

Landing work needed: Yes

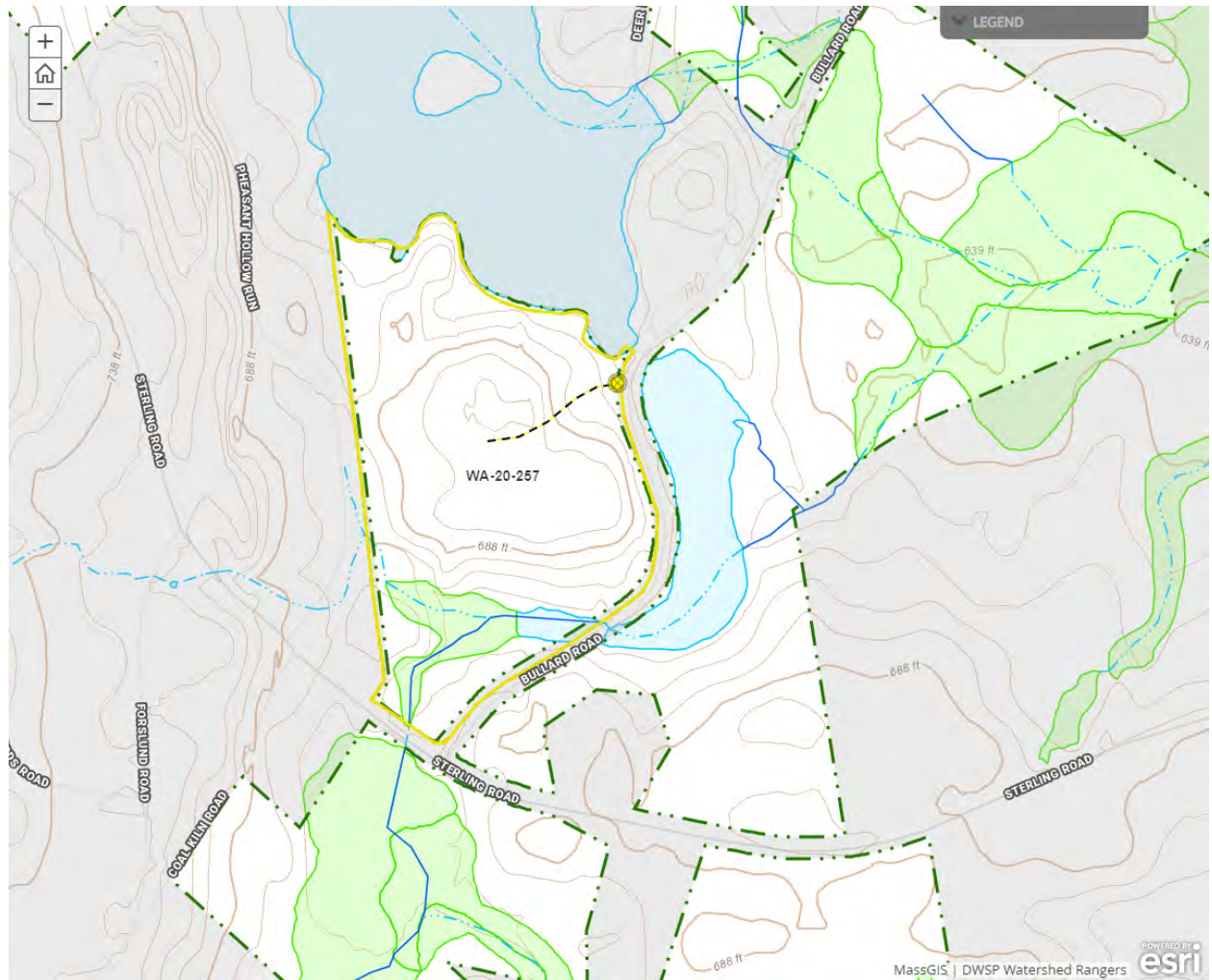
Culverts needed: No

Work needed on permanent bridges: No

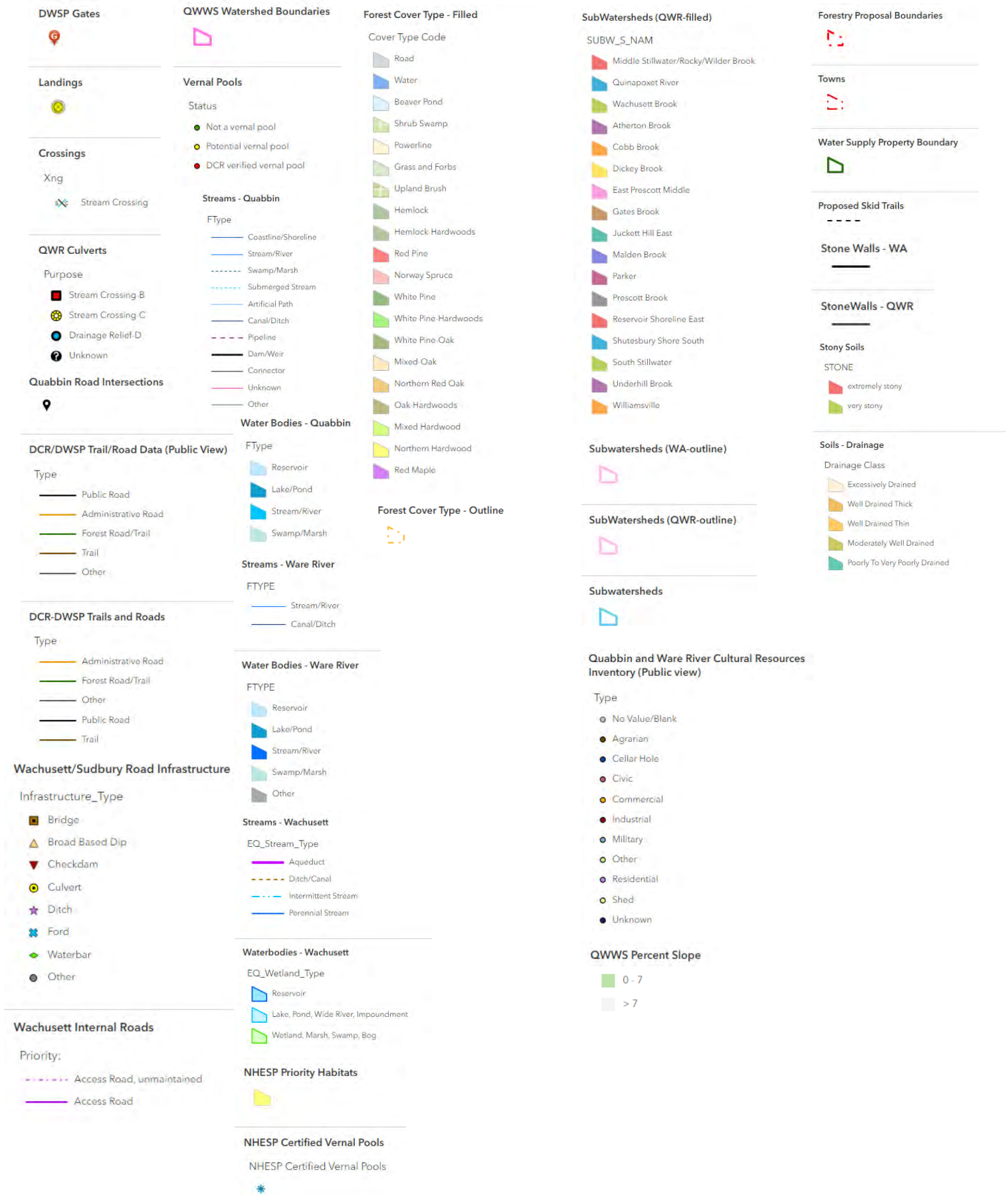
Beaver issue: No

Further comment on access needs:

In order to access this lot there will need to be some dirt work to create a path into the lot. Some gravel might be needed to provide a solid base to the access.



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Wachusett Harvest Proposal WA-20-258

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.

Proposal Location

The north side of this working unit is bound by Working Unit 263 which was proposed in 2016 and cut in 2017. The east side is bound by the railroad bed road, the south side is bound by the woods road that connects the railroad to the Parker pit area and the west side is a line that runs roughly through the middle of Bear Swamp.

Total Acres: 73



General Description

	Overstory Type(s)	Acres
Dominant	Oak, mixed - dry site	69
Secondary	Red pine	2
Secondary	White pine/hardwood	2

	Understory Type(s)
--	--------------------

Dominant	Tree seedlings/saplings dominate site
Secondary	Mountain laurel prevalent

Description of forest composition/condition:

This is a pretty typical dry-site mixed oak stand with black oak, red oak and white oak in the overstory along with far fewer red maple and white pine. Black oak predominates on the higher and drier portions with red oak taking its place on the lower, slightly damper sections. There's a light scattering of paper birch especially in the eastern half; perhaps a vestige of the fires that were probably more common when the railroad was active. There's a small pocket of large bigtooth aspen in the northeast corner of the area near the railroad bed which are nearing the end of their lifespan. Unexpectedly, there are two small red pine plantations. The northerly one dates to 1966. The other one was planted a little bit earlier in 1959. This one however is mostly blown over in what appears to have been a microburst in about 2010.

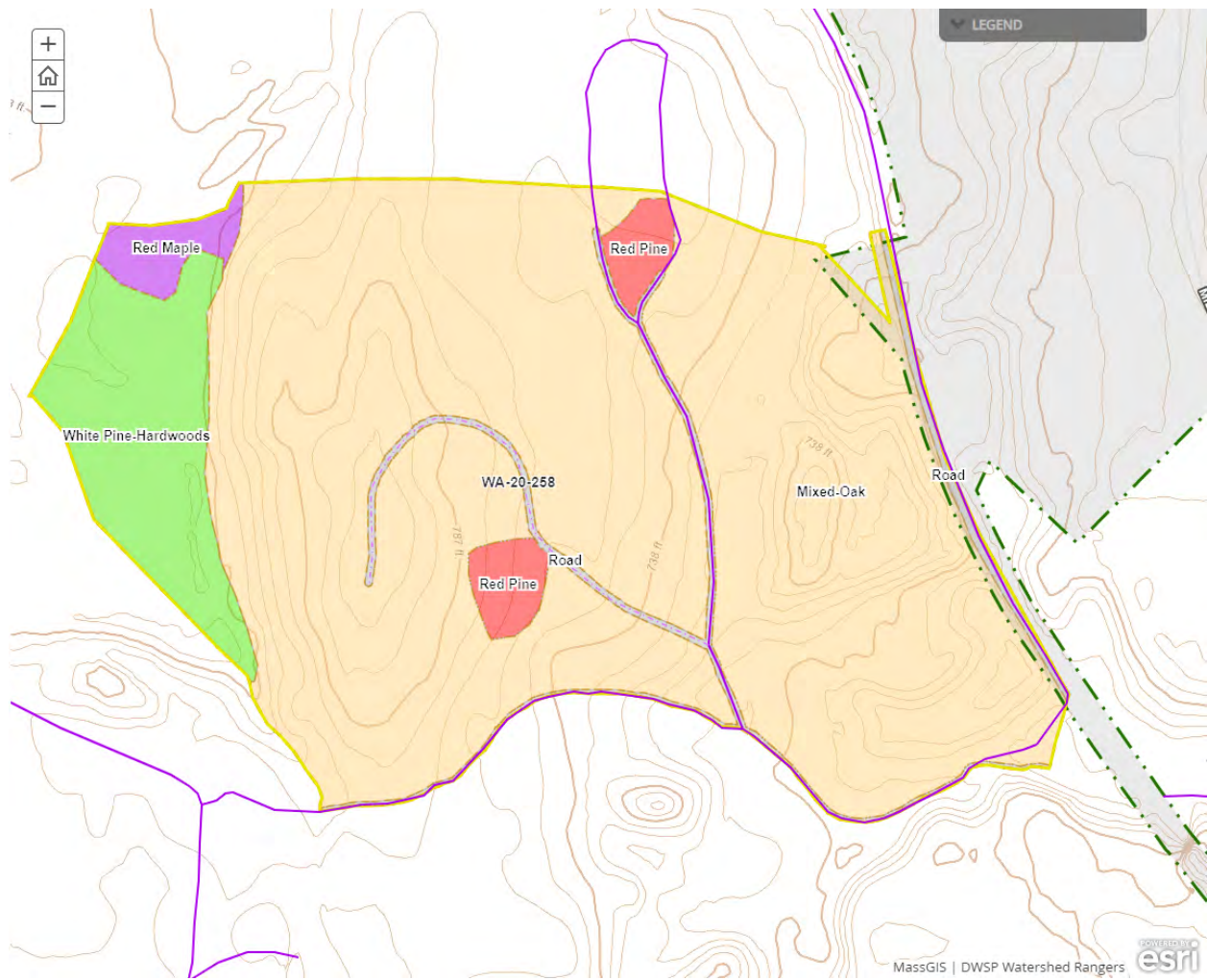
There is excellent advance regeneration through much of this area. Where there isn't advance regeneration, mountain laurel is prevalent and at clearly interfering levels. This is especially so on the west slopes overlooking Bear Swamp. In the eastern part of the area, mountain laurel is also interfering along with witchhazel in the lower, damper areas. Other common shrubs present are huckleberry, lowbush blueberry and sheep-laurel. Maple-leaved viburnum is present and seems to be pretty well restricted to the Canton till soil in the southwestern part of this area as is sassafras.

