

FORESTRY
MANAGEMENT PLAN
MILLS RIVERSIDE PARK PROPERTY

PREPARED FOR
JERICHO LAND TRUST

JERICHO & UNDERHILL,
VERMONT

May, 2000
Prepared by:
Kara Wires
Scott Moreau
Greenleaf Consulting Inc.
Jericho, Vermont

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I. PROPERTY DATA SUMMARY:

Prepared For: Jericho Land Trust

Address: % Livy Strong
86 Alpine Drive
Jericho, VT 05465

Town Where Land Is Located: Jericho & Underhill, Vermont

Total Acreage: 213.6 acres total; 205.5 Jericho, 8.1 Underhill

Ortho Photo Number: 116220, South Hill & 116224, Underhill
Series 5000, 1988

II. INTRODUCTION:

This 213.6 acre Mills Riverside Park will be owned by the Jericho-Underhill Recreation District, which is being created. The conservation easements co-held by the Vermont Land Trust and the Vermont Housing and Conservation Board. The requirements, restricted uses, permitted uses and other provisions of the conservation easements were incorporated into this Management Plan but are outlined in more detail in the Grant of Development Rights, Conservation Restrictions, Riparian and Wildlife Habitat Easements, Pubic Access Easement and Right of Entry, which is included the appendices.

The Park was created, in part "to conserve public, non-commercial recreational and educational opportunities, plant, aquatic and wildlife habitats, scenic resources and agricultural and forestry values...for present and future generations."

III. GENERAL DESCRIPTION:

The Mills Riverside Park property is located along the Jericho-Underhill town line on the east side of Route 15 and south of River Road. The property is accessed via a drive off of Route 15, just south of the intersection of Route 15 and River Road. Access is made by parking on the north side of the Browns River and walking over a covered bridge and onto the main portion of the property. The terrain is gentle to moderately sloping becoming steep and ledgy in the south and east. The Browns River is the northern boundary line for much of the property. The cover types on the property are variable with a major river and flat open meadowland in the north and wooded land becoming steep in the south. A portion of South Hill is contained in the southern part of the Park. South Hill is part of the Green Mountains, which is part of a large unbroken tract of forestland, which has largely escaped human interference and development due to its rugged terrain. This type of forest is important for wilderness loving species such as black bear, moose, wild turkey, fisher, bobcat and others.

According to the town Grand Lists, the parcel consists of 213.6 acres—205.5 acres in Jericho and 8.1 acres in Underhill. In the past forty years the property has been used for a variety of purposes including a recreational vehicle campground, hay field, maple syrup production and timber production.

The boundary lines are in fair to good condition. The boundary lines are mostly old fence lines with some old blazes. The fence lines that are in poor condition will be harder to find over time. To prevent confusion over line location it is recommended that all lines be located, and painted with good quality boundary paint within the next few years. In addition, all property corners should be located and painted. Additionally, signs can be placed along the boundary lines indicated ownership and appropriate uses of the Park. Boundary line review and painting should be carried out on a periodic basis; usually seven to ten years between paintings will suffice. Painting the boundary lines helps to insure that no violation of timber rights will occur from adjoining lands. Well-maintained boundary lines also reduce the necessity for future re-survey of specific boundary lines, or the entire property.

IV. MANAGEMENT ZONES

For management purposes the Park has been divided into zones or cover types. These zones are delineated on the Property Map attached. The Parking Zone is approximately 5 acres located between Route 15 and the Browns River. The Scenic, Recreation, Agricultural & Riparian Zone is the gentle, primarily non-forested land in the northern portion of the property, along the Browns River. This Zone is approximately 61.6 acres. Within this Zone is the Riparian Zone. The Riparian Zone is approximately 5 acres and represents a 50-foot buffer along the Browns River. The Forest, Wildlife & Trail Zone is in the southern portion of the property. The total acreage for this Zone is approximately 147 acres. Within the Forest, Wildlife and Trail Zone is the Wildlife Zone. The Wildlife Zone is approximately 59 acres and represents all land on the property that is above 1,000 feet in elevation, which is essentially the very southern portion of the property.

1. PARKING ZONE

This is an approximately 5-acre Zone that is located between Route 15 and the Browns River. The main purpose to this Zone is to provide an off street parking area for visitors to the Park. This area provides the only access to the Park via a gravel drive off of Route 15. There is a covered bridge along the gravel road, which provides access across the Browns River. The covered bridge was built in 1964 and has a 10-ton capacity. New concrete footings were added to the bridge in 1995. The bridge, which is in good condition, is 12 feet wide with a travel lane of nine feet. To prevent undesired use of the Park trail system by motorized vehicles, vehicle access beyond the covered bridge is limited to handicap access, emergency, forestry, wildlife habitat improvement and maintenance purposes only. A gate or cable across the bridge may be necessary to prevent unauthorized vehicular use. As well as being sheltered, the bridge provides a centralized entrance point to the Park; therefore, it is an obvious location for signs, maps, notices and other Park information.

