



## FOREST MANAGEMENT PLAN

Planning Period 2017-2027

### Manchester Town Forest Manchester, Kennebec County, Maine Map R2, Lots 50, 51 and Map R3, Lot 55B Map U24, Lots 28, 28A

Town of Manchester  
P.O. Box 18  
Manchester, ME 04351  
(207) 622-1894

Prepared by:  
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Jonathan Doty, FI 3904

October 9, 2017

## BACKGROUND

The Manchester Town Forest includes two parcels, one on either end of town. The 235-acre Bog Pond parcel lies southwest of the Kerns Hill Road, and is part of a broad area of undivided woodland cover, roughly 2,600 acres in size<sup>1</sup>, along with several other conserved properties, including Hallowell's town forest and the Maine Department of Inland Fisheries and Wildlife's Jamies Pond property. The 65-acre Fairbanks Pond parcel lies near the Sidney town line and extends around the southern end of Fairbanks Pond, directly west of the state's Tyler Pond Wildlife Management Area. To the best of our knowledge all, or large sections, of both properties came into Town ownership as a result of unpaid taxes, the most recent being the portion of the Bog Pond parcel that abuts Kerns Hill Road. With this latter exception, access to both parcels is quite poor and recreational use of both is largely limited to mountain bike, snowmobile, and ATV users. Loggers have selectively harvested both properties over the years, though the most recent cutting, again along the Kerns Hill Road, occurred just prior to the Town's ownership tenure. Both properties are well wooded, with pine, oak, and hemlock sawtimber and a mix of smaller-sized stems of many species. Taken together, currently Manchester's town forest supports 675,000 to 900,000 board feet of sawtimber and 2,800 to 3,600 cords of pulpwood – an average of 16 to 22 cords per acre – worth \$170,000 to \$230,000.

167 MAIN ST. #2A

P.O. BOX 356

WINTHROP

MAINE 04364

TEL: 207-377-7196<sup>1</sup> Manchester 2011 Comprehensive Plan

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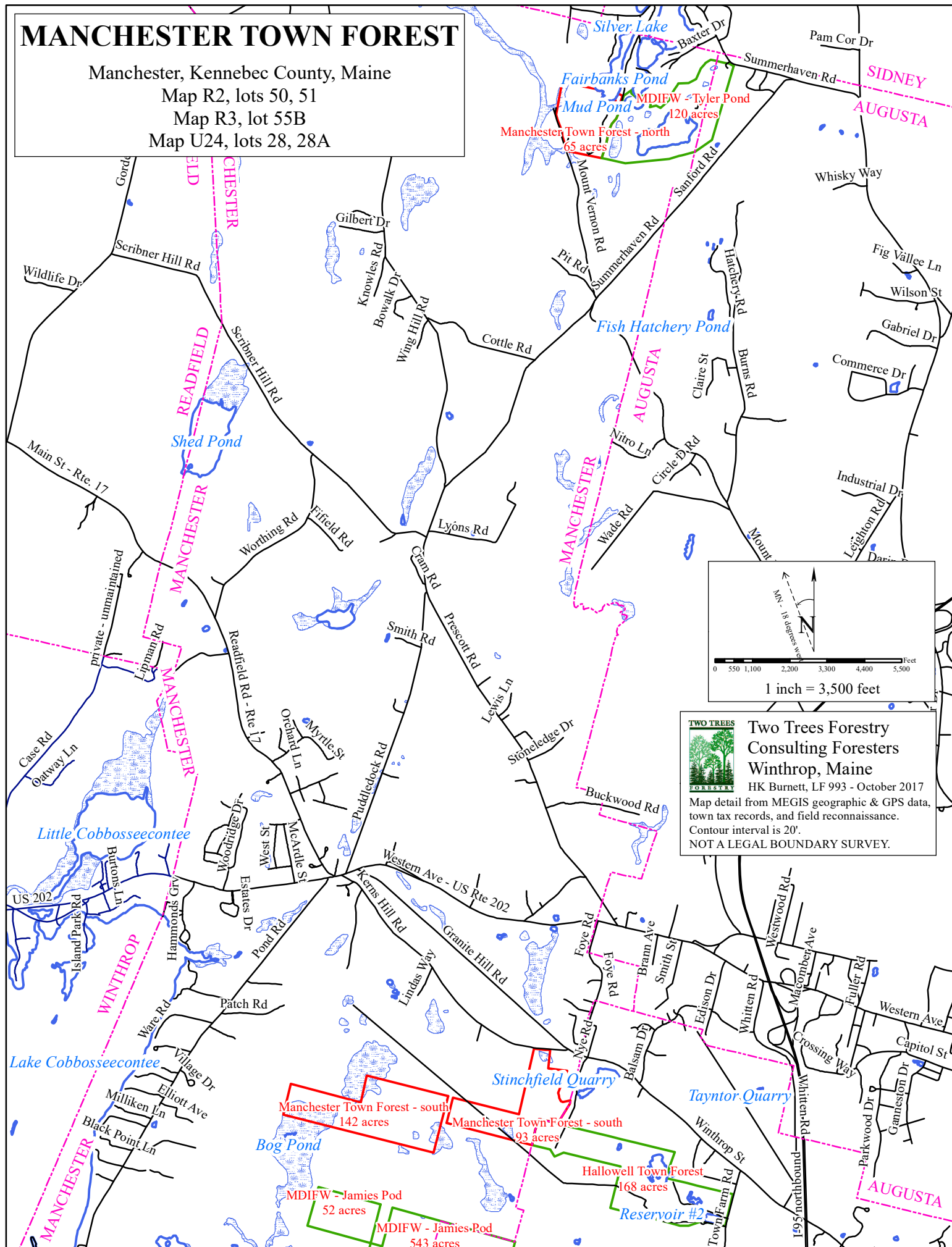
# MANCHESTER TOWN FOREST

