

V. Resources, Issues and Management Recommendations for Public Reserved Lands within the Plan Area

Squapan Unit

Vision for the Squapan Unit

The Squapan Unit, at almost 20,000 acres, is the largest public reserved lands unit in the Aroostook Hills region. This Unit contains a multitude of recreational, ecological and timber resources. It is close to and easily accessible from Presque Isle, a city of approximately 10,000 people. The Unit provides an extensive system of motorized trails to meet the demands of the local population, as well as connecting with the larger ATV and snowmobile trail networks which draw recreationists to the region from a much wider area. It is this extensive system of ATV and snowmobile trails that is the hallmark recreation feature of the Squapan Unit. The Unit also provides opportunities for hunting, fishing and boating, and will likely see increased use with the addition of a second public boat launching facility on Squapan Lake. The Squapan Unit, with its breadth of recreational opportunities, contributes to the regional recreation and tourism economy. The Unit is also abundant in timber resources with good vertical and age diversity, affording a dependable income source from sustainable harvesting on the Unit, and contributing to the local timber economy. Exemplary natural communities exist in several locations on the Unit, and protection of these communities is integral to larger initiatives to conserve Maine biological diversity.

This plan contains many recommendations aimed at expanding traditional recreational opportunities and access on the Unit, continuing timber harvesting that produces high quality timber while promoting forest health and diversity, and protecting sensitive and important ecological and wildlife resources. The Squapan Unit is a great example of public reserved land that balances multiple uses and values, which is a central goal of Bureau land management. *The Vision for this Unit is to continue that balance of managing for recreational use in appropriate places, performing exemplary timber harvesting that maintains forest health and diversity, and protecting important ecological features and wildlife habitat. Consistent with this overall Vision, the Bureau will seek to improve the extensive multi-use trail system to achieve an exemplary standard; and to add value to that system with associated camping and picnicking areas; while expanding boat access to Squapan Lake and exploring opportunities for compatible new uses such as hiking trails.*

Character of the Landbase

The 19,936 acre Squapan Unit (the largest unit in the Aroostook Hills region) is located between the towns of Ashland and Presque Isle in central Aroostook County. The majority of the Unit is located just east of Squapan Lake, with the entire eastern shore of the lake contained within the Unit. Squapan Lake is an impounded lake, with a dam

owned by WPS New England Generation, Inc. creating the lake from tributaries of the Aroostook River. In addition to the lake, a defining natural feature of the Unit is Squapan Mountain, a ridgeline that runs north-south and reaches its high point of 1,470 feet elevation at both its north and south ends.

Acquisition History

The Squapan Unit began as original public lots set aside as Maine was being divided into townships in T11 R4 WELS (1,000 acres) and Squapan Township (970 acres). A series of trades and acquisitions from 1976 to 1999 with several landowners (including JM Huber, Dunn Heirs, and Pingree Assoc.) added to and subtracted from the original public lots, leading to the configuration of the Unit that exists today. Most of the Unit is under common/undivided ownership, meaning the Bureau shares ownership of multiple parcels of the Unit with other landowners. This leads to a complicated management and tracking system for the Bureau.

Natural Resources

Geology and Soils

In the early Devonian Period (between 360 and 408 million years ago) the modern day continents of North American and Europe were colliding, leading to volcanic activity and the building of the Appalachian Mountains. This included creation of Squapan Ridge. The various types of Devonian Formation bedrock that underlie the majority of the Squapan Unit are the result of these continental collisions. The majority of the Squapan Unit is therefore composed of mafic intermediate granite—a bedrock type that consists of dark igneous rocks mainly composed of iron and magnesium. A stretch of it follows along the ridges of Squapan Mountain and Garland Hill where it is either exposed or only has a small amount of soil and vegetation covering it.

Calcareous bedrock, containing at least fifty percent calcium carbonate, is found in the northwest corner of the Unit. The high levels of this mineral lead to a more basic soil type (pH 6.0-7.8) and calcium rich groundwater. These conditions may support plants and animals with different needs and usually produce an ecosystem that can be readily distinguished from the others around it.

Glacial till covers most of the surface of the Squapan Unit. Swamp deposits are fairly common around the lake, but they have merely covered the till that is now underneath them. Glacial till is deep in the Squapan Unit and soils in the area all show signs of being formed in this dense loamy material. Perham, Chesuncook, and Daigle are the most common of these soil types.

Hydrology and Wetlands

All water in the Squapan Unit flows north into the Aroostook River and eventually drains through New Brunswick to the St. John River. Squapan Lake is an impoundment created by a dam at the outlet of Squapan Lake and head of Squapan Stream, which flows into the Aroostook River. It is a narrow, horseshoe shaped lake 14 miles in length, 4,986 acres in size and reaches a maximum depth of 70 feet. WPS New England currently

owns the dam which generates power on-site, but also stores water for use at two downstream hydropower generation developments. The dam is operated to provide peak winter power, and water elevation fluctuates from 590.5 feet to 603 feet (FERC, 1991).

The Squapan Unit contains 1,461 acres of wetlands. Seventy-six percent of these wetlands are forested and 24 percent are open.

The following chart lists the hydrologic features for waterbodies in or partly in the Unit.

Waterbody	Acres	Maximum Depth (ft)	Direct Drainage area (sq.mile)	Dam	Trophic Status	pH
Squapan Lake	4,986	70	55.28	Yes	Mesotrophic	7.02
Alder Lake	120	3	3.55	No	Eutrophic	No records

Ecological Processes

Many natural disturbances have played a role in shaping the vegetation and communities of the Squapan Unit. The influence of fire is obvious in two locations—on the upper slopes of the west side of Squapan Mountain on the north and south ends. Fire typically produces even-aged, single storied stands, and this type of stand is evident in these two locations. These two post burn areas are predominately red spruce with a depauperate understory. Fire may have played a part in other stands on Squapan Unit, but its influence is most evident in these two areas.

In northern hardwood stands, the dominant natural disturbance occurs from small gaps (ranging from 1/10 to 1/2 acre) resulting from ice, wind throw, or natural tree mortality. Such gaps are more common in mature stands, reflecting the large canopy size and susceptibility of these canopies to damage. Regeneration in these gaps depends on the size of the gap and seed source. The scale and frequency of gaps in these hardwood and mixed wood stands results in a multi-aged and multi-storied forest structure. The Squapan Unit has some extensive areas with mature and late successional stands. Large snags, downed decaying logs, and subsequent gap regeneration are integral natural process in these stands. Snap offs from high winds are most prevalent along the ridge top of Squapan Mountain’s long ridge line.

