LAND MANAGEMENT PLAN

For

ST. JOHN'S ABBEY

Collegeville, Minnesota

January 12, 2001

Prepared and Written by

Donald W. Peterson, Forester

Reviewed and Recommended by

Land Manager — Date: July 30, 2002

Approved by

Abbot — Date: 10-22-03

DEDICATION

This plan is dedicated to Father Paul Schwietz OSB, Priest, Benedictine, and Forester.

Father Paul died suddenly May 4, 2000 when this plan was getting well underway under his direction. He was my primary contact with the Benedictine owners of this property. We worked on goals for this plan and met several times to discuss progress and issues. At our last meeting, shortly before his death, we discussed natural areas and I expressed my pleasure at being able to work and meet with him.

Father Paul earned a master's degree in forestry (silviculture) at the University of Minnesota in 1985. Thereafter he served as Land Manager for St. John's. He was completely dedicated to his work and exemplified the Benedictine ideal of prayer and work that "in all things God be glorified". I helped him mark for cutting an oak shelterwood area, oak thinning, and did an oak regeneration seedling survey for him.

Father Paul experienced success in his restoration of prairie and wetlands. He also experienced some of the frustration of foresters in working to regenerate old oak forest, though under his direction this was well underway. This plan is poorer for not having Father Paul's continued counsel.

I trust this plan embodies Father Paul's vision for St. John's forest and lands, now and for what they can become, both on the ground and as an outdoor laboratory for education.

Father Paul was greatly liked and respected by all that knew him, including his fellow foresters. His untimely death was a great shock. We remember his contributions to land management and the forestry profession. We miss his friendliness, good humor and unspoken example of his dedication to our Creator.

Don Peterson, Forester
October, 2000

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Introduction

In 1856 Father Bruno Riss, OSB, traveled on foot west of St. Cloud, through a roadless wilderness, to find land for a Benedictine Monastery. He was looking for land that would provide three essentials, fuel, pasture and water. To this can be added a site suitable for a secluded, rural, monastery. He selected land that is the magnificent heritage of the St. John's Abbey today.

Through the years the Benedictine Fathers and Brothers have cared for the lands and waters given them as their part of God's creation. The land has yielded fuelwood, lumber, maple syrup, pasturage, agricultural fields, water power and untold benefits from enjoyment of natural beauty, wildlife, and recreation.

Now, in the year 2000, the land is still managed for most of the same objectives: solitude, recreation, natural beauty, forest products and a beautiful setting for the monastic and educational institutions. It is used as a teaching resource in environmental education.

This Land Management Plan is to bring up to date the goals and methods to achieve those goals based on science and the social needs of the resident, and to some extent non-resident, communities and institutions.

The vision for managing these lands has been well stated by the 1979 Land Management Task Force and by the1997 Values of an Arboretum at St. John's. The vision includes theological, spiritual, educational, academic, physical and recreational values. This great tract of forest, fields, water and wetlands will continue to be managed to serve all these purposes.

Theological and spiritual values are paramount. God is transcendent. His creation "proclaims the truth that the world is a sacred place. In all its earthiness, it reflects the beauty of its maker···" (A Green Banner).

Rural, natural beauty as a setting for the Abbey, the University, the Arboretum and other institutions is a major consideration. Scenic beauty is also of great importance along the interstate, along St. John's roads, hiking trails, and around Lake Sagatagan.

Educational values are pervasive and obvious, not only for the university and other institutions on site, but also for the surrounding people and region. The St. John's Arboretum has education as a basic purpose. The Arboretum has an advisory committee and education plan that meshes with this plan. The land is and will be used for field trips and research. Good forest land management and other land management practices are and will be demonstrated.

For the resident monks, students, professors and others, the lakes, trails, fields and forest are much used and needed for quiet recreation and sports activities. This use privilege is also extended to Alumni and to some extent others of the visiting public.

The forests have yielded much fuelwood, logs for lumber, maple syrup and other products since the beginning, and the intention is that the land will continue to produce products needed now and in the future, in coordination with all other uses, in a sustainable manner. The latest science will be used to help manage the land to maintain the diversity of native plants and animals.

The Benedictines of St. Johns have a very strong "sense of place." Since Bruno Riss located land for a monastery in the Minnesota wilderness, there have been 144 years of community,

work, prayer, experiences, hopes, life and death, and many stories in the service of our Lord. Not only Benedictines but also many seminarians, university students, professors and many others who have lived and visited here have developed this sense of place. This sense of place will be carried on now and far into the future.

The objective of this plan is bring all these things together in harmony, "that in all things God be glorified," (Fr. Paul) and give short and long term direction for managing the land (exterior to the inner campus) to achieve this vision.

This plan is written for the Benedictine owners and for other stakeholders as well as for the Land Manager. It therefore tries to minimize use of technical language so as to be understandable to all. It is intended as an "umbrella plan" for land management, recognizing that more detailed plans are needed in such areas as prairie, wetland, and savannah management and also "people management" policies. It is more detailed for forest areas but not to the project plan level. No one will be completely satisfied with this plan, but it is hoped that, benefiting with many reviewer inputs, it is something of a consensus plan.

This plan attempts to summarize 140 years of St. John's land management. Future revisions will need only to revise as needed and summarize accomplishments in the time period since the last plan.

Goals of Saint John's Land Management Plan

Vision

To prepare and use a state of the art land management plan for St. John's exclusive of the inner campus. The plan is to be comprehensive including the forest, wetlands, savannah, prairie, plantations, special areas, roadsides, trailsides, lakeside and any other identified areas. A complete acre count will be made for the whole property. The plan will be based on current science along with the social needs of the institutions. It will be sustainable, maintain or improve the diversity of native plants and animals, and be practical for implementation. The plan should be flexible enough to allow for adaptive management.

Goals

1. To provide a sustainable harvest of forest products. An extended rotation will be employed for better diversity and natural beauty. Harvest to produce a normal balance of age classes. (Currently the forest is about 110-130 years of age.)
2 .Maintain, and when possible improve, the natural diversity of native plants and animals in healthy, sustainable ecosystems.
3. Attain green certification for harvesting to validate Benedictine stewardship values.
4. Locate and map a natural area of significant size to be left in a "natural" state with little management except possible use of fire.
5. Demonstrate good land management practices to highlight educational opportunities. Incorporate educational objectives: i.e. deer exclosures, internships, and other studies.
6. Continue to employ the shelterwood system in regeneration of oak stands. Consider group selection and clearcutting if and where applicable.
7. Maintain or improve natural, scenic beauty by recognizing important areas and zones, prescribe cutting, no cutting or cultural work which will improve areas for this purpose. This includes areas around the inner campus, interstate and highway roadsides, trailsides, around Lake Sagatagan and other identified areas.
8. Identify impacts the inner campus has on the greater campus, and minimize where possible.
9. Manage the deer herd and other wildlife to the extent allowable and practical so as to protect diversity and enhance other values.
10. Evaluate and implement if it is desirable to locate and measure permanent plots for monitoring species, volumes, growth, mortality, habitat changes and other objectives. Coordinate with state forest inventory survey methods.
11. Have a land management crew capable of harvesting wood, trail maintenance, controlled burns, planting, etc.
12. Maintain and improve the prairie, savannah, and wetland areas in a natural state for healthy habitats, natural beauty, wildlife and education (Habitat Restoration Project).
13. Provide special recognition and management for any rare, endangered, unusual, plants, animals, geological, anthropological or other features encountered.