Manchester, Kennebec County, Maine

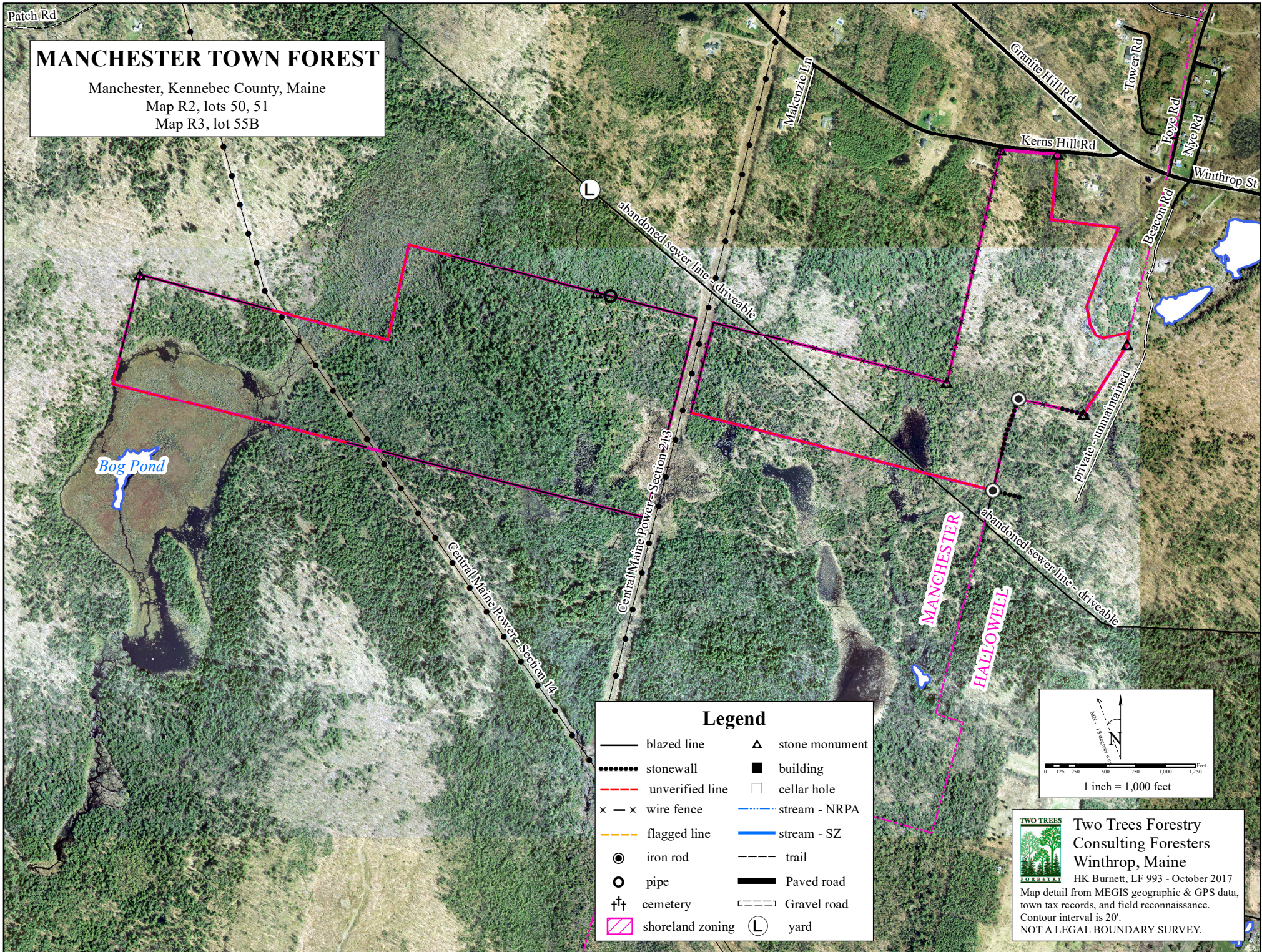
Map R2, lots 50, 51

Map R3, lot 55B

Map U24, lots 28, 28A



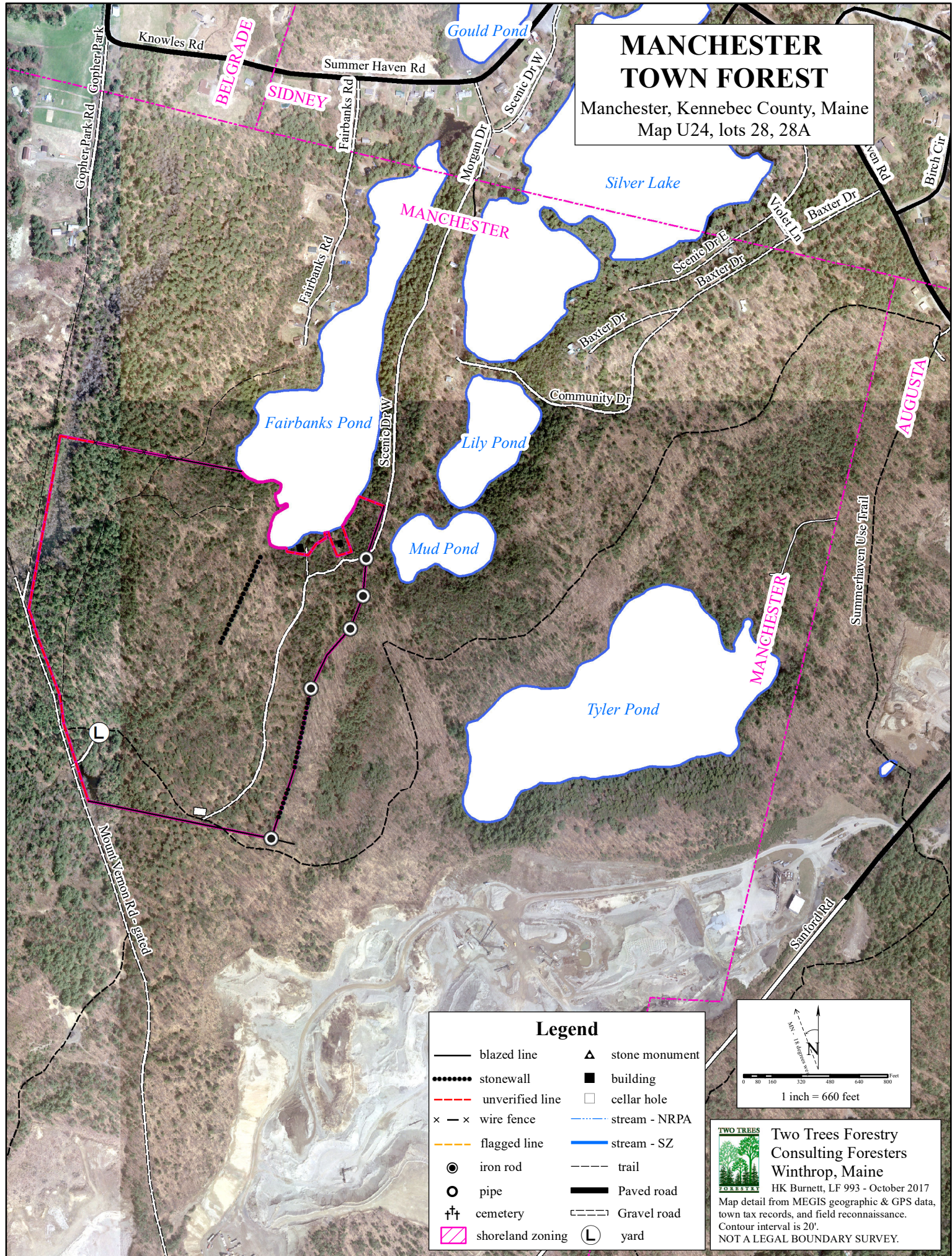






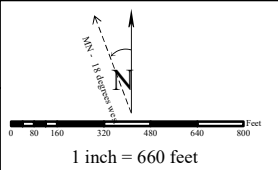
# MANCHESTER TOWN FOREST

Manchester, Kennebec County, Maine  
Map U24, lots 28, 28A



## Legend

- |       |                  |     |                |
|-------|------------------|-----|----------------|
| —     | blazed line      | ▲   | stone monument |
| ●●●●● | stonewall        | ■   | building       |
| ---   | unverified line  | □   | cellar hole    |
| x - x | wire fence       | --- | stream - NRPA  |
| ---   | flagged line     | --- | stream - SZ    |
| ⊙     | iron rod         | --- | trail          |
| ○     | pipe             | —   | paved road     |
| ††    | cemetery         | --- | Gravel road    |
| □     | shoreland zoning | ○   | yard           |



**TWO TREES**  
Two Trees Forestry  
Consulting Foresters  
Winthrop, Maine  
HK Burnett, LF 993 - October 2017  
Map detail from MEGIS geographic & GPS data,  
town tax records, and field reconnaissance.  
Contour interval is 20'.  
NOT A LEGAL BOUNDARY SURVEY.



## MANAGEMENT OBJECTIVES

The Town of Manchester expects to own and manage the properties indefinitely, utilizing the land for conservation, recreation, and financial gain. Income, in both the short and long term, is important, thus they would like to manage the timber sustainably and promote the growth of a healthy forest dominated by a variety of long-lived and valuable species. Any timber harvesting should be conducted with sensitivity to promoting the scenic beauty of the property, protecting or improving wildlife habitat, and preserving the integrity of the soil and water features, and be used as a demonstration of responsible and sustainable forest management. The Conservation Commission is also interested in preserving portions of the forest as unmanaged wildlife habitat. Although access is challenging, these properties also provide recreational opportunities to the people of Manchester, and the town would like to pursue any avenue to expand or enhance these values. Unfortunately, invasive species – namely multiflora rose and honeysuckle – pose a resource concern that managers hope to eradicate or minimize.

## LAWS IMPACTING LAND MANAGEMENT ON PROPERTIES

- **Local Ordinance** – Manchester has no local ordinances that apply to timber harvesting. Land Use Planning Commission rules also do not apply in Manchester, as it is an organized town.
- **Standards for Timber Harvesting in Shoreland Areas (MSZA)** – Manchester administers and enforces its own rules for timber harvesting in shoreland zones, and has adopted rules similar to the Statewide Standards. Areas with 250' of the open wetland surrounding Bog Pond as well as within 250' of Fairbanks Pond are considered shoreland zones. Within those areas, loggers may not remove more than 40% of the total volume, nor create cleared openings greater than 2,500 square feet. Other rules also apply but don't significantly hinder management options. These rules are administered and enforced by the Maine Forest Service.
- **Natural Resources Protection Act (NRPA)** – NRPA regulates disturbing soil adjacent to water bodies, including all seasonal brooks including all well defined channels with exposed mineral soil, including streams with only seasonal water flows. The law requires that concerted efforts must be made to ensure that soils do not wash into the brooks. Working within guidelines described in the Maine Forest Service's Best Management Practices for Forestry should ensure compliance. Permitted activities may require permit-by-rule (PBR) or full permitting.
- **Protection and Improvement of Water Law** – The law regulates activities, which discharge or may potentially discharge materials (pollutants) into water bodies. In the context of forestry, the law addresses pollutants originating from non-point sources and addresses the impact, not the location, of an activity.
- **Erosion and Sedimentation Control Law** – The Law requires that measures be taken to prevent unreasonable erosion of soil or sediment beyond the site or into a protected natural resource, such as a river, stream, brook, lake, pond, or wetland. Erosion control measures must be installed before the activity begins, be maintained, kept in place and functional until the site is permanently stabilized.
- **Forest Practices Act** – FPA mandates adequate regeneration must be present within five years of any harvest, establishes rules relating the planning requirements, size, and spacing of clearcuts, and outlaws liquidation harvesting. All landowners must notify the Maine Forest Service prior to harvesting and then report volume and price information for any year in which harvesting occurred.



## **BOG POND PARCEL**

The Bog Pond parcel contains a modest variety of flat to gently rolling upland ground, punctuated by small pockets of wooded and open wetlands, with a large open wetland surrounding Bog Pond to the west. Two Central Maine Power transmission corridors bisect the parcel, as well as a retired sewer line, beneath a gravel road. The Bog Pond parcel has 400' of frontage on Kerns Hill Road – although much of that is low, wet ground. The Town acquired a deeded right-of-way along the eastern abutter's driveway, which that neighbor used to truck timber during the harvest just prior to the town's acquisition of the property. However, it runs right through that man's dooryard, making it unlikely as permanent access. Areas closer to Bog Pond have historically been accessed along the old sewer line, which is connected by the Fish and Game and then the Town Farm Roads in Hallowell. Although that road is still largely passable, it would likely require some permission from the City of Hallowell and one other abutter for the town to truck wood along it, and some minor repairs. Mountain bikers currently traverse the sewer line and a small network of trails, which tie into others on the abutting Hallowell Town Forest, to the east.

Boundary evidence is abundant along all but the eastern end of the southern line and the northern portion of the eastern line. Elsewhere, blazes, wire fence, and stone walls mark the lines, and stone monuments mark some of the corners. We walked the entire perimeter with GPS, and documented specific locations of physical evidence on the attached map.

## **SOIL AND FOREST RESOURCES**

The woodlot contains three primary topographic features: upland flats, wooded lowlands, and open wetlands. A soils map and site suitability chart are included on pages 22 to 24.