The naturally occurring spruce budworm has had a major impact on lowland spruce – fir forests. Budworm activity in the early 1980s led to some pre-salvage and salvage harvesting of the land particularly in T10 R4 (previous owners harvested), and less so in T11 R4 where harvesting was conducted by the Bureau. Presumably most of the budworm related harvest activity occurred on the lower elevations of the Unit where spruce stands with fir are more extensive.

Beavers have a significant impact on wetlands in the region. By creating and abandoning impoundments along the stream course, beavers create a mosaic of habitats for other plant and wildlife species. At the Squapan Unit, wetlands impacted by beaver activity occur north of the lake along Squapan Inlet Stream, in the southeast part of the Unit along the headwaters of Shields Brook, and in the northeast part of the Unit along the North Branch of Presque Isle Stream and one of its tributaries.



Goldie's woodfern

Rare Plant and Animal Species

The rare Goldie's woodfern (*Dryopteris goldiana*) occurs at three locations on the Unit. Goldie's woodfern typically grows in rich woods where soil pH is relatively high. A large stand of the fern occurs at the site known as the "Fern Grotto". This site is the upper portion of a hardwood dominated, seepy drainage. The other two locations are in the northeast corner of the Unit. One is associated with a small area of maple - basswood - ash forest, and the other is in mixed forest near and along the stream just north of the rail line at the eastern boundary.

No rare animal populations are known to occur on the Unit.

Natural Communities

Squapan Mountain: Spruce - Fir - Northern Hardwoods Ecosystem and Hemlock Forest
Squapan Mountain is the most prominent feature on the Squapan Unit. The mountain has a north to south oriented ridge that extends approximately five miles, nearly the entire length of the Unit. The mountain reaches high points of approximately 1470 feet at both the north and south ends. In general, the forest on the lower slopes and the adjacent landscape has been managed more intensively for timber than that of the upper slopes and the ridge. The upper slopes and the ridge have experienced only limited, mostly selective harvesting in the distant past, and some areas at present retain no signs of past activity. The majority of the ridge top and upper slopes are mapped as a Spruce - Fir - Northern Hardwood Forest Ecosystem. These areas have the least amount of evidence of past management and are characterized by late successional stands of northern hardwoods, mixed spruce - northern hardwoods, and spruce forest.

Along with the Spruce - Fir - Northern Hardwood Forest Ecosystem, the northern part of the mountain includes an exemplary Hemlock Forest. The Hemlock Forest is on the mid-slope on the west side of the mountain. Old growth and younger hemlock trees are mixed with mature red spruce, and small amounts of yellow birch and red maple. A larger hemlock cored at this site was aged to 345 years. The understory is relatively open with striped maple being common. The herb layer is relatively depauperate with wild sarsaparilla and wood fern most common. Slopes are moderate to steep and have scattered boulders.

The Spruce - Fir - Northern Hardwood Forest Ecosystem and the Hemlock Forest are part of an area described in a report prepared by the Maine Forest Biodiversity Project in the context of potential ecological reserves that could be designated on public conservation lands (McMahon, 1998). In the 1998 report, an area totaling 11,770 acres was identified as a candidate for ecological reserve designation (along with 68 other sites). The Maine Legislature in 2000 authorized the designation of ecological reserves on Department of Conservation lands, and 68,974 acres were designated by the Bureau of Parks and Lands Director at that time. The Squapan Unit site was not included in 2000, in part due to legislatively imposed limits on total ecological reserve acreage (acreage not to exceed 6% of operable timberland acres on public reserved and non-reserved lands). Due to new Bureau land acquisitions, however, the Bureau may designate 3,080 more acres of ecological reserves in the future. The Bureau and the Ecological Reserve Scientific Advisory Committee have decided to wait until the completion of updated management plans on all public reserved lands (due in 2012) before designating additional acreage. At that time, the Squapan ridgeline will be considered along with other areas for ecological reserve designation. Management of this area in the meantime will need to focus on preserving the current qualities of the ecosystems.

“Fern Grotto” Site This rich, seepy hardwood site is conspicuous for its abundance and diversity of ferns. The site includes a large population of the rare Goldie’s wood fern along with several other species indicative of higher pH habitats including maidenhair fern, ostrich fern, Braun’s hollyfern and silvery spleenwort. Most of the area was selectively harvested in 1985. Much of the hardwood forest in the Fern Grotto area has some herbaceous plants that are indicators of limited enrichment such as doll’s eyes, however, it is clear that the richest areas follow the seeps and drainages in the forest. In addition to the numerous fern species, other plant species indicative of enriched soils that occur at the site include leatherwood and zig-zag goldenrod.



A wide diversity of ferns occur at the Fern Grotto site

Dudley Brook Small Cove Hardwood Site This small eight acre site near the northern border of the Unit has several diffuse flowages that feed into a more or less level rich hardwood site. It contains a significant percentage of basswood and cedar with many

large trees. Basswood is near the edge of its range in this location. This area also has a moderate size population of the rare Goldie's wood fern.

Squapan Lake Slope Forest: Spruce - Northern Hardwood Forest There is an exemplary Spruce - Northern Hardwood Forest on the slope immediately adjacent to the northeast shore of Squapan Lake. The survey of this forest and the determination of its exemplary qualities occurred after a Bureau harvest was performed. The stand is a nearly linear feature, following the shore of the lake for approximately two and a half miles and averaging about 1,000 feet in width. The total area is 336 acres.

This mature stand is a diverse mix of species with sugar maple, yellow birch, red spruce, beech, balsam fir, and hophornbeam all being common, and hemlock, red maple, white ash, and northern white cedar all being somewhat less common. Cedar is more common in some seepage areas on the lower part of the slope.

The shrub layer is primarily tree regeneration with balsam fir and beech saplings being most common. The herb layer is a mix of herbs, ferns, and tree seedlings with tree seedlings being most common. Large amounts of coarse, downed woody debris are also present.