14. Locate and mark all survey corners and property lines. Maintain as needed.
15. Preserve the rural character of St. John's surroundings both on Abbey lands and by cooperation with adjoining and contiguous landowners.
16. Set up a record keeping system for monitoring plan progress and as a basis for an annual report.
17. Be prepared to respond to natural disasters such as insect infestations-gypsy moth, diseases-oak wilt, fire and windstorms.

Rev 4-11-2000

Don Peterson
Fr. Paul Schwietz

The Order of Saint Benedict endorses the principles and criteria of the Forest Stewardship Council and intends to use these principles and criteria in conjunction with our goals to assure that the Order's lands continue to be well managed long into the future.

The Order of Saint Benedict adopts the Minnesota Voluntary Site Level Guidelines (Minnesota Forest Resource Council, 1999) as the minimum standards for forest management practices.

Rev 6-1-2002

HISTORY AND PAST LAND USE

Native American Land Use - This section prepared by Will Robbins, 2005

Saint John's Abbey and Saint John's University has been a presence in the St. Cloud area for almost 150 years. Most of that history is well documented thanks to the monks and other European settlers. Less well known, however, is the history of the people that used this land prior to European settlement. Our best information comes from the accounts and photographs of the people who worked closely with the Native Americans, as well as the treaties made between tribal leaders and the United States government.

The Minnesota Historical Society (MNHS) has a large archive dealing specifically with the Native Americans of Minnesota. It contains records of treaties and agreements as well as locations of known burial sites and other important archeological sites. Specific information about the land owned by St. John's Abbey however is sparse. This is likely due to the fact that the land has been held by a single owner since it was settled. While there is no documented evidence of use or settlement before the land was purchased by the United States, many clues can be put together to give us a picture of how the land was likely used.

The MNHS has record of prehistoric settlement sites approximately 5 miles from St. John's campus. Sites such as these are often found on lake shores where the inhabitants would have easy access to water. In fact, more than 75% of occupation sites are on peninsulas and flat areas along the shore of a lake[1]. This evidence would suggest the area currently occupied by the main part of St. John's campus as the most likely site in the area, though the long and extensive disturbance make the probability of a significant archaeological site very low. This is compounded by the fact that nothing was noted in any of the college records concerning building construction or in the notes of the public land surveyors.

Just because nothing was ever found, however, does not mean that the land was not used. In fact, much of the folklore of the area suggests at least occasional use. The two main water features on campus, Lake Sagatagan and the Watab River are both named with Ojibwa words. Sagatagan means "punk" or small dry wood used for starting fire. Lake Sagatagan is actually part of a chain of lakes in the area called Sagatagan by the Native Americans presumably for its abundance of good firewood. Watab is the Ojibwa word for the root of the Tamarack tree, which they used to tie together the bark of their canoes. The name by which the early monks called their woods is also a hint of previous use. Settlers often called stands of Sugar Maple trees a "sugarbush" and would tap the trees in the spring to make maple syrup. In many of the accounts of the first years of St. John's Abbey, their land is referred to as the "indianbush" suggesting that the previous inhabitants had also gathered the sweet sap from the trees.

In addition to folklore, some official documents and records help to create a picture of pre-settlement land use. The treaty of Prairie du Chien in 1825 drew a distinct boundary between the Ojibwa and Dakota Nations. The boundary in Minnesota ran along the Mississippi River until it reached the Watab River. From there, the line followed the North Fork of the Watab River to its supposed source at Island Lake. The boundary then proceeded west by northwest in a straight line to the point where Minnesota meets the border between North and South Dakota. The Ojibwa were given the land to the north and east of this line, while the Dakota were given the land to the south and west. This put the land that would become St. John's University directly to the south of the not well observed border.

[1] Pat Emerson. MN DNR Archeologist, Phone interview, May 5 2005.

Several other treaties played an important part in the history of Native American's in central Minnesota. An 1837 treaty opened part of eastern Minnesota along the Mississippi near St. Paul and north to Lake Mille Lacs to settlement by Americans. In 1846 a reservation was set aside for the Winnebago and Hochunk tribes. This reservation also used the north fork of the Watab River as a southern boundary, though the reservation was never occupied. 1851 brought the Treaty of Traverse de Sioux and ceding of the southern half of the state, including the land at St. Johns.

Additionally, there is record of several major trading sites along the upper reaches of the Mississippi River. The nearest post was on the east bank of the Mississippi River at the confluence of the Watab River. The settlement was aptly named Watab. The settlement thrived until the middle of the 19th century but was eventually out competed by St. Cloud and by the 1880's had disappeared entirely.

All of these pieces of evidence together show that, prior to European settlement; the land held by St. John's University was probably used somewhat frequently by the Native Americans in the area for hunting and gathering. While some areas of the campus seem to be prime locations for archaeological, the fact that nothing has been documented in the last 150 years coupled with the significant disturbances to the land makes it unlikely that any significant site is present. This lack, however should not keep us from understanding that this land was used and enjoyed long before the monks laid eyes upon it.

Land Management Through the Years Following Monks Arrival

Records of land management of St. John's lands from 1864 to 1989 are virtually non-existent except for conifer plantings (Schwietz 1983). He states:

> "There aren't many records available concerning the management of our property. I couldn't find any data on wildlife or forest management in the archives, however there are bits and pieces and a living history which is still available. The woods provided the early monks with lumber to build with and wood for fuel. The lumber crews were made up mostly of local farmers who worked at St. John's over winter months. There wasn't any major work done though until 1931 when Br. Ansgar Niess was the Abbey forester. Under his guidance several hundred acres were clear cut to make way for several pine plantations. He started several hundred thousand red, white and scots pine, Norway and white spruce from seed and planted them out by hand. His efforts grew and today two of the larger stands are known as the Pine Curtain and Pine Knob."