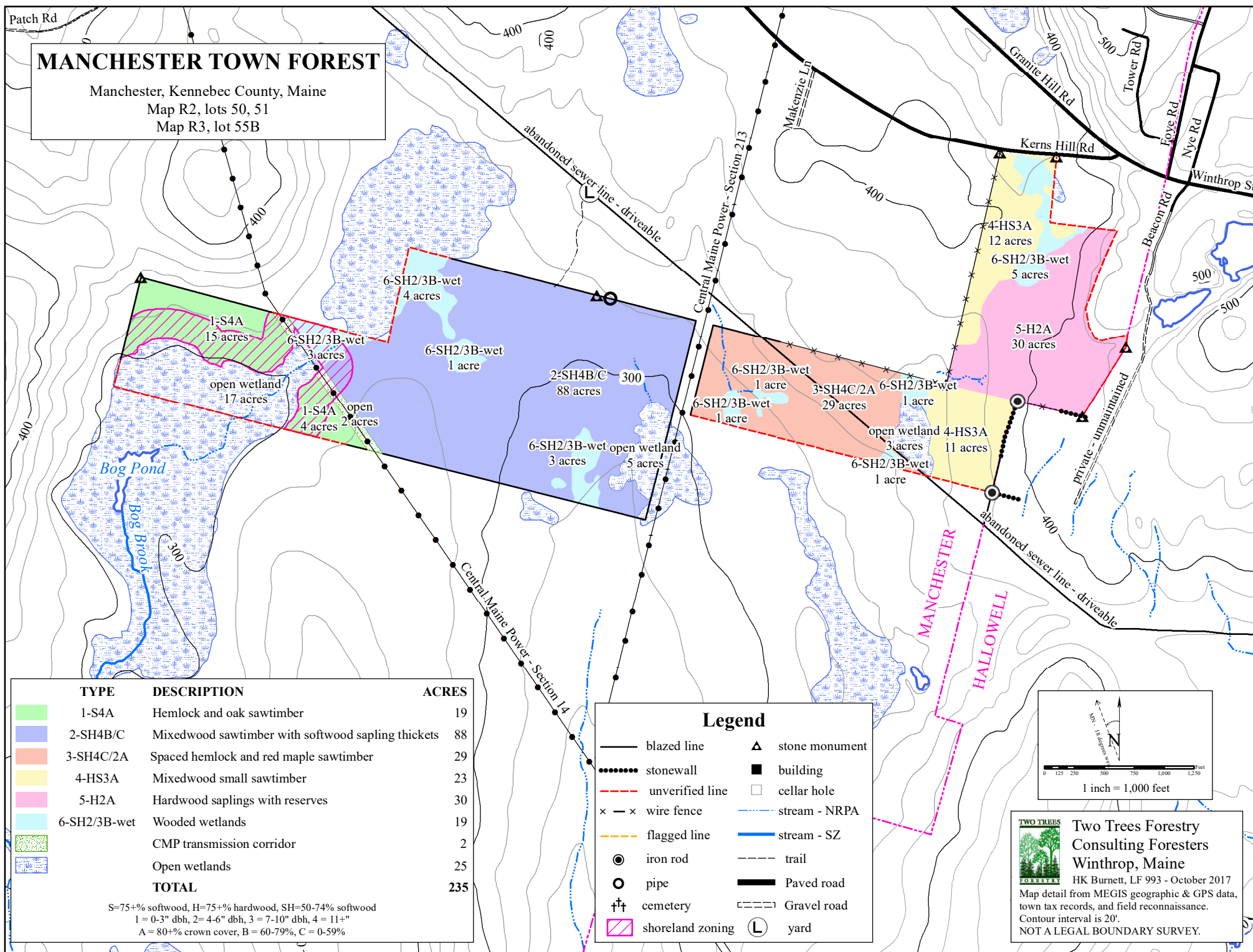
- Upland flats – deep, flat or gently sloping, well drained, productive, Paxton-Charlton very stony fine sandy loams and Woodbridge very stony fine sandy loams, which formed in glacial till. These sites are well suited to growing white pine, oak, and northern hardwoods, such as white ash, sugar maple, and yellow birch. These areas could be operated during most seasons except the very wettest.
- Wooded lowlands – deep and poorly drained Ridgebury fine sandy loams. These soils feature low productivity, and are best suited for red maple, balsam fir, and spruce. These areas should only be operated in while soils are frozen, if ever.
- Open wetlands – very poorly drained Togus fibrous peats and Scarborough mucky peats, which formed from organic materials. These sites are saturated with water almost year round, and thus inhospitable to woodland growth. These areas should not be crossed except when frozen in winter, and only then if necessary.

For management purposes, the wooded areas were divided into seven stands. All stocking and volume figures list a range of values, based on sampling at a 67% confidence interval. Loggers have worked these areas on a regular basis, and most stands have a layered, multi-aged canopy and moderate timber stocking.



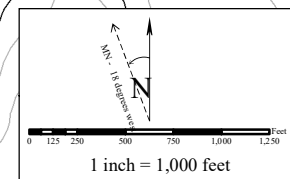
# MANCHESTER TOWN FOREST

Manchester, Kennebec County, Maine  
Map R2, lots 50, 51  
Map R3, lot 55B



## Legend

- blazed line
- stonewall
- unverified line
- wire fence
- flagged line
- iron rod
- pipe
- cemetery
- shoreland zoning
- stone monument
- building
- cellar hole
- stream - NRPA
- stream - SZ
- trail
- Paved road
- Gravel road
- yard



**Two Trees Forestry**  
Consulting Foresters  
Winthrop, Maine

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Map detail from MEGIS geographic & GPS data,  
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Contour interval is 20'.  
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Stand 1. Hemlock and oak sawtimber (S4A – 19 acres) Hemlock, with some red oak, red maple, and yellow birch, dominate rolling ground in the far west of the property, averaging 12” to 16” in diameter and 60’ to 70’ in height. Loggers most recently entered the area during the 1980s, but were quite selective. As a result, most areas are heavily stocked, though the continuous canopy slows individual tree growth and the well-shaded forest floor inhibits regeneration. In the few areas where loggers were more aggressive, average tree diameter is higher, and 20’ to 30’ tall beech and red maple saplings populate the understory. Throughout, oak and hemlock form varies, but good quality stems are common, often featuring straight boles and 20’ to 30’ of few/small limbs. I found no evidence of damage from insects or disease, nor the presence of any invasive species. Current volumes likely total 3,000 to 5,000 board feet of sawtimber and 10 to 15 cords of pulpwood per acre. This area could be harvested in most seasons, except the absolute wettest, though access to most parts is limited by a neighboring wetland. Absent active management, hemlock and beech will likely replace the current overstory as trees slowly succumb to individual mortality.

Distribution of trees, by species and diameter, basal area per acre

<u>Diameter</u>	<u>Hemlock</u>	<u>Red oak</u>	<u>Red maple</u>	<u>Yellow birch</u>	<u>Species</u>	<u>Snags</u>
5 - 8"	11				<b>11</b>	
9 - 12"	23		5	3	<b>31</b>	3
13 - 16"	23	6	3	3	<b>35</b>	3
17 - 20"	9				<b>9</b>	
>20"	8	3			<b>11</b>	
total BA	74	9	8	6	<b>97</b>	<b>6</b>
% of total	76%	9%	8%	6%	<b>100%</b>	

Stand 2. Mixedwood sawtimber with softwood sapling thickets (SH4B/C – 88 acres) Upland ground between the powerline corridors features a multi-aged stand with three distinct, but dispersed, cohorts: scattered 20” to 24” and over 80’ tall white pine, a partial canopy of 10” to 14” diameter and 60’ to 70’ tall red maple, spruce, pine, oak, and hemlock, and an often thick understory of 25’ to 35’ tall fir, hemlock, pine, and spruce, where an overstory is least continuous. Stocking tends to be higher in the west, with sapling thickets common to the east. During the early 2000s, loggers mostly, and only, removed large pines throughout central sections. Overstory tree growth is generally good; most trees have healthy and expanding crowns, although many red maples feature dead or dying tops. Softwood stem quality is excellent, as most trees have 24’ or more of sawtimber quality material. Current volumes likely total 2,000 to 3,000 board feet of sawtimber and 15 to 20 cords of pulpwood per acre. I found no evidence of damage from insects or disease, nor the presence of any invasive species. This area should be harvested when soils are dry in summer, or when frozen. Active management should favor quality spruce, pine, and red oak, seeking to increase their relative abundance, while removing most red maple and poor quality hemlock. Over time, attention should be directed towards selecting and releasing the best quality pine and spruce saplings.



Distribution of trees, by species and diameter, basal area per acre

<u>Diameter</u>	<u>Balsam fir</u>			<u>Yellow birch</u>		<b><u>Species</u></b>	<b><u>Snags</u></b>
	<u>White pine</u>	<u>Hemlock</u>	<u>Spruce</u>	<u>Red maple</u>	<u>Red oak</u>		
5 - 8"	1	15	4	15	1	<b>36</b>	2
9 - 12"		7	3	19	3	<b>32</b>	5
13 - 16"	3	12	2	10	1	<b>28</b>	4
17 - 20"	3	2		2		<b>7</b>	
>20"	3	1				<b>4</b>	1
<b>total BA</b>	<b>10</b>	<b>37</b>	<b>9</b>	<b>46</b>	<b>5</b>	<b>107</b>	<b>12</b>
<b>% of total</b>	<b>9%</b>	<b>35%</b>	<b>8%</b>	<b>43%</b>	<b>5%</b>	<b>100%</b>	

Stand 3. Hemlock and red maple sawtimber (SH4C/2A – 29 acres) During the late 1990s, loggers harvested along both sides of the abandoned sewer line, where a dense cohort of 20' to 30' tall beech and red maple saplings, with similar sized hemlock and balsam fir to the west, are now growing under a partial overstory of 10" to 14" diameter and 55' to 65' tall hemlock and red maple, with some beech, red oak, sugar maple, and yellow birch. Many of the residual trees are of variable quality, with forks or crooks, alongside straight stemmed trees with small or no branches. Directly alongside the CMP corridor loggers generally avoided, leaving what is now very high stocking of sawtimber size and quality trees. Elsewhere, sapling density is high, which should encourage more uniformly good stems. Current volumes total 1,000 to 2,000 board feet of sawtimber and 10 to 15 cords of pulpwood per acre. Other than beech bark disease, which affects most beech, I found no evidence of damage from insects or disease, and only a small presence of multiflora rose, an invasive shrub, typically in old skid trails. Active management should favor diversity, improving the growing conditions for oak, sugar maple and yellow birch, as well as removing the overstory in areas with quality regeneration to release saplings.

