Massachusetts Department of Conservation and Recreation

Division of Water Supply Protection, Office of Watershed Management

Forest Management Project Summary

Project Title: Brigham

DWSP Harvest Permit Number: 4382
DCR Forest Cutting Plan File Number: 021-6877-14

Site Information

Watershed: Ware River	**Town(s)**: Barre and Hubbardston
Acres: 12.6	**Nearest Road:** Brigham Road
Natural Heritage Atlas overlap?: No	**Public Drinking Water Supply Watershed?:** Yes
Forest Types: White pine-oak, White pine-hardwoods	**ACEC?:** No
Soils: Primarily Charlton-Chatfield-Hollis association, fine sandy loam, very rocky.	
Wetland Resources: None.	
Vernal Pools: None	

Harvest Information

Harvest Start Date: 4/1/14	**Harvest End Date:** 11/25/14
Number of Wetland Crossings: None	**Number of Stream Crossings:** None

Best Management Practices Applied

Stream Crossings	There are no stream crossings.
Filter Strips	There are no filter strips.
Wetland Crossings	There are no wetland crossings.
Harvesting in Wetlands	There is no harvesting in wetlands.

DWSP Forester supervising this harvest
Name: Steven J. Wood
Forester License #: 257
Phone #: 508-882-3789 ext.1603

NARRATIVE

General Description/Forest Composition/History:

This harvesting lot is located east of Brigham Rd. along the Hubbardston/Barre town line (portion in both towns but mostly in Barre) and is bounded by stone walls, Brigham Rd. and an old road to the south. The East Branch Ware River and associated wetlands are just west of the lot but will not be impacted by the operation.

The northern portion of the lot was tilled farm land until the 1930s and is now growing poorly formed white pine and hardwoods. This is the only section showing any evidence of past logging and appears to have been thinned 20+ years ago, possibly having only firewood cut. The rest of the lot was probably untilled pasture and has better formed white pine and oak with a small section of oak-hardwood growing on it currently. There are several stone walls running through the lot that probably separated various pastures and fields in the past. In the 1930s the Commonwealth purchased the property from Jennie H. Brigham and a second parcel from Paul C. Rockwood.

The overstory is currently dense with a mostly stagnant understory. Overstory species present in decreasing order of abundance are white pine, red oak, black oak, white oak, red maple, black cherry and white ash. The understory includes the same species as the overstory but is mainly white pine and red maple. There are also some black birch and scattered hemlock. Shrubs present include high and low bush blueberry, some viburnums, and hazelnut. There are also various ferns, grasses and forbs. None of these should be an impediment to establishing tree regeneration. The site was judged to be moderately diverse. The only invasives seen were glossy buckthorn and small amounts of Japanese barberry, mainly in the northern portion. In the fall of 2013 all of both species were pulled from this area in an attempt to control invasives and sample plots were established.

The soil is a moderately to well-drained sandy loam and is rocky. There are two rock ridges that run north-south through the lot and there is some exposed bedrock in this area. The soil along these ridges is shallower.

Site Selection:

The Division of Water Supply Protection (DWSP) has determined that a vigorous, species-diverse, many-aged forest offers the most stable land cover in the face of potential large-scale disturbances by wind, ice, insects or disease. The Division's long term objective is to diversify today's predominately older forest into a multi-aged forest while conserving biodiversity using sustainable forestry practices.

DWSP foresters, guided by the Land Management Plans for each of the four source supply watersheds of the DCR/MWRA drinking water system, design timber harvests that will regenerate approximately 1% of the managed forest annually so that gradually, over time, the managed forest will include a much broader range of age classes than is currently present. Additionally reserve areas of large unmanaged stands of trees are left to grow to biological maturities ranging from 100 to 400 or more years of age.

The overall purpose of this management is to restore the forest to more balanced proportions of young, mid-aged, and older trees while retaining the greatest possible variety of native species. The DWSP's working hypothesis is that the damage caused by inevitable future severe weather events, outbreaks of disease, and insect infestations is likely to be less extensive and the forest's rate of recovery following those events is likely to improve as these forest characteristics fully develop.

DWSP foresters follow all relevant state and local regulations and are further restricted by multiple in-house guidelines such as DCR/DWSP's Conservation Management Practices (CMPs) to ensure that forest management is conducted in a manner that does not impair water resources or other natural or cultural

resources on the watersheds. The Division meets or exceeds the requirements of both the Forest Cutting Practices Act and the Wetlands Protection Act (MGL ch. 132 and 131).

