

CALENDAR BROOK WILDLIFE MANAGEMENT AREA PLAN

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Feb. 18, 1987
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and

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CALENDAR BROOK WILDLIFE MANAGEMENT AREA PLAN

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Calendar Brook Wildlife Management Area Management Plan

I. Goals

The Vermont Department of Fish and Wildlife is empowered by Vermont law to respond to the following policy: "It is the policy of the state that the protection, propagation, control, management, and conservation of fish, game, and fur bearing animals in this state is in the interest of the public welfare ...". The Department is also empowered to "... manage, inventory, preserve, protect, perpetuate and enhance all nongame wildlife in the state...". The Department views as part of this policy the acquisition, protection, and enhancement of fish and wildlife habitat.

Wildlife Management Areas are lands owned and administered by the Vermont Department of Fish and Wildlife. The management goals by priority on all areas are to:

1. protect and enhance critical wildlife habitats.
2. demonstrate state of the art wildlife habitat management techniques to land-owners, foresters, and loggers so that these techniques may find broad application on private lands.
3. provide an appropriate level of outdoor recreational opportunities associated with fish and wildlife resources.

Where objectives, strategies, or actions developed from these goals are conflicting, the higher priority goal shall take precedence. Critical wildlife habitats are just that, 'critical', and must have top priority in management planning. While Department-owned land does provide outdoor recreational opportunities, 90% of the state is in private ownership and is absolutely essential to the recreational needs of the state. Using W.M.A.s as demonstration areas to enhance wildlife-related outdoor recreation on private lands (goal #2) therefore takes priority over goal #3.

II. General Description

The Calendar Brook Wildlife Management Area (CBWMA) is a 340 acre parcel owned and managed by the Vermont Department of Fish and Wildlife. The property is located in the town of Sutton, Caledonia County, Vermont, near the Sheffield-Sutton town line (see figure 1).

The state acquired fee simple ownership of this parcel in 1965 from Norman Perron at a cost of \$4,250.00. CBWMA was purchased by the Fish and Wildlife Department with federal aid monies. Land purchased with this aid carries restrictions on management thereof. These restrictions include the following highlights:

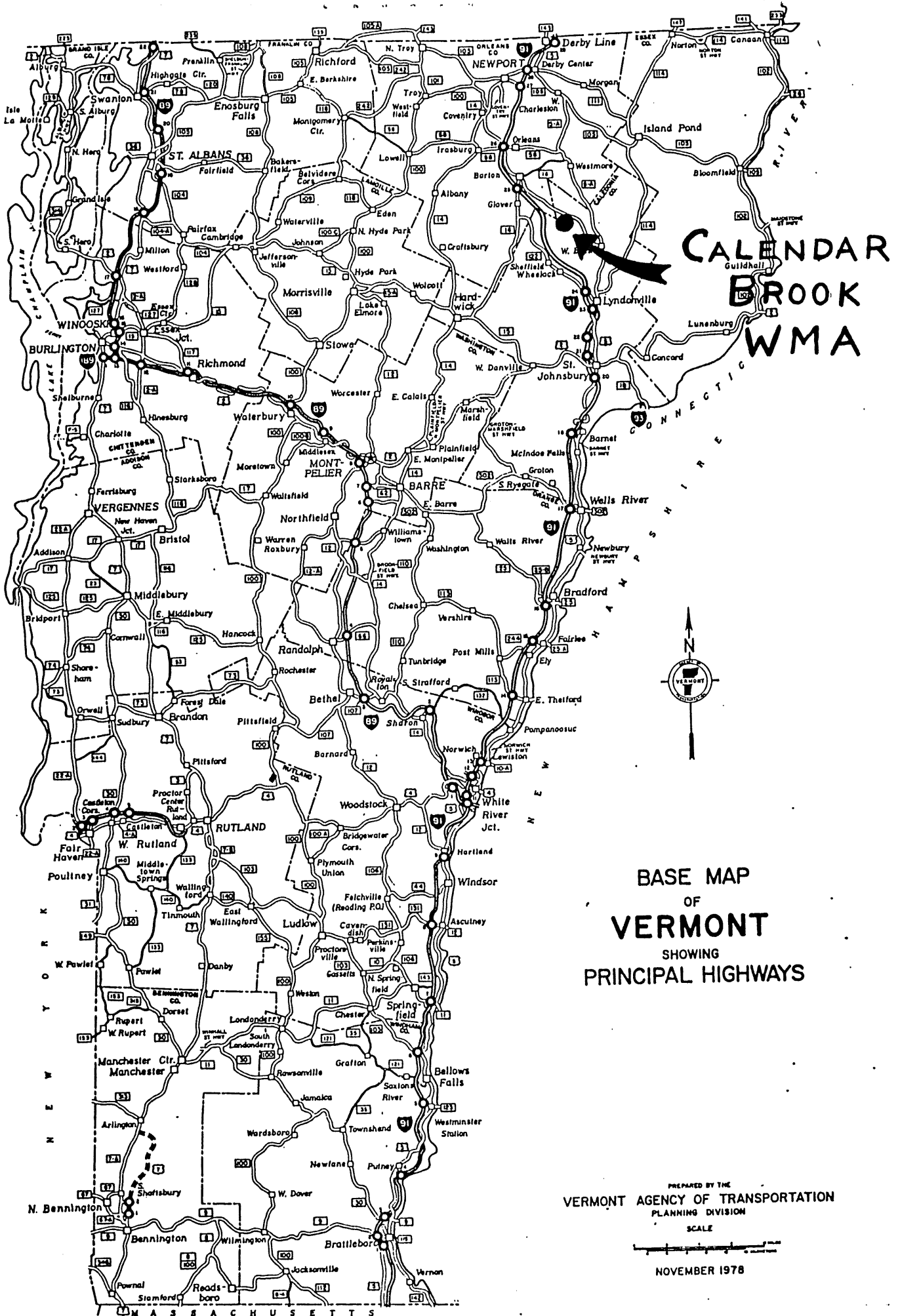
1. The property must continue to serve the purpose for which it was acquired (in this case, to provide critical white-tailed deer habitat).
2. Management plans and activities must maintain and/or improve habitat.
3. Property shall not be used for the purpose of producing income, however, income producing activities incidental to accomplishment of purposes approved by the Regional Director are allowable.
4. The State Fish and Wildlife Department must retain control over management decisions and actions on the property.

