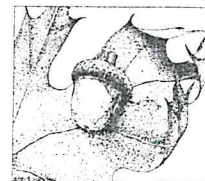




FOREST MANAGEMENT PLAN

Submitted to: Massachusetts Department of Conservation and Recreation
For enrollment in CH61/61A/61B and/or Forest Stewardship Program



FEB 21 2020

CHECK-OFFS

CH61	CH61A	CH61B	STWSHP	C-S
cert. <input type="checkbox"/>	cert. <input type="checkbox"/>	cert. <input type="checkbox"/>	new <input checked="" type="checkbox"/>	EEA <input checked="" type="checkbox"/>
recert. <input type="checkbox"/>	recert. <input type="checkbox"/>	recert. <input type="checkbox"/>	renew <input type="checkbox"/>	Other <input type="checkbox"/>
amend <input type="checkbox"/>	amend <input type="checkbox"/>	amend <input type="checkbox"/>	Green Cert <input type="checkbox"/>	
Plan Change: _____ to _____			Conservation Rest. <input type="checkbox"/>	
			CR Holder _____	

Administrative Box

Case No. <u>308-11651</u>	Orig. Case No. <u>new</u>
Owner ID <u>507258</u>	Add. Case No. _____
Date Rec'd <u>2-21-20</u>	Ecoregion <u>2021A</u>
Plan Period <u>2021-2030</u>	Topo Name _____
Rare Spp. Hab. <u>YES</u>	River Basin <u>Charles</u>

OWNER, PROPERTY, and PREPARER INFORMATION

Property Owner(s) City of Waltham
Mailing Address 610 Main St. Waltham, Ma 02452 Phone 781-314-3452
Email Address agreen@city.waltham.ma.us

Property Location: Town(s) Waltham Road(s) Totten Pond Road

Plan Preparer Richard Valcourt Jr Mass. Forester License # 405
Mailing Address P.O. Box 134 Petersham, Ma 01366 Phone 508-479-6635

RECORDS

Assessor's Map No.	Lot/Parcel No.	Deed Book	Deed Page	Total Acres	Ch61/61A 61B Excluded Acres	Ch61/61A 61B Certified Acres	Stewshp Excluded Acres	Stewshp Acres
R0 40	003R	N/A	N/A	211.75	0	0	12.50	199.25
R040	003A	N/A	N/A	38.00	0	0		38.00
R048	001A	67755	30	20.85	0	0		20.85
TOTALS				270.60	0	0	12.50	258.1

Excluded Area Description(s) (if additional space needed, continue on separate paper)

SEE NEXT PAGE.....

HISTORY Year acquired 1900's ? Year management began 2020

Are boundaries marked: Yes ☐ blazed/painted/flagged/signs posted (circle all that apply)? No ☐ Partially ☒

Stand no. _____ treatment _____ reason _____
(if additional space needed, continue on separate page)

Previous Management Practices (last 10 years)

Stand #	Cutting Plan #	Treatment	Yield	Acres	Date
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Remarks: (if additional space needed, continue on separate page)

Excluded Land Descriptions

Exclusion 1:

Start where the northwestern property corner meets the southern edge of Totten Pond Road. From here travel 327' along the southern edge of Totten Pond Road in the easterly direction to the place of beginning. From here head S 35 W 751', thence, S 79 E 796', thence, N 10 E 136', thence, N 70 W 296', thence, N 10 E 290', thence, N 49 E 137' back to the place of beginning. Containing 7 acres more or less.

Exclusion 2:

Start at point 1 on the forest distance and bearing map. This is along the northeastern boundary line of the property at an intersection of walls. From here travel S 33 W 910' to the place of beginning. First head S 75 W 425', thence, S 19 E 217', thence, N 75 E 405', thence, N 14 W 217' back to the place of beginning. Containing 2.2 acres more or less.

Exclusion 3:

Start at point 1 on the forest distance and bearing map. This is along the northeastern boundary line of the property at an intersection of walls. From here travel S 27 W 1,663' to the place of beginning. From here travel S 85 W 120', thence, S 13 E 131', thence, N 88 E 106', thence, N 7 W 138' back to the place of beginning. Containing .3 acres more or less.

Exclusion 4:

Start at Point 2 on the forest distance and bearing map. This is located in the southwestern part of the property. This is the point of beginning, from here travel S 66 E 270' to the western edge of Border Road. Then travel northerly along the western edge of Border Road 1,087', thence, S 22 W 1,038' back to the place of beginning. Containing 3 acres more or less.

Landowner Goals

Please **check** the column that best reflects the importance of the following goals:

Goal	Importance to Me			
	High	Medium	Low	Don't Know
Enhance the Quality/Quantity of Timber Products*	X			
Generate Immediate Income			X	
Generate Long Term Income			X	
Produce Firewood			X	
Defer or Defray Taxes			X	
Promote Biological Diversity	X			
Enhance Habitat for Birds	X			
Enhance Habitat for Small Animals	X			
Enhance Habitat for Large Animals	X			
Improve Access for Walking/Skiing/Recreation	X			
Maintain or Enhance Privacy			X	
Improve Hunting or Fishing			X	
Preserve or Improve Scenic Beauty	X			
Protect Water Quality	X			
Protect Unique/Special/ Cultural Areas	X			
Attain Green Certification			X	
Other:				

*This goal must be checked "HIGH" if you are interested in classifying your land under Chapter 61/61A.

In your own words, describe your goals for the property:

Inventory and improve overall condition of Park.
Improve trails & signage.

Stewardship Purpose

By enrolling in the Forest Stewardship Program and following a Stewardship Plan, I understand that I will be joining with many other landowners across the state in a program that promotes ecologically responsible resource management through the following actions and values:

1. Managing sustainably for long-term forest health, productivity, diversity, and quality.
2. Conserving or enhancing water quality, wetlands, soil productivity, carbon sequestration, biodiversity, cultural, historical and aesthetic resources.
3. Following a strategy guided by well-founded silvicultural principles to improve timber quality and quantity when wood products are a goal.
4. Setting high standards for foresters, loggers and other operators as practices are implemented; and minimizing negative impacts.
5. Learning how woodlands benefit and affect surrounding communities, and cooperation with neighboring owners to accomplish mutual goals when practical.

Signature(s):

[Handwritten Signature]

Date:

2/13/20

Owner(s) City of Waltham

(This page will be included with the completed plan.)

Property Overview, Regional Significance, and Management Summary

This 258 acre woodland owned by the City of Waltham is located about 1 to 1.5 miles northwest from Waltham Center. It is generally referred to as Prospect Hill Park. A large portion of this property has been owned by the city for a long time, so long that there are no deed references on file for the majority of the property. This is a large tract of land located right in the Boston metropolitan area. The size and location of this property along I-95 is unique to the area, giving it a high value as unfragmented woodlands, wildlife habitat, scenic beauty, and historical value. The closest large tract of land to this parcel of that is the Blue Hills Reservation area which is 6,000 +/- acres. This piece of land is roughly 12 miles south and is owned by the Department of Conservation and Recreation.

This property has mostly well drained Hollis-Rock outcrop-Charlton complex soils with 3 to 35 percent slopes, with bed rock down 16" – 26". The substratum layer is a light brownish gray sandy loam to a depth of 60 inches or more. In some areas the surface layer is very fine sandy loam. In some areas the subsoil is redder. Included within this complex are small areas of moderately deep soils and Canton soils in saddles and on side slopes. These soil types support the following forest types: oak hardwood, white pine hardwood, and white pine. These are typical forest types found growing in the central hardwood forest region which this land lies within. There is one distinctly different oak hardwoods stands on this property that is considered to be dry site oak that has thin soils with short dwarf like trees growing along the hill top of Prospect Hill. The other oak hardwoods, white pine hardwood, and white pine stand on the property have similar quality, conditioned, and sized trees growing.