The age structure of this working unit is as follows; 0%, 0-20 years old; 0% 21-40 years, 3%, 41-60 years; 0%, 61-80 years; 2%, 81-100 years; 95%, >100 years old. Most of this forest originated in about 1917. The oldest stands originated in about 1914, making them about 106 years old.

Assessment of Terrestrial Invasive Species:

Sampling found no terrestrial invasive species in any of the 166 plots taken. This is not surprising given the extremely dry character of most of this site.

While there was not much defoliation from gypsy moths in this area this year, there are a lot of egg masses throughout. We expect significant defoliation this year.

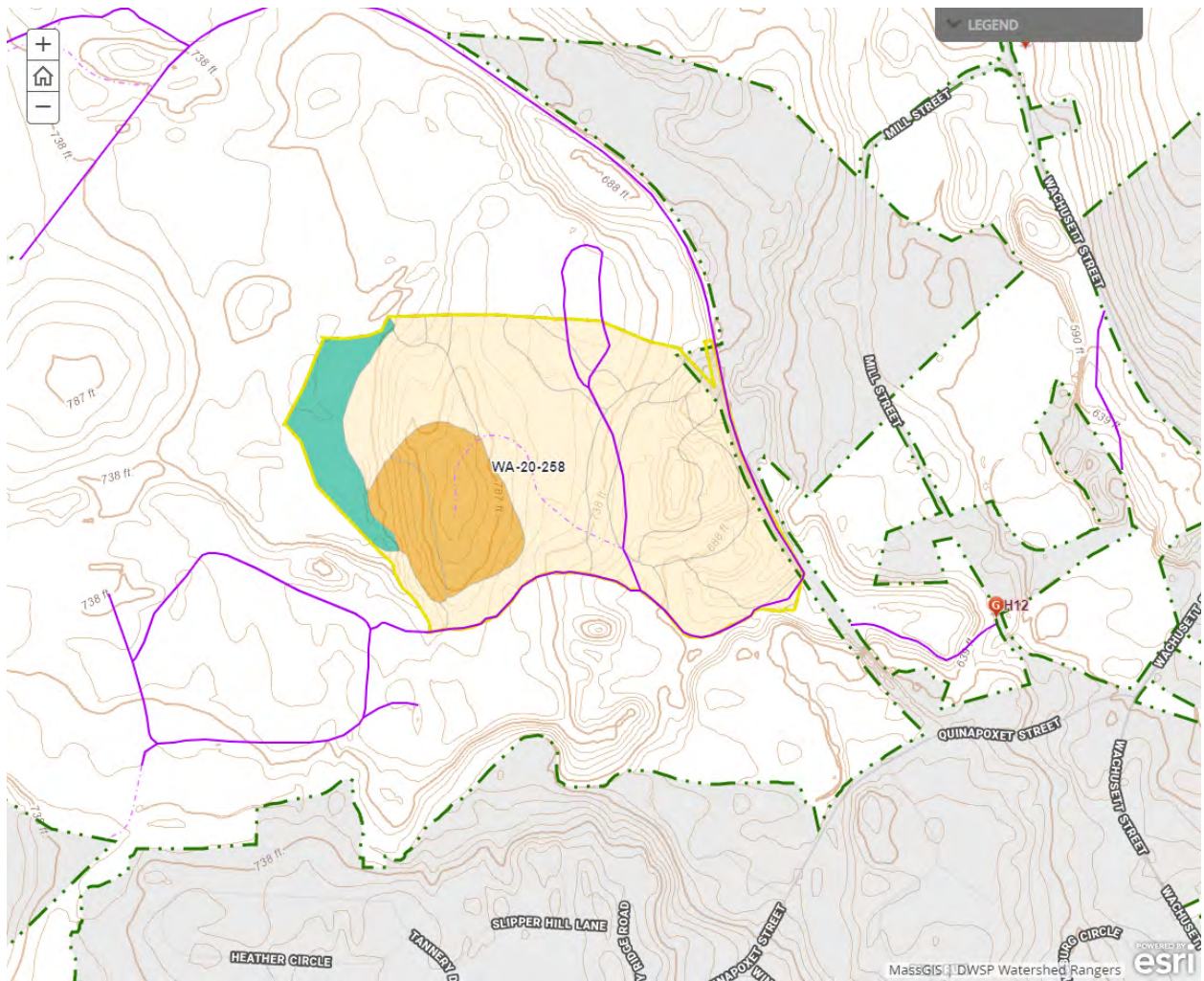


Soils

Drainage Class	%
Excessively Drained	82
Well Drained Thin	0
Well Drained Thick	18

Moderately Well Drained	0
Poorly to Very Poorly Drained	0

The excessively drained soils are the Hinckley and Merrimac sandy loams and the well-drained thick soil is the Canton fine sandy loam.