The Grant permits an unpaved parking area. This parking area could be located to the south of the gravel road, well outside of the 50 foot buffer zone along the Browns River. The parking area should be set to the south enough as to have minimal aesthetic impacts on the view of the bridge. The Grant also prohibits artificial lighting unless required by state or local rules. Artificial lighting seems unnecessary, as most of the Park use will occur during daylight hours.

2. SCENIC, RECREATION AND AGRICULTURAL ZONE

The Scenic, Recreation and Agricultural Zone is approximately 61.6 acres. It is located along the Browns River and south to the boundary line in the western portion of the property and to the forested areas in the eastern portion of the property. This Zone contains the land in the Park the will receive the most use from visitors. It can be used for a variety of recreational activities such as walking, running, cross-country skiing, wildlife viewing, and fishing. Due to its proximity to two schools and a public library, this Zone could be used by school groups for field trips and educational endeavors. Use of this Zone will be primarily during daylight hours, since Grant prohibits artificial lighting except for a few instances outlined in the Grant including lighting in and around the buildings and temporary lighting for special events. Contained within this Zone are approximately 44 acres of open land, 12.1 acres of forestland, 5 acres of riparian buffer and a 0.5-acre pond.

There are many opportunities for wildlife habitat in this Zone. There is a variety of habitat with the pond, river, open areas and forested areas in close proximity. This variety of habitat allows the Zone to support a wide array of species. This Zone provides a lot of open land, water habitat and forest-field edges that many bird, reptile and other mammal species require. Additionally, vegetation in the forested areas and in the edges can also influence wildlife habitat. One of the bird species that uses edge habitat is the blue bird. There are blue bird boxes located along the edges where the open area and forested landscapes meet in an effort to provide additional nesting cavities for these birds. Boxes should be cleaned each spring prior to the arrival of the next year's birds.

In this Zone, there are many tree and shrub species that are used by wildlife for food,

cover and nesting, including apple trees, black cherry, aspen, sumac and alder. Sensitive bird species like American woodcock, use early successional tree species found in this Zone, such as grey birch, alder, willow and aspen for breeding and nesting. The scattered apple trees in this Zone should be released and pruned to encourage fruit production. Wildlife habitat should be considered and important habitat features retained or enhanced when management activities are conducted in this Zone.

The gravel road that connects the Park to Route 15 continues through the covered bridge and then splits into two trails (see map). One road travels south of the pond and the other north of the pond. They reconnect east of the pond, near the "barn". The trail then continues west into the Forest, Trail and Wildlife Zone. These trails are in good condition and provide recreational opportunities to visitors of the Park for non-motorized recreation such as walking, wildlife viewing, snowshoeing, and cross-country skiing. The trails also provide access to the forested portions of the Park. These trails should be maintained so access and recreation can continue. Non-motorized, mechanical recreation (like mountain biking) can result in erosion of the trails, create unsafe conditions for other users on the trails and disturb wildlife. Recreation that involves animal transportation (horses and llamas), during times of the year when the soils are wet can cause erosion and degradation of the trails. Finally, trails could be expanded into the open areas to the east and along the river.

A. Open Land

The northeast portion of open land is former hayfield. This area has not been hayed in several years and there are tree seedlings beginning to grow in the field. This area should continue to be hayed or be mowed at least once every three years to keep it open. Mowing should occur after nesting season in late July. This field could be leased to a local farmer for hay or corn production. The lease should include provisions for a buffer along the Browns River and for minimal use of pesticides and fertilize. As stated in the Interim Management Plan, preference should be given to organic farming methods.

There are outstanding views of Mt. Mansfield from this field. Paths, especially along the edges, could be mowed into the field to provide trails for visitors to access this portion of the property for walking, wildlife viewing, cross country skiing, snowshoeing and other forms of passive recreation. Park benches could be located near the edges of the field, along the trails. If the land is being actively used by a farmer, recreational access will be limited during the growing season. However, an arrangement could be made with the farmer for trails to be left along the perimeter of the field for recreational uses, even during the growing season.

The majority of the open land in the western and central portion of the Park was part of a seasonal recreational vehicle (RV) campground that was operated by the previous landowner. The former campground occupied approximately 34 acres. The covered bridge was built for access to this campground. Associated with the campground were forty RV site hook-ups, a small playground, a bathhouse with toilets, showers and laundry facilities, a storage shed, two lampposts, a water line and picnic tables. Additionally, the past landowner has indicated there are five 500 gallon and one 1,000 gallon septic tanks located within the campground area.