In particular this property is lacking understory growth and trees of varying age classes and sizes. Also invasive species are present and in high stocking levels in certain sections of the property. Three major goals for this ten year management period should be increasing stocking levels of seedlings, saplings, and pole size trees, reducing the stocking levels of invasive species and establishing boundary lines to reduce encroachment from neighboring properties. All three of these items are addressed within the stand descriptions and management sections. The terrain on this property is flat to hilly with their being a few steeper areas and some rock outcrops along the top and sides of Prospect Hill (see forest stand and boundary map). There are limited streams and wetlands on this property.

The city of Waltham's primary objectives are to provide recreational opportunities; provide educational opportunities; promote biological diversity; enhance wildlife habitat; enhance the quality and quantity of timber products; maintain privacy; preserve scenic beauty; protect water quality; and protect any unique cultural areas. It is clear that much of this properties main function is for day-use walkers and hikers, with their being many high use trails all through the property. Reducing the number of walking/hiking trails through the property maybe highly beneficial to reduce the fragmentation, soil compaction, increase wildlife habitat, and gain back the more "woody" feel to the property. Biological diversity will be promoted by retaining as many different tree species as possible. Wildlife habitat for large animals like deer will be enhanced by maintaining hard mast producing trees through the stand (oak, hickory).

Thinning around these desired mast trees will allow their crowns space to expand and grow overtime, increasing the health and hopefully mast production (acorns, hickory nuts). Habitat for small animals will be enhanced by retaining cavity trees, creating snags by girdling, making brush piles, and creating areas with early successional habitat (dense young growth). Water quality will be protected by limiting timber harvesting in and around wetlands and using the proper best management practices (BMP's) when crossing a stream or wetland. By practicing good forest stewardship, the city of Waltham will improve the value of their property to the general public and many plant and wildlife species, while continuing to enjoy the many benefits it provides.

Forest Locus Map

Property Owner: Town of Waltham

Property Location: Totten Pond Road

Plan Preparer: Richard Valcourt Jr.

Map for Forest Management Plan use only

Map prepared from deed, assessors, map, and field recon.


January 2020

Legend

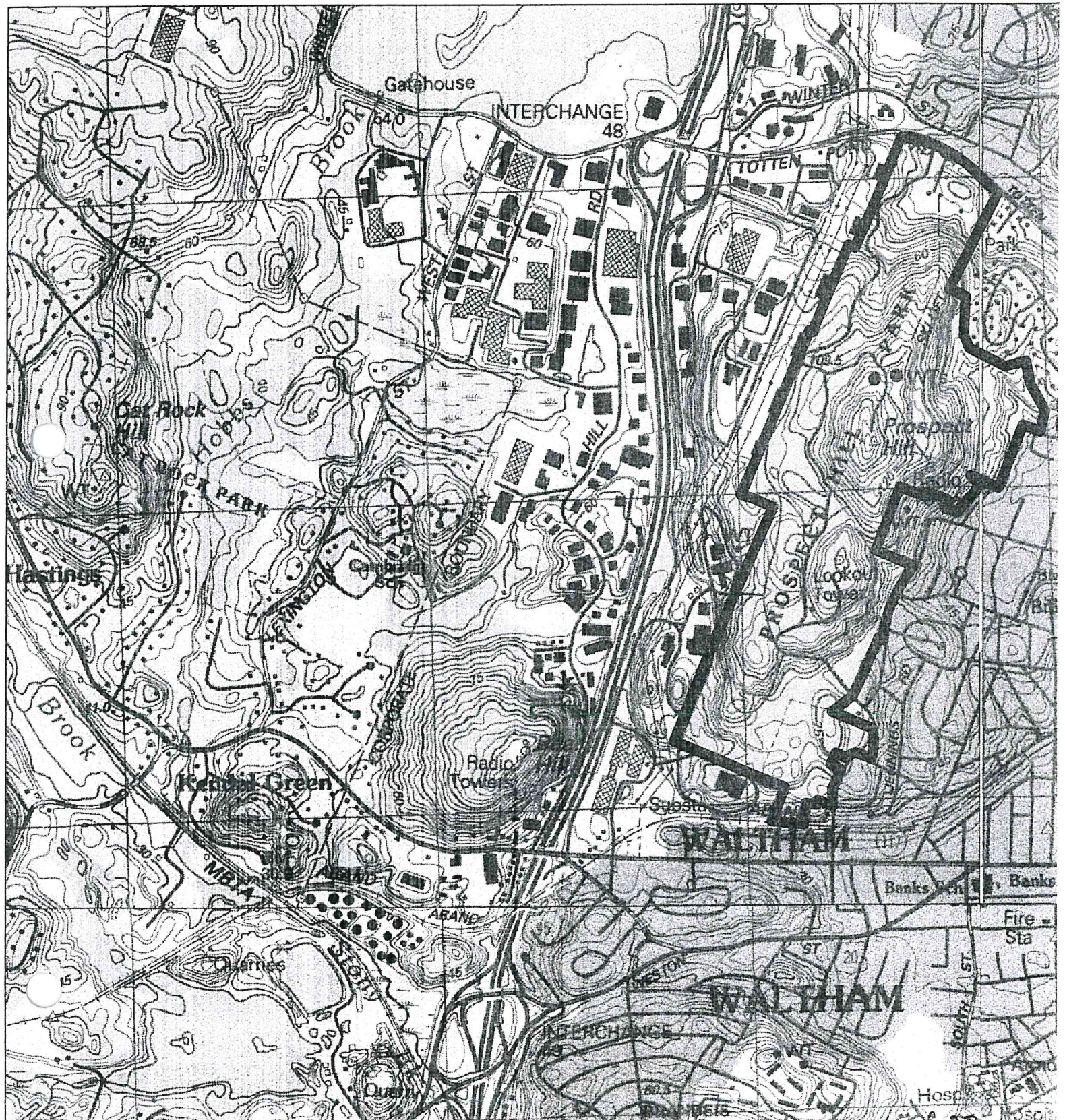
 property boundary



0 875 1,750 3,500 Feet



TRUE



Forest Stand and Boundary Map

Property Owner: City of Waltham

Property Location: Totten Pond Road

Plan Preparer: Richard Valcourt Jr.

Map for Forest Management Plan use only

Map prepared from deed, assessors, map, and field recon.