Distribution of trees, by species and diameter, basal area per acre

<u>Diameter</u>	<u>Hemlock</u>	<u>Beech</u>	<u>Red maple</u>	<u>Balsam fir</u>	<u>Sugar maple</u>	<b><u>Species</u></b>	<b><u>Snags</u></b>
					<u>Red oak</u>		
5 - 8"	9	6	5	9		<b>29</b>	
9 - 12"	7	5	10	2	3	<b>27</b>	2
13 - 16"	11	2	3			<b>16</b>	
17 - 20"	3					<b>3</b>	
>20"	5				1	<b>6</b>	
<b>total BA</b>	<b>35</b>	<b>13</b>	<b>18</b>	<b>11</b>	<b>4</b>	<b>81</b>	<b>2</b>
<b>% of total</b>	<b>43%</b>	<b>16%</b>	<b>22%</b>	<b>14%</b>	<b>5%</b>	<b>100%</b>	



Stand 4. Mixedwood small sawtimber (HS3A – 23 acres) Rolling upland ground along the Kerns Hill Road, as well as an area in the southeastern corner, are well stocked with 8” to 12” in diameter and 50’ to 60’ tall beech, red maple, and hemlock poletimber, with southeastern areas also including white ash, yellow birch, popple, red oak, sugar maple and white birch. Hardwood stem form is variable, but good quality trees are well distributed across most acres and hemlock tend to have at least 16’ of sawtimber quality growth. Individual tree growth is slowing, as the main canopy closes. Current volumes total 500 to 1,000 board feet of sawtimber and 13 to 18 cords of pulpwood per acre. Beech are moderately affected by the beech bark disease, although several trees show some degree of resistance. Other than that, I found no evidence of damage from insects or diseases, nor the presence of any invasive species. This area could be harvested in all but the wettest times. Managers should favor the less common oak, yellow birch, and sugar maple here, and eventually create conditions favorable for their regeneration, and elsewhere identify and release hemlock and red maple of good health and stem form.

Distribution of trees, by species and diameter, basal area per acre

<u>Diameter</u>	<u>Hemlock</u>	<u>Red oak</u> <u>Sugar maple</u>	<u>Red maple</u>	<u>Beech</u>	<u>White ash</u> <u>White birch</u>	<u>Species</u>	<u>Snags</u>
5 - 8"	5	5	10	15	5	<b>40</b>	8
9 - 12"	8	6	15	8	3	<b>40</b>	5
13 - 16"	2	5			3	<b>10</b>	
17 - 20"						<b>0</b>	
>20"			3			<b>3</b>	
<b>total BA</b>	<b>15</b>	<b>16</b>	<b>28</b>	<b>23</b>	<b>11</b>	<b>93</b>	<b>13</b>
<b>% of total</b>	<b>16%</b>	<b>17%</b>	<b>30%</b>	<b>25%</b>	<b>12%</b>	<b>100%</b>	

Stand 5. Hardwood saplings with residuals (H2A – 30 acres) During the mid-2000s, loggers heavily harvested areas south of the Kerns Hill Road and west of the granite dump, regenerating and releasing what are now 15’ to 25’ tall white birch, red maple, red oak, popple, and beech saplings, primarily, along with widely-spaced clumps of 12” to 16” diameter 60’ to 70’ tall hemlock, red maple, and red oak trees, though many of the latter are unhealthy; many were bumped by loggers, who also deeply rutted much of the area. Thus, overstory growth is poor, and many trees have died. Sapling density is high, which should encourage proper stem formation. Current volumes total less than 1,000 board feet of sawtimber and 5 to 10 cords of pulpwood per acre. I found no evidence of damage from insects or disease, and only a small presence of multiflora rose, an invasive shrub, in some skid trails. This area should be harvested in dry times or when frozen. This stand should be given time to recover following the recent heavy harvest.

Distribution of trees, by species and diameter, basal area per acre

<u>Diameter</u>	<u>Hemlock</u>	<u>Red oak</u>	<u>White ash</u> <u>Red maple</u>	<u>Beech</u>	<u>Species</u>	<u>Snags</u>
5 - 8"			13	3	<b>16</b>	3
9 - 12"	8	3	7		<b>18</b>	
13 - 16"	3	3			<b>6</b>	
17 - 20"					<b>0</b>	
>20"		2			<b>2</b>	
<b>total BA</b>	<b>11</b>	<b>8</b>	<b>20</b>	<b>3</b>	<b>42</b>	<b>3</b>
<b>% of total</b>	<b>26%</b>	<b>19%</b>	<b>48%</b>	<b>7%</b>	<b>100%</b>	



Stand 6. Wooded wetlands (SH2/3B-wet – 21 acres) Wooded wetlands on the property generally feature a poorly stocked mixture of 4” to 8” in diameter and 35’ to 45’ tall red maple, balsam fir, yellow birch, and brown ash saplings and small poletimber, although stocking and size vary based by location. Stand growth is limited by the often-wet soils, which lead to restricted rooting depth. Current volumes total only about 5 to 10 cords of pulpwood per acre. I found no evidence of damage from insects or disease, and only a small presence of multiflora rose, an invasive shrub, along some wetland edges, particularly in the east. These areas should only be harvested or crossed when frozen, if ever, and preferably permanently reserved from timber harvesting due to their sensitive soils and unique ecology.

## **FAIRBANKS POND PARCEL**

On the north end of town, rolling upland ridges and flats dominate the Fairbanks Pond parcel, though wet ground lies along its western boundary. Pond frontage is dominated by a boggy border and a mucky substrate, which has limiting its value as a swimming area. The property is accessible via several roads, though the town’s legal rights to them are unknown. Loggers historically yarded timber to the lot’s southwestern corner, and trucked it southward via the Mt. Vernon Road. That road is in good repair, though may require some work to grade the surface and improve traction on sloping, sandy sections. The road is currently blocked by large rocks at its intersection with the Sanford/Summerhaven Road, and would likely require some abutter research/permission prior to use. Scenic Drive West also accesses the property, but from the northwest. The road is firm and drivable, but narrow and winding, making it impassable by logging trucks. As the road extends south through the property its quality further deteriorates. Several ATV and snowmobile trails traverse the property, including the state-established Summerhaven Use Trail, a six-mile off-highway recreational vehicle trail that crosses the property’s southern end. As well, snowmobiles traverse the now-often flooded and old Mt. Vernon and Gopher Park roads.

Boundary evidence is abundant everywhere. except along the northern line east of the pond. Elsewhere blazes and old iron fence posts, as well as the Mt. Vernon Road, mark the edges; several iron rods mark the bends in the eastern boundary. We walked the entire perimeter with GPS, and documented specific locations of physical evidence on the attached map.

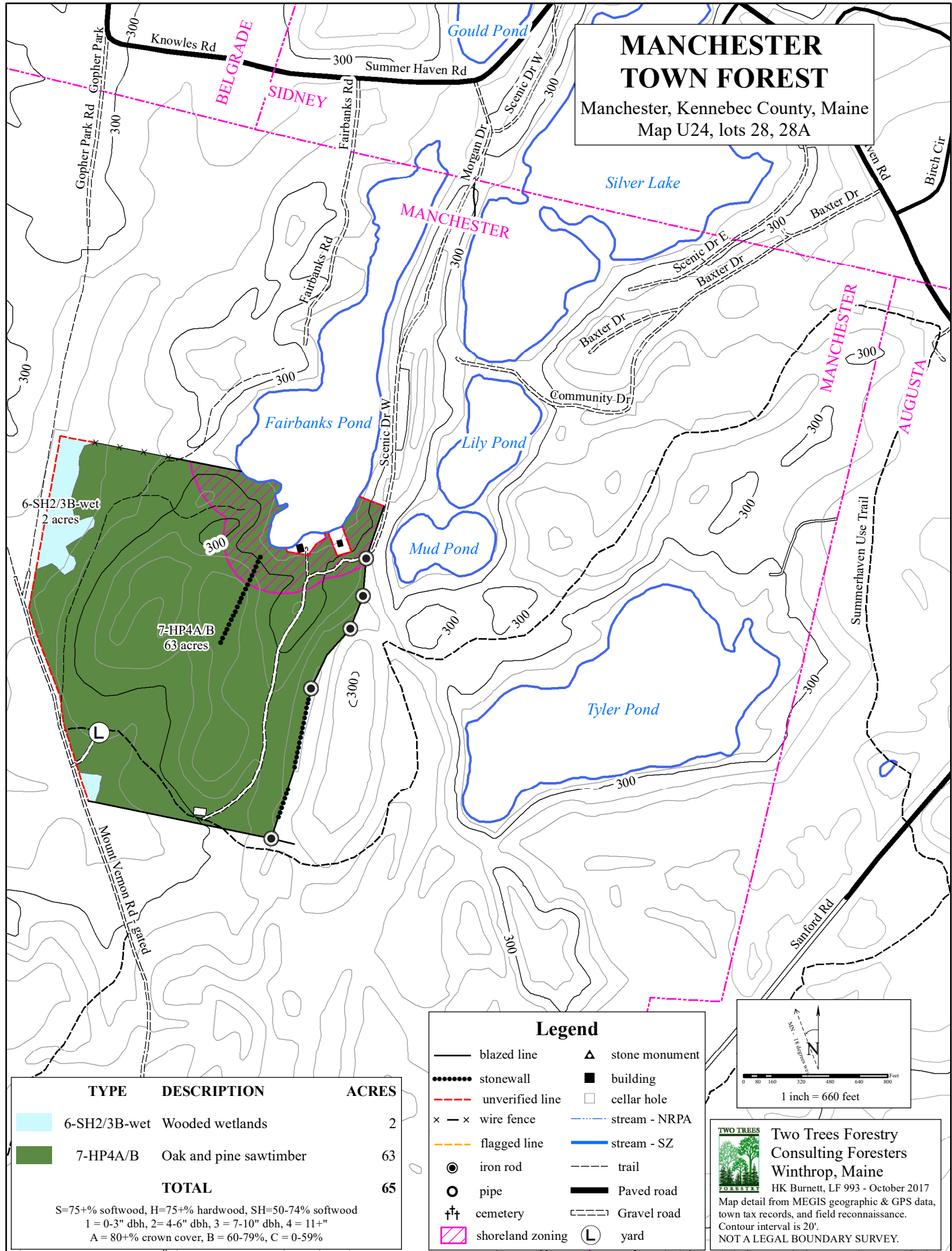
## **SOIL AND FOREST RESOURCES**

The woodlot contains two primary topographic features: upland flats, rolling slopes, lowlands, and open wetlands. A soils map and site suitability chart are included on pages 22 to 24. Timber stocking levels are high and most areas dominated by an even-aged stand of oak and pine.

