

Massachusetts Department of Conservation and Recreation
Division of Water Supply Protection, Office of Watershed Management
Forest Management Project Summary

Project Title: Hartwell Pasture Lot

DWSP Harvest Permit Number: 5245
DCR Forest Cutting Plan File Number: 241-7007-14

Site Information

Watershed: Wachusett	Town(s): Princeton
Acres: 66	Nearest Road: East Princeton Road (Rt. 31)
Natural Heritage Atlas overlap?: No	Public Drinking Water Supply Watershed?: Yes
Forest Types: Mixed-hardwood; Oak-hardwood; White pine-hardwood	ACEC?: No
Soils: Woodbridge-Paxton, Charlton-Chatfield associations. These are soils of till origin and are extremely stony on this site.	
Wetland Resources: There is a small wetland in the south end of the sale area associated with an intermittent tributary to East Wachusett Brook. There is also a small isolated wetland also adjacent to Rt. 31.	
Vernal Pools: The wetland adjacent to Rt. 31 has a pool that is nearly perennial and wood frogs have been observed in it. While it has not positively been identified as a productive vernal pool, it will be assumed that it is and treated as such.	

Harvest Information

DWSP Permit Start Date: 07/01/14	DWSP Permit End Date: 07/01/16
Number of Wetland Crossings: None	Number of Stream Crossings: None

Best Management Practices Applied

Stream Crossings	There are no stream crossings.
Filter Strips	A variable-width filter strip has been applied to both of the intermittent streams in the far southwest corner of the sale area. No trees are being cut in either filter strip.
Wetland Crossings	There are no wetland crossings.
Harvesting in Wetlands	There is no harvesting in wetlands.

DWSP Forester supervising this harvest	
Name:	Greg Buzzell
Forester License #:	25
Phone #:	508-792-7806 ext.317

NARRATIVES

General Description/Forest Composition/History:

This sale area is located on property purchased by the MDC (predecessor to the DCR) in 1998 to the north of East Princeton Road (Rt. 31) in Princeton. It is bounded by stone walls, East Princeton Road and a subwatershed boundary line. This very rocky hillside was used as pasture until it was eventually abandoned starting in the 1920's. This parcel's past is evident in the very large, open-grown trees (mostly oak, hickory and white pine) that are widely scattered throughout the area as well as the small, straggling junipers which struggle to survive in the shade of the forest which has re-grown to occupy the hillside.

This property was logged in the 1980's. The focus seems to have been the removal of white pine. Whether intending to or not, the result was the establishment of good regeneration. Unfortunately that operation was performed with a skidder and a significant number of trees have large, unhealed wounds at their bases.

This is a very rocky hillside with a wide variety of species in the overstory. The primary tree species are white pine, red oak and shagbark hickory along with red maple, black birch, black cherry, black oak, white oak, American beech, white ash, eastern hemlock, yellow birch and bitternut hickory. Also present are sassafras and eastern hophornbeam. The removal of some of the white pine in the 1980's resulted in small, irregular openings in the overstory and a diverse layer of species in the understory. Most of the tree species present in the overstory are also represented in varying amount in the understory along with numerous shrub species such as witch-hazel, hazelnut, mountain laurel and blueberry (high and low bush). Even though there is some poor quality white pine present, fortunately the logging in the 1980's didn't remove all of the good quality white pine.

Site Selection:

The ideal watershed protection forest is one which best serves the function of the land as a producer of high quality drinking water in both short- and long-term. This forest must be vigorous and diverse in tree species and ages, be actively accumulating biomass and actively regenerating. Such a forest will be ideally suited to be resilient to, and quickly recover, from small- and large-scale disturbances such as diseases, insect infestations, ice storms and hurricanes.

None of the forest in this management area is less than 60 years old. Given the goal to have multiple age classes on every area, now is the ideal time to begin the establishment of a young forest. A combination regeneration and terrestrial invasive plant survey found no invasive species present while advance regeneration was found on 73% of the plots.

Silvicultural Objectives:

Given the adequate advance regeneration throughout this area, openings will be made in the overstory to release young trees from the shade of older, taller trees, thereby creating a more diverse forest. Throughout this area, openings have been marked totaling 9.6 acres, ranging in size from 0.2 to 0.5 acres with an average size of 0.4 acres. These openings are well distributed throughout the working unit with adequate spacing between the patches to allow for future patches of a similar range of sizes (See Figure 2). Standards regarding green retention (live trees left within patches for structure and seed) have been followed.