January 2020

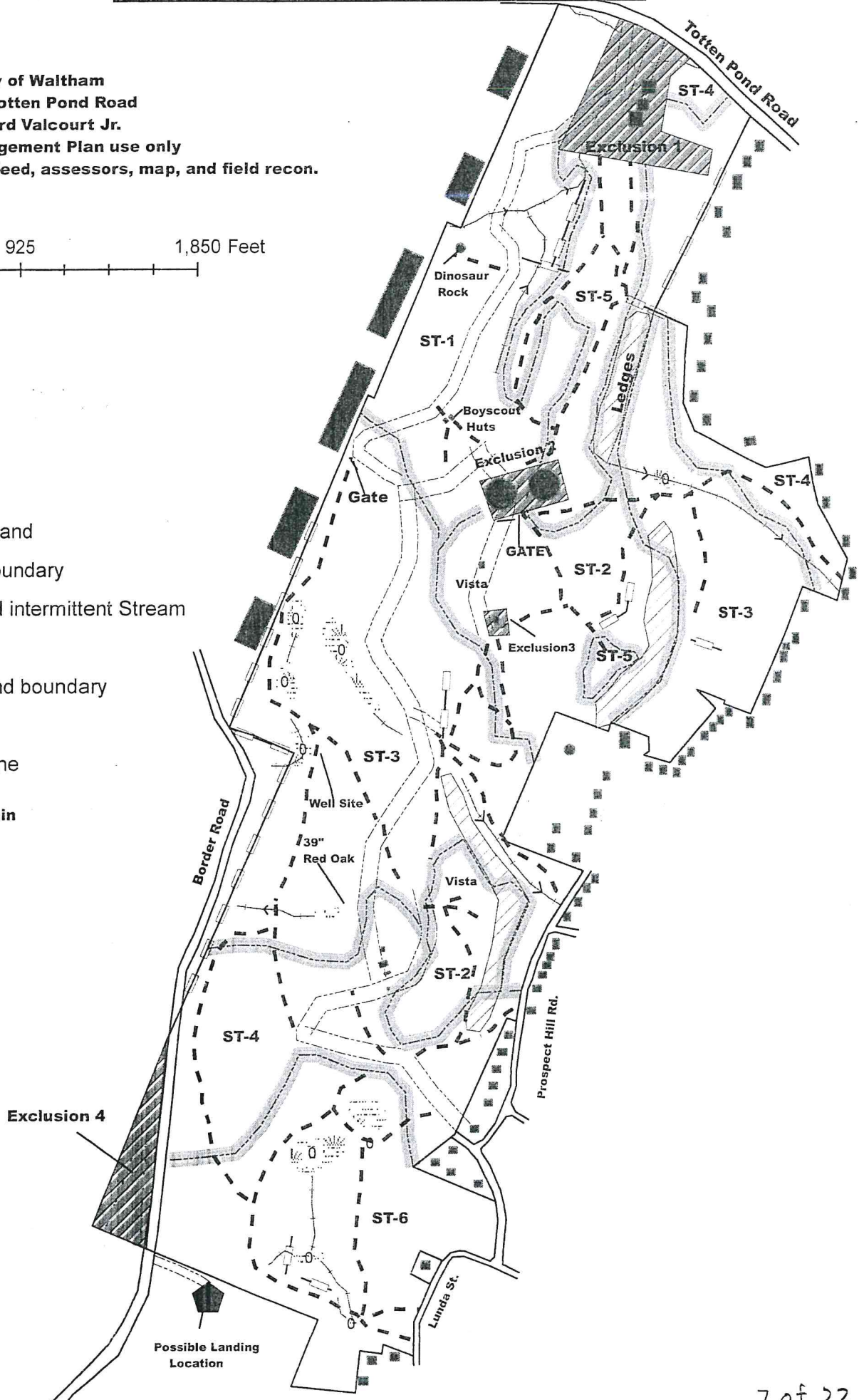
0 462.5 925 1,850 Feet



TRUE

Legend

- Stonewalls
- Excluded Land
- property boundary
- Stream and intermittent Stream
- Hiking Trail
- Forest Stand boundary
- Wetlands
- Property Line
- Steep Terrain
- Building



Property Owner: City of Waltham

Property Location:

Plan Preparer:

Map for Forest Management Plan use only

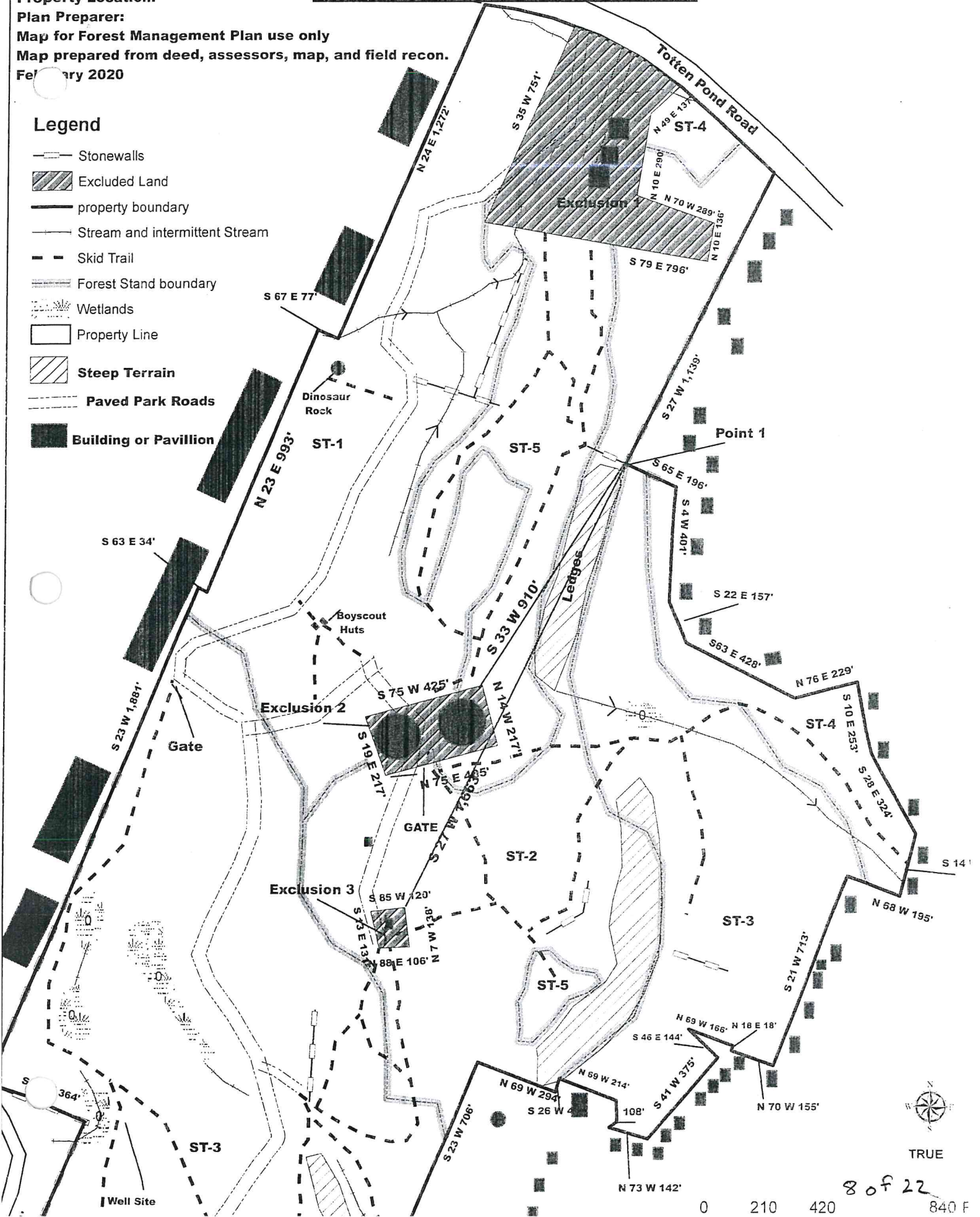
Map prepared from deed, assessors, map, and field recon.