The CBWMA is situated on the easterly border of the North Central physiographic region. This region has one of the most severe climates in the State. The average mean temperature is 43 F with a mean annual low of -27 F. Seasonal snowfalls average 80 to 100 inches. The period of continuous snow cover approaches 100 days and average maximum snow depth is over 25 inches.

Elevations of the parcel range between 1300 and 1500 feet. Terrain is flat to moderate side hill. The parcel is split by Calendar Brook from which the property takes its name (see figure 2).

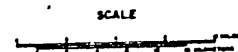
The CBWMA is presently 100% forest but evidence of old fences indicates that portions of the property were once cleared for agricultural purposes. Spruce-fir cover types cover 71% of the area with the balance mostly white cedar. These softwood cover types provide critical deer winter habitat, indeed, this was the primary reason for State acquisition.

The CBWMA takes its name from Calendar Brook, a tributary of the Passumpsic River, which courses through the middle of the property.



BASE MAP
OF
VERMONT
SHOWING
PRINCIPAL HIGHWAYS

PREPARED BY THE
VERMONT AGENCY OF TRANSPORTATION
PLANNING DIVISION



NOVEMBER 1978

CALENDAR BROOK W.M.A.



Fig. 2: Topographic Map Showing Approximate WMA Boundaries
Approximate Scale 1 inch = 2900 Feet

III. Resource Analysis

A. Fish and Wildlife

Many species of wildlife occur year round or seasonally on Calendar Brook W.M.A. The most significant species are white-tailed deer, black bear, snowshoe hare, bobcat, fisher, coyote, beaver, and brook trout.

White-tailed Deer: Virtually the entire CBWMA is critical wintering habitat for deer. Deer filter into the Calendar Brook Wintering Area (CBWA), normally in December, from the greater portions of the towns of Sutton and Sheffield and return to their summer ranges in April or May.

Deer seek the softwood forests of CBWMA for shelter from deep snow, cold temperature, and wind-chill. This shelter is critical to the overwintering health and, ultimately, the survival of deer. Reproductive rates, body size, and antler size can also be negatively affected by lack of adequate winter shelter.

Based on a recent average annual buck kill for this area, an estimated 193 deer winter in the CBWA (see appendix A). The CBWMA probably winters 40 to 50 deer, based on its percent (24%) of the total wintering area.

The extremely high deer populations of the 1960's and early 1970's severely overbrowsed available food supplies at Calendar Brook. High 'browse-lines' on edge cedars and old 'bark scars' on sapling firs attest to the starvation conditions faced by deer in those decades. Today's lower populations, however, are more in balance with available habitat. Additionally, frequent logging over the last decade has produced satisfactory supplies of new browse growth throughout the CBWA.

Deer hunting pressure is moderate on the CBWMA, and trophy bucks are frequently taken in the area. Hunting pressures should remain relatively constant over the next 10 years.

Black Bear: The CBWMA provides the dense softwood thickets sought by bear for escape and travel cover, and may provide denning sites. Spring grazing is available on the surrounding farmlands. Other spring and summer bear foods

are available in the wetter sites and old forest cutting, however, virtually no fall mast crops are present. Bear sign is often present at CBWMA, but no harvest or hunter pressure data is available.

Showshoe Hare: An important food base for bobcats, coyotes, owls, and other predators, 'snowshoes' are common to abundant in the younger softwood stands. While some stands are maturing beyond good hare cover, other regenerating stands are about to become ideal.

Young softwood cover, required by hare, is expected to always be present as a by-product of deer winter habitat management.

Hare hunting with hounds occurs here to a limited degree. This type of recreation should be discouraged in the future due to stress on wintering deer.

Fisher and Bobcat: CBWMA is presumably good fisher and bobcat habitat as seemingly adequate prey populations (hare) are present throughout a sizeable softwood basin, and little human disturbance occurs throughout most of the year.

No data is available on the extent of trapping or hunting of fisher or bobcats on CBWMA. It is likely that both occur.

Coyote: CBWMA is important habitat for coyotes for the same reasons it is attractive to fisher and bobcats. Additionally, the many hayfields adjacent to CBWMA undoubtedly provide other coyote prey species, such as mice, moles, and woodchucks.

The amount of coyote trapping or hunting on CBWMA is unknown.

Beaver: Calendar Brook and its small tributaries provide many suitable damming sites. Beaver are constantly building new dams, currently near the center of the WMA. Past cuttings has provided abundant food in the form of aspen, cherry, birch, and maple saplings. Future cutting practices will tend to discriminate against the regeneration of hardwoods, however, some hardwood will probably always be present.

Beaver trapping data on CBWMA is not known, but some trapping probably occurs.

Brook Trout: Calendar Brook falls 70 feet during its one-mile course through the WMA. This coldwater stream enjoys heavy shading from streambank vegetation, often traveling underneath a nearly closed forest canopy.

Good native trout populations are present, and only sporadic light stocking of hatchery reared brook trout occurs several miles downstream.