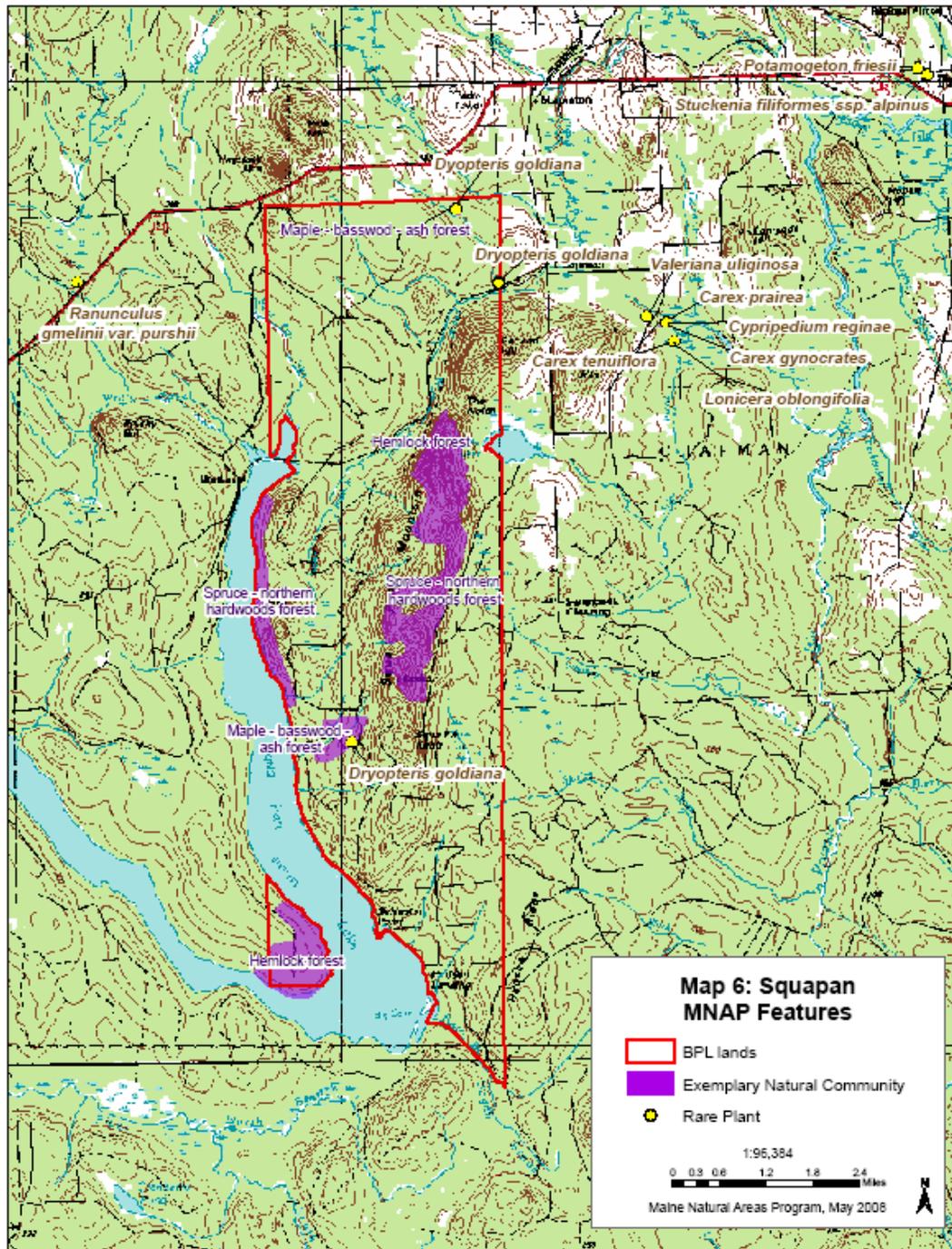
Mature Spruce - Northern Hardwood Forest on west facing slope adjacent to Squapan Lake

Squapan Peninsula (Big Cove) Hemlock Forest Squapan peninsula is a forested upland with gentle to moderate slopes that is on the west side of the lake and bordered by

Squapan Lake on the south and east sides. The peninsula area supports a mature Hemlock Forest community. The forest composition varies with some areas being dominated by hemlock with red spruce, sugar maple, and balsam fir as frequent associates, and other areas dominated by a mix of northern hardwoods with a smaller percentage of softwoods. Larger hemlock trees are greater than 32 inches in diameter at breast height and over 300 years old. A larger red spruce at the site was recorded with a diameter of 26 inches. In the understory there is yellow birch, beech, and striped maple. The herb layer is thin with wild sarsaparilla, Canada mayflower, common wood sorrel, wood fern, and starflower common. There is a significant amount of large downed woody debris and some low, damp pockets where northern white cedar occurs.

In the northern hardwoods area, sugar maple is dominant with largest trees up to 30 inches in diameter. Smaller trees are common with some scattered red spruce and northern white cedar. Tree regeneration is dominant in the herb layer with striped maple and beech common. Shrub and sapling layers are dominated by beech. Otherwise, the herb layer is depauperate. There is a thick duff layer, and soils are rocky loam. The lower-lying areas adjacent to the lake support a mix of northern white cedar, balsam fir,

and red spruce. There is some evidence of historic cutting in the near shore area of the forest. Herb cover and diversity is relatively higher on the lower slopes in comparison to the upper slopes. In the lower slope areas there are also mature red maples, a higher cover of shrubs, and more tree regeneration.



Fish and Wildlife Resources

Wildlife

The Squapan Unit has 467 acres of wading bird and waterfowl habitat, mostly located around the northern part of Squapan Lake and adjacent to Alder Lake. Mussels in Squapan Lake include eastern elliptio and eastern floater. The virile crayfish is also present. Mammals in the area include: coyote, fisher, marten, weasel, snowshoe hare, whitetail deer, moose, black bear, red fox, striped skunk, meadow mouse, and short tail shrew. Squapan Lake riparian areas support river otter, raccoon, muskrat and beaver. Birds that occur on Squapan Lake or associated wetlands include: great blue heron, osprey, goldeneye, mallard, American bittern, black duck, hooded merganser, and common merganser, among others. Great horned owl, screech owl and bald eagle occur on or near the Unit.