We would like to know about forestry agriculture—what was grown and where, the dairy herd, pasture, haying, work in the woods, logging, sawmilling, how much volume was cut and used, how much wood was cut for fuel (which must have been considerable) for the power plant. Most of this has been lost. In an effort to fill in some of this gap, the following has been gleaned from C. J. Barry's book Worship and Work: Saint John's Abbey and University, 1856-1956 with epilogue, 1980 edition. (Page numbers in parentheses) Additional information is from other OSB sources.

1856 Monks arrive in St. Cloud by Steamboat on May 20. (32)
1856 (fall) 4 monks place homestead claim 360 acres each at present site of Saint John's and build claim shacks. (1,280 acres?) (44)
1857 Father Bruno Riss and 3 brothers continue exploration of Indianbush. Fr. Bruno in residence at St. Joseph. (45)
1858 Abbot Wimmer buys land warrants for 1,280 acres at $0.86/acre using funding from King Ludwig of Bavaria that had been designated for use for the Benedictine convent in St. Joseph. (62)
1864 (spring) Monks and students move from St. Cloud to "Indianbush" northwest of present Collegeville Station. Two story frame building built. (78)
1865 Decided to move to the present location on L. Sagatagan. (82)
1865-1866 (winter of) Primitive road cut from "Old Farm" to new building site.
1866 First load of lumber arrives from a sawmill in St. Cloud on May 28. (82)
First monastic building built with native fieldstone. (83)
1868 Watab River dammed and a sawmill erected.
1869 Brickyard laid out in hollow W. of present cemetery, home made red bricks. (101)
Sales of wheat, cattle, horses, hides, tallow, flour from the Abbey's gristmill.
Naming of Lake Sagatagan from St. Louis to St. John to original Indian name (Chippewa) Sagatagan. (119)
1872 Railroad extended from St. Cloud to Melrose with stations at St. Joseph and Avon. (122)

1876 Sawmill improved. (135)
Present cemetery cleared.

1879 Collegeville Station established in east pasture of "Old Farm." Railroads bring in more settlers. (143)

1880 (spring) Brickyard laid out NE of proposed church, began producing 15,000 bricks per day. (142)
Land around the monastery is well known for its inferior quality for agriculture. 640 acres purchased near West Union, expanded to 1000. (151)

1886 Big additions completed to monastic buildings, cutting and felling trees, clay for bricks past two years. (153)

1894 Tornado passes over St. John's on June 27. 8:30 PM touches corner of cemetery, passed over L. Sagatagan and monastery grounds, doing much damage and demolishing the barn. One of 11 tornadoes that day in Minnesota and eastern S. Dakota. (218)

1896 Planting of Norway spruce, Scots pine, and White pine on sites hit by tornado in 1894. Norway spruce and Scots pine seeds sent earlier from Germany. (First documented forest planting in MN)

1899 (10/10/99) Electricity turned on in buildings, Powerhouse built and is powered by wood. (227)

1907 Watab Dam leveled and improved. (229)
Watab steam heating plant improved.

1907 Three mile road from Collegeville Station past Abbey to Watab Dam leveled and improved. (229)

1907 Old north cranberry bog reclaimed as extensive athletic bowl and baseball diamond. (230)

1911 Fr. James Hanson and students make insect and herbarium collections. (235)

1905-1930 John Katzner developed apples, grapes (Alpha) and other fruits for Minnesota use. (230)
Fr. Adrian Schmidt turns his energies to forestry, reforestation, and linden. (237)

1901 St. John's granted exclusive fishing rights on L. Sagatagan. (238)

1906 Fish hatchery established on Watab for rainbow trout. 'Watab Park" developed. (238)

1930 Conifer growth study by Larry Ritter of MN Department of Conservation

1933 Saint John's becomes a State Game Refuge on August 10th.

1945 Power house built. (335)

? Agricultural enterprises near campus replaced because of enlarging campus and economic unfeasibility. (357)

1949 Forest Management Plan prepared by Otis Hall of U of MN School of Forestry

1950 Saint John's is certified as meeting the requirements of the Tree Farm Program. It is the 20th Tree Farm in Minnesota.

1966 Gemini Dam installed.

1997 Fr. Paul Schwietz work to promote environmental education and enhanced land stewardship begins with the establishment of Saint John's Arboretum. The Arboretum is a partnership of the Abbey's land base and the University's teaching mission. The Abbey retains complete control over land use decisions.

2002 SmartWood and the international Forest Stewardship Council confer "well-managed status" on OSB following an audit of the forest and land management practices.

2003 The Abbey purchases 100 acres in sections 35 & 36 of Avon Twp. from Mike Philippi.

2011 The Abbey purchases 70.46 acres in sections 35 & 36 of Avon Twp. from Gary and Judi Grooters.

2011 August 2 – A windstorm at 7:45 am blows down about 2,000 trees across the property, with the most affected area near the freeway on both sides of I-94.

Notes:

1856 Farming enterprise in Indianbush in Watab Meadows. Old farmhouse was NW of present Collegeville Station. Called "Old Farm." (466)
Both mills of the Watab, sawmill and gristmill, served by a waterwheel. (470-19)
Building dates important in land management from chronology by Fr. Roman Paur, OSB (506)

Dates (Beginning Additions, Alterations	Building, Site	Architect, Designer
1859	Indianbush "Old Farm"	
1878 1941	Sawmill	Phillip Heitkemper, OSB
1903, 1939	Woodworking shop	Raphael Knapp, OSB
1917	Watab Fish Ponds	
1918	Flour Mill	
1918, 1935	Chicken Coop	
1925, 1944	Lumber Shed	Raphael Knapp, OSB
1942, 1970	Maple Sugar House	P. Heitkemper, S. Schramel, OSB
1942	Stone Weather Station	Cloud Meinberg,, OSB

For more Fr. Riss history of early years refer to "In the Beginning" in the Appendix.

Cattle, sheep and hogs were husbanded in St. John's agricultural past. Here are two quotes from Schwietz 1985:

> "Cattle were grazed in the woods over the years and it has been suggested that along with fire they are a major reason for the fine stand of red oak (Quercus rubra L.) today. The last report found was that 75 head of cattle were grazed on approximately 50 acres from 1953-1957, although the acreage involved was not identified."
>
> " In the early 20's almost 100 acres of maple-basswood were cleared for pasture, and then later planted with conifers, by Br. Ansgar Niess. Sheep were grazed on Pine Knob . . .for about ten years before the area was planted. Lawrence Ritter said that there were few problems with brush or hardwood

competition due to the previous grazing. The seedlings were grown in the Abbey nursery by Br. Ansgar" (Schwietz 1985 as told to him by Br. Ansgar).

St. John's land management records state the dam was made to form Gemini Lake in 1966. Interstate I-94, formerly US Highway 52, was constructed in 1976 and was expected to take 54 acres of St. John's land to the widening and interchange. The new entrance road to the campus was made at the same time. In 1988 the dam was constructed for the wetlands. Wetlands and prairie restoration work followed.