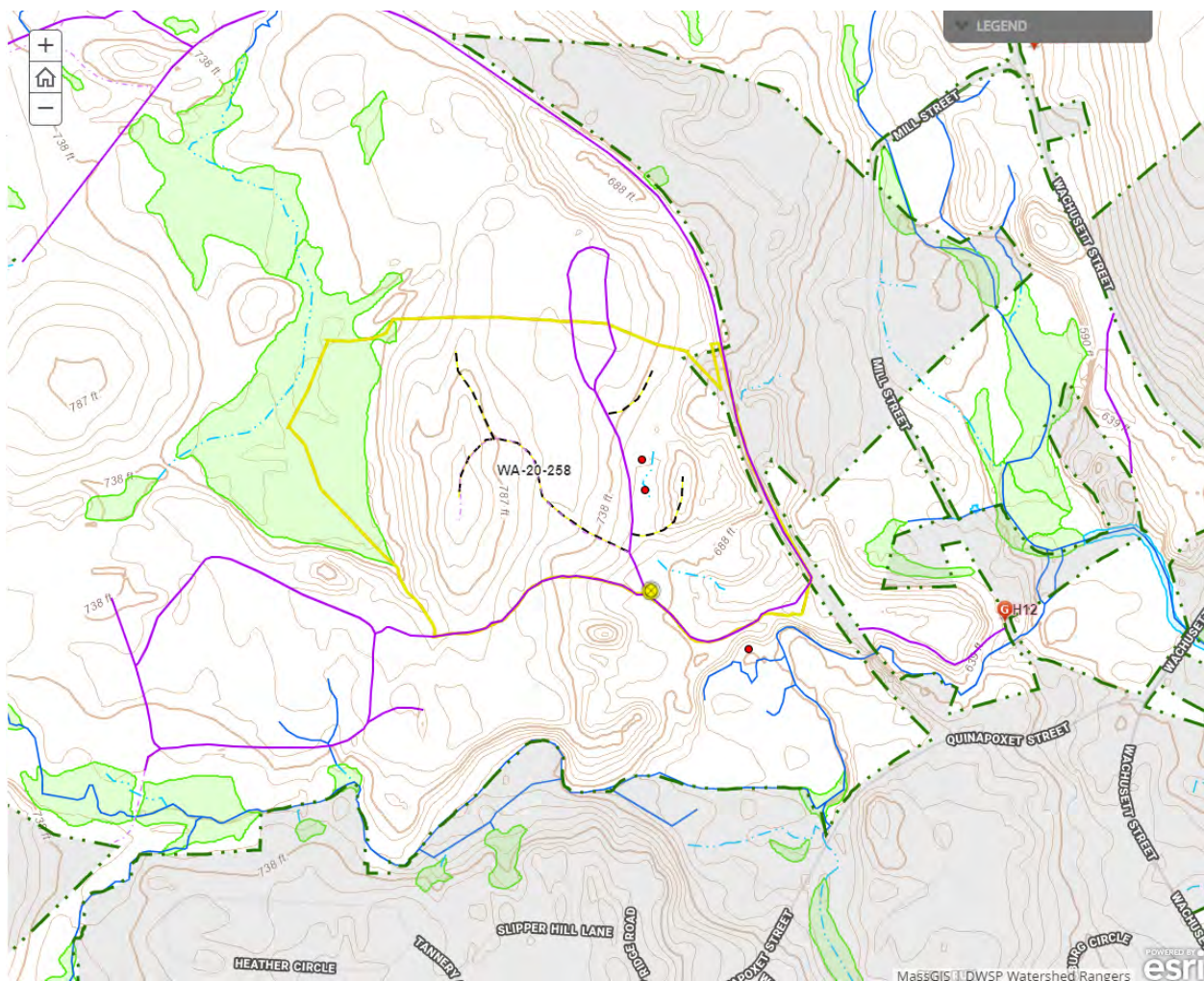
Wetlands

- Wetlands present? - **Yes**
- Streams present? - **No**
- 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**
- Is logging in wetlands planned? - **No**

Bear Swamp is on the western edge of this proposed area, but no logging will occur in Bear Swamp.

Verified vernal pool #66 is in this area and there is another newly verified vernal pool just south in the same narrow, unmapped wetland at the western base of a steep-sided knoll.



Silviculture

Acres in Intermediate cuts: **10**

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

Acres in Regeneration cuts: **24**

Average regen opening size: **1**

Maximum regen opening size: **2**

Description of advance regeneration in proposal area:

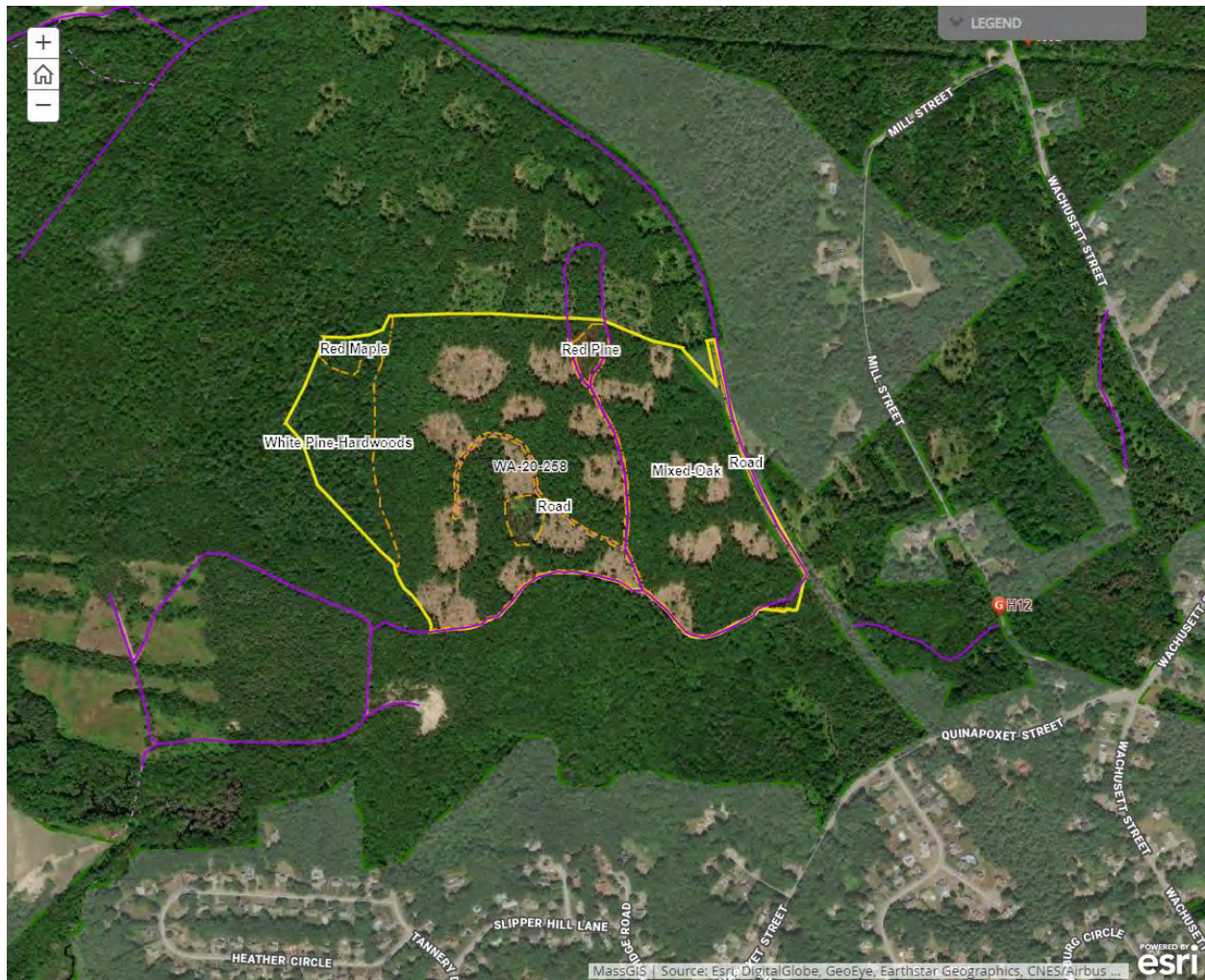
Adequate advance regeneration was present in 62% of the plots. These plots are well distributed throughout the proposed sale area with the exception of the west-facing slopes above Bear Swamp which are dominated by mountain laurel. The regeneration is comprised of white pine, black oak, white oak and red oak with lesser amounts of red maple, sassafras and black cherry. Interfering levels of native shrubs (primarily mountain laurel) were present in 30% of the plots.