- Rolling slopes – deep, excessively drained, Windsor loamy sands which formed in glacial outwash. These sites feature low productivity, and are best suited for white pine. Operability could occur at almost any time.
- Lowlands – deep and poorly drained Ridgebury fine sandy loams. These soils feature low productivity, and are best suited for red maple, balsam fir, and spruce. These areas should only be operated in while soils are frozen, if ever.

# MANCHESTER TOWN FOREST

Manchester, Kennebec County, Maine  
Map U24, lots 28, 28A



6-SH2/3B-wet  
2 acres

7-HP4A/B  
63 acres

L

TYPE	DESCRIPTION	ACRES
6-SH2/3B-wet	Wooded wetlands	2
7-HP4A/B	Oak and pine sawtimber	63
TOTAL		65

S=75+% softwood, H=75+% hardwood, SH=50-74% softwood  
1 = 0-3" dbh, 2 = 4-6" dbh, 3 = 7-10" dbh, 4 = 11"+  
A = 80+% crown cover, B = 60-79%, C = 0-59%

### Legend

—	blazed line	▲	stone monument
.....	stonewall	■	building
- - -	unverified line	□	cellar hole
x - x	wire fence	---	stream - NRPA
- - -	flagged line	---	stream - SZ
⊙	iron rod	---	trail
○	pipe	==	Paved road
††	cemetery	---	Gravel road
▨	shoreland zoning	○	yard

1 inch = 660 feet

### Two Trees Forestry Consulting Foresters Winthrop, Maine

HK Burnett, LF 993 - October 2017  
Map detail from MEGIS geographic & GPS data,  
town tax records, and field reconnaissance.  
Contour interval is 20'.  
NOT A LEGAL BOUNDARY SURVEY.



For management purposes, the wooded areas were divided into two stands. All stocking and volume figures list a range of values, based on sampling at a 67% confidence interval.

Stand 7. Oak and pine sawtimber (HP4A/B – 63 acres) Rolling ridges rising from Fairbanks Pond hold 12” to 16” red oak and white pine, from 65’ to 75’ in height. Most areas feature a mixture of the two species, although pine often grows in a pure stand along the west and south, while oak is more prevalent along high ground in the center. As well, 50’ to 60’ tall hemlock often occupies the midcanopy position on steeper slopes, especially along the shores of Fairbanks Pond. Loggers have harvested parts of this stand in the past 20 to 30 years, tending to focus more upon areas of pine, especially along the western edge where they widely spaced large, good quality pines, regenerating a mixture of pine, oak, and balsam fir, now 10’ to 20’ tall, and along the eastern ridge, where they created some small patchy openings, which have regenerated to beech, hemlock, and pine, now 20’ to 30’ tall. Most acres are in a state of crown closure, and as a result growth is slowing. Pine and oak quality is quite good, many oaks have 16’ straight, branch free stems, while many pine have 24’ or more sawtimber quality material. I found no evidence of damage from insects or diseases, nor the presence of any invasive species. Current volumes likely total 6,000 to 7,000 board feet of sawtimber and 12 to 15 cords of pulpwood per acre. Managers should favor the healthiest and best quality pine and oak on all acres, yet retain many hemlock for diversity.

Distribution of trees, by species and diameter, basal area per acre

<u>Diameter</u>	<u>White pine</u>	<u>Red oak</u>	<u>Hemlock</u>	<u>Beech</u>	<u>Species</u>	<u>Snags</u>
5 - 8"	6	2	1	4	<b>13</b>	2
9 - 12"	8	11	2	2	<b>23</b>	2
13 - 16"	10	21	5		<b>36</b>	1
17 - 20"	7	6	2		<b>15</b>	1
>20"	15	1	1		<b>17</b>	1
<b>total BA</b>	<b>46</b>	<b>41</b>	<b>11</b>	<b>6</b>	<b>104</b>	<b>7</b>
<b>% of total</b>	<b>44%</b>	<b>39%</b>	<b>11%</b>	<b>6%</b>	<b>100%</b>	

Wooded wetlands (SH2/3B-wet – 2 acres) Wooded wetlands on the property generally feature a poorly stocked mixture of 4” to 8” in diameter and 35’ to 45’ tall red maple, balsam fir, yellow birch, and brown ash saplings and small poletimber, although stocking and size vary based by location. Stand growth is limited by the often-wet soils, which lead to restricted rooting depth. Current volumes total only about 5 to 10 cords of pulpwood per acre. I found no evidence of damage from insects or disease, nor any invasive shrubs. These areas should only be harvested or crossed when frozen, if ever, and preferably permanently reserved from timber harvesting due to their sensitive soils and unique ecology.

## BIODIVERSITY AND AREA LANDSCAPE FEATURES

Maine's Department of Inland Fisheries and Wildlife (IF&W) considers the large open wetland northeast of Bog Pond as important habitat for Inland Waterfowl and Wading Birds. To help preserve its habitat value, IF&W suggests that managers buffer the open wetland with a 250'-wide band of undisturbed forest. As well, IF&W considers much of the property to be a potential deer wintering area, though its actual use has not been confirmed. The softwood cover triggered its potential designation, for the evergreen needles intercept falling snow and provide thermal cover, facilitating winter travel and bedding for deer during snowy winters. In addition, IF&W considers the woodlot to be part of a landscape with waters that support populations of wild brook trout. These fish benefit from cool, well-oxygenated waters. To promote these conditions, harvesting should retain forested buffers along riparian areas and cross streams only when necessary, implementing measures to minimize any sediment runoff into streams. Maine's Natural Areas Program has no record of any rare or endangered species, and it is unlikely that any are present, as such there are no limitations on the activities recommended in this Plan based on the Endangered Species Act. Nonetheless, the property provides considerable yet somewhat homogenous habitats, including expansive and unfragmented woodland cover, multiple canopy layers, large open wetlands, nearby fields and open areas, tall pines, and large cavity trees and snags. Maintaining continuous forest cover for hundreds of acres ensures habitat for animals requiring large home ranges, such as moose, marten, and barred owls. However, mature mast producing trees, such as beech and oak, are poorly represented on the property, except on the Fairbanks parcel, leaving local wildlife reliant on less nutritious food sources.

The Fairbanks Pond parcel is part of the Belgrade Esker and Kettle Complex, a focus area of statewide ecological significance. Eskers that have been spared sand and gravel mining, as well as kettlehole ponds and peatlands and their associated rare plants and natural communities are key features of this focus area. While this property has not been identified to possess these rare plants, regardless managers should take special care when operating near riparian areas to ensure these habitats are best protected.

The chart below – adapted from Maine Audubon's *Focus Species Forestry* – lists the current distribution of major forest ecosystem types and age classes<sup>2</sup>. This may help visualize the woodlot's current state, and help plan and guide decisions relating to ecological diversity. Maximizing the number of forest ecosystem types and ages generally increases the diversity of wildlife utilizing the property by guaranteeing a broad suite of habitats. As shown, most of the property is split between the mature and sapling development stage, and four ecosystem types are present. While little can be done to expand representation of ecosystems, large group selection and/or small clearcuts can help diversify development stages, and thus increase habitat.

Forest Ecosystems																						Special Value Habitats				
Aspen-Birch				Northern Hardwoods					Oak-Pine					Hemlock			Spruce-fir					N. White Cedar			Riparian Forest	Vernal Pool
R	S	I	M	R	S	I	M	L	R	S	I	M	L	I	M	L	R	S	I	M	L	I	M	L		

<sup>2</sup> See chart of age-classes. R=regeneration, S=sapling, I=intermediate, M=mature, and L=late successional



## LONG TERM MANAGEMENT DIRECTION

The woodlots should be managed in a way that build long-term value through periodic, regular commercial timber harvesting, increase public recreational opportunities, promote native vegetation and diverse wildlife habitat, and protect soil integrity and water quality. Their size and proximity to other conserved land positions the forests well to provide habitat for animals with large home ranges, and also offer the chances for future connectivity, increasing their recreational and wildlife value.

Maintaining property infrastructure is an important means of protecting and simplifying management. Well-delineated boundaries and serviceable roads and trails all protect the property from potential timber trespass, illegal dumping, and soil erosion, while facilitating recreational use and management access. Managers should plan to refresh paint and blazes on all lines every 10 years, and may want to consider a strategy of dividing and rotating through this work over time to keep yearly efforts at a reasonable level. Depending upon whether the abandoned sewer line may be used as access (necessitating permission to cross neighboring land) and the suitability of utilizing the right-of-way from the Kerns Hill Road through the neighbor's dooryard, the Town may want to develop a road between the paved road and the sewer line. However, such a connection would require about 3,000' of new road. Such a road need not be fully graveled, but likely would require clearing, stumping, and grading, with gravel/culverts installed in select spots. An existing entrance, leading to mostly high/dry ground, lies at the western end of the lot's Kern's Hill Road frontage. On the Fairbanks Pond parcel we do not recommend improving public automobile access, given that the portion of Scenic Drive West just north of the property is in poor condition; necessary improvement to enable passenger cars to safely traverse to the property would be expensive and require expenditures on land not owned by the town. We suggest that public access to that parcel be limited to pedestrians and users with bicycles, ATVs, or snowmobiles. Periodic logging access would likely be gained along the now-gated Mt. Vernon road.

Difficult access also complicates improving recreational use, though opportunities exist to tie-into and expand existing trail networks. Abutting the Bog Pond parcel, a well-developed network of mountain biking trails already exist throughout the Hallowell Town Forest, which even now extends slightly onto Manchester's land. While to the north, the six-mile long Summerhaven Use Trail crosses the Fairbanks Pond parcel's southern end. As both of these trails reach Town land far from parking areas, a series of mountain biking trails seems the most logical option for development. Unlike hiking trails, these trails need not be constructed for high mileage or wide enough to accommodate groups, but instead benefit from narrow, winding paths, making heavy use of topographic features to provide acceleration. The Fairbanks Pond parcel seems especially well-suited for this use, as it contains nearly 100' of vertical relief between its highest and lowest points, and is underlain by deep, excessively drained soils, well resistant to erosion and not subject to abundant shallow and surficial tree roots, like other biking areas in the state.