The former campground area has been maintained over the years and should continue to be mowed yearly. There are areas, along the southerly trail and along the southern edge of the property where scatted groups of trees, especially grey birch, have become established. In the

middle of the open areas there are scattered trees that should be maintained as shaded spots for the location of benches and picnic tables.

The existing structures should be maintained. The playground can be expanded and updated and the restroom facilities renovated and made handicap accessible.

There is an approximately 2 acre open area in the south-central portion of this Zone that is surrounded by forestland (see map). This opening was the log landing used during past timber harvesting activities, including the 1995-96 sale. This area has not been maintained and there are scattered aspen and white pine becoming established. To remain open, this area should be mowed at least once a year. There are apple trees along the edges of this open area that could benefit from release and pruning to improve fruit production.

The open area to the south of the bridge, along the southern boundary seems most ideal for the location of playing fields and temporary structures, such as tents or platforms, to be used for community concerts and other special events. These higher impact uses should be located in a cluster so as to impact the smallest amount of land. This location is the most accessible from the parking area and is in close proximity to the parking area and buildings, which are already areas with relatively high impact. Additionally, this location would also have the smallest impact on the view of Mt. Mansfield from Route 15 and other locations in the Park.

B. Forested Land

There are two distinct forested areas in this Zone, comprising about 12.1 acres. One is along the Browns River and the other is in the southern portion of this Zone, surrounding the 2 acre former log landing (see map).

The forested land along the river is approximately 6.1 acres. The western portion of this area contains an old beaver pond and has wet soils. This old beaver pond and wet areas support a variety of bird, amphibian, reptile and other mammalian wildlife species. The vegetation is primarily alder in the really wet areas and typical river bottom/wet site species such as willow, elm, aspen, black cherry, cottonwood, silver maple, alder, grey birch, pin cherry and ash in other areas. The areas in the east, primarily in Underhill, have better drained soils. The vegetation found there contains typical northern hardwood species such as butternut, basswood, ash, sugar maple, black cherry and yellow birch. Throughout these areas there are abundant amounts of two non-native, invasive species—honeysuckle and bamboo. These nuisance species are difficult, if not impossible to eliminate from an area once they have become established. They can form a dense layer that can interfere with regeneration of native tree species as well as the growth of native herbaceous plants. Repeated and persistent cutting and burning of the plants may help control the honeysuckle. For bamboo, removal of the entire plant, including all the roots and surrounding soil may be required. Future management activities in this area should try to discourage the spread of these species.

This forested area should be maintained as part of the buffer along the Browns River for water quality, wildlife habitat and aesthetics. A few short spur trails with picnic tables or benches can be located from the open area through this wooded area to provide visitors access near the Browns River. However, a 50-foot buffer should be maintained along the river in which there are no trails. Care should be taken in the location of these trails to minimize impact to sensitive wildlife and ecological features, such as the beaver pond and alder swamp.

The other forested area is approximately 6 acres located in the southern portion of the Zone, around the 2-acre log landing. This 6 acres should be left for its aesthetic importance and to provide wildlife habitat and cover along the edges of the open areas. The prominent feature in this wooded area is the approximately 2 acre stand of large white pine. This area of white pine contains trees that are substantially taller than the surrounding vegetation and can be seen from a long distance by people traveling on Route 15 or River Road. This stand primarily contains white pine larger than 15 inches in diameter with an understory of hardwoods including ash, red maple, yellow birch, striped maple, black cherry and elm. The area to the east of the large white pine contains old-field white pine that is poorly formed as a result of past attacks by white pine weevil. Besides white pine there are scattered hardwoods including black cherry, aspen, grey birch, and paper birch. The trees in this area are smaller, typically with diameters less than 10 inches. Finally the area to the west, along the trail contains primarily young hardwoods such as aspen, grey birch and red maple with some scattered larger white pine and yellow birch. There is honeysuckle found in this forested area as well as discussed about, care should be taken not to encourage the spread of this non-native plant.

C. Riparian Buffer Area

This is an area that includes the Browns River and 50 feet from the top of the riverbanks on either side of the River. Except for along the Parking Zone, where the Park is located on both sides of the River, this buffer is along the southern bank of the River. Approximately 4,500 feet of Browns River is located along the northern boundary of the Park. This buffer is important to protect water quality, protect fish and wildlife habitat and to stabilize the stream banks. The Browns River contains vital habitat for aquatic insects, crayfish, salamanders, trout and other fish species. It also provides habitat, including food for a variety of birds and other mammals. According to the Vermont Department of Fish and Wildlife, there are three rare and sensitive fish located approximately 1,500 feet downstream. These fish are Finescale dace (*Phoxinus neogaeus*), Rosyface shiner (*Notropis rubellus*) and Trout-perch (*Percopsis omiscomayeus*). Access to this area for research and educational activities is encouraged with care taken to protect sensitive areas.