All DCR forest management activities go through a review procedure involving DCR staff from supporting disciplines including wildlife biology, forest planning, water quality and environmental engineering, civil engineering, and cultural resource protection.

Other than the patch cut at the south end of this harvest, most of the forest around this lot is 80 or more years old and has had either light thinning or no cutting during DCR ownership. The proposed treatment on this lot will advance our goals of creating a new age class, diversifying structure and improving the vigor of the residual stems which should reduce their susceptibility to storm damage and insect/disease.

Silvicultural Objectives:

The main treatment on this lot is a thinning with poorly formed, damaged, and/or crowded stems of poor vigor being cut to release the crowns of the better formed trees and to initiate some regeneration and partially release some of the existing seedlings. There will be approximately thirteen .1 - .2 acre small openings created here where there are groups of only poorly formed trees. Another cut in 10-20 years will be needed to keep the existing regeneration vigorous and release these small groups. Most of the suppressed understory and mid-story trees will be cut other than some hemlock, which is tolerant of these conditions, and some cavity and other trees that are or could be used by wildlife for nesting or feeding. A more diverse oak-hardwood stand with a smaller white pine component should be started by this treatment. Additionally a more vigorous and diverse shrub/grass/forbs component will be established especially in the small patch cut to the north.

The southern edge of this cut abuts a small clear cut completed in 2003 and this cut will release the regeneration established here. This treatment should increase the diversity of species and will increase the age and structural diversity of the forest as a whole.

Cultural Resources:

There are 3 cellar holes just south of the lot. Numerous stone walls are present and have been located with GPS and mapped as have the cellar holes and barways.

Other than the above features this land has been determined to not be culturally or archeologically sensitive based on a review by the DCR Archaeologist. Standard practice dictates that every effort is made to avoid disturbing stone walls. There are multiple walls on this lot and existing barways will be utilized as much as possible to cross them. Due to the larger size of modern equipment these will need to be widened, and this widening has been approved by the Archaeologist.

Wildlife/Rare or Endangered Species:

There are no vernal pools, critical habitats, or known rare or endangered plants or wildlife on this lot. A variety of wildlife such as deer, turkey, coyote and moose are known to frequent the lot and beaver and otter are in the adjoining river and wetlands.

FIGURES

Figure 1: Final Forest Cutting Plan

FINAL

Forest Cutting Plan

and Notice of Intent under M.G.L. Chapter 132 – The Forest Cutting Practices Act, 304 CMR 11.00
(Effective Date: 1/1/04)

For DCR Use Only:

File Number	237-2340-14	Case No.	
Date Rec'd	2-10-14	Nat. Hert.	N
Earliest Start	2-26-14	Nat. Hert. Imp.	N
River Basin	CHICOPEE	Pub. Dr. Wat.	WARE
Gen. Obj.	LT	ACEC	N

DH

Site Information

Location

Town: Barre & Hubbardston, WR lot 4382
Road: Brigham Rd.
Acres: 12.65 Proposed Start Date:
Vol. MBF: 32.1 Vol. Cds.: 133 Vol. Tons: 187

Plan Preparer

Name: Steven J. Wood
Address: DCR, Division of Water Supply Protection
578 Old Turnpike Rd.
Town, State, Zip: Oakham, MA 01068
Phone: (508)882-3789 ext.1603
Type of Preparer: Mass. Licensed Forester
*Mass. Forester License #: 257
*Required for land under Ch61, Ch61A or Forest Stewardship

Landowner

Name: DCR, Division of Water Supply Protection
Mailing Address: 485 Ware Rd.
Town, State, Zip: Belchertown, MA 01007
Phone: (413)323-4447
Ch61 ☐ Ch61A ☐ Stew ☐ *Case #:
Est. Stumpage Value: $2600.00

Licensed Timber Harvester**

Name:
Address:
Town, State, Zip:
Phone:
Mass. Lic. Harvester #:
**This information may be supplied after the plan is approved, but before work begins.

Best Management Practices

Stream Crossings

Indicate location on map	SC-1	SC-2	SC-3	SC-4
Type of Crossing				
Existing Structure				
Type of Bottom				
Bank Height (ft)				
Stabilization				

Harvesting in Wetlands

Indicate location on map	HW-1	HW-2	HW-3	HW-4
Forest Type (see pg 2)				
Acres to be Harvested				
Resid. Basal Area (>50%?)				