From a forest management standpoint an important initial step will be to determine which areas will be managed and if any will be allowed to develop as nature dictates. To begin, we recommend that open and wooded wetlands, as well as stream corridor buffers be protected from disturbance to the extent possible. Specifically, we suggest that no equipment enter any of the above areas, except in designated spots where streams need to be crossed. Otherwise streams should be protected with at least 25'-wide no-cut buffers on both sides with similarly wide areas around all wetlands. We further recommend that some upland terrain be protected as well, with areas to the far west of the Bog Pond parcel the likeliest options. Restricting harvesting on the 25 wooded acres west of a line between where Central Maine Power's Section 14 powerline intersects the southern boundary and the corner of the property that lies roughly north of that spot will further protect the water quality and unique ecology in that area, while also enabling the already old oak and hemlock timber there to become that much larger, develop late-successional features, and likely become regionally unique and especially so amid the 2,600 acres of neighboring and undeveloped land.

With the preserved areas set aside the remaining 230 acres may be prioritized and scheduled for management activities and harvesting. Given that Town officials prefer to see the land generate regular income, while also improving forest vigor and growth, we suggest a harvest schedule that enables each managed acre to be entered about once every 20 years. With the property segregated into three harvest blocks, one could be treated every six to seven years. While initial harvests will be dictated by then priorities, we envision areas with well-stocked timber scheduled for cutting first, with areas currently dominated by younger timber to be entered later in the initial 20-year cutting cycle. We don't suggest that the harvest schedule be so regimented as to harvest timber before it is best, for it is likely that during the initial harvest cycle some areas within each harvest block will be avoided, so as to allow that block's youngest timber to continue growing. However by the end of the second harvest cycle we expect that all areas of each harvest block will have been entered. Such a rotation should be sustainable indefinitely, though natural disturbances or altered landowner objectives may dictate amendments/alterations to that plan. Large harvest blocks are purposefully proposed so as to minimize the frequency of impact on neighboring landowners, if permissions become necessary. The blocks are defined as follows:

Block 1 – 63 acres. Fairbanks Pond parcel. Wood should be yarded to the south end of the property and trucked out via the Mt. Vernon Road, pending explanation/permission with/from other road abutters. Initial entry: 2018 to 2020.

Block 2 – 88 acres. Western areas of the Bog Pond parcel, bound on both sides by CMP transmission corridors. Wood will likely be yarded to the abandoned sewer line and trucked out to the Town Farm Road in Hallowell, pending explanation/permission with/from other road abutters. Initial entry: 2025 to 2027.

Block 3 – 82 acres. Eastern areas of the Bog Pond parcel. Wood will likely be yarded to the abandoned sewer line running through the stand and trucked out to the Fish and Game Road in Hallowell, pending explanation/permission with/from other road abutters. Initial entry: 2032 to 2034.



Given that Manchester will rely on natural regeneration, managers should always be considering how to establish the forest's next generation. As the current overstory matures we recommend that managers opt to create patches in the overstory of 0.3 to 0.7 acres (two to three tree lengths in diameter) to enable sunlight to reach the forest floor and tree seeds to contact mineral soil directly. Scheduling these harvests during dry summer months should allow equipment to scarify soils while minimizing rutting. Such will enable a variety of trees to become established, diversifying the timber types and development stages present. Later, harvests would remove nearby and overtopping trees to enlarge the regenerated gaps.

This general notion of expanding the size of openings, while retaining blocks of uniformly large trees, will ultimately create a forest comprised of multiple age classes, tree sizes, and heights. Such forests provide the diversity that best resists insect and disease problems, benefits a multitude of wildlife, and provides a solid foundation for a regular income stream. Thus the woods should be managed to produce large diameter (14" to 22" dbh), high value trees, under gradually developing uneven-aged conditions, with some 24+" trees retained indefinitely. Harvest levels should be set to ensure that total harvest volumes do not exceed volumes grown, currently 130 to 150 cords per year<sup>3</sup>.

However, it is possible that invasive plants – mainly multiflora rose and honey-suckle – will become a resource concern. Although these plants are currently young and uncommon on the Bog Pond property, except near the quarry dump and along the sewer line, given time they may become more problematic. These plants often outcompete and inhibit natural regeneration of native species. Dense interconnected clumps of shrubs and the rose's sharp recurved thorns can also obstruct travel through the woods, decreasing recreational value. Tackling the issue as early as possible will increase the odds of minimizing their spread, and require significantly less effort to contain their impact. To this end, we suggest implementing a monitoring program to identify the problem's full extent; it appears that most shrubs are growing along old skid trails and wetlands in the eastern half of the. Once located, managers should focus on stopping their spread, and then working back toward the problem's center.

## **SHORT TERM MANAGEMENT RECOMMENDATIONS**

As mentioned above the top management priorities are to protect the land, generate income, improve management and recreational access, boost forest growth, quality, and health, strive to retain the forest in a relatively natural state, by preserving select portions and removing invasive shrubs, while managing most of the uplands for a variety of valuable and long-lived species.

To begin, visible boundaries markings are Manchester's best protection against accidental or intentional timber trespass. Blazed and brightly painted line-trees provide good visibility and durability and generally benefit from maintenance about every 10 years. Currently boundaries are quite visible except on the Bog Pond parcel, near the quarry dump, and on the Fairbanks Pond lot, east of Fairbanks Pond. The latter area may require a surveyor to define the lines around the two small camp lots, though elsewhere, managers should be able to connect existing evidence with flagging and then blaze and paint line trees.

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<sup>3</sup> Based upon statewide growth averages of the species and volumes on this property

From a timber management standpoint, forest vigor and growth on the Fairbanks Pond parcel (7-HP4A/B) would benefit from a commercial harvest. Trees there are in closed canopy conditions, and individual tree growth has slowed. Managers should identify oaks and pines with healthy crowns and good form to release from competition. Pines should be released on three to four sides, while oak should be more conservatively treated, opened up on only two sides, preferentially with shade maintained on their southern side. A more aggressive treatment would likely stimulate epicormic branching, a stress response which causes new limbs to form on the lower stem, thus degrading potential lumber value. Isolated hemlock should largely be retained for diversity, though to the west, where they are more common, managers ought to remove poor quality individuals, as well as those in competition with better neighbors. As the Fairbank Pond's forest is quite homogenous, the Town may consider creating several small openings, ranging from 0.5 to 2.0 acres, well distributed across the parcel, to diversify forest age and habitat offerings. Harvesting in such a manner across all 63 acres would likely remove 100,000 to 150,000 board feet of sawtimber and 400 to 500 cords of pulpwood, worth \$24,000 to \$28,000. The residual stand would be dominated by high quality oak and pine, fairly uniformly spaced, and contain 60 to 80 square feet of basal area. Wood will likely be trucked out the now-gated Mt. Vernon Road, assuming that permission can be secured. Prior to any such harvest we recommend, and offer to lead, a public tour to more widely describe the logistics and implications of such a harvest.

**Necessary Best Management Practices (BMPs):** The most important resource to protect is Fairbanks Pond, and the western wetland. Scheduling harvesting when soils are dry or frozen should mitigate erosion risk. In addition, buffering these riparian features with a 25'-wide or greater no-harvest zone should protect these sensitive areas long-term. Loggers should utilize slash to stabilize skid trails and install waterbars on slopes to retire trails after the harvest. Consideration may be given to seeding the retired skid trails with winter rye to ensure soil stability and provide additional wildlife habitat.

Prior to this harvest commencing Manchester, or their agent, must submit a Forest Operations Notification (FON)<sup>4</sup>, which are valid for two years and are available from the Maine Forest Service, to the MFS. A confidential landowner report of harvesting activities will be mailed to each owner with an active FON, to be completed and returned to the MFS by the end of January.

With the Fairbanks Pond harvest complete, work on a more expansive recreational trail network there should begin. With the Summerhaven Use Trail as a foundation additional loops could be developed. Cooperative work with local mountain biking organizations such as the Central Maine chapter of New England Mountain Bike Association (NEMBA) will likely be the best approach to designing and constructing a trail network. As well, with timber sale income in hand Manchester managers may consider investing some of it into creating access from the Kerns Hill Road to the old sewer line on the Bog Pond parcel, thus ensuring that when harvesting is scheduled there, access will be ready.

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<sup>4</sup> MFS Chapter 26 rules, see: [http://www.maine.gov/dacf/mfs/publications/rules\\_and\\_regs/chap\\_26\\_rules.pdf](http://www.maine.gov/dacf/mfs/publications/rules_and_regs/chap_26_rules.pdf)



By 2025 to 2028 western areas of the Bog Pond parcel (2-SH4B/C) will be suitable for a management entry. There, managers should seek to improve the growing conditions of the best pine, spruce, and red oak, while decreasing the abundance of red maple, hemlock, and liquidating all mature fir. Though southwestern areas are fairly well stocked, elsewhere timber volumes are quite variable. Loggers will likely have to work opportunistically in poorly stocked areas and likely harvest only within veins of highest timber volumes; large sections of this stand may go untreated during this initial entry. Assuming a relatively even distribution between areas of higher stocking where loggers will operate and lower stocking where they will avoid, we expect this treatment will cover roughly 40 to 45 acres, remove 40,000 to 60,000 board feet of sawtimber and 400 to 500 cords of pulpwood, likely worth \$14,000 to \$18,000. The harvested portions will likely be composed of well-spaced pine, spruce, red oak, red maple, and hemlock, with each species distribution well balanced. Stocking will likely total 50 to 70 square feet of basal area per acre. Loggers will probably utilize the old sewer line for access, from the Fish and Game Road in Hallowell, assuming secured permissions. Simultaneous with this, Manchester may consider reinvesting some harvest income into precommercial treatments in the sapling thickets, to decrease the proportion of fir and hemlock and speed the growth of the better pines and spruces.