General comments on silviculture proposed:

With excellent advance regeneration present throughout this working unit, openings will be made on up to 24.2 acres thereby achieving the goal of creating a new age class on 1/3rd of this area. This will be accomplished by the removal of the overstory in patches that average about 1 acre with a maximum size of about 2 acres. These will be well distributed throughout the proposed area taking advantage of where the regeneration is best. Given the dry character of this area, openings will be located in order to take advantage of where white pine regeneration is present.

Some partial cutting may occur between the openings, however this will be restricted due to the presence of mountain laurel in so much of this working unit. Partial cutting only serves to encourage the dominance of mountain laurel in forest understories.

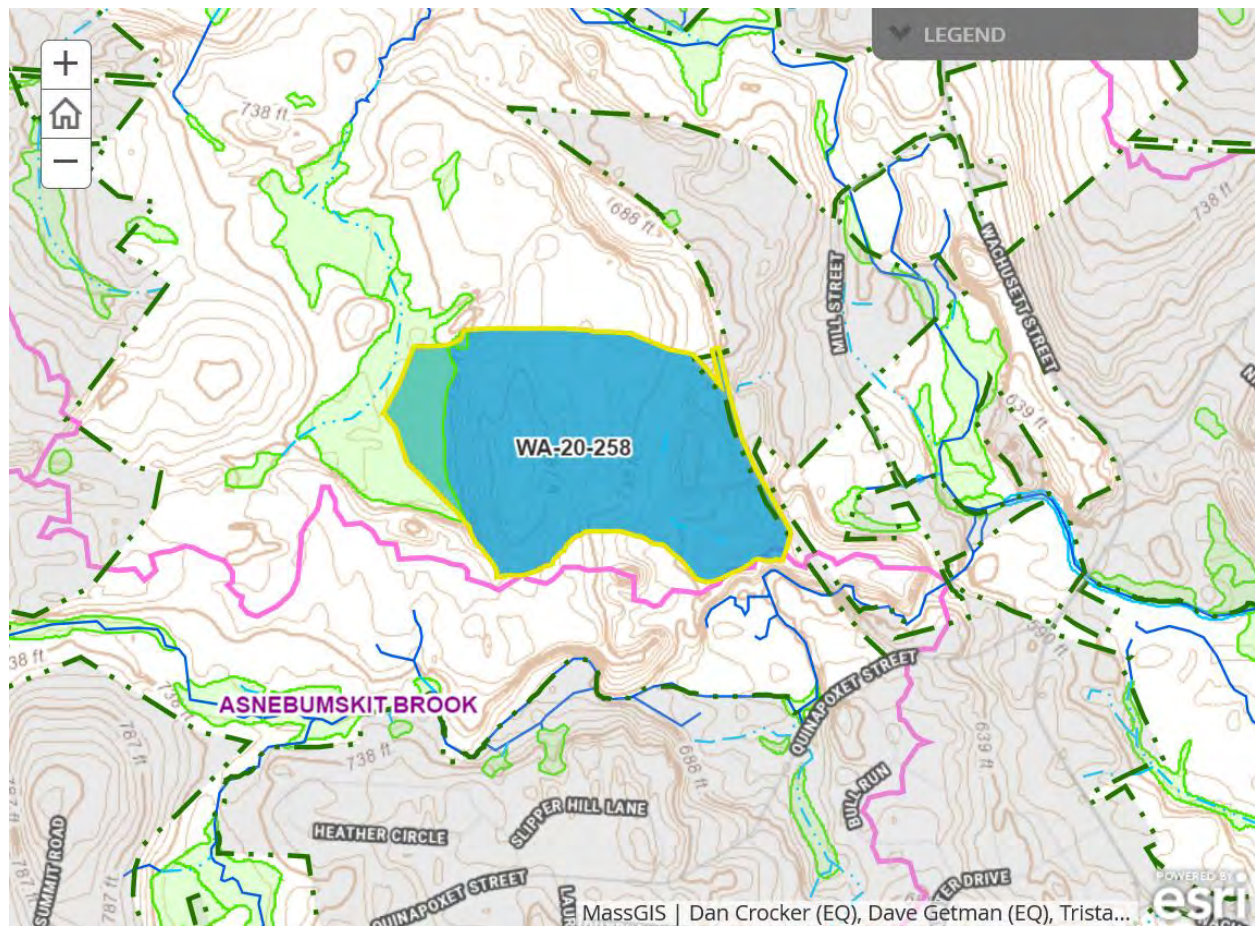
Following this cut, this working unit will have an approximate age structure as follows: 33%, 0-20 years old; 0%, 21-40 years; 1%, 41-60 years; 1%, 61-80 years; 2%, 81-100 years; 63%, >100 years old.