This 50-foot buffer is primarily vegetated and provides wildlife habitat, cover and a travel corridor for a variety of species, including many species of songbirds and mammals such as mink, otter and beaver. There are spots where there is essentially no vegetation along the river or less than 50 feet of vegetation, primarily due to mowing. These areas should be left unmowed so that vegetation can become established. The vegetation now found along the River is primarily willow, paper birch, boxelder, grey birch, aspen, white pine and a few scattered apple trees. Bamboo and honeysuckle can also be found. These non-native, invasive species and their management is discussed in Section B on page 5. Elimination of these species is preferred. At a minimum, the spread of these species during management activities should be discouraged.

D. Pond

There is an approximately 0.5 acre spring-fed pond in the western portion of the Zone (see map). This pond was enlarged soon after the campground was developed. The pond is mapped as a wetland on Vermont Department of Fish and Wildlife Significant Habitat Map and provides a variety of habitat for birds, amphibians, reptiles and other mammals. Additionally, the pond provides recreational and educational opportunities for visitors to the Park. Benches and tables around the pond provide places for visitors to sit and watch wildlife or enjoy the view. With the Park entrance, playground and bathroom facilities nearby, it provides a central gathering place for the community.

3. FOREST, WILDLIFE & TRAIL ZONE

The Forest, Wildlife and Trail Zone is approximately 147 acres in the southern portion of the Park. This Zone is completely forested. The Wildlife Habitat Area, which is approximately 59 acres, is located in the southern part of this Zone encompassing all land above 1,000 feet in elevation. Management objectives for this Zone and the Park as a whole identify recreation, forest aesthetics and maintenance of healthy wildlife habitat as important and complimentary uses with timber management.

Current recreational resources in this Zone consist of old trails that were created by past logging operations (see map). There are two major trails that are currently being used. These trails are appropriate for non-motorized dispersed recreation, such as hiking, skiing, snowshoeing and wildlife watching. These trails are in good condition. They begin as one trail as they enter this Zone and then split approximately 700 feet into the Zone. One trail follows a southwesterly direction to one of the southerly boundary of the Park and the other follows a southerly bearing to the other southern boundary line at about 1,200 feet in elevation. There are other old logging roads, especially in the southwestern portion, that could easily be cleared of downed trees and used as recreational trails without adversely impacting wildlife or aesthetics. All trails should be marked with directional signs prevent visitors from veering off the trail.

Aesthetics is a major issue that must be taken into account while completing any type of project on the site, whether it is forestry, wildlife or recreational in nature. Aesthetically important areas should be maintained and enhanced, especially if they are located along a trail. Unique natural and cultural features such as unusually large and unique trees and shrubs or stonewalls should be preserved in their natural state. New trails should be located so as to allow viewing of these areas without impacting them. Of particular importance are features on the landscape that can be seen from long distances and which might have negative effects to neighbors if removed or altered. The old stonewalls and rock piles located in this property should not be disturbed during management activities.

A sugarbush on the property was tapped until the 1980s. There are old remnants of the sugaring operation located in the Park. There is a foundation and construction material of the sugarhouse located along the trail (see map) as well as the old cast iron boiling pan. In the woods, old tubing, buckets and barrels can be found that were used at one time for sugaring on the property. These cultural features should be left undisturbed. The sugarbush may be leased or used as an educational tool some point in the future. A new sugarhouse may be constructed at a

new location near the sugarbush for future sugar operations and/or for educational purposes.

When conducting management activities, the use of experienced and capable logging contractors is essential. A clear understanding of the management practice is essential. Care should be exercised to minimize residual trail and tree damage, maintain pleasing aesthetics, and work in accordance with Vermont water resource protection and general forestry regulations. Timber harvesting activities that take place in the Park can be used as educational opportunities for local school children as well as the general public regarding forest and wildlife management. To address recreational and aesthetic issues, a no cut buffer will be placed around the trails and open areas and timber management activities will occur during the winter months when visitation to the Park is likely to be lowest.

A. Wildlife Habitat Area

This area is approximately 59 acres and is located in the southern portion of the Park at elevations above 1,000 feet. This portion of the Park contains a portion of South Hill. The South Hill has been identified by the Vermont Department of Fish and Wildlife as "Black Bear Production Habitat". South Hill is part of the Green Mountain Forest chain, which is part of a large unbroken tract of forestland that connects with other large tracts such as the Vermont National Guard Ethan Allen Firing Range and Mt. Mansfield State Forest. This type of forest is important for wilderness loving species such as black bear, moose, wild turkey, fisher, bobcat and others.