Wetland Crossings

Indicate location on map	WC-1	WC-2	WC-3	WC-4
Length of Crossing				
Mitigation				
Stabilization				

Filter Strips

Indicate location on map	FS-1	FS-2	FS-3	FS-4
Width (50', 100', or VA)				

Service Forester Comments

Codes

Type of Preparer	Type of Crossing	Stabilization	Mitigation	Type of Bottom
LF Mass. Lic. For	CU Culvert	SE Seed	FR Frozen	LE Ledge
TH Lic. Tim. Har	BR Bridge	MU Mulch	DR Dry	ST Stony
TB Timber Buyer	FO Ford	CO Corduroy	OT Other	MU Mud
LO Landowner	PO Poled	ST Stone		GR Gravel
OT Other	OT Other	HB Hay Bales		OT Other
		OT Other		

Note
Applicant must provide DCR with all relevant information before plan may be approved and cutting may begin.
Some forestry activities, such as prescribed burning and pesticide or fertilizer application may require additional permits. Consult MA Forestry BMP Manual for further information.

If Other (OT) is used in any category an explanation must be given on an attached narrative page

Forest Products

Products to be Harvested*

Species	Mbf/Cds		Mbf/Cds
White Pine	20.8	Red Maple	
Red Pine		Sugar Maple	
Pitch Pine		Red Oak	8.3
Hemlock		Black Oak	
Spruce		White Oak	1.8
Other Sftwd.		Other Hdwd.	1.2
White Ash		Total Mbf	32.1
Beech		Cordwood (Cds)	133
White Birch		SW Pulp (Tons)	119
B & Y Birch		HW Pulp (Tons)	
Black Cherry		Chips (Tons)	68

*Note: Volumes and values indicated in the Plan are as reported by the plan preparer and have not been independently verified by the service forester upon approval. Mbf = thousand board feet.

Stand Treatment

Cutting Standards

Indicate location on map	ST-1	ST-2	ST-3	ST-4
Forest Type	WO4	WH4		
Acres	12.2	15		
Landowner Objective	LT	LT		
Designation of Trees	CT	CT		
Type of Cut	SH	CC		
Source of Regeneration	AD/SE	AD/SE		

Landowner

Landowner Signature

The most important information on a cutting plan is the Landowner's objective, as this will determine which trees will be harvested and which will remain; **this decision will also determine the future condition of the forest for decades to come.** After having read the Massachusetts Forest Cutting Plan Information Sheet on page one, indicate your objective by checking the appropriate box below.

☒ **LT – Long-term Forest Management**
Planned management of the forest to achieve one or more of the following objectives: produce immediate and maximize long-term income, enhance wildlife habitat, improve recreational opportunities, protect soil and water quality, or produce forest specialty products.

☐ **ST - Short-term Harvest**
Harvest of trees with the main intention of producing short-term income with minimal consideration given to improving the future forest condition, which often results in a forest dominated by poor quality and low value specie

I (we) have read the Massachusetts Cutting Plan Information Sheet, and am aware of my (our) management options.
I (we) hereby certify that I (we) have the legal authority to carry out the operation described above.
I (we) certify that I (we) have notified the Conservation Commission in the town in which the operation is to take place and the abutters of record within two hundred feet of the area to be harvested.
I (we) understand that the volumes and values (Ch61 only) in this plan have not been independently verified by the service forester upon approval and will report final values and volumes to the Director or his/her agent if the final figures differ from those reported.

[signature] 1-24-14

Signature of landowner(s) Date

Service Forester

Determination and Status

	Approved	Disapproved	Expires
Cutting Plan	☑	☐	2/10/16

[signature] 2/18/14

Signature of Service Forester/Director's Agent Date

SITE VISIT W/ S. WOOD 2/11/14

	1	2	Expires	Ser. For. Init.
Extension	☐	☐	/	/

	App 1	Dis 1	App 2	Dis 2	
Amendment	☐	☐	☐	☐	/

Final Report and Comments

I hereby certify that the afore described Forest Cutting Plan and all relevant statutes have been substantially complied with.