February 2020

Bearing and Distance Maps

Legend

- Stonewalls
- Excluded Land
- property boundary
- Stream and intermittent Stream
- Skid Trail
- Forest Stand boundary
- Wetlands
- Property Line
- Steep Terrain
- Paved Park Roads
- Building or Pavillion



Property Owner: City of Waltham

Property Location:

Plan Preparer:

Map for Forest Management Plan use only

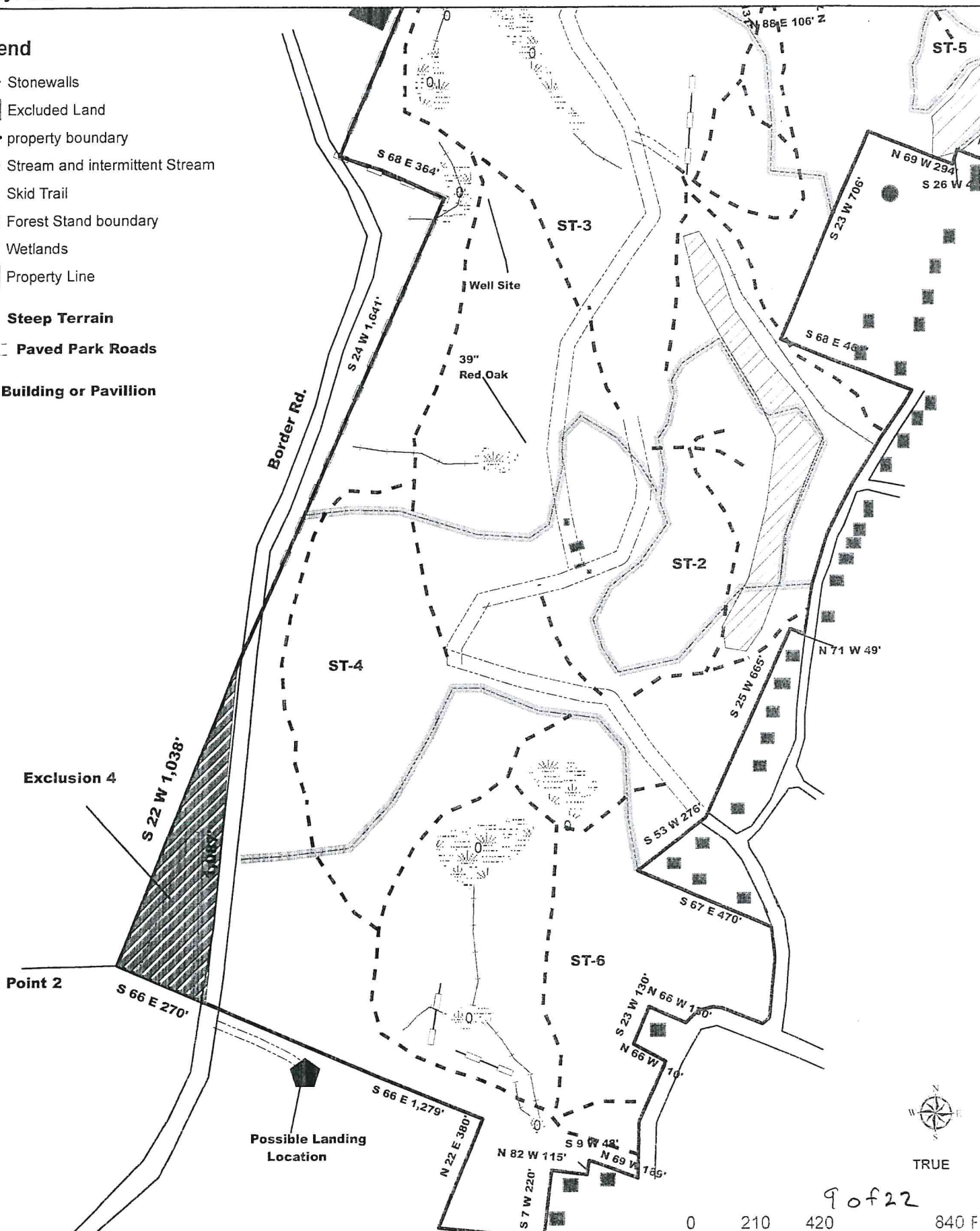
Map prepared from deed, assessors, map, and field recon.

February 2020

Bearing and Distance Maps

Legend

- Stonewalls
- Excluded Land
- property boundary
- Stream and intermittent Stream
- Skid Trail
- Forest Stand boundary
- Wetlands
- Property Line
- Steep Terrain
- Paved Park Roads
- Building or Pavillion



Invasive Species Map

Property Owner: Town of Waltham

Property Location: Totten Pond Road

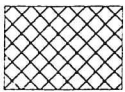

Plan Preparer: Richard Valcourt Jr.

Map for Forest Management Plan use only

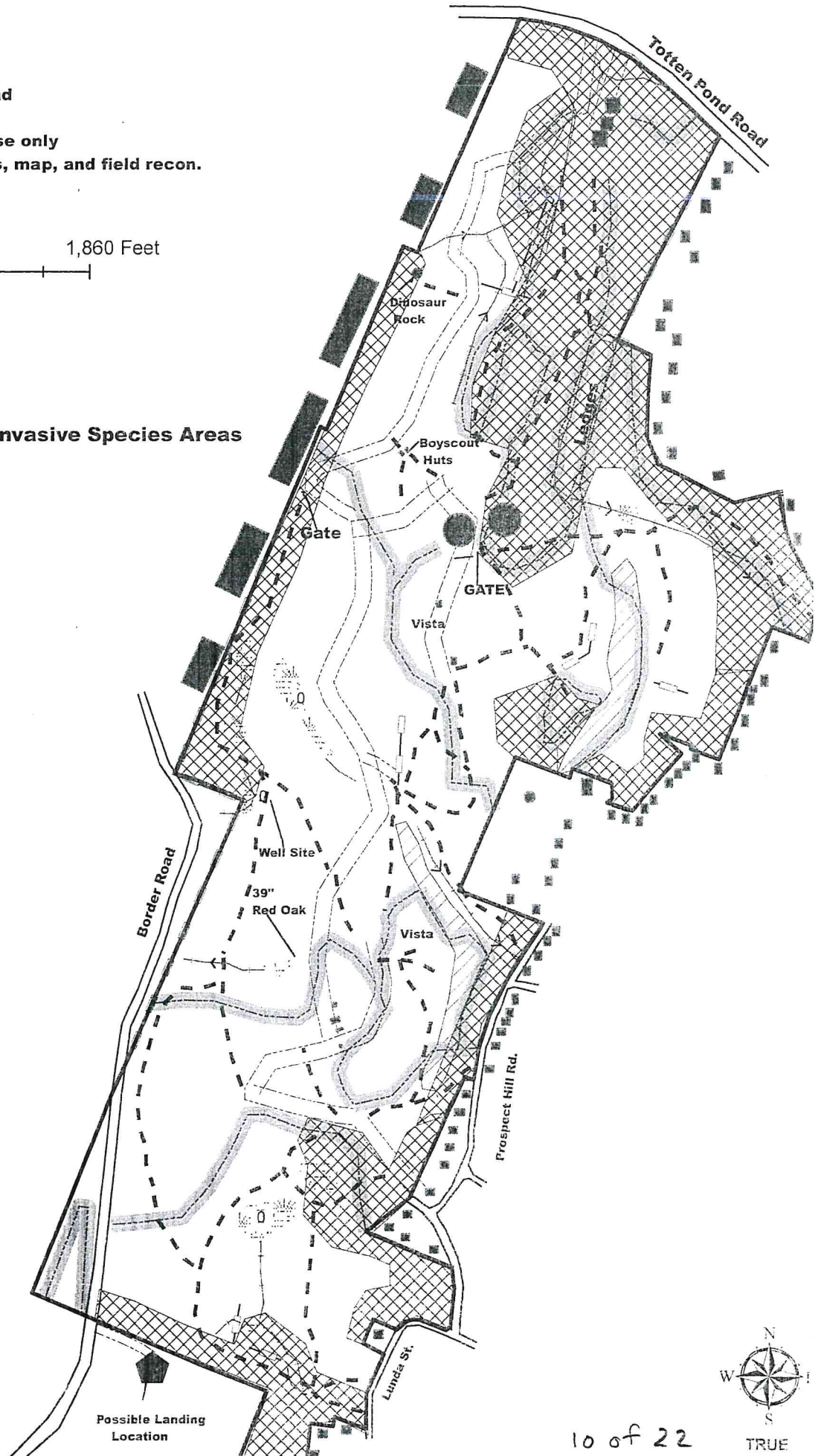
Map prepared from deed, assessors, map, and field recon.