John Pflueger, a long-time neighbor whose brother served as a lay logger, clearly remembers "a monk in robes selecting the timber to be harvested" in the 1930's. (Personal communication with T. Kroll 2003) It is evident that the St. John's Benedictines have actively managed their land in the best Benedictine tradition. Rene Dubos, in contrasting Franciscan ecological values with those of Benedictines, wrote "Throughout the history of the Benedictine order, its monks have actively intervened in nature--as farmers, builders and scholars. The Benedictines have brought about profound transformation of soil, water, fauna and flora, but in such a wise manner that their management of nature has proved compatible in most cases with the maintenance of environmental quality." (Dubos 1972)

A Physical and Spiritual Home

Since they arrived at this site in 1864, the Benedictine monks have each taken vows of stability that commit them to this place for life. That theme is evident in the long-term approach that has resulted in demonstrated stewardship of the land. The monks use this land as their physical home and as an inspiration to serve God in the way they know best.

This commitment to God and the land as well as the ongoing commitment to educating others has resulted in many neighbors, students, and visitors sharing in this "sense of place." Saint John's would not be the place it is without its history of stewardship and its extensive forests, lakes, wetlands, fields, pastures, and prairies.

Aesthetics and Recreation

The Benedictines came as pioneers into the wilderness of Minnesota. The St. Paul area was rejected as a place for their monastery as they had in mind an area that would remain rural. Their claim along the Mississippi in St. Cloud was good but lacked pasturage. Their first claimed areas along the North Branch of the Watab River, sections 31 and 6 in Indianbush, provided water, wood and pasturage. In surveying their claim on the west line of Section 6, they came upon a beautiful lake nestled in forested hills. They immediately sought ways to add lakes Sagatagan and Stumpf to their claimed area. The small band of pioneers soon moved from Watab Meadows to the present location between Lakes Sagatagan and Stumpf. The beauty of the area, upon discovery, was immediately recognized. Here they built, not with logs and frame, but with stone and were home, developing a great "sense of place," which continues unabated to this day.

The beautiful setting has been much enjoyed by Benedictines, students and many others for 140 years. Here have been erected many distinctive buildings. Here have taken place, in beautiful surroundings, the many activities of monastic life, student life and many others. The natural beauty has been enhanced by tree planting--planting of Scots pine and Norway spruce as found

in their native Bavaria. Also native white pine was planted early and later other native species. Today these, along with many other landscape plantings, greatly add to the impressive surroundings of the inner campus and surrounding hills and fields. They add green to the otherwise drab, in winter, hardwood trees. Who does not recognize the beauty of snow on conifers?

Lake Sagatagan is a centerpiece for the forests and campus of St. John's. It has been used much for boating, fishing, swimming, ice-skating and, of course, is greatly admired for its natural lakeshore. Many athletic events take place in the inner campus. Cross-country running makes use of forest trails.

The forests of St. John's have provided a tranquil setting and solitude. There are over 12 miles of trails accessible for hiking and, in winter, skiing. The newest trail goes through the restored prairie and wetlands where many species of plants, birds and animals may be seen. Who does not recognize the interest and beauty of having differing habitats, with great diversity of native plants and animals, to view and study?

Timber Use Through the Years

From the beginning the Saint John's Benedictines have used timber from their lands. Even before owning the land, trees were blazed to mark the boundary of their claim. Then tamarack were cut for their first log dwelling. Wood was needed for cooking and heat. A water-powered sawmill was erected in 1868 at the Watab Dam. This was improved in 1876 and again in 1941. Lumber was used for framing buildings and for furniture. Much timber was also cut for fuelwood until 1947 when the new coal fired power plant was put into operation. Records on the amount of timber cut, and where it was cut until 1989 are, regrettably, not available.

The first woodworking shop was constructed in 1903. But from the beginning the monks made their own furniture with their own, distinctive designs. Through the years many chairs, tables, desks, doors, cabinets, podiums, credenzas, were made. Wood was used for rafters, ceilings, and wainscoting. Many other uses were made of wood from Saint John's forests.

Initially much of their lumber was sawn in their own sawmill. The last sawmill was dismantled sometime after 1949. Thereafter logs were sawn in other local sawmills. When sawing in spring, before the ground was soft for plowing, the steam-powered sawmill was a major attraction on campus (Saint John's Abbey 1974).

Volumes harvested since 1989 can be found in the records section towards the end of this plan.

Much of the sawtimber cut, after sawmilling at a local mill, is returned to the woodworking shop. It is air dried, then kiln dried and stored for use in the lumber shed. In recent years from 15M to 109M board feet have been "sold" to the woodworking shop, averaging 46 thousand board feet per year.

Much of the woodwork in the buildings of Saint John's comes from their forests and woodworking shop. A recent large use of Saint John's red oak was the ceilings of Sexton Commons. The shop is now working on red oak cabinets, student bed headboards, white pine coffins and other projects.

Logging is done by a Saint John's woods crew. Logs not milled for Saint John's use are sold on the open market decked at roadside.

Some additional references from the past are revealing:

> "A charcoal producing operation was begun in 1954 to utilize low-value forest materials. It began as a study in cooperation with the Iron Range Resources and Rehabilitation Commission, the U.S. Forest Products Laboratory, the Minnesota School of Forestry and the Lake States Forest Experiment Station (Record, November 19, 1954)." "Br. Julius guided the project until it was discontinued in the 1980's." (Schwietz 1985).
>
> "In the thirties and forties, Br. Ansgar and his crews were still clear cutting areas for lumber, firewood, pasture or pine plantations. These practices continued to renew the forest habitat, creating openings and forest edge. Since 1949, clear cutting has been abandoned in preference to selective harvesting. Yet even this harvesting has been reduced to between 20,000 to 50,000 board feet harvested annually. Most agricultural fields have been abandoned and the fields have either reverted to grass, hardwoods or in some cases been planted to pine." (Schwietz 1985).

Purpose and Use of the Allowable Harvest Calculation

The purpose of the allowable harvest calculation is to assure that harvesting does not exceed the net growth. Net growth includes growth of existing trees over 5 inches in diameter at breast height (DBH) plus in-growth of saplings less mortality. The calculation also has to account for acres which have trees, but which are not likely to be part of planned harvest areas. These include the areas such as those with special restrictions described above, water quality buffers, and sites with such low quality wood or poor access that harvest is unlikely.

The Allowable Harvest volume is usually given as an annual amount. However, it is acceptable to average this amount over a time period such as 5 or 10 years to allow for flexibility with markets, stand locations, and staffing. The Allowable Harvest level is recalculated with each new plan, about every 5-10 years. It can also be updated as new information on growth rates or acres is available.