A second goal is to remove some of the overstory trees in the forest between the new patches. This will target individual trees of poorest vigor and form to reduce competition for healthier trees. Partial cutting will occur in several areas throughout the sale area totaling 9.0 acres. About a quarter of the stocking (total volume of trees in the area) will be removed in these areas. Of the 66 acres in this timber sale, trees are being removed from 18.6 acres.

Cultural Resources:

This lot was reviewed by the DCR archaeologist and all recommendations will be followed. There is no known cultural significance to this former pasture, either historically or pre-European contact. All stone walls on DCR property are valued as a cultural resource, so the stone walls on this property will be protected from damage to the extent possible.

Wildlife/Rare or Endangered Species:

DWSP's Conservation Management Practices regarding vernal pools are being followed. Otherwise, there are no critical habitats or known rare or endangered plants or wildlife. There are numerous trees throughout this area that fit the general description of a "wildlife tree". These tend to be the widely scattered, large-crowned trees that pre-date the abandonment of the pasture but other younger trees (60-85 years old) should also be considered as valuable to wildlife due to being hollow to varying degrees. All of the large-crowned older trees are being retained and the vast majority of the younger variety will be kept as well.

FIGURES

Figure 1. Forest Cutting Plan

Figure 2. Map of harvest area showing approximate boundary, proposed openings and other features

Figure 3. General locus map showing the location of the proposed timber harvest

Figure 4. Pre-Harvest Photographs, A-C

Figure 5. Post-Harvest Photographs, A-C

Figure 1. Forest Cutting Plan

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)

MAY 19 2014

For DCR Use Only:

File Number	94-20744	Case No.	
Date Rec'd	5-19-14	Nat. Hert.	AS 1
Earliest Start	6-30-14	Nat. Hert. Imp.	NO
River Basin	Wachusett	Pub. Dr. Wat.	NO
Gen. Obj.	LT	ACEC	NO

Site Information	Location	<u>Lot 5245</u>	Landowner	
	Town	<u>Princeton</u>	Name	<u>DCR/DWSP/OWM Wachusett/Sudbury</u>
	Road	<u>East Princeton Road (Rt. 31)</u>	Mailing Address	<u>180 Beaman St.</u>
	Acres	<u>66</u>	Town, State, Zip	<u>West Boylston, MA 01583</u>
	Proposed Start Date	<u>6/30/14</u>	Phone	<u>608-792-7806</u>
	Vol. MBF	<u>75.7</u>	Ch61 <input type="checkbox"/> Ch61A <input type="checkbox"/> Stew <input type="checkbox"/> *Case #	
	Vol. Cds.	<u>101</u>	Est. Stumpage Value	
	Vol. Tons	<u>119</u>	Licensed Timber Harvester**	
	Plan Preparer		Name	<u>To be supplied when known.</u>
	Name	<u>Gregory S. Buzzell</u>	Address	
Address	<u>180 Beaman Rd.</u>	Town, State, Zip		
Town, State, Zip	<u>West Boylston, MA, 01583</u>	Phone		
Phone	<u>508-792-7806 Ext 317</u>	Mass. Lic. Harvester #		
Type of Preparer	<u>Mass. Licensed Forester</u>	**This information may be supplied after the plan is approved, but before work begins.		
*Mass. Forester License #	<u>25</u>			
*Required for land under Ch61, Ch61A or Forest Stewardship				

Best Management Practices	Stream Crossings					Harvesting in Wetlands				
	Indicate location on map	SC-1	SC-2	SC-3	SC-4	Indicate location on map	HW-1	HW-2	HW-3	HW-4
	Type of Crossing					Forest Type (see pg 2)				
	Existing Structure					Acres to be Harvested				
	Type of Bottom					Resid. Basal Area (>50%?)				
	Bank Height (ft)					Service Forester Comments				
	Stabilization									
	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)	VA	VA								

Type of Preparer	Type of Crossing	Stabilization	Mitigation	Type of Bottom	Note:
LF Mass. Lic. For.	CU Culvert	SE Seed	FR Frozen	LE Ledge	Applicant must provide DCR with all relevant information before plan may be approved and cutting may begin.
TH Lic. Tim. Har	BR Bridge	MU Mulch	DR Dry	ST Stony	Some forestry activities, such as prescribed burning and pesticide or fertilizer application may require additional permits.
TB Timber Buyer	PO Pond	CO Corduroy	OT Other	MU Mud	Consult MA Forestry BMP Manual for further information.
LO Landowner	PO Poled	ST Stone		GR Gravel	
OT Other	OT Other	HB Hay Bales		OT Other	
		OT Other			