Much about the common loon population on Squapan Lake is known thanks to studies done as part of the 1991 dam licensing process undertaken by Maine Public Service Company (MPSCo). (The Squapan Dam has since come under the control of WPS New England, who must follow the terms of the license). In 1992, a loon survey revealed a possible maximum of 13 territorial loon pairs on Squapan Lake, with six pairs observed nesting, and two chicks surviving to fledge. Loons did not complete nesting in 1992 until the end of July (a later than usual nesting season). Consequently MPSCo proposed maintaining stable water levels from May 15 until July 31, to accommodate the longer nesting season. MPSCo maintained water levels to fluctuate no more than one foot so that loon eggs would not be washed off the nests and loon adults would not be stranded. In 1997 they performed a follow-up study, and found six nesting pairs, with five chicks surviving to fledge. The May 15 to July 31 stable water level plan, contained within a larger common loon management plan, was approved by the Federal Energy Regulation Commission for Squapan Lake (MPSCo., 1997).

Fisheries

Principle sport fisheries in Squapan Lake include landlocked salmon, brook trout, splake and rainbow smelt. Fisheries in the lake have been somewhat limited due to the dam blockage of fish passage from Squapan Stream. IF&W stocks the lake annually with fall yearling splake, and periodically with landlocked salmon and trout. The littoral areas of the lake contain warm-water species such as yellow perch, fallfish and white suckers, which compete with cold-water species. The West Inlet to Squapan Lake was determined to be particularly important for salmon spawning, as well as trout and smelt spawning. Smelt provide an important early-winter fishery (with ice fishing shacks dotting the lake by December) and spring dip net fishery, as well as a food source for salmonids.

The dam license dictates that the current dam owner (WPS New England) perform certain activities to benefit fisheries. Water levels are kept higher in late spring and fall for spawning of cold-water species. Inactive beaver dams and driki are removed from the mouths of several tributary streams to aid fish in traveling upstream to spawn. Structural habitat improvements were made to Squapan Stream. However, the construction of fish passage facilities to allow passage from the stream to Squapan Lake was considered not economically justified by the Federal Energy Regulation Commission. (FERC, 1991)

Alder Lake, which is partially contained within the Unit, has yellow perch and minnow species. Low oxygen levels in winter have caused periodic fish dieoffs. Heavy silt loads from agricultural fields limit game fish habitat in Alder Lake.

Natural Resources Management Issues

- Potential Future Ecological Reserve on Squapan Mountain: The Spruce – Fir – Northern Hardwood Forest Ecosystem and the exemplary Hemlock Forest on Squapan Ridge are candidates for inclusion in the Maine Ecological Reserve System authorized by the legislature for Bureau of Parks and Lands properties. This area was a candidate in 2000, and could be included in the system when the Bureau reviews all potential candidate properties at the end of its current planning cycle (2012-13). The issue is how to manage this area to maintain the qualities that qualify it for ecological reserve designation, and how the motorized trail system passing through this area should be managed.
- Fern Grotto Site: This area is conspicuous for its abundance and diversity of ferns, probably caused by rich seeps in the area. The issue is how to maintain the site to protect the unusual plant community there.

Historic and Cultural Resources

The Maine Historic Preservation Commission (MHPC) has identified the east slope of Squapan Lake as having a high probability of containing Native American sites. However, any sites would be on the banks of the original stream, prior to dam installation, which created Squapan Lake. In the case that the dam was ever removed, or the lake level significantly lowered, MHPC would seek to do an archeological survey of the banks.

Recreation and Visual Resources

The Squapan Unit is host to a variety of recreational activities, including fishing, hunting, hiking, camping, boating, ATV riding and snowmobile riding. The Unit's proximity to Presque Isle, Caribou, and other smaller Aroostook County towns increases its popularity as a recreation destination.

Motorized Trails

ATV use

The Unit contains approximately 20 miles of shared use roads which are open to ATV use, and another 20 miles of approved ATV trail. ATV trails connect with the Bangor and Aroostook Multi Use Trail and Aroostook Valley Multi Use Trail to the north. Unit trails also connect with club trails to the east and west. The Squapan Unit was the first public reserved land unit in the Bureau to host an officially sanctioned ATV trail.



ATV riding in the Squapan Unit

Snowmobile Use

There are approximately 35 miles of main artery snowmobile trails within the Unit, all funded by grants from the Bureau to municipalities. Trails serve as both destinations and connectors to other trails. The Ridge Trail (Trail 75c) is used by many families as it is less crowded than the ITS trails. Trail 75 is a local trail that traverses the Unit from north to south, and is used by some to make loops with other trails. Two ITS trails traverse the Unit. ITS 81 travels east/west for a short distance across the south end of the Unit, and ITS 105 is a major north/south connection in the ITS system, which crosses the Squapan Township section of the Unit. Squapan Unit snowmobile trails can also be used to connect with the Bangor and Aroostook Multi Use Trail and Aroostook Valley Multi Use Trail to the north. The Bureau contracts with snowmobile clubs in the area to maintain trails.

Non-motorized Trails

There are currently no non-motorized trails on the Unit. However, there is some interest in creating a non-motorized trail that would connect Haystack Mountain (a parks property with a short hiking trail), the Squapan Unit, and Aroostook State Park. Another potential non-motorized trail could begin at the snowmobile “Ridge Trail” and then branch off onto another section of the Ridge and reconnect to the snowmobile trail later. The non-motorized trail could possibly travel to the fire tower on the mountain for a view of the region, provided that the fire tower could be made safe for the public.

Boating Access

There are currently no boat launching facilities on the Unit. Squapan Lake has a concrete, ADA accessible public boat ramp on the western end of the lake, at the site of the dam. This site is owned and operated by WPS New England Generation and will continue to be available to the public as part of the FERC license for the dam. A private ramp is located at Walker Siding on the northwest portion of the lake.

Camping

There are currently five campsites available in the Unit, on the east shore of Squapan Lake accessible by water. Camping is permitted anywhere on the Unit, but campfires are only permitted at the five designated sites.

Hunting and Fishing

Principle sport fisheries in Squapan Lake include landlocked salmon, brook trout, splake and rainbow smelt. Fishing is most popular in the north end of the lake, and Unit boat access would greatly enhance this use. WPS New England Generation performs enhancements for fisheries as part of their dam license requirements, and IF&W maintains a stocking program on Squapan Lake. Hunting for waterfowl, upland game birds, bear, moose, and deer occurs on the Unit. Hunting is permitted on the large majority of the Unit—currently in all areas except for a 300 foot buffer around the five campsites. Temporary signage is placed around active logging operations to indicate the area as temporarily off-limits to hunting. Hunters are encouraged to contact the Ashland Bureau office for the most up-to-date information on hunting access.