There is a small (1-2 acre) area of hardwood with a substantial beech component near the height of land in the southern portion of the Park. According to Vermont Department of Fish and Wildlife, this small beech stand may be a portion of a larger stand of beech located in the area of South Hill. Beech trees provide important hard mast (beechnuts) for black bear. Some of the beech shows evidence of past and recent bear use. Black bear return to the same area year after year to feed on the beechnuts of certain trees. Also important to black bears are soft mast (berries) they get from black cherry trees. There are black cherry trees scattered throughout most of the Wildlife Area. Spring and summer foods for black bear are primarily grasses, forbs, and fruit (raspberries, blackberries, elderberries etc.). Some of these can be found in the Wildlife Area.

The large home range of black bear (up to 180 square miles) makes black bear management impractical in meeting all the habitat needs, but there are practices that may be employed in this property that would greatly benefit the bear.

1. Preserve and perpetuate beech and oak groves.
2. Retain and release black cherry trees.

This same habitat can also benefit another large range species, the wild turkey. Like the black bear, turkeys also prefer mast stands of beech, oak, and hop hornbeam. The Area should be managed to retain and/or promote 20-50% of dominant and co-dominant species to be mast producers. Turkeys also prefer areas where spring seeps occur. These areas should be protected for their value as winter food sources. The coniferous cover around spring seeps should be removed to encourage herbaceous production.

B. Forest Stands

For management purposes, the forestland has been divided into stands, which are defined as areas of relative similarity (such as age, species, topography, etc.), which can be treated uniformly. The stands are identified on the Map located at the end of this report. The FOREST STAND ANALYSIS for each unit is included in this section and contains a description, acreage, management objectives, and recommendations. FOREST STAND ANALYSIS data, collected in the field cruise, is included to quantify the unit characteristics and monitor changes associated with future growth. The estimated sawtimber volume and cordwood volume is indicated for each stand.

FOREST STAND ANALYSIS

Map Area 1

Acreage 3

Stand Type: White Pine (White Pine 98 %). Other species include black cherry and ash.

Age Structure: Even-aged

Size Class: Pole to large sawtimber

Stocking: Adequate; Approaching the A-line on the white pine stocking guide.

Stand Age: 60-80 years

Description: No recent treatment has occurred in this stand. This is a small stand that has grown up on land that was open approximately 70-90 years ago. It is almost a pure stand of white pine. The pine is good to fair quality. There are scattered hardwoods, primarily red maple and elm. The elevation of the stand is approximately 760 feet in the north and 820 feet in the south. The terrain is gently to moderately sloping.

Forest Health: Some of the white pine stems show evidence of past white pine weevil attacks. White pine weevil destroys the leader and results in a misshapen, poorly formed tree.

Access distance: less than 1 mile

Regeneration: Adequate; abundant advanced sugar maple regeneration in pockets. Other species include red maple and elm.

Acceptable Basal Area/acre: 195 ft²

Total Basal Area/acre: 240 ft²

Stems/acre: 265

Mean Stand Diameter: 13.0 inches

Slope: 0-20 %

Aspect: North & West

Average Site Class: I

Site Index: 70, white pine

Soils : Peru extremely stony loam: good potential productivity; no severe limitations to hardwood or softwood management

Management Objective: Manage using even-aged silvicultural techniques to maintain or improve wildlife habitat and recreational opportunities while producing quality white pine sawtimber.

Silvicultural Prescription: An intermediate thinning is recommended in the next five years to remove poor quality, weeviled white pine as well as suppressed trees. The stand is currently reaching a fully stocked condition, and potentially valuable trees are being suppressed due to competition. Since this is a small stand, located in the corner of the property, recreational and aesthetic impacts will be minimal. Since the thinning would primarily be a thinning from below, taking out the smaller trees the impact of the view from the neighbors and public at long distances would be minimal. The thinning could be conducted using horses and should occur during the winter months when the ground is frozen and the number of visitors to the Park is likely to be minimal and impact to soils lessened. The residual basal area should be no lower than 150 ft²/acre.

Product: White pine sawtimber and pulp

Rotation Age: 100-110 years

Sawtimber Volume/acre: 16,968 bd.ft.

Cordwood Volume/acre: 45 cords

FOREST STAND ANALYSIS

Map Area 2

Acreage 55

Stand Type: Mixedwood (Red Maple 38%, White Pine 16%, Red Spruce 16%, Sugar Maple 13%, and Black Cherry 12%). Other species include ash, aspen, paper birch, yellow birch.

Age Structure: Even-aged

Size Class: Poles to large sawtimber

Stocking: Adequate; Midway between the A- and B-line on the Mixedwood stocking guide.