If Other (OT) is used in any category an explanation must be given on an attached narrative page. no 3 of 5

Products to be Harvested*

Species	Mbf/Cds		Mbf/Cds
White Pine	59.1	Red Maple	0.9
Red Pine		Sugar Maple	
Pitch Pine		Red Oak	14.5
Hemlock		Black Oak	1.2
Spruce		White Oak	
Other Sftwd.		Other Hdwd.	
White Ash		Total Mbf	75.7
Beech		Cordwood (Cds)	101
White Birch		SW Pulp (Tons)	119
B & Y Birch		HW Pulp (Tons)	
Black Cherry		Chips (Tons)	

*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.

Cutting Standards

Indicate location on map	ST-1	ST-2	ST-3	ST-4
Forest Type	OH	WH		
Acres	41	25		
Landowner Objective	LT	LT		
Designation of Trees	CT	CT		
Type of Cut	SE	SE		
Source of Regeneration	AD	AD		

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 species.

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.

J. Bell

5/17/14
Date

Signature of landowner(s)

Determination and Status

Approved Disapproved Expires 5/03/16
 Cutting Plan
 Signature of Service Forester/Director's Agent [Signature] Date 5/13/14

Final Report and Comments

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

Signature of Service Forester/Director's Agent _____ Date _____

Extension 1 2 Expires 1 Ser. For. Ints. 1
 Amendment App 1 Dis 1 App 2 Dis 2 _____

Forest Types	Designation of Trees	Type of Cut	Intermediate Harvests	Source of Regeneration
WP White Pine	CT Cut Tree	SH Shelterwood	AD Advanced	AD Advanced
WK WP/Hem	LT Leave Tree	ST Seed Tree	CT Commercial Thin	SE Natural Seed
WH WP/Hdwd	SB Stand Boundary	CC Clear Cut	NT Non-Com Thin	PL Plant
WO WP/Oak	OT Other	SE Selection	Non-Standard Systems*	CO Coppice
RP Red Pine	Landowner Objective	SA Salvage	HG Highgrade*	DS Direct Seed
SR Red Spruce	LT Long-term Mgt.	SN Sanitation	DL Diameter Limit*	OT Other
	ST Short-term Har.		OT Other*	

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

Forest Cutting Plan

Narrative Page

Use only if further explanation is required of information on pages one or two or if "other" was used in any category.

Landowner: _____

Town: _____

File Number: _____

BMPs	<p><u>There are no trees being cut in either FS-1 or FS-2.</u> <u>Less than 50% of the basal area is being removed from the 50 ft. buffer strip associated with Rt. 31.</u></p>
Silviculture	<p><u>This property was logged in the 1980's long prior to DCR acquisition. That operation, which seems to have targeted primarily white pine, led to the establishment of advance regeneration. It also resulted in the basal wounding of many of the residual trees. In order to release this advance regeneration, 22 openings in the overstory are being created that total 9.6 acres. These openings range from 0.2 to 0.5 acres in size with an average of 0.4 acres. They are well distributed throughout the area taking advantage of the advance regeneration comprised of red, black and white oak, white pine, hickory, red maple, black birch and black cherry. A thinning will occur on an additional 9.0 acres where 25-30% of the stocking will be removed. The goal of this partial cutting is to remove the trees of poorest vigor, including many of the trees with unhealed basal wounds, while benefiting the better quality hickory, red oaks and white pines.</u></p>
Objectives	<p><u>The objective of this operation is to diversify the age structure of the forest in this 66 acre working unit by removing the overstory in patches thereby releasing the advance regeneration. There is currently very little diversity in age structure as 0% of the forest is less than 60 years old with most of it originating in the 1920's through the 1940's following the abandonment of this former pasture.</u></p>
Other	<p><u>Given the location of the landing off of Rt. 31 and concerns regarding the sightline for traffic traveling in the southbound lane, the timber harvester will be required to place traffic warning signs well to the north of the landing whenever trucks or trailers will be accessing the landing.</u></p>

Figure 2. Map of harvest area showing approximate boundary, proposed openings and other features