Recreation Issues

- ATV Use over Squapan Ridge: ATV interests have requested the Bureau to designate the existing snowmobile trail over Squapan Mountain (Trail 75c) for ATV use. Currently ATV trails travel around the base of the mountain, but not over the ridge as the snowmobile trail does. Access to the Ridge Trail would provide ATV riders with views of the region if vistas were provided. There is some unauthorized use of the snowmobile ridge trail by ATVs, and the trail is in poor condition with drainage problems and erosion in some areas. In addition, the ATV use of the current trail poses safety concerns, due to the steepness and erosion problems. Local ATV clubs have shown cooperation with Bureau staff in addressing unauthorized use with some success. An additional complicating factor is that a portion of the trail is within the Spruce – Fir – Northern Hardwoods Ecosystem considered as a potential future ecological reserve. (Future decisions regarding new ecological reserves will be made upon completion of updates to all management plans in Bureau Public Reserved Lands, due in 2012).
- Non-motorized Trails: There are no non-motorized trails on the Squapan Unit. There is potential to build a system of trails to connect Haystack Mountain, the Squapan Unit, and Aroostook State Park. This trail could be used by hikers, cross-country skiers, and possibly mountain bikers. The issue is whether there is sufficient demand for this trail, and if cooperation could be obtained from private landowners between the Unit and the State Park. Shorter non-motorized loop trails could be built off of the snowmobile Ridge Trail as well. A non-motorized trail could travel to the fire tower on the mountain, however, improvements would need to be made to the fire tower to make it safe for public use. The expense of this may be prohibitive.

- Boating Access on Squapan Lake: There has been interest for some time in the Bureau's providing a boat launching facility on the Unit. Currently there are two boating access facilities on Squapan Lake. There is a private boat launch at Walker Siding that is closed to the public, and a public boat launch owned by WPS New England at the site of the dam which is far from the Unit's campsites and desirable fishing locations at the north end of the lake. An issue is whether the Bureau can make an arrangement with the owners of the Walker Siding private launch to re-open their facility to the public, to minimize the number of facilities on the lake. If this is not possible, the Bureau must attempt to find a suitable site on the Unit that meets Bureau standards (including environmental standards, ability to build the site to ADA accessibility standards, and ability to provide legal public right of way to the site). Another issue is finding the funding to acquire legal public right of way, and to build the facility.
- ATV/Vehicle Accessible Camping: There is interest in providing opportunities for camping that are more accessible by vehicle or ATV on the Unit. Currently the campsites on the Unit are all on the lakeshore, and are water accessible only. Connector trails could be made from the public use roads to one or more of the campsites, with parking near the road. This would retain the primitive nature of the campsites, yet make them more accessible for those traveling by car rather than by boat. Another option is providing a day use and camping area along the ATV trail surrounding Squapan Mountain. Upgrades have been made to this trail recently. A camping area along this trail could be made to connect with a larger system of ATV camping areas in the region spaced about a day's drive apart. An ATV camping shelter already exists in Bridgewater, and more shelters could be built in cooperation with other ATV interests and landowners.

Timber Resources

Harvest History

The Unit was harvested extensively in response to the spruce budworm outbreak in the 1970s and 1980s. The southern portion of the Unit (in T10 R4) was mostly acquired by the Bureau after the budworm salvage operations had been performed by previous landowners. These harvests were quite extensive, with subsequent blowdowns occurring. As a result, very little overstory remained and it contained abundant hardwood regeneration. The northern portion of the Unit (in T11 R4) was mostly acquired by the Bureau in the 1970s, and budworm salvage was performed by the Bureau in the late 70s and early 80s. Harvesting was heavy (though not as heavy as the southern portion of the Unit) and targeted mature, high risk fir and spruce. Mature, high risk aspen was also salvaged at that time.

After the spruce budworm harvests, the Bureau performed light selection and improvement cuttings of softwoods and hardwoods. From 1990-2001, an average of 1,200 cords per year were taken from the Unit. From 2002-2008 harvests have averaged



Forest on the Squapan Unit

about 5,000 cords a year. This is somewhat above the sustainable harvest level, compensating for the low harvests in the 1990s.

Current Conditions

Timber volumes in the Squapan Unit are close to Bureau and regional averages. The proportion of hardwoods on the Unit is 47 percent, which is the highest for any large parcel in the northern region. Many acres hold a considerable amount of large, healthy sugar maple, yellow birch, red spruce and eastern hemlock. Some large trees are low quality hardwoods and oversize hemlock. In general, most of the Unit has considerable vertical and age diversity, allowing for ongoing harvests without the need for the Bureau to perform adjustments in stand characteristics.

Softwood Type

Softwood type stands cover about 39 percent of the regulated acres on the Unit (about 6,000 acres). These softwood stands are made up of approximately 28 percent spruce, 16 percent cedar, 13 percent hemlock, 11 percent fir, and three hardwood species (sugar maple, yellow birch, red maple) that total 18 percent. Volume on these stands is an average of 24 cords/acre. Most species are of good quality, although, some of the larger hemlock and cedar have defects. Hardwoods within the softwood stands contribute to the volume and quality of the stand.

Mixedwood Type

Mixedwood type stands cover about 35 percent of the regulated acres on the Unit. Volume on these stands averages 20 cords/acre. Mixedwood stands range from softwood sites preferentially cut for spruce and fir in the past, to stands with deep and fertile soils where hardwoods and softwoods grow well. Mixedwood stands are composed of: 22 percent spruce, 14 percent sugar maple, 12 percent beech, 11 percent hemlock, 8 percent each of fir, yellow birch and red maple, 6 percent cedar, and 5 percent aspen. Most mixedwood stands are well stocked with quality trees, though some have sparse overstories from budworm era salvage cuts.