[signature] 10/1/2014

Signature of Service Forester/Director's Agent Date

Codes

Forest Types
WP White Pine
WK WP/Hem
WH WP/Hdwd
WO WP/Oak
RP Red Pine
SR Red Spruce
HK Hemlock
HH Hem/Hdwd
BC Blck Cherry
BB Bee/Bir/Map
OH Oak/Hdwd
OR N Red Oak
OM Mixed Oak
RM Red Maple
BE Beech
SF Spruce/Fir
SM Sugar Maple
PP Pitch Pine

Designation of Trees
CT Cut Tree
LT Leave Tree
SB Stand Boundary
OT Other

Landowner Objective
LT Long-term Mgt.
ST Short-term Har

Type of Cut
SH Shelterwood
ST Seed Tree
CC Clear Cut
SE Selection
SA Salvage
SN Sanitation

Intermediate Harvests:
CT Commercial Thin
NT Non Com Thin
Non-Standard Systems:*
HG Highgrade*
DL Diameter Limit*
OT Other*

Source of Regeneration
AD Advanced
SE Natural Seed
PL Plant
CO Coppice
DS Direct Seed
OT Other

*If Other (OT) or a non-standard system is used an explanation must be given on attached narrative page

Forest Cutting Plan

Narrative Page **(Effective Date: 1/1/04)**
Use this page to provide further explanation or if Other (OT) was used in any category on pages 3 or 4.

Landowner DCR, DWSP

Town Barre/Hubbardston

File Number 021-6877-14

BMPs

Use this Section to provide further explanation or if Other (OT) was used in any category in the Best Management Practices Section on Page 3.

Stand I is receiving a modified seed cut with small openings up to 1/4 acre also being created. Intent is to establish a new age class which should be released in 10-20 years.Trees with better form and vigor along with valuable habitat trees will be retained. Stand II is a lower quality old field WP type and is being clear cut.

Designation of Trees

Use this Section to describe the types of trees to be harvested and/or retained if Other (OT) was used for "Designation of Trees" in the Stand Treatment Section on page 4.

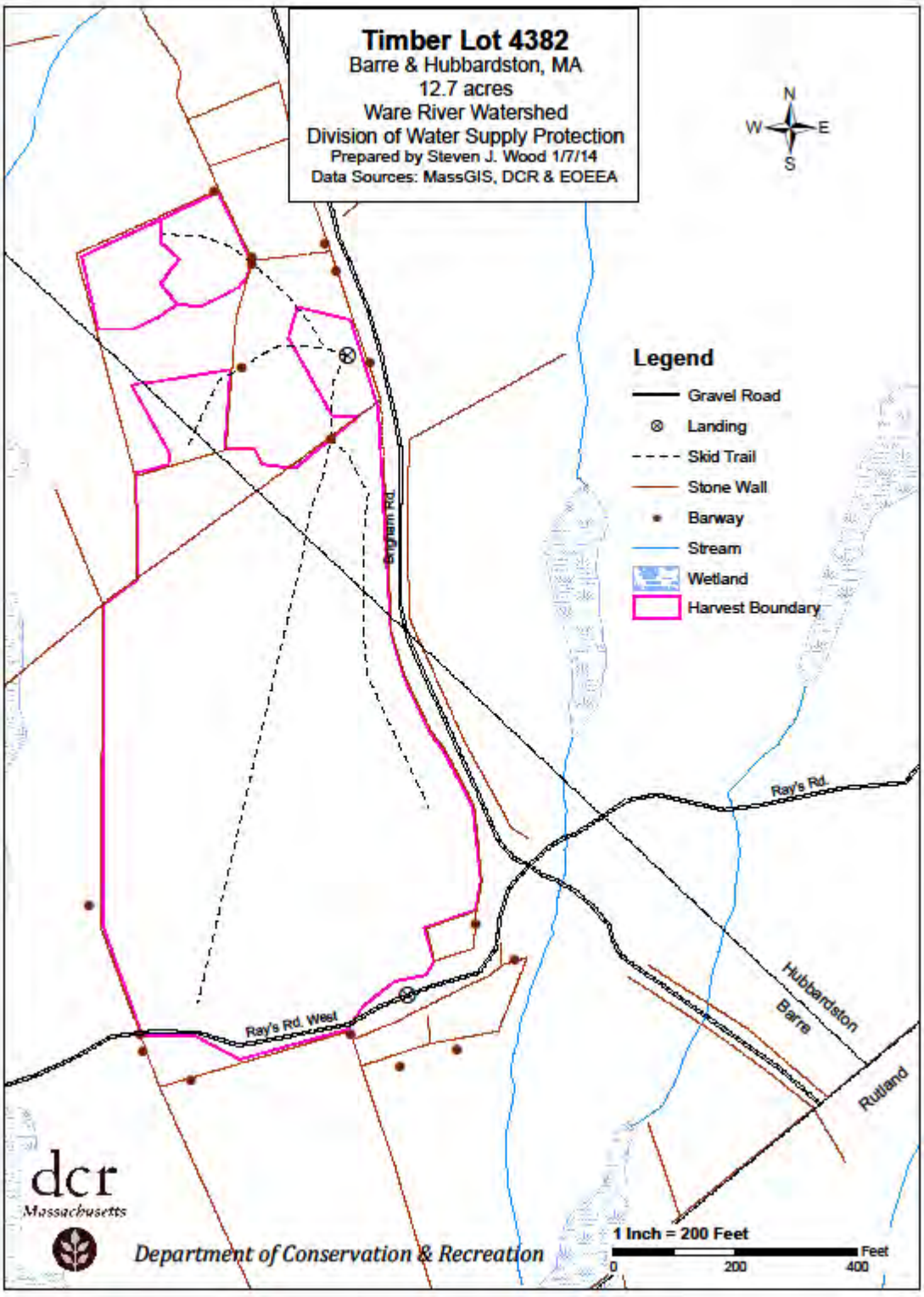
Stand No.	Species to be Cut	Size of Trees to be Cut	Quality of Trees to be Cut	% BA/Acre Removed