CBWMA offers good, non-roadside brook trout fishing, and is a favorite spot for some local residents.

Trout fishing may be the highest recreational use of the area.

B. Vegetation:

Calendar Brook WMA is comprised of the following general cover types:

<u>TYPE</u>	<u>ACRES</u>
Spruce-fir	151
Spruce-fir/red maple	91
Northern white cedar	78
Open (powerline R.O.W.)	4
Riparian Zone	16
TOTAL	<u>340</u> Acres

A FOREX inventory of the CBWMA was conducted in 1982. This inventory generated detailed information regarding forest species composition, diameter, timber quality, merchantability, etc. The resultant stand map (figure 3), along with the inventory summaries (Appendix B), can be used to study location and characteristics of each forest type. The forest types are classified according to the Society of American Foresters publication "Forest Cover Types of the United States and Canada", whereby the forest cover type is a descriptive classification based on the present occupancy of an area by tree species.

The spruce-fir type at CBWMA is predominately balsam fir, red spruce, and white spruce. Yellow birch, red maple, and aspen are common hardwood associates.

Poorly drained sites are occupied by northern white cedar, with balsam fir as a common associate. Approximately 50 acres of forested wetlands were mapped by the U.S. Fish and Wildlife Service National Wetlands Inventory (see figure 4). These forested wetlands generally represent seasonally saturated soils as commonly found in low, flat softwood stands, and therefore are not considered as a separate cover type.

Timber harvesting prior to State purchase has created mostly large sapling to pole-sized, even-aged stands.

The 16 acre riparian zone represents an imaginary area 75 feet either side of Calendar Brook. This zone was created on paper to account for special treatment. The vegetation in this zone is often the same as adjacent stands but along some stretches of stream alders and willows predominate.

The open powerline right-of-way is a mixture of grasses, spirea, blackberries, raspberries, dogwood and other shrubs, and tree saplings. Tree growth is curtailed by periodic sprayings and/or manual cutting.

C. Soils:

No detailed soils mapping of the CBWMA has been done to date. The only soils information pertaining to this area is the general soils map prepared by USDA Soil Conservation Service in 1974. According to this map two soil associations can be found on the ownership.

The following are the general descriptions of the two associations:

1. Muck and Peat-Peacham association: Deep, level, very poorly drained, organic and loamy soils low in lime; in depressions on wet side slopes; on uplands.
2. Paxton-Woodbridge association: Deep, gently sloping to moderately steep, well drained and moderately well drained, loamy soils low in lime with a hardpan; on uplands.

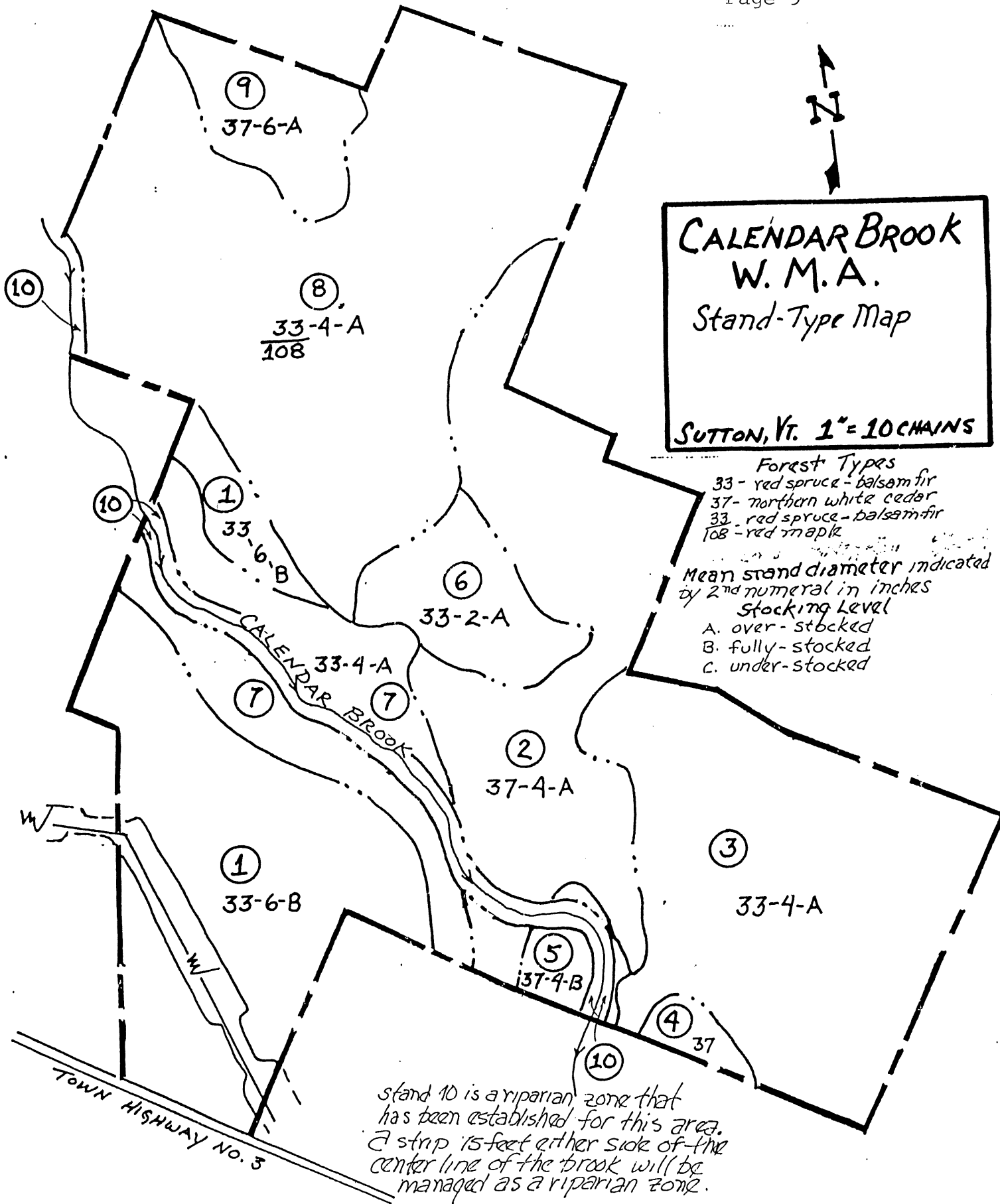


Figure 3. Stand Map, Calendar Brook W.M.A.