Hardwood Type

Hardwood type stands cover about 26 percent of the regulated acres on the Unit (about 4,000 acres). While some of the hardwood acres lie on shallow, rocky soils on Squapan Mountain, most are on very fertile soils, including enriched “cove” soils. Hardwood stands are composed of: 37 percent sugar maple, 19 percent beech, 13 percent red maple, 10 percent spruce, and 9 percent yellow birch. Hardwoods on Squapan Unit are very high

quality. The exceptions are beech, which is heavily infected with the beech bark disease, and some older trees, purposely retained for wildlife.

Timber Management Issues

- Several areas within the Squapan Unit could be considered “High Conservation Value Forests” (HCVF) by the forestry certification programs the Bureau is certified through. Some of these areas correspond with sites the Maine Natural Areas Program has termed “exemplary communities” (see “natural communities” section above). The Squapan Mountain Spruce - Fir - Northern Hardwoods Ecosystem and Hemlock Forest, the Squapan Peninsula (Big Cove) Hemlock Forest, and the Dudley Brook Small Cove Hardwood Site are sites that may be designated as HCVFs. Management of a HCVF should maintain key characteristics such as large, old trees, and the Bureau could further designate these areas as “no-cut” zones or special protection areas.

Transportation and Administrative Considerations

Due to the central feature of Squapan Ridge running from north to south, the Unit is accessed by separate road systems. The western portion of the Unit is accessible from Route 163 near Haystack Mountain, turning south and traveling one mile over private gravel road to the Squapan Unit gravel access road. Once inside the Unit, this gravel public use road extends six miles south, and vehicular access ends at a gate. The road becomes a trail used by ATVs and snowmobiles, and access by other motorized vehicles is blocked in certain areas to maintain trails for ORVs.

Access to the eastern side of the Unit is from Mapleton, traveling south on the West Chapman Road. Two miles of private road must be crossed before entering the Unit on the east side. Once inside the Unit, the public access road turns west toward Squapan Lake and then heads north, where it ends at a gate and becomes ATV and snowmobile trail.

Other access points to the Unit have been provided to Bureau staff for forest management by private landowners, and these access points depend on the good will of the landowners.

In other administrative matters, much of the Unit, particularly in T 10 R 4 (Squapan Township), is under common/undivided ownership, meaning the Bureau shares ownership of multiple parcels of the Unit with other landowners.

Transportation and Administrative Issues

- Road Access The Bureau would like to obtain deeded right-of-way to portions of the Unit now only accessible through private roads. The Bureau has worked cooperatively with surrounding landowners, obtaining permission to cross roads

for management in the Unit. As lands change ownership, however, such permission cannot be assured over time.

- Minority Ownerships To simplify management, the Bureau would need to purchase minority interests in the Unit, so that the Unit is owned by the State in full.

Squapan Unit Allocations

Special Protection Dominant

- The Fern “Grotto” site Goldies Wood Fern found here is the primary reason for designating this site as a special protection area, as it has a state rarity rank of S2 – which is imperiled in Maine because of extreme rarity. This rich, seepy hardwood site is conspicuous for its abundance and diversity of ferns. The site includes a large population of the rare Goldie’s wood fern. MNAP recommends the following for this site: Since the enrichment seems to follow the seeps in the area, it makes sense to focus a set aside on the seeps. Maintain a no harvest buffer of five chains from the edge of the seeps as previously proposed. This distance is an appropriate way to ensure that the special features of the area are set aside without restricting other management options for the area surrounding the special features.
- Dudley Brook Small Cove Hardwood Site This small eight acre site in the north most part of the Unit, has several diffuse flowages that feed into a more or less level rich hardwood site. It contains a significant percentage of basswood with many large trees. Basswood is near the edge of its range in this location. This area also has a moderate size population of the rare Goldie’s wood fern in a cedar stand. The Bureau is designating this site as a natural area.
- A small population of Goldie’s Wood Fern in mixed forest near and along the stream just north of the rail line at the eastern boundary.
- Squapan Peninsula (Big Cove) Hemlock Forest Squapan peninsula is a forested upland with gentle to moderate slopes that is on the west side of the lake and bordered by Squapan Lake on the south and east sides. The peninsula area supports a mature example of a Hemlock Forest community. A portion of this community will be allocated as a natural area.

Wildlife Dominant

- Ridgeline of Squapan Mountain encompassing the MNAP defined Spruce -Fir - Northern Hardwoods Ecosystem and Hemlock Forest exemplary community. Wildlife dominant will be used as a temporary allocation pending review of this area in the future (as a separate process from this management plan) as a potential ecological reserve. In the meantime, the Bureau will not perform any timber management in this area. The existing snowmobile ridge trail (which may later be

designated for ATV use) will not be part of this wildlife allocation, but will be a developed recreation class I corridor through it.

- Squapan Lake Slope Forest (336 acres): Spruce - Northern Hardwood Forest exemplary community on the slope immediately adjacent to the northeast shore of Squapan Lake. The stand is a nearly linear feature, following the shore of the lake for approximately two and a half miles and averaging about 1,000 feet in width.
- Squapan Peninsula (Big Cove) Hemlock Forest A portion of this mature Hemlock Forest community (the portion that is not designated as a special protection natural area) will be wildlife dominant. Timber management will be a secondary use, and will maintain the late successional character of the forest.
- Other riparian shoreline areas: Wading bird and waterfowl habitat and riparian areas (330 foot buffer along lakes and rivers, 75 foot buffer along secondary streams).

Note that the shoreline of Squapan Lake is designated as remote recreation as a secondary use to the dominant wildlife management allocation.

Developed Recreation Class I Dominant

- Designated public use roads, snowmobile trails, and ATV trails as shown on the Recreation Allocation map.
- A new boat launching facility (if built) on Squapan Lake.
- Any new drive-to campsites including any campsite areas developed for ATV access.

Visual Consideration Areas (secondary allocations)

- A 100 foot buffer around Squapan Lake and Alder Lake (Class I).
- Public access roads (Class I).
- Areas seen from a scenic viewpoint (if developed) on Squapan Mountain (Class II)
- Areas of Squapan Mountain and Garland Hill that can be seen from the west side of Squapan Lake, the West Chapman Road, and Haystack Mountain (Class II).

Timber Management Areas

- All other areas are timber dominant. Timber is a secondary use in wildlife dominant areas, remote recreation areas, visual consideration areas and developed recreation areas.