Regeneration & Future Condition

Use this Section to describe how Chapter 132 requirements will be met if a non standard system (HG, DL, or OT) was used for the "Type of Cut" in the Cutting Standards Section on page 4.

Stand No.	Source of Regeneration (ex. AD, SE)	How will Regeneration be obtained/protected? If using AD - Describe the species present and how the regeneration will be protected If using SE - Describe the source of the seed and the number of seed trees/acre

Stand No.	Desired Future Condition Describe what the stand is expected to look like five years from the harvest, including the condition of the overstory & understory


Timber Lot 4382
Barre & Hubbardston, MA
12.7 acres
Ware River Watershed
Division of Water Supply Protection
Prepared by Steven J. Wood 1/7/14
Data Sources: MassGIS, DCR & EOEEA
N
W
E
S
Legend
Gravel Road
Landing
Skid Trail
Stone Wall
Barway
Stream
Wetland
Harvest Boundary
Ingram Rd.
Ray's Rd.
Ray's Rd. West
Hubbardston
Barre
Rutland
dcr
Massachusetts
Department of Conservation & Recreation
1 Inch = 200 Feet
0
200
400
Feet

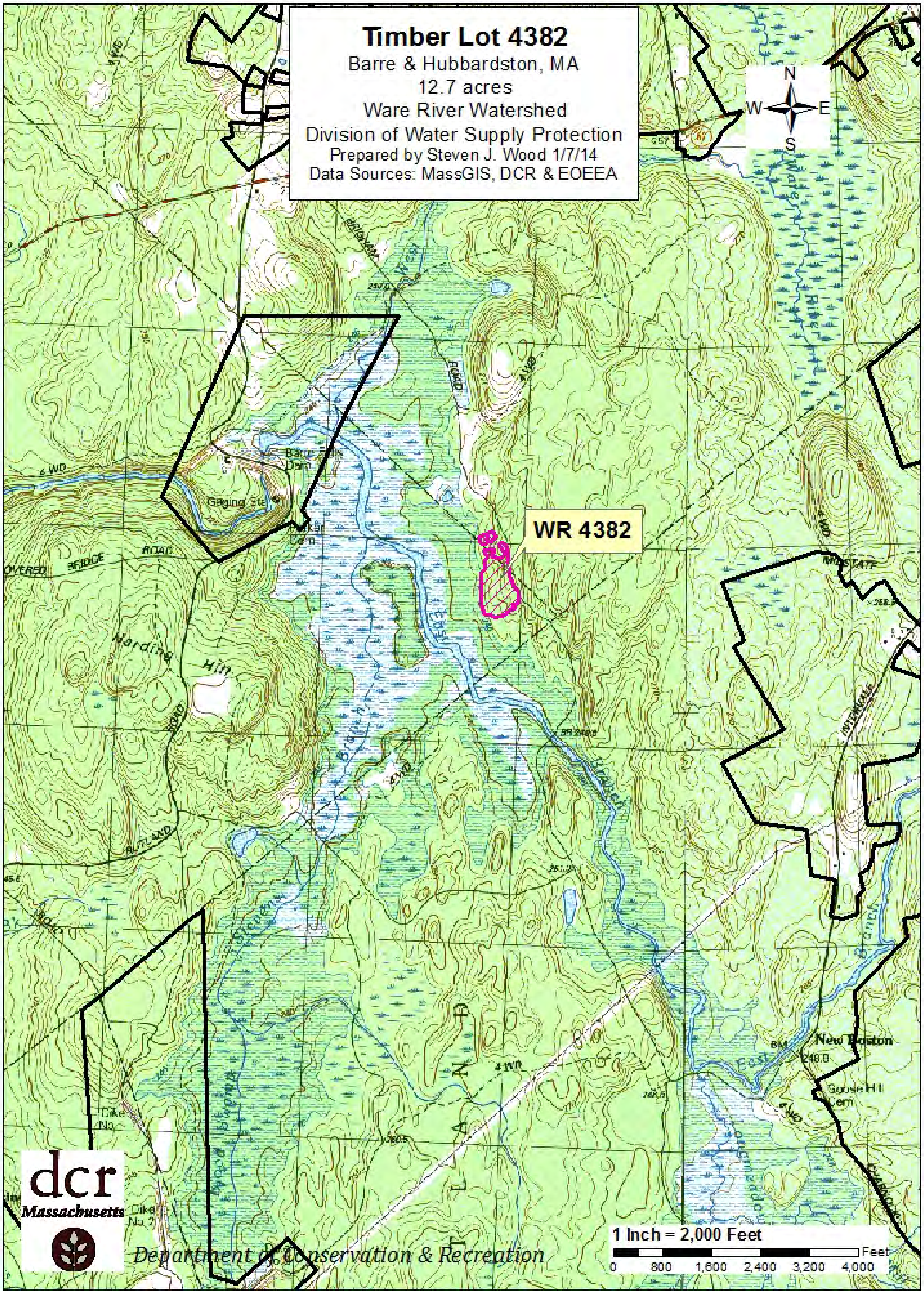

Timber Lot 4382
Barre & Hubbardston, MA
12.7 acres
Ware River Watershed
Division of Water Supply Protection
Prepared by Steven J. Wood 1/7/14
Data Sources: MassGIS, DCR & EOEEA
N
S
E
W
WR 4382
Harding Hill
New Boston
Gaging Sta
dcr
Massachusetts
Department of Conservation & Recreation
1 Inch = 2,000 Feet
Feet
0
800
1,600
2,400
3,200
4,000