January 2020

0 465 930 1,860 Feet



Highest stocked Invasive Species Areas



Forest Stand Narratives
And
Forest Management Practice Schedule

Stand types and numbers correspond with the Map.

OBJ	STD NO	TYPE	AC	SIZE-CLASS MSD	BA/AC	VOL/AC	SITE INDEX
STEW	#1	OH	33	13"	130SF	8MBF and 14 Cords-Firewood	NRO:65

Terrain & Water Resources: Mostly sloping to the north at 15 to 25 percent slope, with rocky ground conditions and areas with large surface stones. There are two separate streams that intersect and continue running northerly into exclusion 1.

History & Cultural Features: There are scattered pieces of stonewalls present in this stand and a large boulder that has been named Dinosaur Rock (See forest stand and boundary Map).

Access: Good access along the park access road.

Soils Hollis-Rock outcrop-Charlton complex, 0 to 25 percent slopes, with bed rock down 16'' – 26'' down in most areas. Some areas of the stand that have the Charlton complex have bedrock at 27'' – 65'' down.

Overstory Tree species recorded growing from highest to lowest stocking level include: northern red oak, black oak, black birch, red maple, sugar maple, shagbark hickory, white oak, eastern white pine, and quaking aspen. This stand is described as having mostly northern red oak growing with mixed hardwood species growing amongst them at lower stocking levels. The quality and condition of this stand is mostly good throughout the stand with the trees showing good form and tree height. In particular this stand has the highest quality and largest diameter northern red oak growing on the property. This stand would benefit from a commercial thinning that removes most of the low quality and poorly spaced trees.

Understory Trees and Shrub Species: Tree species recorded growing include: red maple, black oak, northern red oak, black birch, sugar maple, shag bark hickory, pignut hickory, and eastern white pine. This stand has low to medium stocking levels of regeneration present, this is due to the highly stocked overstory occupying most of the sunlight and growing conditions. In and around the stream area has the most acceptable growing stock saplings sized trees, with much of the rest of the stand having unacceptable growing stocking in the understory. Pockets of acceptable growing stock of black birch saplings can be found growing where a tree has died or is in a state of decline in the overstory, allowing increased sunlight to reach the forest floor. Shrub species recorded at low stocking levels include: witch-hazel and flowering dogwood.

Herbaceous Growth: Limited herbaceous growth present with there being scattered lycopodium, wintergreen, and mixed fern species present.

Invasives: Low stocking levels mostly in the southern part of the stand as you head northerly closer to exclusion 1 the stocking levels become higher. Invasives recorded include: oriental bittersweet and japanese barberry,

Habitat Considerations: Hardmast production site of acorns which provide a very valuable food source for a variety of wildlife species.

Desired Future Condition: A well-spaced oak hardwoods stand with a diversity of tree species growing in the understory as seedlings, saplings, and pole size trees with few to no non- native invasive species growing. Any native tree, shrub, or herbaceous growth is encouraged to grow striving for overall species diversity.

Stand Improvement Techniques: Remove Invasive species. Create opening in the canopy to spark the growth of seedlings and saplings in the understory. Remove low quality and poorly spaced trees.

Town(s): **Waltham, Ma**

Owner(s): **City of Waltham**

OBJ	STD NO	TYPE	AC	SIZE-CLASS MSD	BA/AC	VOL/AC	SITE INDEX	
STEW	#2	OH	46	14"	110SF	.5MBF and 14Cords-Firewood	NRO:47	

Terrain & Water Resources: This stand has minor slopes to steep terrain through the stand, with slopes ranging from 5 percent to 45 percent and steeper, with their being some ledges with rock out crops present as well. This stand has thin soils with ledge not too far under the soils with this stand being situated along or on top of prospect hill. There are two or more vista site locations located within this stand.

History & Cultural Features: Scattered pieces of stonewall in different section of the stand.

Access: Mostly good access with some areas of the stand being limited around the ledges area (see forest stand and boundary map).

Soils Hollis-Rock outcrop-Charlton complex, 3 to 35 percent slopes and steeper, with bed rock down 16" – 26" down in most areas. Some areas of the stand that have the Charlton complex have bedrock at 27" – 65" down.

Overstory Tree species recorded growing in the stand from highest stocking levels to lowest include: black oak, red oak, pignut hickory, white oak, black birch, eastern white pine, eastern hop horn beam, and norway maple (non-native). This stand is described as having mostly dwarfed trees that are stunted in growth due to the thin low nutrient rich soil conditions. The oak and hickory species are conditioned and typical to growing in these thin soiled dry areas, referred to as dry site oak. The size and height of these trees is not representative of their age, as many of these trees are the same age as the larger diameter taller trees are found down slope where there are richer deeper soils. The main important function of the trees in this stand are their roots helping to maintain stable soil conditions that are not easily washed away by heavy rain storms. Not much active management is recommended in this stand unless opening up for a vista area.

Understory Trees and Shrub Species: Tree species recorded growing in this stand include: white oak, black oak, northern red oak, pignut hickory, eastern white pine, red maple and sugar maple. Mostly low stocking levels of a mixture of seedlings, saplings, and pole size trees that are of mixed quality and condition. Shrub species recorded growing include: low bush blueberry, eastern juniper, and some scattered huckleberry.

Herbaceous Growth: Limited herbaceous growth such as lycopodium, grass, sphagnum moss, and a few mixed fern species. Although along the ledges of the stand where water seeps out there was an abundance of fern species present along with invasive species winged euonymus.

Habitat Considerations: Denning sites in ledges and rock out crops. Low bush and huckleberry if they fruit out can provide a food for source for a variety of wildlife species. Acorns and hickory nuts, although this stand probably does not produce many due to the growing conditions.

Invasives: Limited invasives through most of the stand except along the ledges where there is high stocking levels of winged euonymus growing. Other sections of the stand may have small amounts of oriental bittersweet and japanese barberry.

Desired Future Condition: The desired future condition of this stand is oak hardwoods stand with a diversity of tree and shrub species growing throughout it.

Stand Improvement Techniques: None recommended.

Town(s): **Waltham, Ma**

Owner(s): **City of Waltham**

OBJ	STD NO	TYPE	AC	SIZE-CLASS MSD	BA/AC	VOL/AC	SITE INDEX
STEW	#3	WH	88	17"	85SF	6.7MBF and 6 Cords-Firewood	EWP:68

Terrain & Water Resources: Mostly sloping to the east and west with slopes from 5 percent to 35 percent. Limited surface stones and rocks through this stand, with a few ledge out crops and mounds located through the stand. There is a stream and small wetland located in the north central part of the stand that flows easterly off the property, along with other small wetland areas and streams in the southeastern portion of the stand. Most of this stand is considered upland forest.

History & Cultural Features: Small sections of stonewall located throughout the stand and boundary lines. There is an old well site located in the central part of the stand (see forest stand map).

Access: Logging access is limited due to their being no road frontage or access roads near this stand. Timber stand improvement access by foot and chainsaw is good.

Soils: Narragansett-Hollis-Rock outcrop complex, 15 to 25 percent slopes and Hollis-Rock outcrop-Charlton complex, 0 to 25 percent slopes, with bed rock down 16" – 26" down in most areas. Some areas of the stand that have the Charlton complex have bedrock at 27" – 65" down.