Approximate Stand Age: 30-70 years

Description: No recent treatment has been conducted in this stand. This stand has developed on former pasture. Evidence of past agricultural uses on the property consists of old stonewalls, rock piles and scattered apple trees, especially in the northern portion of the stand. There are scattered pockets of almost pure red spruce and white pine, but the majority of the stand is pole to small sawtimber sized hardwood with scattered poor quality white pine. Much of the red maple component is poor quality, open grown, and multi-stemmed. The elevation of the stand varies from about 700 feet at the northern stand boundary along the open land to about 900 feet at the southern stand boundary. The terrain is gently sloping. There are poorly drained soils in portions of this stand, as well as streams that drain north into the Browns River. Care should be taken to protect these wet, fragile soils and protect water quality and the integrity of the stream and trails. Any management activities that involve heavy equipment should be restricted to times of the year when the ground is frozen and a 50 foot no-cut, buffer should be left along year-round streams and all trails.

Forest Health: Much of the white pine is severely deformed due to past white pine weevil attacks. Some of the white pine is infected with white pine blister rust. White pine blister rust is a rust fungus that causes a wound that results in pitch that is exuded from the stem and may result in mortality.

Access distance: less than 1 mile

Regeneration: Adequate; abundant sugar maple poles and saplings throughout the majority of the stand. Seedlings, saplings and poles of beech, striped maple, red spruce, yellow birch, red maple and hop hornbeam were also found. There were occasional honeysuckle plants found in the understory in the northern portion of this stand. Care should be taken not to encourage the spread of this non-native plant. These plants should be destroyed when possible during any management activities.

Acceptable Basal Area/acre: 109 ft²

Total Basal Area/acre: 138 ft²

Stems/acre: 340

Mean Stand Diameter: 8.5 inches

Slope: 0-25%

Aspect: North & West

Average Site Class: II

Site Index: 65, white pine

Soils : Peru extremely stony loam (site class I): good potential productivity; no severe limitation to hardwood or softwood management

Cabot extremely stony loam (site class II): fair potential productivity; no severe limitations to hardwood or softwood management

Management Objective: Manage using all-aged silvicultural techniques to maintain or enhance wildlife habitat and aesthetic values while producing quality sawtimber. All-aged management more accurately mimics nature in a climax stage forest, where individual trees succumb to age or other factors. The small openings created by the removal of individual trees provide the right environment for the establishment of new regeneration or the release of existing saplings.

Silvicultural Prescription: A timber stand improvement/intermediate thinning is recommended to take place in the next five years. The lower quality red maple and weeviled white pine stems should be removed to release the higher quality species and better formed stems. Since primarily low quality stems with little commercial value would be removed, some of the cut trees could be lopped low to the ground and left in the woods. However, there are areas with mature spruce, white pine and hardwoods that can be harvested and the value of these can help offset the cost of the non-commercial work. There are abundant sugar maple poles and saplings in portions of this stand that could be tapped as part of a sugar bush in the future if they are released and allowed to advance into larger size classes. As the stocking levels increase there may be some mortality due to competition. Areas with lower stockings can be treated at a later date. Untreated areas can be treated over the years and provide some of the firewood needed for future sugaring operations.

Treatment in this stand should be conducted in the winter due to wet soils in areas and to minimize impact to recreational activities in the Park. Residual basal area should be no lower than 110 ft²/acre.

Product: Hardwood and Softwood sawtimber, pulp, and firewood

Cutting cycle: 12-15 years, desired crop tree diameter is 20 inches dbh.

Sawtimber Volume/acre: 3,900 bd.ft.

Cordwood Volume/acre: 39 cords

FOREST STAND ANALYSIS

Map Area 3

Acreage 27

Stand Type: Sugar Maple-Mixed Hardwood (Sugar Maple 40% Red Maple 33%). Other species include ash, paper birch, red spruce, black cherry, elm, striped maple, yellow birch, white pine, aspen, gray birch, and hop hornbeam.

Age Structure: Even-aged

Size Class: Poles-small sawtimber

Stocking: Adequate; Approaching the A-line on the Hardwood stocking guide.

Approximate Stand Age: 30-70 years

Description: No recent treatment has occurred in this stand. Like Stand 2, this stand has grown up on former pastureland. It has developed into a stand of young hardwood poles and small sawtimber with some scattered medium to large sawtimber trees. There are a few scattered open grown sugar maple that were likely part of the sugar bush to the south and served as the nurse trees for the abundant sugar maple poles and small sawtimber trees in this stand. The elevation in this stand ranges from about 900 feet on the northern stand boundary to 1,000 feet at the southern stand boundary. Terrain is gentle in the northern portion to moderately sloping in the southern portion. There are two streams that cross this stand and empty into Browns River. Care should be taken to protect the stream integrity and water quality when conducting any management activities in this stand as well as the condition of the trails—a no cut buffer of 50 foot should be retained around these streams as well as the recreational trails. Winter treatment is recommended to reduce the impact on recreational uses of the area.