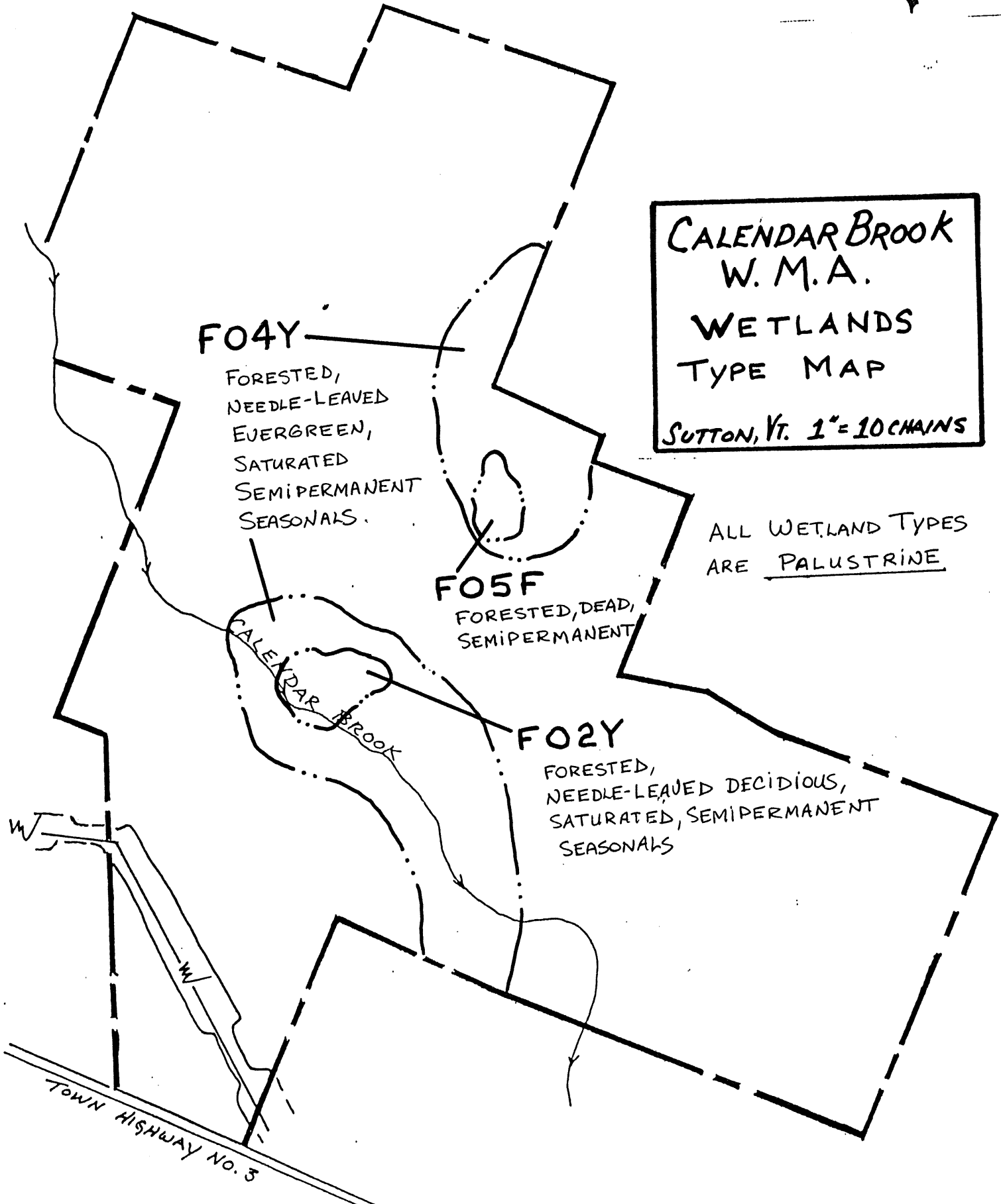


Figure 4. Wetlands Type Map, Calendar Brook W.M.A.
Adapted from U.S.F.W.S. National Wetlands Inventory

D. Recreation:

No user-day information is available for any type of recreation, and no specialized recreational facilities exist at this time.

Fishing in Calendar Brook is probably the greatest recreational use, followed by deer and hare hunting. Some trapping, bear hunting, and grouse hunting probably occurs.

Little (if any) birdwatching, hiking, or skiing occurs here. Canoeing is impractical and snowmobiling is not allowed per state policy.

Recreational use is not expected to change significantly in type or intensity over the next 10 years.

E. Special Conditions:

1. Access Facilities

Sutton town highways 3, 23, and 32 circumvent the CBWMA, although actual road frontage occurs only for 670 feet along highway 3. Old logging trails provide additional foot access into the interior of the property.

No parking areas are developed; fisherman normally park near bridges on highway 3 and 23. A parking area off highway 3 would benefit grouse hunters, trappers, and fishermen seeking access to the center of the ownership.