Overstory Tree species recorded growing in this stand from highest to lowest stocking levels include: white pine, black birch, northern red oak, black oak, white oak, pignut hickory, white ash, red maple, american elm, and few scattered spruce. This stand is described as having medium to large diameter eastern white pine growing with mixed small to large diameter hardwoods species growing amongst them. The white pine is found growing in patches up to 1 acres in size +/- as well as spaced out through the stand. The very northern tip of the stand near the "ledges" (labeled on map) has moister soils where there is some white ash, pignut hickory, and american elm growing. Most of the trees in this stand show good form and tree height. This would be a good stand to manage some quality eastern white pine timber in but has limited access.

Understory Trees and Shrub Species: Tree species recorded growing in this stand include: eastern white pine, pignut hickory, red maple, black birch, northern red oak, black oak, and scattered spruce. The understory is growing at mostly low stocking levels with their being seedlings, saplings, and pole size trees growing. The understory is mixed quality and condition with there being about 50 percent considered acceptable growing stock and the other 50 percent considered unacceptable. Shrub species recorded growing include: high-bush blueberry, witch-hazel and invasive species winged euonymus. The small wetland areas in the southeastern part of the stand have the wetland shrub sweet pepper bush growing in them mostly.

Herbaceous Growth: Limited herbaceous growth present with there being scattered lycopodium, wintergreen, and mixed fern species present.

Habitat Considerations: Large standing snags for bird perching and nesting sites. Increase browse and cover for a variety of wildlife species such as fox, deer, rabbit, etc.

Invasives: The northern tip of the stand above the stream has high stocking levels of winged euonymus growing. Other sections of the stand may have very small amounts of winged euonymus, oriental bittersweet and japanese barberry.

Desired Future Condition: A well-spaced white pine hardwoods stand with a diversity of tree species thriving as seedlings, saplings, and pole size trees through the stand.

Stand Improvement Techniques: Remove invasive species. A commercial thinning focusing on removing some mature saw timber and tree spacing. Increase stocking levels in understory.

Town(s): **Waltham, Ma**

Owner(s): **City of Waltham**

OBJ	STD NO	TYPE	AC	SIZE-CLASS MSD	BA/AC	VOL/AC	SITE INDEX
STEW	#4	WP	30	15"	133SF	10MBF and 10 cords-softwood pulpwood	EWP:65

Terrain & Water Resources: Flat to hilly terrain with some benches in this stand with slopes from 5 percent to 40 percent or greater. No streams or wetland located within this stands parameters. Dry soil conditions through the stand with limited surface stones and boulders present.

History & Cultural Features: Some stonewalls along the boundary lines. Trail system with sections of natural stone stairs built of stones.

Access: Limited but possibly accessible from parcel of land located just south of the Town of Waltham Land.

Soils: Hollis-Rock outcrop-Charlton complex, 0 to 25 percent slopes, with bed rock down 16" – 26" down in most areas. Some areas of the stand that have the Charlton complex have bedrock at 27" – 65" down.

Overstory : Tree species recorded growing from highest to lowest stocking level include: eastern white pine (75%), black oak, northern red oak, white oak, black birch, pignut hickory, and red maple. This stand is described as being consistently stocked with eastern white pine throughout, with mixed hardwood species growing amongst them at low stocking levels. The eastern white pine is mostly good quality that shows good tree heights and tree form. The crowns of the white pine also appear to be green and healthy, although, they should be monitored for thinning/dicoloration yearly since needle cast disease can be an issue in dense white pine stands. The mixed hardwood species are mostly low quality and suppressed from the eastern white pine growing over them. The overall health of the stand would increase if a shelterwood harvest was done. This would remove most of the low quality trees, space out the overstory, and overtime establish a regeneration layer in the understory.

Understory Trees and Shrub Species: Tree species recorded growing in this stand include: eastern white pine, black birch, black oak, red maple, pignut hickory, and northern red oak. This stand has very low stocking levels of seedlings, saplings, and pole size trees. Almost all of the understory in this stand is considered unacceptable growing stock due to low light and limited growing space. Low bush blueberry was the only shrub species recorded.

Herbaceous Growth: Limited herbaceous growth present with there being scattered lycopodium, wintergreen, and mixed fern species present.

Habitat Considerations: Dead standing snags for woodpeckers. Increase browse and cover in the understory for a variety of wildlife species.

Invasives: Low stocking levels of oriental bittersweet and winged euonymus recorded within the stand. Much of the stand has no invasive species present.

Desired Future Condition: A well-spaced white pine stand with a diversity of tree species thriving in the understory as seedlings, saplings, and pole size trees.

Stand Improvement Techniques: Remove low quality trees, Space out trees, and increase sunlight/growing space on the forest floor.

OBJ	STD NO	TYPE	AC	SIZE-CLASS MSD	BA/AC	VOL/AC	SITE INDEX
S	W	#5	BR	19	Saps-Poles	-----	NRO:60

Terrain & Water Resources: This stand is situated on a hill that has a northerly aspect, with slopes ranging from 30 to 40 percent plus. There are limited surface stones with large boulders around the edges of the stand. These large boulders were pushed to the edges of the stand by bulldozer most likely when the hill was originally made into a small ski and tubing park.

History & Cultural Features: As mentioned above this stand was a small ski and tubing, it has since been abandoned and in a state of returning to forest.

Access: Good Access from exclusion 1 and the existing trail system.

Soils: Narragansett-Hollis-Rock outcrop complex, 15 to 35 percent slopes or greater.

Overstory This stand is composed of dense sapling growth up to 15' tall. Tree species recorded growing in this stand include: black birch, paper birch, eastern white pine, northern red oak, black oak, pignut hickory, white oak, red maple, white ash, and black locus. The trees appear vigorous and to be self-weeding by natural competition amongst them reaching for sunlight and growing space. This is how natural forest secession takes place and the dominant trees will prevail. The best sapling growth is located along the north part of the slope as you go up the hill along the trail invasive species begin to dominate patches of the stand. A possible management strategy for this stand might be to manage it as early successional habitat or as a meadow with native herbaceous and shrub species.

Shrub Species: Shrub species recorded include: low bush blueberry and witch-hazel.

Herbaceous Growth: Limited herbaceous growth present with there being scattered lycopodium, wintergreen, and mixed fern species present.

Habitat Considerations: Maintain as early successional habitat for a variety of bird species to nest and foraging in.

Inives: High stocking levels of invasive species through most of the stand. Invasive species recorded include. Oriental bittersweet, japanese knot weed, japanese barberry, winged euonymus, honey suckle, and ailanthus.

Desired Future Condition: Desired future condition is a naturally progressing young forest or an area that will be maintained as early successional habitat (young forest) by cutting it back every 5 to 10 years.

Stand Improvement Techniques: Remove invasive species. Maintain early succession habitat overtime(young forest).

OBJ	STD NO	TYPE	AC	SIZE-CLASS MSD	BA/AC	VOL/AC	SITE INDEX	
STEW	#6	OH	38	13"	110SF	5.2MBF and 10 Cords-Firewood	NRO:60	

Terrain & Water Resources: Flat with a few small mounds spaced out through the stand. The edges of the stand have some steeper terrain with thinner soil conditions and few areas of exposed ledge. There are a number of small wetland patches (possible vernal pools) located within this stand parameters. There are all interconnected with a small stream that most likely flows most during rain events or wet spring conditions.

History & Cultural Features: Small sections of stonewall located throughout the stand.

Access: Good access from the existing network of trails and access Road. Possible good landing site located just off the property to the south.

Soils: Udorthents, Loamy and Hollis-Rock outcrop-Charlton complex, 0 to 25 percent slopes, with bed rock down 16'' – 26'' down in most areas. Some areas of the stand that have the Charlton complex have bedrock at 27'' – 65'' down.