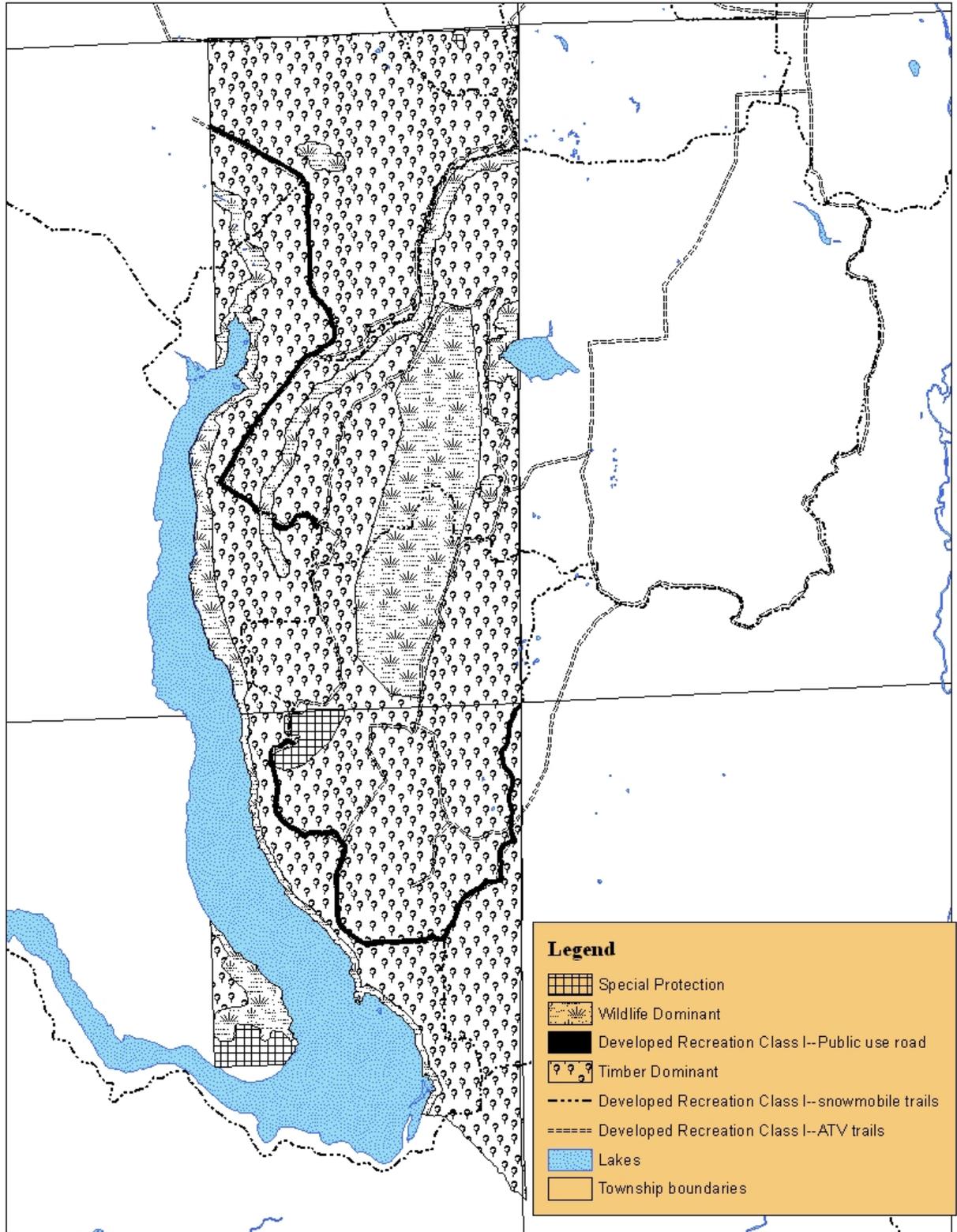
Squapan Unit Allocations (acres)

	Dominant Acres	Secondary Acres
Special Protection—Natural Area	318	
Wildlife	3,468	

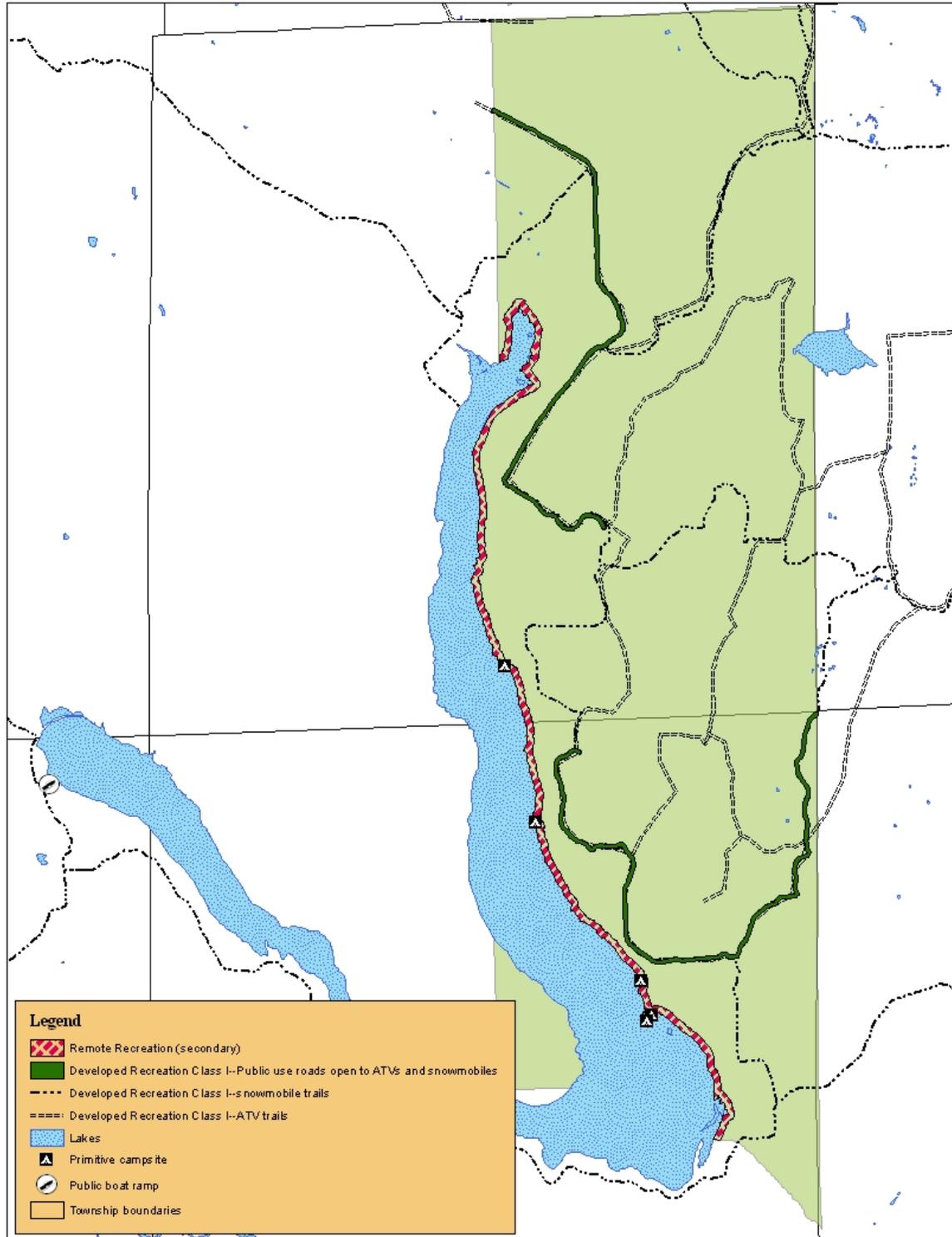
Visual Class I	290	
Developed Recreation Class I	Unknown— roads/trails	
Timber Management	14,274	