It is also acceptable to describe exceptions to the allowable harvest when they are needed. Examples could include situations where the majority of the forest is of similar age and nearing maturity. Cutting at the allowable rate could be so slow as to create a situation where much of the value is lost as trees die to old age before they can be scheduled for harvest. Another situation is in the event of salvage needed after storms or insect outbreaks. A contingency Saint John's must deal with is the predicted arrival of Gypsy Moth in the next 15-20 years and the predicted negative impact that will have on older, mature trees. In any of these cases, the Allowable Harvest could be exceeded and would then need to be recalculated to a lower level for a following series of years to allow the growth to catch up.

Allowable Harvest Calculation
October 31, 2003
Hardwood Cover Types With Usual Restrictions

Cover type	Acres - Total	= Acres with Special Restrictions [1]	Acres with - Usual Restrictions [2]	= Acres in 5% BMP Buffer [3]	Acres X Available for Harvest	Annual = Growth Cu. Ft./ac/yr	Allowable Harvest Cu. Ft./yr
Oak	699	121	578	29	549	39 [a]	21,411
Upland Hardwoods	418	90	328	0	328	38 [b]	12,464
Aspen	49	0	49	2	47	72 [c]	3,384
Lowland Hardwoods	143	6	137	7	130	15 [d]	1,950
Sugar Bush	29	0	29	0	29	38 [e]	1,102
TOTAL	1,338	217	1,121	38	1,083	---	40,311

AVERAGE ANNUAL VOLUME AVAILABLE FOR HARVEST IN HARDWOODS WITH USUAL RESTRICTIONS:
40,311 Cubic Feet per year EQUIVALENT TO: 438 cords per year OR 228 MBF per year or some combination of both.

1) Special restrictions include acres which have less intensive management due to primary uses such as scenic buffers, recreation, roadsides, and teaching. Harvesting on these sites would be limited to actions such as salvage, safety, and restorations.
2) Usual restrictions are the usual and customary restrictions on timber harvests to ensure that water quality, habitat, recreation, diversity, and forest health and productivity are considered and implemented in the prescription.
3) 5% Best Management Practice (BMP) buffers are suggested in the MN Site Level Guidelines for cover types which are even-aged.
a) Based on an average site index of 60 which is conservative. Yields from Gevorkiantz and Scholz 1948.
b) Based on an average site index of 60. Yields from Thomas Crow. – Managing Hardwoods in the Northern Lake States Region.
c) Based on SI 70 which is conservative. Yields from USFS General Technical Report NC-36, Manager's Handbook for Aspen.
d) Based on SI 40.
e) Based on an average site index of 60. Yields from Thomas Crow. – Managing Hardwoods in the Northern Lake States Region.

Hardwood Cover Types With Special Restrictions

Cover type	Acres Total	Acres with Special Restrictions [1]	X	Annual Growth Cu. Ft./ac/yr	=	Maximum Harvest Cu. Ft./yr
Oak	699	121		39 [a]		4,719
Upland Hardwoods	418	90		38 [b]		3,420
Aspen	49	0		72 [c]		0
Lowland Hardwoods	143	6		15 [d]		90
Sugar Bush	29	0		38 [e]		0
TOTAL	1,338	217		---		8,229

AVERAGE ANNUAL VOLUME AVAILABLE FOR HARVEST IN HARDWOODS WITH SPEICAL RESTRICTIONS:
8,229 Cubic Feet per year EQUIVALENT TO: 89 cords per year OR 47 MBF per year or some combination of both.

1) Special restrictions include acres which have less intensive management due to primary uses such as scenic buffers, recreation, roadsides, and teaching. Harvesting on these sites would be limited to actions such as salvage, safety, and restorations.
2) 5% Best Management Practice (BMP) buffers are suggested in the MN Site Level Guidelines for cover types which are even-aged.
a) Based on an average site index of 60 which is conservative. Yields from Gevorkiantz and Scholz 1948.
b) Based on an average site index of 60. Yields from Thomas Crow. – Managing Hardwoods in the Northern Lake States Region.
c) Based on SI 70 which is conservative. Yields from USFS General Technical Report NC-36, Manager's Handbook for Aspen.
d) Based on SI 40.
e) Based on an average site index of 60. Yields from Thomas Crow. – Managing Hardwoods in the Northern Lake States Region.

Conifer Cover Types With Usual Restrictions

Cover type Total	Acres - Special	Acres with = Usual Restrictions [1]	Acres with - in 5% BMP Restrictions [2]	Acres = Available Buffer [3]	Acres X Growth for Harvest	Annual = Harvest Cu. Ft./ac/yr	Allowable Cu. Ft./yr
All Conifers	146	0	146	7	139	37 [a]	5,143

AVERAGE ANNUAL VOLUME AVAILABLE FOR HARVEST IN CONIFERS WITH USUAL RESTRICTIONS:
5,143 Cubic Feet per year EQUIVALENT TO: 56 cords per year OR 29 MBF per year or some combination of both.

1) Special restrictions include acres which have less intensive management due to primary uses such as scenic buffers, recreation, roadsides, and teaching. Harvesting on these sites would be limited to actions such as salvage, safety, and restorations.
2) 2) Usual restrictions are the usual and customary restrictions on timber harvests to ensure that water quality, habitat, recreation, diversity, and forest health and productivity are considered and implemented in the prescription.
3) 5% Best Management Practice (BMP) buffers are suggested in the MN Site Level Guidelines for cover types which are even-aged.
a) Based on an average site index of 65. Yields from USFS General Technical Report NC-33 Manager's Handbook for Red Pine.

Reforestation and Other Silvicultural Work Done Through the Years

Silvicultural work (tree growing) done to date has been largely tree planting. Records of recent years are in the records section. The following historical record is summarized chronologically by year from Schwietz 1985, Appendix A1, as follows:

Year	Stand	Acres	Species*	Location
1896	P9,10	3.5	SP,NS,WP	Near Prep School
1906	PP7	1	SP	Along road near football stadium
1916	P6,8	2	SP	N of Prep School
1921	P1	1.4	WP,SP,RC	Pine Knob area
1927	P114	2.9	SP, WP	S of I-94
1928	P113	.5	WS	Near covered footbridge
1930-'31	P3,15	.5	RP, WP	Pine Knob area
1934	P12,16	27	RP, WP	W and S of Footbridge
1938	P2	2.4	JP	Pine Knob area
1939	P17	4.4	WP	
1940	P11	1.8	JP	Pine Knob area
1958	P5	1.6	RP	Pine Knob area
1962	P4	.3	RP	Pine Knob area
1963	P18	7	RP	
1972	P19,20	7	RP	
1980	P21,22,23	25	JP,RP,WS,BS,WP	N of I-94
	Total acres	118.3		

*SP Scots pine Pinus sylvestris; RP red pine Pinus resinosa; WP white pine Pinus strobus; JP jack pine Pinus banksiana; WS white spruce Picea glauca; NS Norway spruce Picea Abies; BS black spruce Picea mariana

In addition to the above, some tamarack Larix laricina has been recently planted on the south side of Old Collegeville Road.