Figure 2 A-C. Pre-Harvest photographs from marked points, taken 10/25/2013

A. Photograph taken from marked point 1, southern end of lot, oak-hardwood forest with scattered white pine, Brigham Rd is to the right.

B. Photograph taken from marked point 2, Central part of lot, white pine-oak forest, taken from edge of Brigham Rd. Note suppressed seedlings.

C. Photograph taken from marked point 4, poorly formed white pine in northern section where patch cut will be, note stone wall on right.

Figure 3 A-C. Post Harvest photographs from marked points, taken 10/24/14

A. Photograph taken from marked point 1, taken 10/24/14

B. Photograph taken from marked point 2, taken 10/24/14

C. Photograph taken from marked point 4, taken 10/24/14

Figure 4 A-C. After one growing season photographs from marked points, taken 7/17/15

A. Photograph taken from marked point 1, taken 7/17/15

B. Photograph taken from marked point 2, taken 7/17/15

C. Photograph taken from marked point 4, taken 7/17/15

Figure 5 A-C. After two growing seasons photographs from marked points, taken 7/27/16

A. Photograph taken from marked point 1, taken 7/27/16

B. Photograph taken from marked point 2, taken 7/27/16

C. Photograph taken from marked point 4, taken 7/27/16

Figure 6 A-C After three growing seasons photographs from marked points taken 7/17/17

A. Photograph taken from marked point 1, taken 7/17/17

B. Photograph taken from marked point 2, taken 7/17/17

C. Photograph taken from marked point 4, taken 7/17/17