***Dominant acreages are representations based on GIS metrics and do not sum to total unit acres due to measuring error and limits of GIS precision.*

Squapan Unit Dominant Resource Allocations



Squapan Unit Recreation Allocations, Facilities and Infrastructure



Squapan Unit Management Issues and Recommendations

Issue	Recommendations
<i>Natural Resource Management Issues</i>	
1. Potential Future Ecological Reserve on Squapan Mountain	1. The Bureau will not perform any timber management in this area, which will be temporarily designated as wildlife dominant until future decisions about ecological reserve additions are made. The current snowmobile Ridge Trail will be a “developed recreation class I” segment through the wildlife dominant area. Any future ecological reserve designation should exclude the motorized Ridge Trail from the ecological reserve boundary.
<i>Recreation Management Issues</i>	
2. Unauthorized ATV use of the snowmobile trail over Squapan Mountain causing erosion and drainage problems, as well as safety concerns for users.	2. Continue to work with ATV interests to curb the current unauthorized use of the Ridge Trail over Squapan Mountain.
3. Request by ATV community for authorization to use/upgrade the snowmobile trail over Squapan Mountain for ATV use; and potential impacts to the adjacent natural communities and their potential ecological reserve designation.	3. Designate the trail for ATV use when (a) ongoing cooperation from the ATV community has effectively curbed illegal use of existing trail; (b) an assessment of the trail and a detailed engineered plan for needed improvements is completed; (c) funding sources to accomplish needed improvements have been secured and (d) an improved, well-designed trail is in place.
4. Lack of non-motorized trails on the Squapan Unit; potential to build a system of trails to connect Haystack Mountain, the Squapan Unit, and Aroostook State Park to be used by hikers, cross-country skiers, and possibly mountain bikers.	4. Determine, as resources allow, if there would be sufficient demand for this trail, and if cooperation could be obtained from private landowners between the Unit and the State Park. Work with Aroostook State Park Manager, the Town of Castle Hill, and private landowners in this endeavor.
5. Potential to provided short, non-motorized trails that connect to the snowmobile “Ridge Trail” and provide access to the fire tower on the mountain.	5. Determine if there would be sufficient demand for non-motorized trails that connect to the snowmobile Ridge Trail, and continue to the fire tower. Before building a trail to the fire tower, determine the expense of improving the tower to make safe for public use, and improve the tower if funding can be obtained and demand can be demonstrated.

<p>6. A second public boating launching facility is desired on Squapan Lake, since the Walker Siding facility has been closed to the public.</p>	<p>6. Continue communications with the owners of the Walker siding facility about the possibility of re-opening their facility to the public. If not possible, assess the feasibility of various sites in the Unit for providing boating access. A site will be chosen if it is: cost-effective, able to accommodate an ADA accessible facility, and can accommodate a full service motor boat facility without violating water quality or other environmental standards. If a suitable site can be located, and funding can be obtained, build a second public boat launching facility on Squapan Lake.</p>
<p>7. ATV/Vehicle Accessible Camping There is interest in making some of the Unit campsites accessible by vehicle and ATV. There is also interest in a day use area at the “old camp yard” site along an existing ATV trail.</p>	<p>7. Assess the possibility of providing one or more trails from the public use roads to existing lakeshore campsites, with parking areas near the road. Maintain the primitive nature of the lakeshore campsites. Work with the ATV community to consider a camping area near the ATV trails around Squapan Mountain that could be connected to a regional series of ATV camping shelters spaced about a day’s drive apart. Provide a day use site at the “old camp yard” site, including a picnic table with a shelter and a privy.</p>
<p>Issue</p>	<p>Recommendations</p>
<p><u>Timber Management Recommendations</u></p>	
<p>8. Future Timber Management</p>	<p>8. Maintain the high proportion of large, high quality trees and size and species diversity. More specifically</p> <ul style="list-style-type: none"> • Increase the spruce component in softwood stands and maintain fir at present levels. White pine, which currently makes up one percent of the softwood type volume, should be increased. • Maintain mixedwood stands in current species assemblages with the exception of beech which will be decreased when stems are diseased and have poor crowns. • Encourage high quality sugar maple, yellow birch and spruce on hardwood stands and retain red maple and beech of acceptable quality. • Beech should be retained for wildlife when crowns are good (even if bark is diseased) and when bark is smooth. • Designate areas as HCVF areas, which will

	in some cases correspond with special protection areas and other MNAP designated exemplary communities.
<i>Transportation and Administrative Issues</i>	
9. Road Access	9. Work with abutting landowners to facilitate Bureau staff access to portions of the Unit not easily accessed by public use roads. Seek deeded access over abutting lands.
10. Minority Ownership	10. Work cooperatively with minority owners to pursue full State ownership of lands within the Unit.