Starting in 2003, many Red oak Quercus rubra and White oak Quercus alba were planted. Nearly all of these were from seed collected at Saint John's.

The first plantings of Scots and Norway spruce were for landscape purposes near the monastery. The trees are now large and very impressive. Later plantings have been for forestry purposes.

A reference to silvicultural work from Fr. Paul (Schwietz 1985) is:

> "During the 1930's a project was begun to control white pine blister rust in the plantations. The earliest measures were to systematically remove the alternate host of the disease, Ribes sp., from the plantation areas. At first W.P.A. crews did the work, later it was the young members of the community under Br. Julius' guidance. Lawrence Ritter was instrumental in these efforts which include the pruning of the white pine up to 17 ft. from the ground (Record, December 16, 1948). This pruning not only reduces the potential of disease infection, but also insured the production of more valuable sawtimber products."

There are additional references to thinning of pine plantations, pruning and gopher control.

Father Paul began oak regeneration by shelterwood, the first cutting in the winter of 1990-91 and continuing annually to the present, in the area presently in Stands 1 and 3 of Compartment III. Shelterwood area east of the road was prescribed burned in 1996. A seedling survey in

September of 1999 resulted in a count of 2555 oak seedlings per acre in the burned area compared to 1225 in comparable unburned area west of the road. (ref. Oak Shelterwood Seedling survey by D. W. Peterson Sept 29, 1999)

Cutting of defective, old, declining and inferior trees for fuelwood throughout the forest for many years, leaving the better trees, undoubtedly helped to improve much of the forest for timber.

Past Inventories and Plans

The first formal inventory and plan, Management Plan for the St. John's University Forest, was done in 1949 by Otis Hall of the School of Forestry, University of Minnesota. He inventoried the timber resource on the forested area of St. John's and gave recommendations for its management. These included a recommended cut of 55,000 board feet per year. The plan recommended improvement cutting leading to the selection system. The individual tree selection system was considered good forest management for oak types at that time. Defective and overmature trees were to be cut leaving the best trees until after their period of rapid growth. This type of cutting was done until 1991. Establishment of permanent inventory plots was recommended as soon as possible.

The next plan was the Forest Management Plan of 1976 by the Minnesota Department of Natural Resources. This was a two page plan and map with additional standard pages for Minnesota forests. The plan recommended thinning immature stands less than 70 years old. Some stands "approaching maturity" 70 to 100 years old, were to be regenerated by clearcutting or shelterwood. Those with adequate advance oak regeneration could be clearcut in stands of 2 ½ to 20 acres. Stands lacking advance regeneration were to be regenerated using the shelterwood system leaving 60 to 70 square feet per acre of basal area followed by clearcutting when oak regeneration became established. Aspen was to be clearcut and conifer stands thinned.

In 1979 a Land Use Task Force Committee Report (Appendix D) was produced by a committee headed by Daniel J. Ward, O.S.B. This excellent report set forth principles for managing St. John's land, listed proposed policies for recreational use, non-recreational woodland use, proposed a "Biological Reserve," addressed agricultural uses, land acquisition and adjustment policies.

In 1985 Paul Schwietz, OSB completed A Management Plan for the Conifer Plantations at St. John's. This comprehensive plan inventoried all conifer plantations and gave detailed, specific activities for their management. The inventory included species, year planted, acres, stocking, size, site index and volumes.

Currently there is a Saint John's Arboretum Strategic Plan 2005-2010 (www.csbsju.edu/arboretum/council). It addresses vision, mission, and goals for the Arboretum, with emphasis on environmental education and how that ties to the land stewardship of this plan. Such things as history, education, public relations, fundraising, restoration projects, principles, and development are detailed.

The Major Land Planning Divisions map on the following page shows the land allocation. It shows the area designated "inner campus," natural areas etc. It also shows the location of St. John's boundary lines.

"Green" Certification of Forest Practices

In April 2002, the Order of Saint Benedict received "well-managed" "third-party" certification of its forest management planning and implementation by SmartWood following an intensive audit in 2001. SmartWood used the standards of the international Forest Stewardship Council. www.fscus.org The audit may be found on the Arboretum website. This certification verifies that the intentions and implementation of practices on the ground do allow the forest to provide products while functioning as a healthy and productive ecosystem.

High Conservation Value Forests (per green certification)
The entire land base owned by the Order of Saint Benedict qualifies as "High Conservation Value Forest (HCVF)" as defined by the Forest Stewardship Council (FSC) for their forest certification program. As such, special conditions apply to retain the SmartWood certification of this HCVF land base as "well-managed." The requirements for HCVF include consultation, assessment, planning, and monitoring.

The following experts were consulted in addition to Abbey and University Sources: Peter Bundy, FSC certified consulting forester - OSB is group certified under Peter; Dave Bubser – SmartWood; Hannah Texler – Regional Plant Ecologist with MN DNR Natural Heritage and Nongame Research Program; Andrew Arends - DNR Certification Coordinator; Jim Manolis - DNR Ecosystems planner; Katie Fernholz - Dovetail Partners.

Following consultations, it was determined that Saint John's forests meet three of the four FSC Feb 2002 assessment standards for High Conservation Value Forests.

FSC Assessment Standard A: Forest areas containing globally, regionally, or nationally significant concentrations of biodiversity values and or large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance.
Assessment of OSB regarding standard A: The Avon Hills is a landscape level forest identified by The Nature Conservancy in their national assessment. Saint John's 2,500 hundred acres are a key block in this 40,000 acre landscape, most of which is privately owned.
Planning at OSB regarding standard A: OSB will continue to play a leadership role in trying to preserve the rural nature of the Avon Hills landscape. As this is primarily a privately owned landscape, there is no definitive way to assure that protection of the land base beyond Saint John's will succeed.
Monitoring at OSB regarding standard A: Preservation of the rural landscape of the Avon Hills will be measured by the involvement of OSB and citizens in land protection activities as that is within our scope. Preservation of the land base is not within our scope and so actual measurements of the rate of development or loss of forest base acres will not be measured.