**Necessary Best Management Practices (BMPs):** The most important resources to protect are the numerous wetlands and connecting streams. Scheduling harvesting when soils are dry or frozen should mitigate erosion risk. In addition, buffering these riparian features with a 25'-wide or greater no-harvest zones should protect these sensitive areas long-term. Consideration may be given to seeding the retired skid trails with winter rye to ensure soil stability and provide additional wildlife habitat.

Finally, to mitigate the threat represented by invasive species, priority should be directed at containing their spread. We noted multiflora rose shrubs on the Bog Pond parcel, mostly along old skid trails along wetland edges in the east. Fortunately these shrubs tend to be isolated, thus the entirety of the impacted stands won't require treatment. The first step to combatting this problem is monitoring to determine the problem's extent. This can most easily be done during early spring or late fall as the invasives tend to leaf out much earlier and retain their leaves much later than other vegetation. Once a problem-perimeter has been located, control efforts will be most beneficial if begun from there, with subsequent efforts employed to push the outbreak back to the epicenter, the old sewer line, or to the property's edge, by the quarry dump. Currently, the shrubs tend to be of a relative small size, and thus it should be possible to pull many of them, and their roots, by hand. Pulling plants when soils are wet can ease their removal, though on larger plants managers may need to use a tractor and chain. The pulled plants should be kept out of contact with soil, preferably by hanging on a branch or draped over a bush. If plants are too large for mechanical control, it may be necessary to contract with a Maine Licensed Pesticide Applicator.

This management plan does not recommend any harvesting activity in stands 1, 3, 4, 5, or 6 prior to 2027, nor does it advise any harvest that would leave an area five acres or greater with less than a minimum stocking of trees – a legal clearcut<sup>5</sup>. There should be no reason to update this plan prior to 2027 unless a natural disturbance intervenes or landowner objectives change significantly.

On the Bog Pond parcel, I imagine the most logical location for trail expansion efforts exist along both sides of the abandoned sewer line in the spaced hemlock and red maple stand (3-SH4C/2A).

### **MANAGEMENT PRIORITIES 2017 – 2027**

year	location	activity and extent	net income/cost
2018 - 20	7-HP4A/B perimeter (Fairbanks)	Selectively harvest (63 acres)	\$24,000 to \$28,000
		Blaze and paint boundary (0.75 miles)	(\$600 to \$800) <sup>6</sup>
2025 - 28	2-SH4B/C	Selectively harvest (44 acres)	\$14,000 to \$18,000
		Blaze and paint boundary (3.75 miles)	(\$3,000 to \$4,000) <sup>6</sup>
2018-27	all	Develop biking trails (? miles)	(?)
	all	Combat invasive shrubs	(?)

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<sup>5</sup> MFS Chapter 20 rules, see: [http://www.maine.gov/dacf/mfs/publications/rules\\_and\\_regs/chap\\_20\\_rules\\_05012014.pdf](http://www.maine.gov/dacf/mfs/publications/rules_and_regs/chap_20_rules_05012014.pdf)

<sup>6</sup> Contractor cost; work could likely be completed much less expensively by town volunteers.

# WOODLOT SUMMARY BY WOOD PRODUCT

## Manchester Town Forest Manchester, Maine – September 2017

<u>Product</u>	<u>Volume</u> (MBF)	<u>Stumpage Rate</u> (\$/MBF)	<u>Value</u>
Sawtimber (10" minimum top diameter):			
White pine - grade	265	\$175	\$46,375
Hemlock	220	\$60	\$13,200
Spruce	50	\$100	\$5,000
Red oak	245	\$350	\$85,750
Sugar maple	5	\$300	\$1,500
Red maple	20	\$120	\$2,400
total MBF	805		

		<u>\$/Cord</u>	
Pine	575	\$7	\$4,025
Hemlock	1,035	\$7	\$7,245
Balsam fir	125	\$7	\$875
Red oak	365	\$20	\$7,300
White birch	50	\$20	\$1,000
Yellow birch	70	\$20	\$1,400
Sugar maple	55	\$20	\$1,100
Red maple	940	\$20	\$18,800
White ash	25	\$20	\$500
Beech	195	\$20	\$3,900
Popple	10	\$20	\$200
Other hardwood	10	\$20	\$200
total cordwood	3455		

**Total Estimated Volume in Cords** 4,860  
likely range 4,300 – 5,800 cords

**Likely total stumpage Value** \$170,000 to \$230,000

ABOUT THE CRUISE: The woodlot summary values were derived from a field cruise of 87 variable radius plots, on systematically located transect lines, using a 20 BAF prism. Data was processed using QuickCruise, a rapid timber cruise program providing estimates for Maine, which is the copyrighted property of L.E. Caldwell, LLC(2012). Sawtimber volumes use the International 1/4" Log Rule, which converts to cordwood at a ratio of one MBF to two cords. Cordwood volumes include topwood of sawtimber trees.

ABOUT STATISTICS: The sampling error of the estimate of total volume is 14.9% within a 67% confidence interval. That means that if the woodlot were recruised, new volume estimates would fall within the above stated statistically significant range 15 times in 20. Individual product numbers have higher sampling errors than those for total volume, and are much less reliable.

ABOUT STUMPAGE RATES: Rates are derived from research data collected by Two Trees Forestry during the course of business. The value stated may not represent a legal liquidation value, given that regulatory restrictions may not allow all the timber on the lot to be removed at one time.



**MANCHESTER TOWN FOREST**  
Manchester, Kennebec County, Maine  
Map R2, lots 50, 51  
Map R3, lot 55B

**Soils information**

**Legend**

- blazed line
- stonewall
- unverified line
- wire fence
- flagged line
- iron rod
- pipe
- cemetery
- shoreland zoning
- stone monument
- building
- cellar hole
- stream - NRPA
- stream - SZ
- trail
- Paved road
- Gravel road
- yard

**Scale**  
1 inch = 1,000 feet

**Two Trees Forestry Consulting Foresters**  
Winthrop, Maine  
HK Burnett, LF 993 - October 2017  
Map detail from MEGIS geographic & GPS data, town tax records, and field reconnaissance.  
Contour interval is 20'.  
NOT A LEGAL BOUNDARY SURVEY.

**MANCHESTER TOWN FOREST**  
Manchester, Kennebec County, Maine  
Map R2, lots 50, 51  
Map R3, lot 55B

**Soils information**

**Legend**

- blazed line
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**MANCHESTER TOWN FOREST**  
Manchester, Kennebec County, Maine  
Map R2, lots 50, 51  
Map R3, lot 55B