Forest Health: There was some evidence of sugar maple borer. Sugar maple borer tunnels in the stem of the tree causing a bulging scar on the tree. This weakens the tree and reduces its value as a sawlog. The sugar maple borer tends to attack suppressed and less vigorous stems.

Access distance: less than 1 mile

Regeneration: Adequate, abundant sugar maple poles and saplings as well as poles, saplings and seedlings of hop hornbeam, red spruce, yellow birch, beech, black cherry, and paper birch. Blue cohosh, which is an indicator of a nutrient rich site, was also found in the understory.

Acc. Basal Area/acre: 104 ft²

Total Basal Area/acre: 110 ft²

Stems/acre: 380

Mean Stand Diameter: 7.5 inches

Slope: 5-60 %

Aspect: North & West

Site Class: II

Site Index: 59, sugar maple

Soils : Peru extremely stony loam (site class I): good potential productivity; no severe limitation to hardwood or softwood management

Lyman (site class IV)-Marlow (site class I) very rocky loams: fair potential productivity; no severe limitations to hardwood or softwood management

Management Objective: Manage using all-aged silvicultural techniques to maintain or enhance aesthetics and wildlife habitat while producing quality sawtimber and eventually maple syrup.

Silvicultural Prescription: A timber stand improvement is recommended to take place in the next five years. This stand could be included in a future sugar bush since there are abundant sugar maple poles and saplings throughout. The better quality sugar maple should be released. The stand is currently reaching a fully stocked condition and some of the sugar maple is being suppressed due to competition. Like Stand 2, this treatment is low value and a cost will be incurred in order for it to occur. For the most part, the cut trees can be cut low to the ground and left in the woods. Winter treatment is preferred to reduce impacts to recreational visitors. Residual basal area should be no lower than 80 ft²/acre.

Product: Eventually, sugar maple sap and possibly sawtimber and firewood

Cutting Cycle: 10-12 years, desired crop tree diameter is 20 inches diameter

Sawtimber Volume/acre: 1,649 bd.ft.

Cordwood Volume/acre: 17 cords

FOREST STAND ANALYSIS

Map Area 4

Acreage 44

Stand Type: Sugar Maple (Sugar Maple 64%). Other species include ash, paper birch, red maple, red oak, red spruce, aspen, yellow birch, beech, and hop hornbeam.

Age Structure: Even-aged

Size Class: Poles-large sawtimber

Stocking: Adequate; Midway between the A- and B-line on the Hardwood stocking guide.

Approximate Stand Age: 60-80 years

Description: The majority of this stand was harvested in 1995-96. At that time, a single tree and small group selection harvest and improvement thinning was conducted removing mature hardwood and poor quality stems. This stand has been used in the past for sugar maple sap production. It was last tapped in the 1980s. Evidence in the woods of this past syrup production consists of an old cast iron boiling pan, old sap buckets, scattered plastic sap line, old drums used for storing the sap and an old sugar house foundation with some structural material. The northern boundary of this stand is at approximately 1,000 feet in elevation and it approaches a 1,344-foot peak at the shoulder of South Hill in the southeastern portion of the stand. There are rocky knolls found in that area. Along the southern boundary of the Park, elevation in the stand varies from 1,000 feet to about 1,220 feet. There is a stream that originates in this stand and travels across the property and eventually empties into Browns River. Care should be taken to protect the integrity of the stream and maintain water quality as well as protection of the trail system during any management activities—a no cut buffer of 50 foot should be left around the stream and trails.

Forest Health: No significant health problems noted. There was some evidence of sugar maple borer, which tends to attack suppressed and less vigorous stems.

Access distance: less than 1 mile

Regeneration: Adequate, poles, saplings and seedlings of sugar maple, black cherry, red spruce, beech, hop hornbeam, striped maple, yellow birch, red oak and red maple were found. In some areas where openings were created during the timber sale, black berry and raspberry are found in the understory. Blue cohosh, which is an indicator of a nutrient rich site, was also found in the understory.

Acc. Basal Area/acre: 68 ft²

Total Basal Area/acre: 88 ft²

Stems/acre: 190

Mean Stand Diameter: 9.0 inches

Slope: 5-30 %

Aspect: North & West

Site Class: II

Site Index: 58, sugar maple

Soils : Lyman (site class IV)-Marlow (site class I) very rocky loams: fair potential productivity; no severe limitations to hardwood or softwood management

Management Objective: The majority of this stand is in the Wildlife Habitat Area. Therefore, manage to maintain or enhance wildlife habitat is the priority. This area can also be managed using all-aged silvicultural techniques for the production of maple syrup.