2. Rights-of-Way

Power line: In September 1972, the State granted a 10-year easement for a power line to the Vermont Electric Power Company of Rutland, Vermont. The lease was renewed in 1982, and expires 31 March, 1992. The easement is for a 250 foot wide corridor, however, only a 150 foot wide corridor was cleared initially with the remaining 100 feet reserved for future expansion (see Appendix C).

Two power line corridor crossings, consisting of residual softwood trees, were created to facilitate wintering deer mobility across the CBWMA. Maintenance of the crossings is the responsibility of VELCO, per the lease agreement.

3. Use Value Appraisal

To help compensate towns for loss of taxes because of state ownership of real estate within those towns, the Legislature mandated that lands under the jurisdiction of the Agency of Environmental Conservation pay the towns 1% of the current use value or fair market value, whichever is less, each year (Title 32, Section 3660 VSA).

Current use values are established by a current use advisory board from time to time. These values are based on the productive capacity of the land, assigned to four categories: Forest site I, potential wood growth of more than 85 cubic feet per acre per year; site II, 50 to 85 cubic feet; site III, 20 to 49 cubic feet; and site IV, less than 20 cubic feet.

In 1986 these values were set at \$100/acre on site I, \$60 /acre on site II, \$20/acre on site III, and \$10/acre on site IV.

To qualify for current use taxation, the land must have a management plan for production of forest products, and be accompanied by a map indicating the various sites and where different management is to be done.

The following table summarizes the site values submitting in 1981 for CBWMA.

<u>SITE</u>	<u>ACRES</u>
I	115
II	203
III	10
IV	8
FAIR MARKET VALUE	4 (POWER LINE ROW)
	<hr/>
TOTAL	340

IV. Objectives

White-tailed deer are the selected featured species for Calendar Brook as the property is critical deer winter habitat. The management objectives for CBWMA are to:

1. preserve and perpetuate shelter conditions over as much of the original wintering area as possible while maintaining maximum deer mobility,

2. improve adjacent or future softwood shelter through the regeneration or release of understory softwood trees, and,
3. provide high quality, accessible browse.

No other wildlife species will be "featured" at Calendar Brook, however, habitat components important to many other game and nongame species will be favored by adherence to standard operating guidelines as explained in the State WMA Land Management Manual.

V. Strategies:

Vermont Model Habitat Guidelines for white-tailed deer winter range shall be employed to manage the entire 340 acres at Calendar Brook.

Cedar: The "no management option" per the Model Guidelines shall apply to the 78 acres of cedar stands (see figure 5). This acreage is spread throughout the management area on damp sites, and due to the longevity of cedar, will provide suitable shelter for many years. This option may warrant reconsideration in the future if cedar stands begin to deteriorate sooner than expected.

Spruce/fir: An unevenaged silvicultural system shall be used to manage spruce/fir stands at Calendar Brook. This system was chosen because of the relatively small size of the ownership, and also because evenaged management systems are being demonstrated at larger northern Vermont deer wintering areas owned by the state.

The following strategies shall apply to the 242 acres of spruce/fir stands, all of which are predominantly fir.

1. Employ group selection cuts to create openings 20' to 40' in diameter.
2. Rotation age shall be 75 years.
3. Enter the stand every 15 years and regenerate 20% of the stand with evenly distributed cuts.