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
14 (Quinapoxet River)	2462	78	538	73

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



Harvesting Limitations

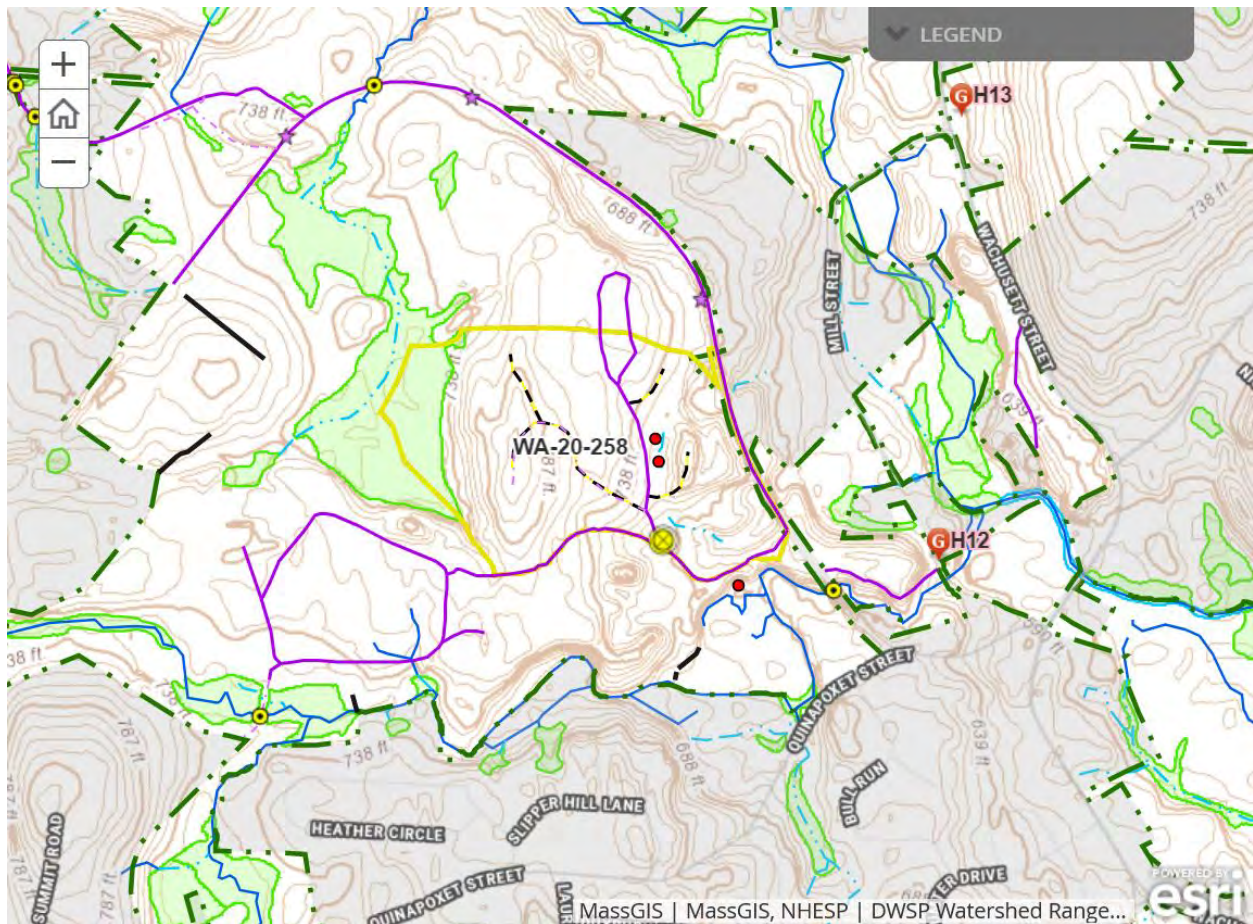
Forwarder required: **Yes**

Feller/processor required: **Yes**

Steep slopes present: **No**

Comments on harvesting limitations:

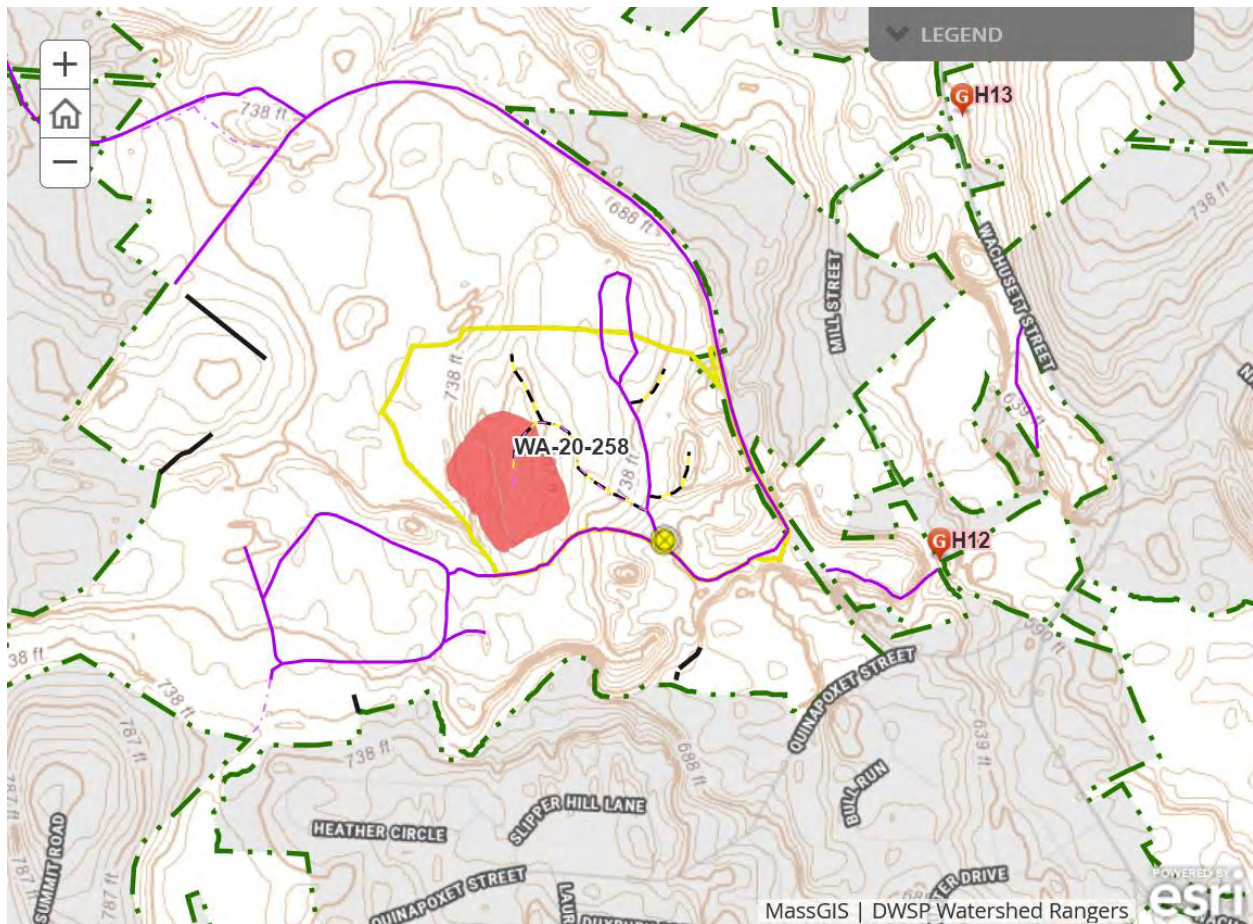
With advance regeneration present and a desire to protect as much of it as possible during the harvest, a cut-to-length harvesting system will be employed.