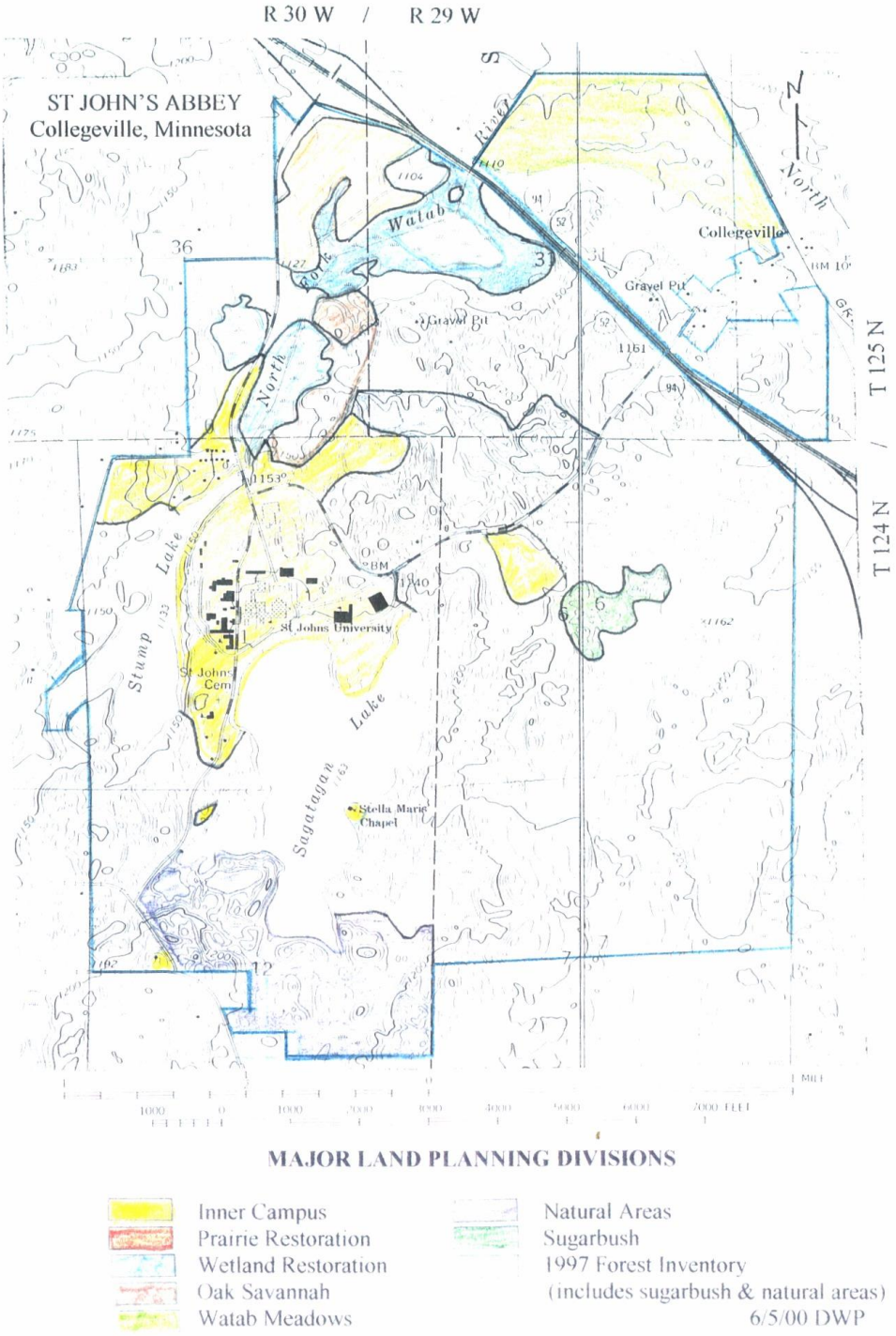
FSC Assessment Standard B: Forest areas that are in or contain rare, threatened, or endangered ecosystems.
Assessment of OSB regarding standard B: The 700 acres of oak forest at Saint John's are included on the DNR's Minnesota County Biological Survey (MCBS) map of significant native plant communities in Stearns County. The oak forests are classified as the Red Oak - Basswood Forest (Non-calcareous Till) type (abbreviated MHc36a). The statewide rarity ranking of this native plant community is S3 (roughly equivalent to state threatened). Another rare native plant community on the arboretum is Southern Rich Tamarack Swamp (FPs63a), which has a statewide rank of S3, and a global rank of G2G3. The arboretum is considered by the MCBS program as a site of outstanding biodiversity significance, the highest possible ranking.
Planning at OSB regarding standard B: OSB plans call for the maintenance of the 700 acres now primarily oak as an oak cover type. This will be done primarily through shelterwood harvests,

planting, and burning to assure another generation of oak. Preserving the oak cover type will naturally provide the habitat needed for a wide variety of species associated with that ecosystem. The Tamarack type encompasses only a few acres and is not to be disturbed.
Monitoring at OSB regarding standard B: Annual regeneration checks and regular field checks will provide monitoring and progress reports on the regeneration of the oak cover type. Faculty and students often assist in monitoring through field studies.

FSC Assessment Standard C: Forest areas that provide basic services of nature in critical situations. (E.g. watershed protection, erosion control.)
Assessment of OSB regarding standard C: While the forest of Saint John's provides many basic services of nature, none are deemed to be in a critical situation.

FSC Assessment Standard D: Forest areas fundamental to meeting the basic need of local communities (e.g. subsistence, health) and/or critical to local communities' traditional cultural identity (areas of cultural, ecological, economic, or religious significance identified in cooperation with such local communities).
Assessment of OSB regarding standard D: The forest base and land at Saint John's have a nearly 150 history and are very closely associated with the monastic religious traditions. The forest is also crucial to students, alumni, and neighbors. The oldest recorded planted trees in MN are here. If the woods were gone, or converted to a golf course or homes, would the cultural effect be significant? The answer is yes and so OSB forests are HCVF for this standard as well.
Planning at OSB regarding standard D: OSB celebrates its sesquicentennial in 2006 and plans to maintain its land base for monks, students, and visitors for another 150 years.
Monitoring at OSB regarding standard D: Every year that Saint John's continues to exist and continues to maintain or expand its land base signifies that cultural significance of the forest is being maintained.

Map of Property & Major Land Planning Divisions



FOREST DESCRIPTION

Geology

The St. John's land is located between St. Joseph and Avon in the Avon Hills in the Hardwood Hills ecological subsection of Minnesota. The hills are part of the St. Croix terminal moraine formed by the Superior Lobe of the Wisconsin glaciation. This ice mass melted back about 14,000 years ago leaving the hills, depressions and lakes we see today. The Watab Meadows area is glacial outwash and stream terrace.

The St. John's area, along with surrounding hills, represents one of the largest areas still in forest in Stearns County. However there are farm fields in surrounding areas along with wetlands and lakes.

Soils

As the property is located in glacial moraine, the upland soils tend to be sandy or sandy loams having been washed by meltwater which carried much of the finer soil particles away to the flats and lowlands. Soils have developed on bouldery glacial till and in depressions.