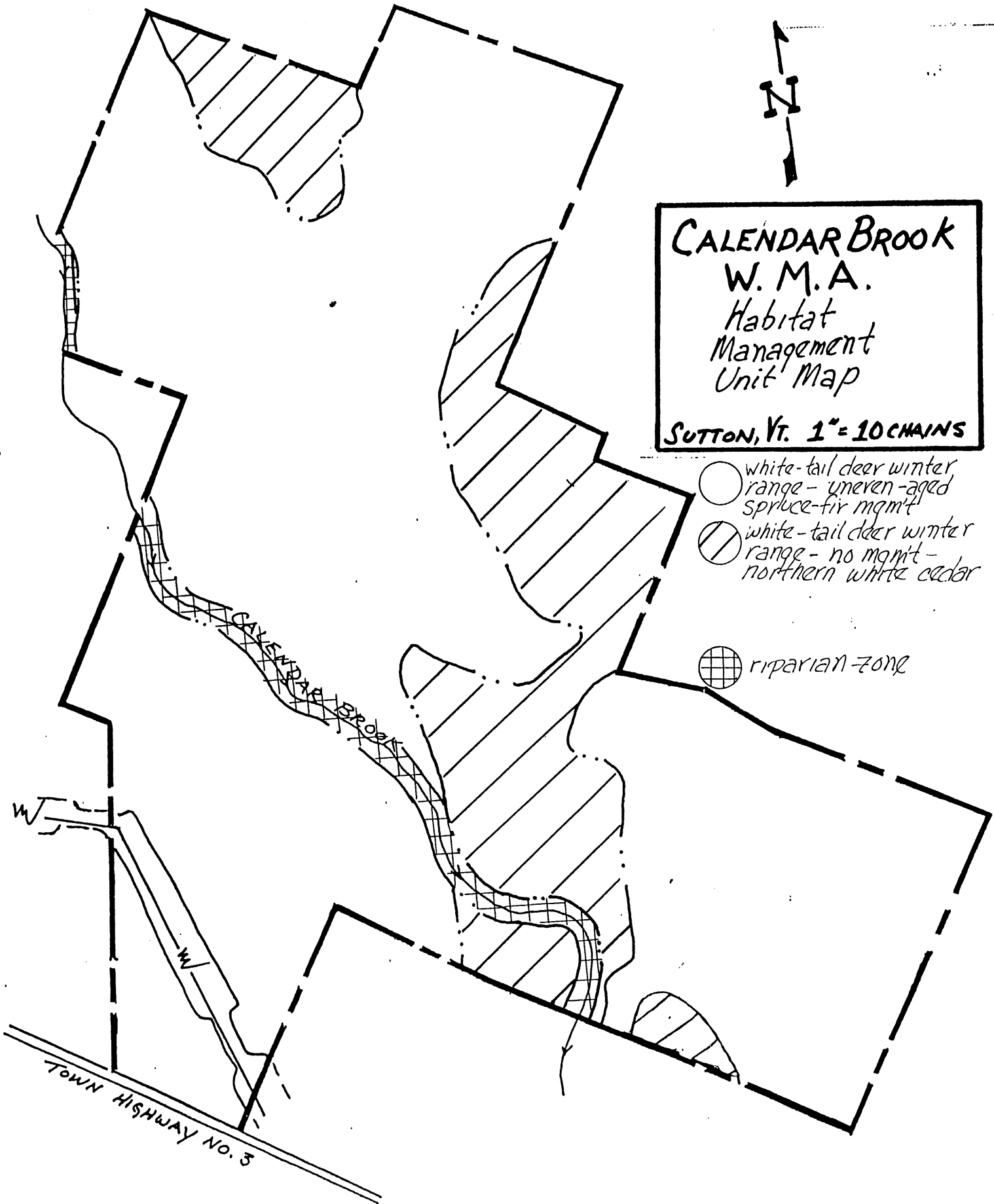


Figure 5. Habitat Management Unit Map, Calendar Brook W.M.A.

4. When converting an even-aged stand, enter the stand early to avoid future losses to blowdown and decadence, i.e., make the first cut at age 30 or 40. Remove the biggest fir first. Always leave spruce, if possible, until the final cut of the first rotation because it lives longer, is more windform, grows bigger, and is more resistant to spruce budworm.
5. Log in winter to provide browse in the form of tops, and to create trails.

General: Guidelines for stream buffers, snag, and den trees, road construction and maintenance, and other standard habitat management practices shall be followed as explained in the State WMA Land Management Manual.

VI. Implementation

The following schedule of actions will be employed to implement the strategies of this plan.

A. Deer Winter Shelter Management - Spruce/fir

The acreage to be treated each year is established mathematically and is bound by the criteria for uneven aged spruce-fir management outlined in the strategies section (see figure 6).

Annual treatments will be combined and scheduled every five years (see figure 7). This schedule will provide a total sale area (80 acres) large enough to be a commercial venture and still provide a constant supply of browse.

Once a specific area receives its initial treatment, the next entry into that area will be 15 years later.

While the total treatment area is 80 acres, only 16 acres or 20% will be regenerated. Regeneration will be achieved by dispersing small openings (20' to 40' diameter) throughout the total treatment area.

This form of uneven-age management will eventually provide five different age classes within the spruce/fir type. Forty percent of the area will be in age classes less than 30 years old with the remaining 60% in age classes of 30 years or greater. The oldest age class will be about 75 years. This balance of age classes should provide suitable winter shelter. Figure 8 graphically illustrates the formation of these age classes through a series of five entries in a specific stand.

B. Browse Production

There are no areas of hardwood trees at CBWMA large enough to be identified and managed as a separate stand. There are significant percentages of hardwoods, such as aspen and red maple, present throughout much of the spruce-fir acreage. These trees, when cut, will provide an abundant and nutritious supply of low growing browse, in the form of stump and root sprouts, for up to 10 years after cutting.

Browse production will occur every 5 years as pockets of hardwood, intermixed in softwood stands yet too small to be identified as separate stands, are cut in the process of shelter management.

C. Roads

In order to implement the treatment schedule of the spruce-fir winter range, access to the easterly side of Calendar Brook must be developed. It is desirable to develop road access that without having to cross Calendar Brook. Over the next few years, the state should explore the possibilities of obtaining rights-of-way across private ownership in order to develop access.

D. Parking Areas

A parking area to accommodate five cars should be built as soon as financially possible. This parking area is to be located at or adjacent to the log landing off Town Highway #3.

Area Regulation Work Sheet

Deer Winter Range Management Unit - Spruce-Fir

A	B	C	D	E	F	G	H	I
			A/B	D x .20	D x 5	E x 5	D x 15	E x 15
acres	entry interval	rotation age	#acres to treat/ yr.	#acres to regenerate/ yr. within treatment area	#acres to treat/ 5 yrs.	#acres to regenerate/ 5 yrs. within treatment area	#acres to treat/ 15 yrs.	#acres to regenerate/ 15 yrs. within treatment area
242	15	75	16.1	3.2	80.5	16	242	48

Uneven-aged Management

- small group selection
- rotation age 75
- regenerate 20% of stand each entry (column E)

Figure 7. Stand Treatment Schedule, Calendar Brook W.M.A.

TREATMENT SCHEDULE - DEER WINTER RANGE MANAGEMENT UNIT

<u>Year</u>	<u>STAND</u>	<u>ACRES</u>	
1985	1	51 ¹	
1990	1	7	
	3	64	
	8	38	
		<u>109</u>	TOTAL ²
1995	8	53	
	6	15	
	7	7	
		<u>75</u>	TOTAL ³
2000	1	51	
		7	
		<u>58</u>	TOTAL ⁴

1 This stand treated prior to development of plan. The total of 51 acres is 29 acres short of the 5 year target of 80 acres.