Overstory Tree species recorded growing in this stand from highest to lowest stocking levels include: black oak, northern red oak, white oak, eastern white pine, black birch, pignut hickory, and red maple. This stand is characterized as having medium to large diameter saw timber growing through the stand with lower stocking levels of smaller diameter trees. This stand has the most consistent largest diameter trees on the property. Most of the trees appear to be healthy but are considered to be on the low quality side due to much of it being black oak with visible surface defects on many of the trees bark. Lots of the larger diameter trees have large sprawling crowns which does make them susceptible to blowing down or ice damage. Mostly mixed oaks dominant this stand but scattered eastern white pine trees are growing in pockets as well.

Understory Trees and Shrub Species: Tree species recorded growing in this stand include: pignut hickory, black oak, black birch, northern red oak, red maple, eastern white pine, and white oak. The stocking of the overstory is considered to be low – medium with some pockets of higher black birch saplings and small poles. The quality and condition is variable with about half of the growing stock being considered acceptable for future growth and development. Removing patches of overstory trees in specific areas would help the acceptable growing stock to continue to grow and develop at optimal growth rates. Shrub species recorded growing in this stand include: high-bush blueberry, witch-hazel, and some sweet pepper bush in the wetland areas.

Herbaceous Growth: Herbaceous growth present includes lycopodium, wintergreen, poison ivy, raspberry, mixed grass species, and mixed fern species present.

Habitat Considerations: Maintain dead standing snags or trees that have active bird peck visible. Increase browse and cover for a variety of wildlife species. Maintain hard mast production trees such as oaks and hickory.

Invasives: Oriental bittersweet, Japanese barberry, winged euonymus, green briar. Most of the invasives were recorded on the edges of the stand not in the interior except green briar. There are two specific green briar patches in this stand that should be removed. You do not want the continued spreading of this invasive.

Desired Future Condition: The desired future condition is an oak hardwoods stand with a diversity of tree species thriving in the understory as seedlings, saplings, and pole size trees.

Stand Improvement Techniques: Remove invasive species. Improve advanced regenerations and spark growth of new seedlings.

Town(s): **Waltham, Ma** Owner(s): **City of Waltham**

MANAGEMENT PRACTICES To be done within next 10 years

Paint and Blaze Forest Boundaries by 2023. Focus on completing the boundaries on the eastern side of the property where the adjacent properties are encroaching onto the town land. The western side of the property is mostly fenced. ***

OBJ	STD NO	TYPE	TREATMENT	AC	TO BE REMOVED BA/AC TOT VOL	TIMING
STEW	1	OH	Commercial Thinning/ Group Selection/ Timber Stand Improvement / Hazard Tree Removal	23	70SF 50MBF 75 Cords of Firewood	2020-2030

Management Practices Objective:

A commercial thinning removing roughly 30 to 50 percent of the current basal area would benefit the long term growth and development of the quality mixed hardwood species. Focus on cutting the poorly formed, unhealthy, crooked stemmed, and some mature saw timber. Due to the location of this stand in the woodlot that is most likely not feasible because of the need for large logging machinery and access but should be considered at a minimum.

**Focus on removing invasive species by pulling, mechanically cutting and stump treatment with herbicide, or spot plant herbicide treatment.*

**Small groups of small to larger diameter trees could be cut or girdled in an effort to increase sunlight conditions on the forest floor and spark the growth of new seedlings and increase the vigor of saplings and pole size trees. Focus on removing low quality trees or poorly spaced trees that will also increase the vigor of the overstory trees by allowing their crowns to have more room to expand and grow overtime. The slash could be stacked in brush piles that could benefit small wildlife species to provide cover and possible denning sites for rabbit, fox, etc. This could also richen the bird habitat across the property as many bird species require patches of young forest for nesting and foraging. This would be a combination of group selection and timber stand improvement treatment type.*

** Remove dead, declining, or broken top trees that are located along trails or forest roads.*

Town(s): **Waltham, Ma**

Owner(s): _____ City of Waltham

OBJ	STD NO	TYPE	TREATMENT	AC	TO BE REMOVED BA/AC TOT VOL	TIMING
STEW	2	OH	Vista Management/ Hazard tree removal/ Timber Stand Improvement	14	10 Cords of Firewood in Vista Cut Areas.	2020-2030

Management Practices Objective:

No active forest management will take place in this stand due to its location on a hill with thin soils. This stand has two or more vista locations that reveals the city of Boston to the east and Cambridge Reservoir to the northwest. These locations views could be enhanced by cutting down strips or patches of trees that would improve the site lines from these locations. Low lying native shrub species could be planted in these areas or these areas could be cut back every five years plus or minus. Obviously soil erosion possibilities should be considered before any vista area is cut.

*Focus on removing invasive species by pulling, mechanically cutting and stump treatment with herbicide, or spot plant herbicide treatment.

* Remove dead, declining, or broken top trees that are located along trails or forest roads.

OBJ	STD NO	TYPE	TREATMENT	AC	TO BE REMOVED BA/AC TOT VOL	TIMING
STEW	3	WH	Commercial Thinning/ Group Selection/ Timber Stand Improvement / Hazard Tree Removal	29	25 square feet 31MBF 57 Cords of Firewood	2020-2030

Management Practices Objective:

A commercial thinning removing roughly 30 to 50 percent of the current basal area would benefit the long term growth and development of the quality mixed hardwood species. Focus on cutting the poorly formed, unhealthy, crooked stemmed, and some mature saw timber. Due to the location of this stand in the woodlot that is most likely not feasible because of the need for large logging machinery and access but possibly in the future some type of operation could be figured out that suites the area.

*Focus on removing invasive species by pulling, mechanically cutting and stump treatment with herbicide, or spot plant herbicide treatment.

*Possible elimination of a number of trails to limit stand fragmentation where it is not necessary.

*Small groups of small to larger diameter trees could be cut or girdled in an effort to increase sunlight conditions on the forest floor and spark the growth of new seedlings and increase the vigor of saplings and pole size trees. Focus on removing low quality trees or poorly spaced trees that will also increase the vigor of the overstory trees by allowing their crowns to have more room to expand and grow overtime. The slash could be stacked in brush piles that could benefit small wildlife species to provide cover and possible denning sites for rabbit, fox, etc. This could also richen the bird habitat across the property as many bird species require patches of young forest for nesting and foraging. This would be a combination of group selection and timber stand improvement treatment type.

* Remove dead, declining, or broken top trees that are located along trails or forest roads.



Town(s): **Waltham, Ma**

Owner(s): **City of Waltham**

OBJ	STD NO	TYPE	TREATMENT	AC	TO BE REMOVED BA/AC TOT VOL	TIMING
SEEW	4	WH	Shelterwood / Timber Stand Improvement / Hazard Tree Removal	15.5	66 Square Feet 41MBF 80 Cords of Softwood pulp	2020-2030

Management Practices Objective:

A shelterwood harvest would benefit the long term growth and development of this stand. This silvicultural prescription would remove 50 percent of the current basal area, striving to leave and space the best quality trees through the stand. The goal would be to fully release desired crop trees and established a good healthy regeneration layer in the understory of seedlings and saplings. The western and far eastern part of this stand could be harvested but the central portion should be left alone since that is in a high traffic area for walkers. The western part of this stand could be harvested in conjunction with stand 5 and landed just off the property to the south in the large open area with a gravel access road (see forest stand and boundary map).