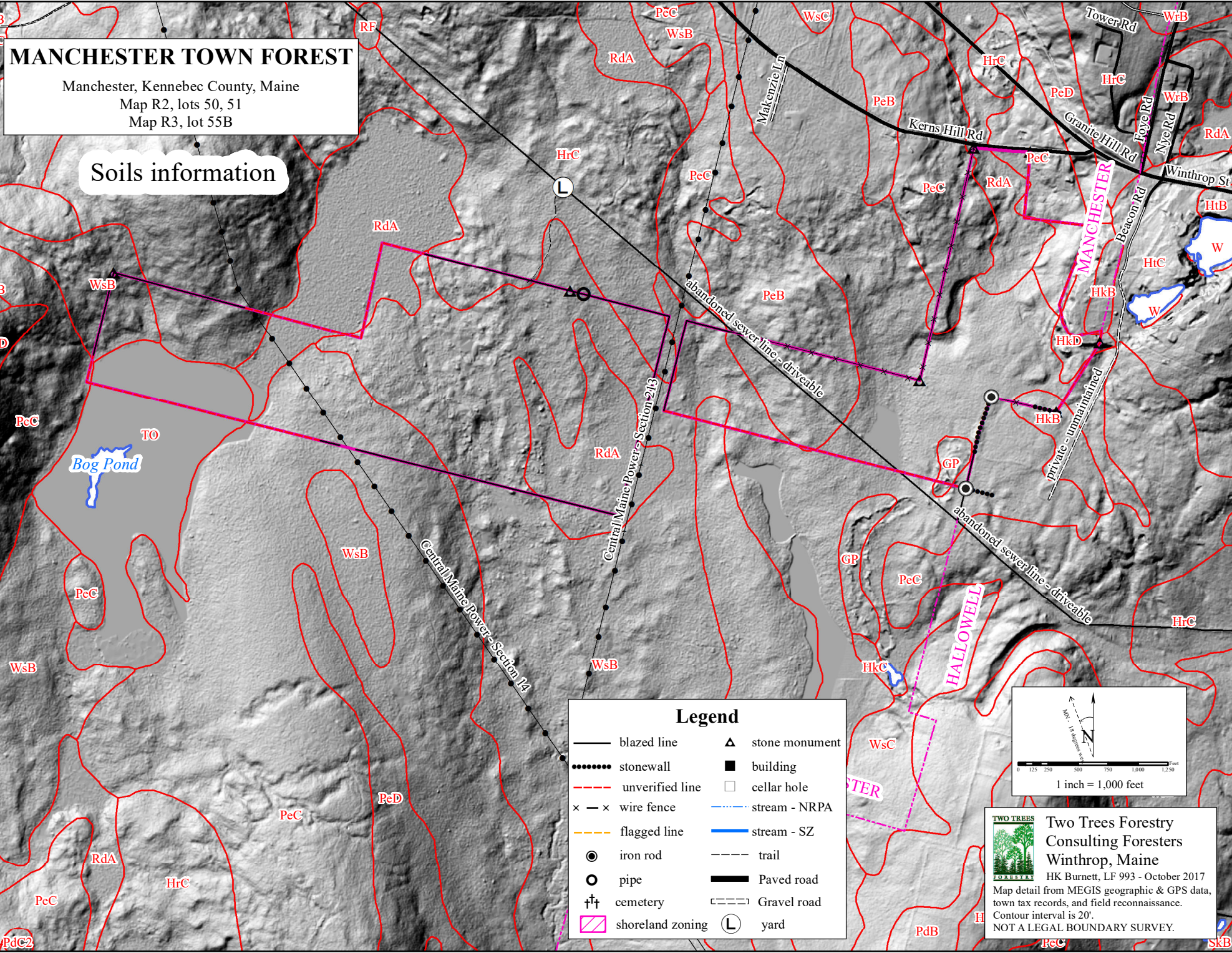
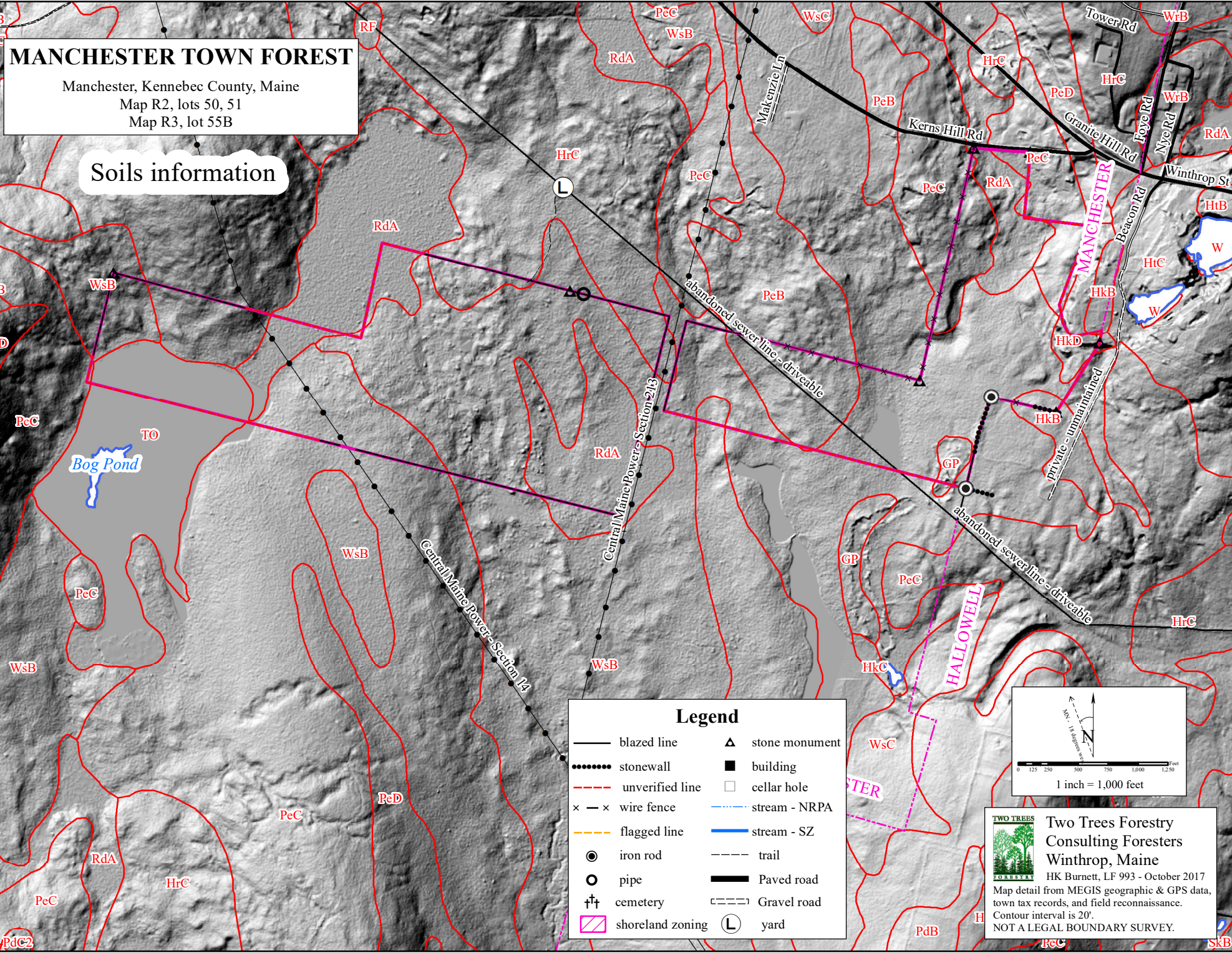
**Soils information**

**Legend**

- blazed line
- stonewall
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**MANCHESTER TOWN FOREST**  
Manchester, Kennebec County, Maine  
Map R2, lots 50, 51  
Map R3, lot 55B

**Soils information**

**Legend**

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NOT A LEGAL BOUNDARY SURVEY.



## Soils Legend

Symbol	other slopes	Name	Ordination Number	WP	RO	SM	RM
BhB		Berkshire fine sandy loam	3o	75		63	
BkB	C, D	Berkshire very stony fine sandy loam	3o	75		63	
Bo		Biddeford mucky peat	5w				50
BuB2	C	Buxton silt loam, eroded	4o	55		48	
DeB		Deerfield loamy fine sand	4o	65		55	
Ha		Hadley silt loam	3o	75		62	
HfC	D	Hartland very fine sandy loam	3r	75		62	
HkB	C, D	Hinckley gravelly sandy loam	5s	55		48	
HrB	C, D	Hollis fine sandy loam	5d	55		48	
HtB	C, D	Hollis-rock outcrop complex	5x	55		48	
Lk		Limerick silt loam	4w	65		56	
LyB	C, D	Lyman loam	4d	65		56	
LzC		Lyman-rock outcrop complex	4x	65		56	
MoA		Monarda silt loam	4w	65		55	
MrA		Monarda very stony silt loam	4w	65		55	
PbB	C	Paxton fine sandy loam	3o	75		62	
PcB	C, D	Paxton very stony fine sandy loam	3o	75		62	
PdB		Paxton-Charlton fine sandy loam	3o	75		63	
PdC2	D	Paxton-Charlton fine sandy loam, eroded	3o	75		63	
PeB	C, D	Paxton-Charlton very stony fine sandy loam	3o	75		63	
PfB		Peru fine sandy loam	3o	75		56	
PkB	C	Peru very stony fine sandy loam	3o	75		56	
RcA		Ridgebury fine sandy loam	4w	65		56	
RdA		Ridgebury very stony fine sandy loam	4w	65		56	
RF		Rifle mucky peat					
SA		Saco soils					
ScA		Scantic silt loam	5w	55		48	
Sd		Scarboro mucky peat	5w	55		48	
SkB		Scio very fine sandy loam	3o	75		55	
SkC2		Scio very fine sandy loam, eroded	3r	75		55	
SuC2	D, E	Suffield silt loam, eroded	5c	55		48	
TO		Togus fibrous peat					
VA		Vassalboro fibrous peat					
WmB	C, D	Windsor loamy sand	5s	55		48	
Wn		Winooski silt loam	3o	75		55	
WrB	C	Woodbridge fine sandy loam	3o	75		62	
WsB	C	Woodbridge very stony fine sandy loam	3o	75		62	

Symbols and slopes - The first and second letters abbreviate the soil name. The third letter shows the slope (A = <3%, B = 3-8%, C = 8-15%, D = 15-25%, E = 25-45%). Soils without slope letters are nearly level. A final 2 shows that the soil is eroded.

Ordination number – Potential productivity; 3=excellent, 4=fair, 5=poor; x=stoniness. Also, w=wet, x=restricted rooting depth, o=insignificant limitations, s=sandy, r=steep

Site index – Average height growth, of listed species, in 50 years. WP=white pine, RO=red oak, SM=sugar maple, RM=red maple

## **GLOSSARY**

Clearcutting - cutting of all trees within a defined area (generally greater than 1 acre)

Commercial harvest - a timber stand improvement or harvest operation that results in a net landowner income

Cord - wood measurement statistic; 128 cubic feet, or a pile of wood four feet high, four feet wide, and eight feet long

DBH - tree measurement; diameter at breast height (4.5 feet above ground)

Decadent - overmature trees that are deteriorating in wood quality

Mature - condition of optimal tree value, after tree vigor and growth have slowed, yet before the onset of decay

MBF - log measurement statistic; one thousand board feet. One board foot equals a board one inch thick by 12 inches square

Operability - ease with which logging machinery could work a site; often limited by rockiness, steep slopes, wetness, etc.

Pre-commercial - a timber stand improvement practice that is a cost, where trees to be cut are frequently too small to be saleable

Poletimber - tree between five inches and 9.9 inches DBH

Regenerate - to establish a new stand of tree seedlings

Regeneration - seedlings of commercial tree species

Sawtimber - logs favored for lumber; generally eight to 16 feet long, straight, with small end diameter greater than eight to 10 inches

Seedling - tree greater than six inches tall but less than one inch DBH

Snag - standing dead and/or dying tree. Important habitat element for numerous wildlife species

Stand - a homogeneous unit of forestland, delineated because it supports trees of common species, age, potential, etc.

Stocking - stand measurement relative to the optimal number of trees that a unit of forestland could grow

## **FURTHER SOURCES OF ASSISTANCE**

1. Two Trees Forestry: We can mark trees to harvest, select competent loggers, ensure a favorable timber sale contract and best market prices, and oversee harvests to meet landowners' objectives. We also maintain boundary lines and administer Federal cost-share programs. Please contact us for further assistance. P.O. Box 356 Winthrop, ME 04364. (207) 377-7196 or [www.twotreesforestry.com](http://www.twotreesforestry.com)

2. Maine Forest Service: A good source of educational material. Taxation and utilization specialists are also on staff. State House Station 22, Augusta, ME 04330. (207) 287-2791 or [www.state.me.us/doc/mfs/](http://www.state.me.us/doc/mfs/)

3. USDA-NRCS and Farm Service Agency: Information and applications for Federal forestry cost-sharing programs, such as erosion control, road and trail repairs, tree planting, timber stand improvement, and management planning.

21 Enterprise Drive Suit #1, Augusta, ME 04330 (207) 622-7847 or [www.me.nrcs.usda.gov](http://www.me.nrcs.usda.gov)

4. Maine Woodland Owners: Publish a monthly newsletter on local forestry concerns and organize educational field days regularly throughout the state. P.O. Box 926 Augusta, ME 04330. (207) 626-0005 or [www.mwo.org](http://www.mwo.org)