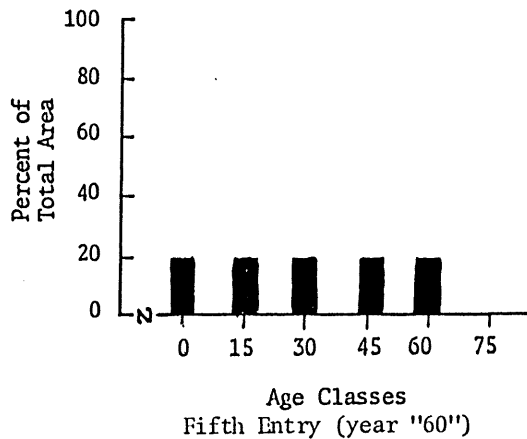
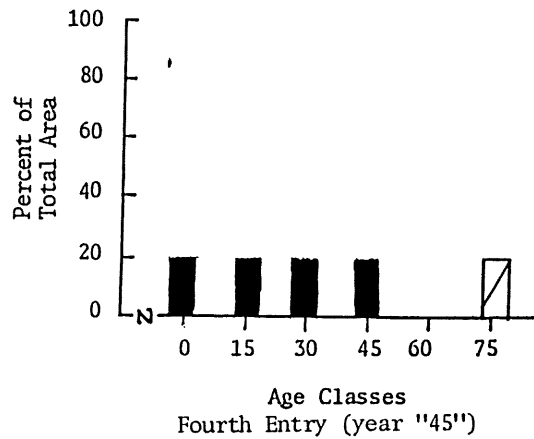
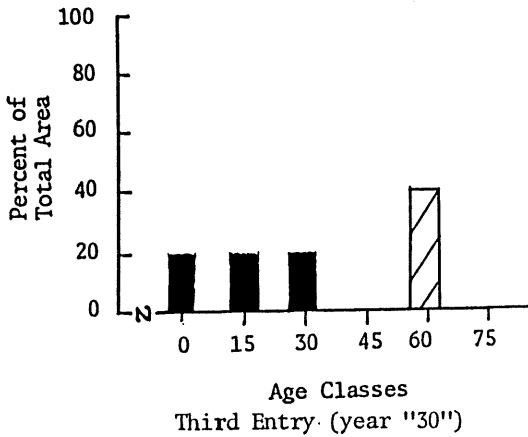
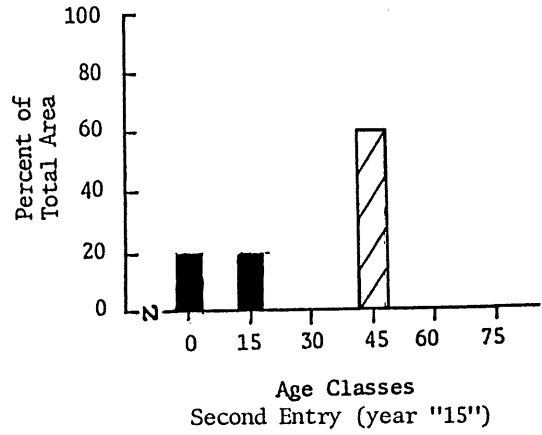
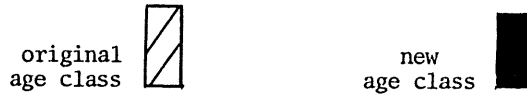
2 Includes 29 acres not treated in 1985.

3 This total is 5 acres short of the 5 year target of 80 acres due to the fact stand 7 is split by Calendar Brook and it is preferable not to cross Calendar Brook.

4 This is the second entry into stand 1.

NOTE: Stand age, merchantability and access conditions were considered in creating the above treatment schedule. As access improves we will try to balance the 5 year cut to the target of 80 acres. The next FOREX inventory (scheduled for 1992) may reveal a need to revise the treatment schedule.

Theoretical conversion of an even-aged spruce-fir stand to uneven-aged. Initial stand is a 30 year old even-aged stand. Age classes depicted for each entry show ideal distribution immediately following completion of cutting. Entries are scheduled every 15 years. Each entry is designed to regenerate 20% of the total stand using group selection.



APPENDIX AWintering Deer Population Estimate
Calendar Brook Wintering Area

1. 5-year average annual buck kill (1981-1985) from the 48 square miles of non-winter range (70% of Sutton and 75% of Sheffield) served by the Calendar Brook Wintering Area = 17 bucks divided by 0.5 (adult male removal rate) = 34 adult male prehunt population
2. 34 x 2.7 (AF:AM ratio) = 92 AF prehunt population
3. 92 AF x 1.5 (reproduction rate) = 138 spring fawns
4. 138 minus 15% summer mortality = 117 fall fawns
5. Total fall prehunt population = 34 adult males
92 adult females
117 fawns

= 243 deer
- 17 buck kill
- 12 antlerless kill*
6. Total posthunt population = 214 deer

- 21 (10% loss **)