**Focus on removing invasive species by pulling, mechanically cutting and stump treatment with herbicide, or spot plant herbicide treatment.*

**Small groups of small to larger diameter trees could be cut or girdled in an effort to increase sunlight conditions on the forest floor and spark the growth of new seedlings and increase the vigor of saplings and pole size trees. Focus on removing low quality trees or poorly spaced trees that will also increase the vigor of the overstory trees by allowing their crowns to have more room to expand and grow overtime. The slash could be stacked in brush piles that could benefit small wildlife species to provide cover and possible denning sites for rabbit, fox, etc. This could also richen the bird habitat across the property as many bird species require patches of young forest for nesting and foraging. This would be a combination of group selection and timber stand improvement treatment type.*

**Remove dead, declining, or broken top trees that are located along trails or forest roads.*

Town(s): **Waltham, Ma**

Owner(s): **City of Waltham**

OBJ	STD NO	TYPE	TREATMENT	AC	TO BE REMOVED BA/AC TOT VOL	TIMING
STEW	5	BR	Clear Cut/ Invasive Species Removal / No management	19	Cut all sapling and pole sized tree growth	2020-2030

Management Practices Objective:

Invasive species eradication is the most important management objective in this stand. Once that is done this stand could be managed as early successional habitat (young forest). To accomplish this you would cut all the tree saplings down, they could be cut and left or put into brush piles. This would make the stand have to start over producing new growth. This new growth has a high value in particular to a variety of bird and song bird species that require young dense forest growth for nesting and foraging. This stand would most likely be considered early successional habitat up to 10 years after cutting the current saplings down to the ground. The southern part of this stand nearer to the water tanks where it is flatter could be managed as meadow area with native wildflowers, shrubs, and grasses. This could be mowed on bi-annual basis to maintain this habitat type. The last thing to mention is that this stand could be left alone to allow natural forest succession to take place overtime. This would be a good management approach as well as long as the invasive species were eradicated from the stand.

OBJ	STD NO	TYPE	TREATMENT	AC	TO BE REMOVED BA/AC TOT VOL	TIMING
STEW	6	OH	Commercial Thinning / Invasive Species Removal / Timber Stand Improvement	24	40 Square Feet 30 MBF 65 Cords-Firewood	2020-2030

Management Practices Objective:

A commercial thinning removing roughly 30 to 50 percent of the current basal area would benefit the long term growth and development of the quality mixed hardwood species. Focus on cutting the poorly formed, unhealthy, crooked stemmed, and some mature saw timber. This stand could be harvested in conjunction with stands 3 and 4 and possibly landed on the land just south of the town property. This property is open land with a gravel access road that appears to not be in any real use currently.

**Focus on removing invasive species by pulling, mechanically cutting and stump treatment with herbicide, or spot plant herbicide treatment.*

**Small groups of small to larger diameter trees could be cut or girdled in an effort to increase sunlight conditions on the forest floor and spark the growth of new seedlings and increase the vigor of saplings and pole size trees. Focus on removing low quality trees or poorly spaced trees that will also increase the vigor of the overstory trees by allowing their crowns to have more room to expand and grow overtime. The slash could be stacked in brush piles that could benefit small wildlife species to provide cover and possible denning sites for rabbit, fox, etc. This could also richen the bird habitat across the property as many bird species require patches of young forest for nesting and foraging. This would be a combination of group selection and timber stand improvement treatment type.*

** Remove dead, declining, or broken top trees that are located along trails or forest roads.*

Town(s): **Waltham, Ma**

Owner(s): **City of Waltham**

MANAGEMENT PRACTICES- Continued.....

**** Continue to monitor forest health and review with licensed professional forester. ****

**** Monitor and eradicate invasive species such as glossy buckthorn, japanese barberry, oriental bittersweet, winged-
euonymus, green briar, and multi-flora rose. ****

Common Insects and Diseases

****Some of the hemlock on the property is infested with the Hemlock Woolly Adelgid insect, a non native insect that feeds on the base of the hemlock needles causing desiccation. The affected trees usually take on a gray cast. There is no practical way of controlling this insect in a forest setting. There is usually a 4 to 10 year window for complete tree mortality depending upon how heavy the infestation is. It is extremely important to monitor the progress of the infestation salvage infected areas as needed ****

**** Monitor the forest also for the infestation of Emerald Ash Borer and Asian Longhorn Beetle these are non native insects that are currently found in other areas of Massachusetts. ****

**** Canavirgella needle cast or Mycosphaerella dearnessii brown spot needle blight, both foliar diseases which affect trees mostly growing at the edge of bodies of water, in wet areas, or on dry steep slopes. Consecutive years of wet springs favor spore formation, dispersal, and infection by both fungi. Affecting the trees needle retention and cause only 1 to 2 years of needs to stay on the tree. ****

**** Monitor for Gypsy Moth Egg Mast and Feeding. Feeding occurs during the late spring and summer, mostly on oak trees but not limited to them. This should be monitored yearly ****

STEWARDSHIP CONSIDERATIONS

TRAILS

-A Multiple use trail system i.e. nature study, hiking, snow shoeing and cross country skiing trails should be maintained and expanded additional trails may be developed.

WILDLIFE

- Retain dead snags for den trees for small mammals and birds.
- Create den trees by girdling low quality coarse trees.
- Nesting boxes could be installed for bats, wood ducks, and owls
- Create coarse brush piles for ground nesting and cover wildlife habitat.
- Create openings for wildlife habitat improvement, nesting, resting and feeding sites
- Create or retain large logs scattered on the forest floor the stands for coarse woody debris 2-5 cords per acre optimum

WATER QUALITY

- Apply the proper BMP during any Timber harvesting, trail construction, road maintenance or construction
- Retain protect riparian areas

Volumes and Site Index

- Volumes were determined by using a standard field cruising methods and USFS NED tally system and applying and calculating the actual volumes.
- Site index was determined by referencing the web soil survey information.

Town(s): Waltham, Ma

Owner(s): City of Waltham

Signature Page Please check each box that applies.

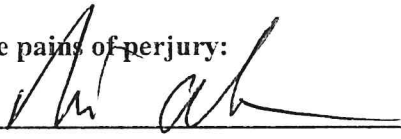
CH. 61/61A Management Plan I attest that I am familiar with and will be bound by all applicable Federal, State, and Local environmental laws and /or rules and regulations of the Department of Conservation and Recreation. I further understand that in the event that I convey all or any portion of this land during the period of classification, I am under obligation to notify the grantee(s) of all obligations of this plan which become his/hers to perform and will notify the Department of Conservation and Recreation of said change of ownership.

X Forest Stewardship Plan. When undertaking management activities, I pledge to abide by the management provisions of this Stewardship Management Plan during the ten year period following approval. I understand that in the event that I convey all or a portion of the land described in this plan during the period of the plan, I will notify the Department of Conservation and Recreation of this change in ownership.

Green Certification. I pledge to abide by the FSC Northeast Regional Standards and MA private lands group certification for a period of five years. To be eligible for Green Certification you must also check the box below.

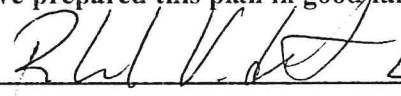
Tax considerations. I attest that I am the registered owner of this property and have paid any and all applicable taxes, including outstanding balances, on this property.

Signed under the pains of perjury:

Owner(s)  Date 2/13/20

Owner(s) _____ Date _____

I attest that I have prepared this plan in good faith to reflect the landowner's interest.

Plan Preparer  License # 405 Date 2/11/2020

I attest that the plan satisfactorily meets the requirements of CH61/61A and/or the Forest Stewardship Program.

Approved, Service Forester  Date 3/9/2020

Approved, Regional Supervisor  Date 4.27.20

In the event of a change of ownership of all or part of the property, the new owner must file an amended Ch. 61/61A plan within 90 days from the transfer of title to insure continuation of Ch. 61/61A classification.

Owner(s) City of Waltham Town(s) Waltham