Silvicultural Prescription: The stand was treated in 1995-96. Currently, sugar maple is the dominant component of the stand. The stand has been used in the past as a sugar bush and can continue to be used in this manner. Wildlife habitat features in this stand consist of some mast producing species such as beech, red oak, cherry and hop hornbeam. Some have signs that they are actively being used by black bear. These features should be retained and the beech, cherry and oak can be released where they are suppressed and the resulting wood used as firewood for the sugaring operation. There is a substantial amount of beech regeneration indicating that beech will become a larger component of the stand in the future.

Product: Mast for wildlife, maple syrup and firewood

Cutting Cycle: 10-12 years, desired crop tree diameter is 20 inches diameter

Sawtimber Volume/acre: 3,668 bd.ft.

Cordwood Volume/acre: 13 cords

FOREST STAND ANALYSIS

Map Area 5

Acreage 18

Stand Type: Northern Hardwood (Sugar Maple 60%, Yellow Birch 21%, Red Maple 16%). Other species found include beech, paper birch, and red spruce.

Age Structure: Even-aged

Size Class: Poles-large sawtimber

Stocking: Adequate; Above the A-line in the Hardwood stocking guide.

Approximate Stand Age: 30-70 years

Description: Portions of this stand were harvested in 1995-96. At that time, a single tree and small group selection harvest and improvement thinning was conducted removing mature stems and poor quality stems. Some of the stems, especially paper birch and yellow birch, that were marked to be cut were not done so at that time. Some of the paper birch that were not cut at that time are now over mature and beginning to die off. The northern boundary of this stand is approximately 1,000 feet in elevation and the southern edge of the stand is the southern boundary of the Park, just below a shoulder South Hill. The terrain is steep and rocky in places. There is a small swath (1-2 acres) of hardwoods with a large component of beech on the steep and rocky terrain along the southern boundary line near the height of land. Some of these beech show past and recent use by black bear. There is a stream that drains a portion of South Hill that originates in this stand. The stream eventually empties into the Browns River. A buffer of 50 foot should be retained around this stream to protect water quality and the integrity of the stream during any management activities.

Forest Health: No significant health problems noted.

Access distance: less than 1 mile

Regeneration: Adequate, abundant sugar maple and beech poles and saplings as well as poles, saplings and seedlings of striped maple and ash.

Acc. Basal Area/acre: 123 ft²

Total Basal Area/acre: 130 ft²

Stems/acre: 380

Mean Stand Diameter: 8.0 inches

Slope: 5-60 %

Aspect: North

Site Class: II

Site Index: 56, sugar maple

Soils : Lyman (site class IV)-Marlow (site class I) very rocky loams: fair potential productivity; no severe limitations to hardwood or softwood management

Management Objective: The majority of this stand is in the Wildlife Habitat Area and it will be managed primarily, using all-aged silvicultural techniques, to improve or maintain wildlife habitat especially for black bear.

Silvicultural Prescription: Much of the stand was treated during the 1995-96 timber sale; however, the average stocking in the stand is high. There are some small areas of mast producing beech trees located in this stand that are used by black bear. These areas should be protected and beech, especially those showing bear use, retained. Beech and other mast producing species found in this stand should be released, especially in areas of high stocking, and the resulting wood can be used as firewood for the sugaring operation. A stronger component of beech should be encouraged in this stand to improve black bear habitat. There is a substantial amount of beech regeneration. Some of the regeneration can be released by removing single trees and small groups of trees. The cut trees can be used as firewood for the sugaring operation or be cut low to the ground and left in the woods. Residual basal area should be no lower than 80 ft²/acre.

Product: Mast for black bear habitat, hardwood sawtimber and firewood for sugaring operation

Cutting Cycle: 12-15 years, desired crop tree diameter is 20 inches diameter

Sawtimber Volume/acre: 3,717 bd.ft.

Cordwood Volume/acre: 21 cords

C. Schedule of Forest Management Activities

<u>Area</u>	<u>Year</u>	<u>Management Activity</u>
4	2000-2010	Release beech, oak, and cherry for wildlife habitat improvement.
5	2000-2010	Release beech for wildlife habitat improvement and beech regeneration to increase beech component in stand.
1	2005	Intermediate Thinning. Residual Basal Area=150 ft ² /acre.
2	2005	Timber Stand Improvement/Intermediate thinning. Residual Basal Area=110 ft ² /acre.
3	2005	Timber Stand Improvement. Residual Basal Area=80 ft ² /acre.
All	2010	Re-evaluate and update management plan.
4	2010-2020	Release beech, oak, and cherry for wildlife habitat improvement.
5	2010-2020	Release beech for wildlife habitat improvement and beech regeneration to increase beech component in stand.
1	2015	Intermediate thinning.
3	2015	Intermediate thinning/single tree and small group selection harvest.
2	2017	Intermediate thinning/single tree and small group selection harvest.
All	2020	Re-evaluate and update management plan.