7. Wintering Deer Population Est. = 193 deer

* Based on a 0.5 AF:AM kill ratio plus 30% antlerless harvest

** Loss due to illegal crippling, misc.

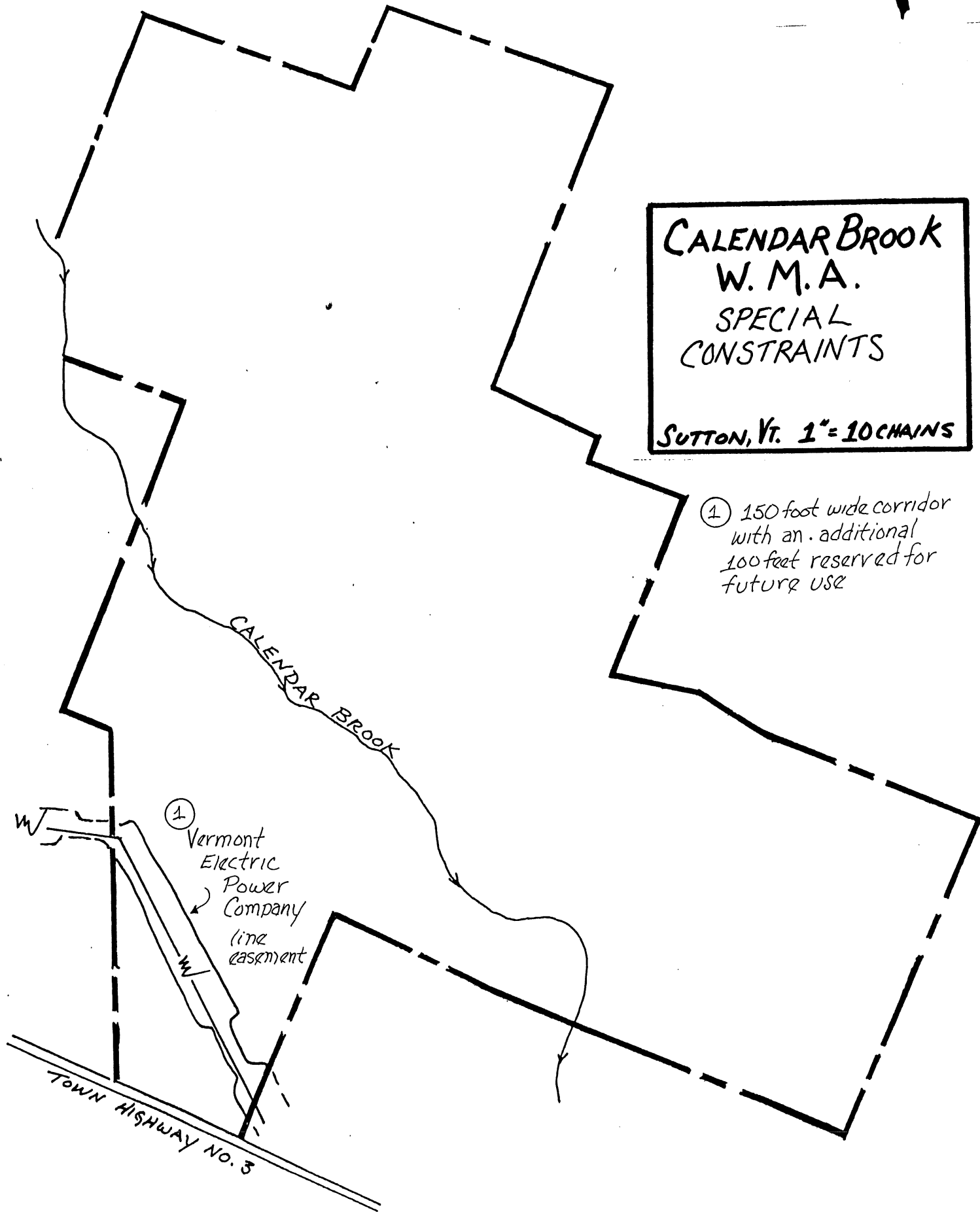
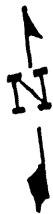
APPENDIX B

MANAGEMENT UNIT CALENDAR BROOK. FOREX COMPARTMENT INVENTORY SUMMARY. 1982

STAND	SIZE	M.S.D.	B.A./A. ACC.		UNACC.	CULL		TIMBER	SPECIES	RECOM.	TREAT.	ACCESS
			TOTAL	B.A./A.		B.A./A.	B.A./A.					
1	58	5.1	124	91	29	4	33	FIR .54	THIN			GOOD
2	60	4.0	188	154	16	18	37	CED .51	THIN			
3	64	3.1	128	113	6	9	5	FIR .43	THIN			NEED R.O.W.
4	4							FIR .75				NEED R.O.W.
5	6	3.1	106	72	2	32	37	CED .60	OVERSTORY			NEED R.O.W.
								FIR .23	REMOVAL			NEED R.O.W.
6	15	2.5	155	127	15	13	5	FIR .64	NO CUT			NEED R.O.W.
7	14	3.2	106	84	7	14		FIR .57	THIN			NEED R.O.W.
8	91	4.1	139	91	34	14		FIR .31	NO CUT			NEED R.O.W.
								R.MAP .20				
9	8	5.5	147	130	10	7	37	CED .55	NO CUT			NEED R.O.W.
10	16							FIR .20				GOOD
11	<u>4</u>											GOOD

CALENDAR BROOK RIPARIAN ZONE (150' TOTAL WIDTH)
POWERLINE RIGHT-OF-WAY

TOTAL=340



CALENDAR BROOK
W. M. A.
SPECIAL
CONSTRAINTS
SUTTON, VT. 1" = 10 CHAINS

① 150 foot wide corridor
with an additional
100 feet reserved for
future use

① Vermont
Electric
Power
Company
line
easement

TOWN HIGHWAY NO. 3



State of Vermont

AGENCY OF NATURAL RESOURCES
103 South Main St., 10 South
Waterbury, Vermont 05676

DEPARTMENT OF FORESTS, PARKS AND RECREATION

Department of Fish and Wildlife
Department of Forests, Parks, and Recreation
Department of Environmental Conservation
State Geologist
Natural Resources Conservation Council

November 18, 1987

MEMORANDUM

TO: Jim Horton
FROM: M. Brian Stone, Chief of Forest Management
SUBJECT: Calendar Brook WMA Long Range Plan

Thank you for the copy of the subject plan. I have filed it with other state lands plans with Ed Leary for reference. Please refer to the plan when developing district annual work plans.

MBS:jca

NOV 20 1987