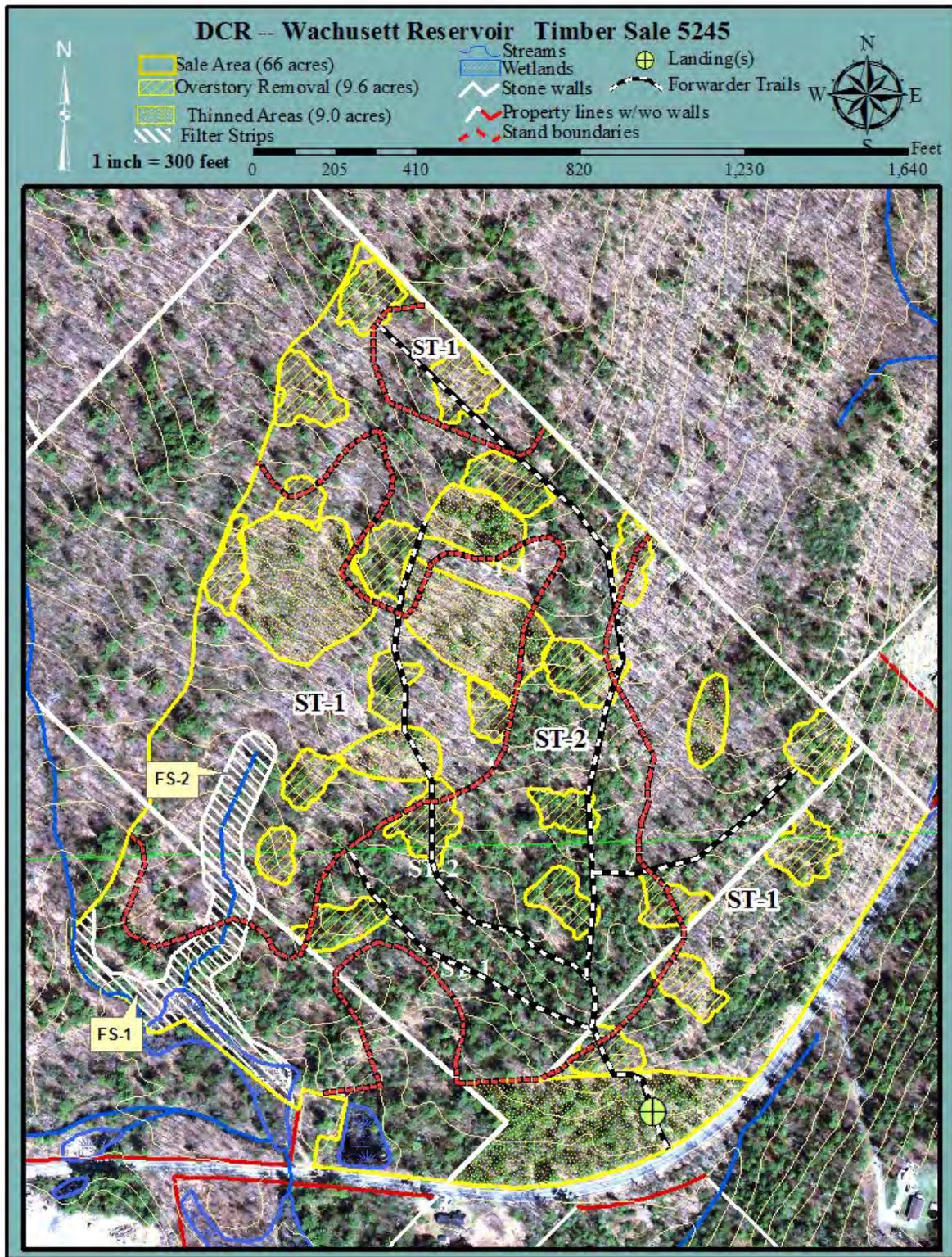


Figure 3. General locus map showing the location of the proposed timber harvest

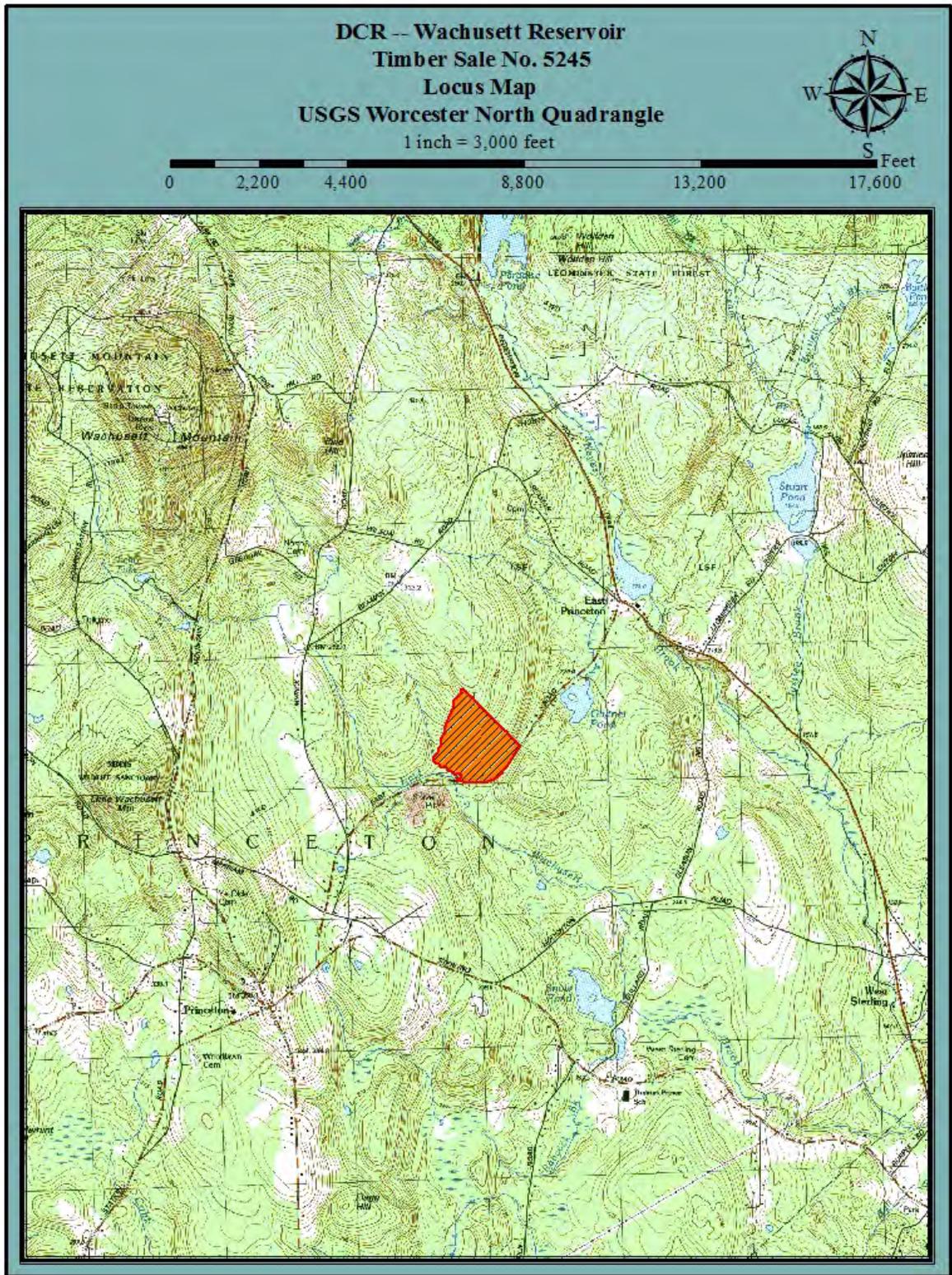


Figure 4. Pre- and Post-Harvest Photographs, Point A (May, 2014)



A. One of the large-crowned trees that pre-dates the abandonment of the pasture. This white oak is being retained in this opening where otherwise the overstory is being removed to release the understory of white pine and hardwood saplings.



B. An area being thinned; the excellent quality red oak and shagbark hickory are being kept while the red oak in the background is marked for removal.



C. A typically rocky scene on this hillside.

Figure 5. Post-Harvest Photographs, A-C (November, 2015)



A. Most of the overstory has been removed to release this understory of white pines and hardwoods. Two consecutive excellent acorn crops have resulted in many oak seedlings becoming established.



B. Another opening made on this extremely rocky hillside.



C. This open-grown white oak was growing on this hillside when it was still a pasture in the early 20th century. Trees such as this are routinely retained as biological legacies and are allowed to grow to the maximum potential life-span for the species.