Cultural Resources

Comments on Cultural Resources:

This area has been assessed by the DCR Archaeologist for both known sites of cultural or archaeological importance as well as for potential use by pre-Contact Native Americans; none are known or documented, though the site is considered potentially sensitive for pre-Contact sites. DWSP will follow any additional recommendations from DCR's Archaeologist regarding protection of sensitive sites.



Wildlife Resources & Rare and Endangered Species

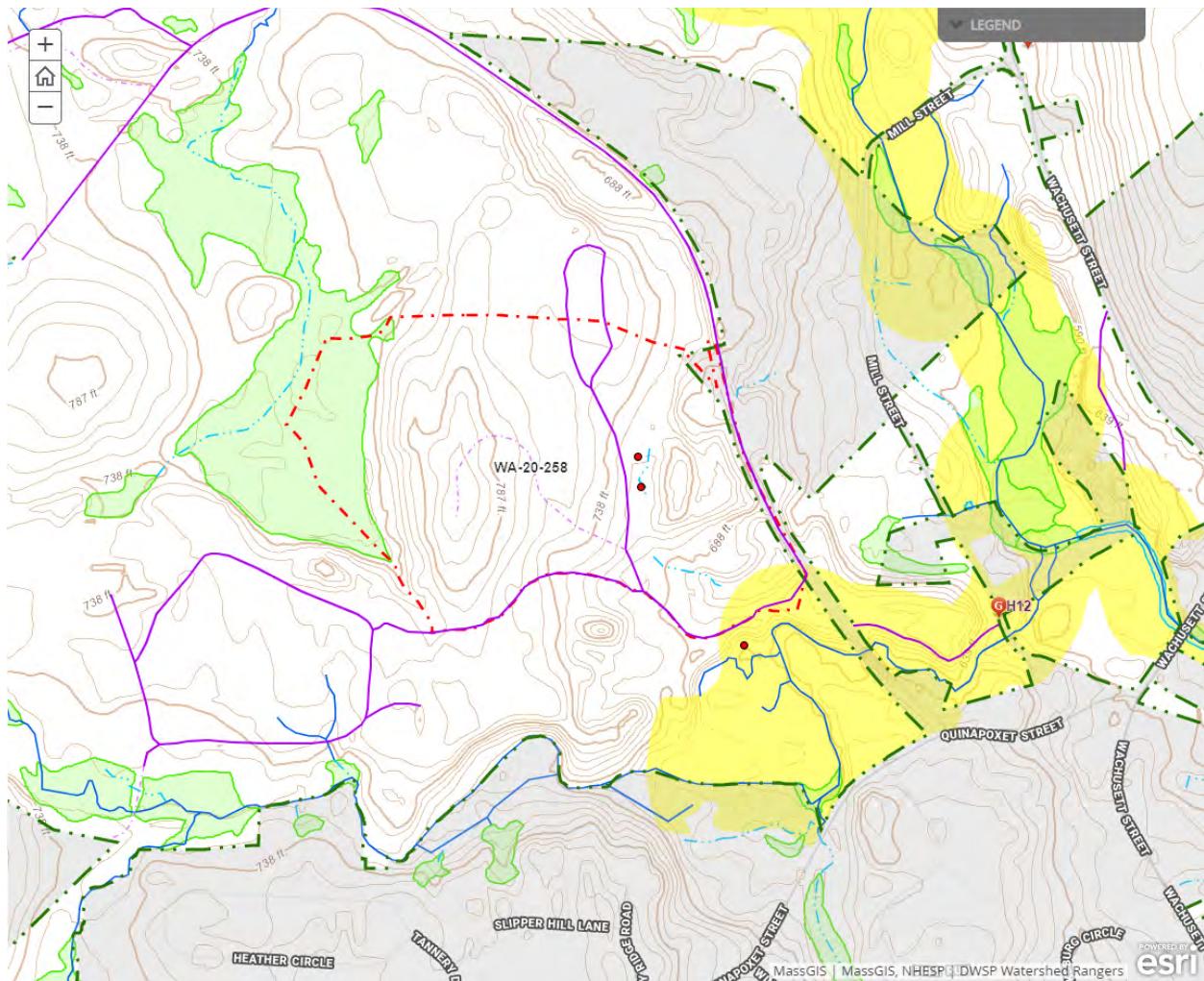
General Wildlife Comments:

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:

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

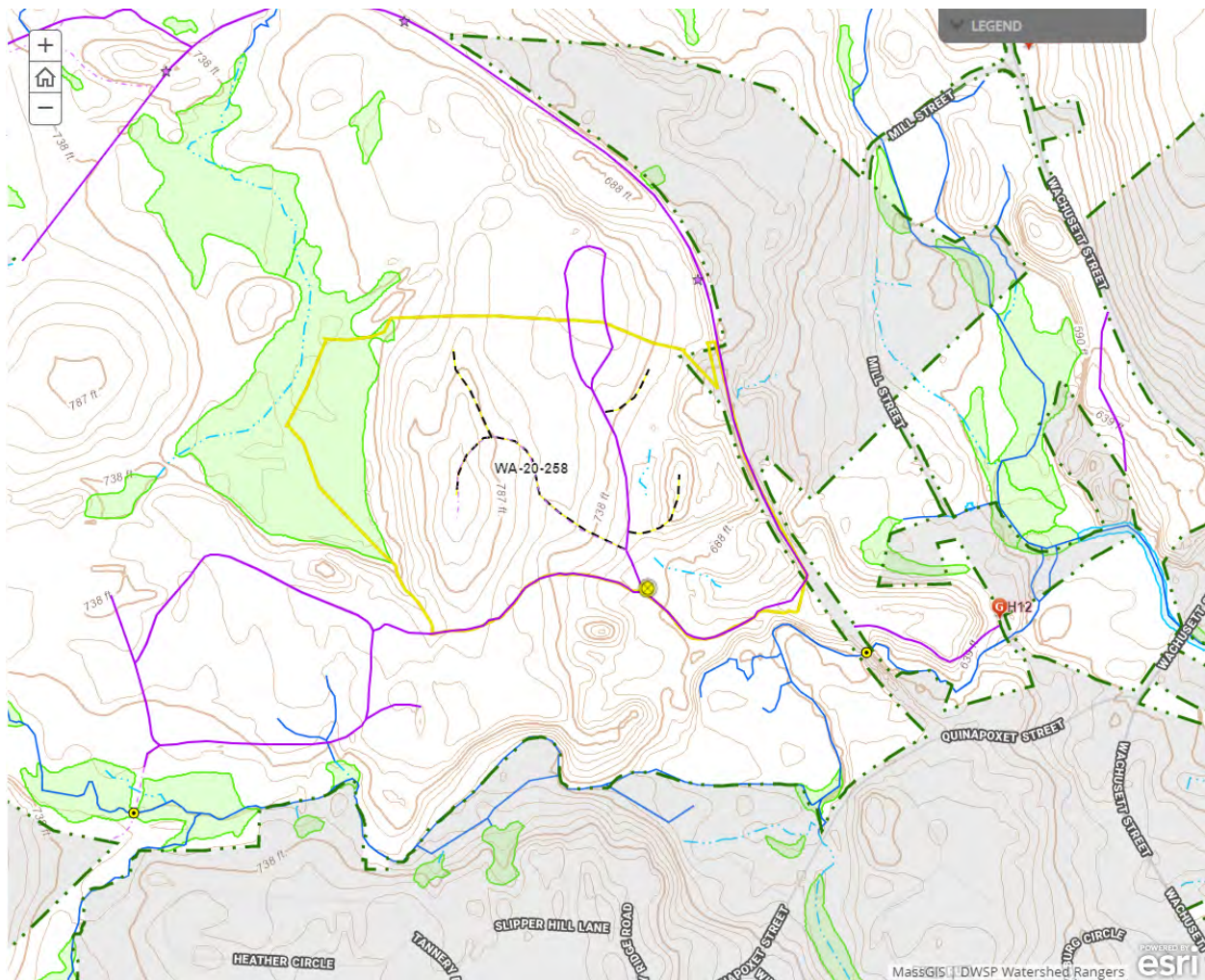
affected species and their locations is not included in this report. DWSP will coordinate with NHESP and follow recommendations to protect these species during the proposed activity.



Environmental Quality Engineering

Comments on EQ Issues:

No stream crossings are planned, and no additional EQ comments.



Forest Access Engineering

Gravel needed: No

Landing work needed: No

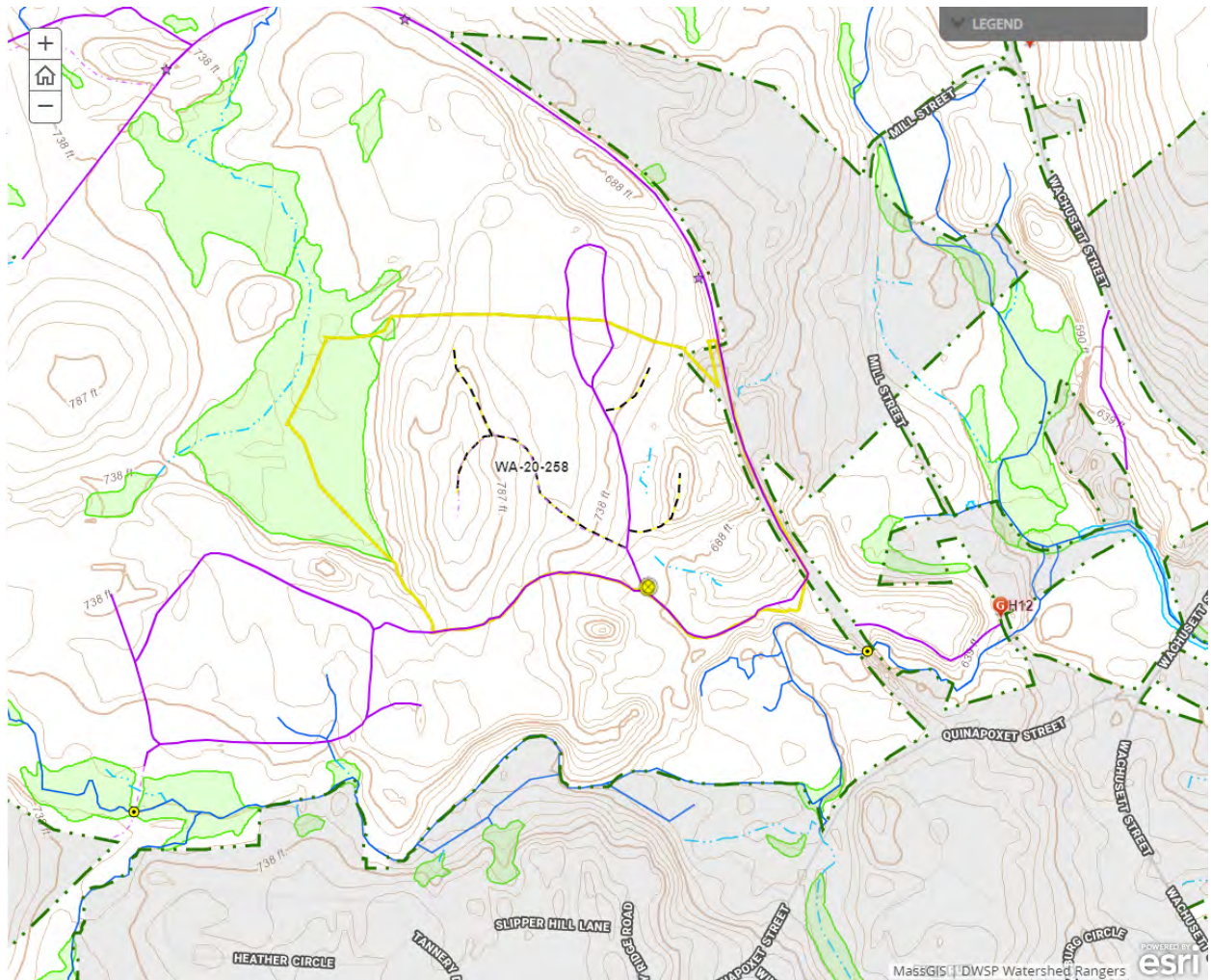
Culverts needed: No

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.



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