Soils occurring at St. John's are mapped by the Stearns County Soil Survey of 1985 as follows (see map):

Number	Name and texture	Drainage	Fertility	Other
155	Chetek sl	somewhat excessive	low	deep sand/gravel, droughty
183	Dassel sl	level, poorly dr	med	high organic, wet drains and depress
204	Cushing sl	well	med	gently undulating
260	Duelm ls	poor to mod well	low	nearly level swales, flats
281	Darfur coarse sl	poorly	med	nearly level in concave swales & dr.
292	Alstad sl	seasonal high water	med	nearly level to undulating
327	Dickman sl	well	low	gently sloping, droughty
413	Osakis l	mod	med	nearly level
453	DeMontreville ls	well	low	undulating, droughty
454	Mahtomedi l course s	excessive	low	rolling, gravelly
540	Seelyeville muck	very poor	low	black muck, high water table
544	Cathro muck	very poor	low	subject to ponding
873	Frebish-Nokay	poor to very poor	med	depressions, drains, seasonal high wt
1015	Psamments ls or s	somewhat excessive	--	excavated or filled, sloping
1016	Udorthents, loamy	excessive to poor	--	Soils mixed by filling or leveling
1055	Histosols, Haplaqualls, s,l,muck	ponded	--	organic and mineral in shallow ponds, slews, depressions
1842	Cushing and Flack sl	well	med	steep bluffs, summits
1843	Cushing-DeMontreville complex	well	med/low	rolling knolls, concave side slopes

s = sand, l = loam, sl = sandy loam, wt = water table, = marsh or swamp, = wet spot

Soils Map


Watab
COLLEGEVILLE
GAME
REFUGE
Stump Lake
Sagatagan Lake
SAINT JOHN'S SOILS
Stearns County Soil Survey 1985
Soil Conservation Service, USDA

Water and Wetlands

Saint John's is blessed with abundant water and wetlands. Open water areas are as follows:

Name	Acres		
Lake Sagatagan	218	(1996 level)	DNR- Lake # 730092
Stumpf Lake	66		DNR- Lake # 730091
Lakes Gemini	42		
Lake Ignatius	13		
Lake Hillary	8		
Wimmer Pond	11		
Wetlands Pond	20		
Cichy Pond	6		
Total	384		

For detailed data from the DNR database go to http://www.dnr.state.mn.us/lakefind/index.html

Lake Sagatagan:

There are two stories behind the name of Lake Sagatagan. Historian Alexius Hoffmann, O.S.B. notes: 'The word S. is a Chippewa (Ojibwa) Indian word and means tinder, i.e. the fungus called spunk or punk, found on trees hereabout and formerly gathered by the Indians, who roved around here as late as 1870." The other story on the name Lake Sagatagan is noted from the diary of Abbot Peter Engel, (1856-1921). "On July 16, 1920, John Smith, oldest Chippewa (Ojibwa) Indian then living (estimated at 130 years) visited St. John's. John Smith insisted that Lake Sagatagan was named not because there was a greater amount of punk found around its shores but because an Indian boy by the name of "Sagatagan" was buried on its south shore." At any rate, the lake has borne the present name since 1896 {The Record 1896, p.140).

How big is Lake Sagatagan? It depends the year or time. The figure given above is the level in October, 1996 when the aerial photos used for this plan were taken. An acreage count on a USGS map based on 1964 aerial photos gives an acreage of 175 acres. The acres above, for Lake Sagatagan, do not include Ignatius Lake or the entrance to it. The water volume according to Professor Bill Lamberts is 1.9 million cubic meters.

Lake levels go up and down through the years depending on rain and snowfall. While this may not be as noticeable in the north half of the lake, the more gradual topography surrounding the south part may be dry, marsh or inundated. Alexius Hoffman OSB writes about this. He states the water level was 4 feet higher in 1916 when Meyer's Bay, Horseshoe Bend and Boniface Bay were part of the lake. It was possible to boat into Ignatius Lake. Hellgate Rock, at high water, has a foot of water over it (Hoffman 1934). The ordinary high water mark set by the DNR is 1168.9 feet above sea level based on the 1929 datum. The records show that the lake has varied between 1,152 feet in the 1930's and as high as 1,169 feet in 1880, 1908 and again in 1987.

Lake Sagatagan is noted for its clean water, almost of primeval quality. Agricultural runoff does not get into this lake. Outboard motors are prohibited, with their oil and gas pollution, not to mention noise. The forested shoreline is a big contributor to high water quality. Policies protecting the quality of water in the lake should be continued.

Stumpf Lake:

Damming of the North Fork of Watab creek in 1868 enlarged Stumpf Lake. An original dam in 1860 powered the grist mill. The improved dam of 1935 remains in place under the bridge

entering the campus from County Road 159. The standing trees that died when the valley flooded were harvested for fuelwood when the lake was frozen over. The resulting underwater stumps became the impetus for the lake's name. The german word for stumps is "Stumpfen." The Abbey (quite accurately) estimated the height of the lake to be created by the dam and bought or traded with neighbors to assure only Abbey land was flooded.

Gemini Lake:

Gemini Lake was created by damming in 1966. Gemini lakes (big and small) (east and west) were formed from low mash land and some field land when the dam was built. The dirt for this dam and much of the road to the west of the campus came from leveling off the lands that became the intramural, football practice, soccer and baseball fields. This work was done by Blattner construction from Avon. The dam is formed all out of earth with a 25" gas main laid on the bottom in the old creek bed extending out 100' from each side of a center control manhole. There is also a 30" over flow pipe just under the top road way going across the dam. (See more below

The wetland south of I-94 was created by damming in 1988. The dam is located near I-94 and the water level is often manipulated in late summer to provide mudflats for migrating shorebirds.

Soil maps for the St. John's property indicate about 98 seasonal ponds, which come and go depending on rainfall, water table and time of year.

The North Fork of the Watab now has several dams as noted above. Much of it, below Stumpf Lake and the north boundary has evidently been straightened for better drainage in the days when fields were used for agriculture. That part along the north boundary flows in the original channel.

The campus water supply is taken from two wells. A well-head protection area has not been established, but the forest does provide natural protection, filtering, and replenishment of the ground water. More info on the wells can be found at the MN Department of Health website: http://mdh-agua.health.state.mn.us/swa/pdwgetswa.cfm?pwsid=1730009&office=0

The campus has a waste water treatment plant (WWTP) and the outflow from it goes into East Gemini Lake. The campus has continually upgraded the process treating the waste water. The impoundment of the N. fork of the Watab River forming the Gemini Lakes was completed in 1966 with the building of the intermural/baseball/football practice field. The hill of sandy clay that provided for the dam also provided for the Watab road which moved Co. RD 159 from the center of the campus to the back edge along the Watab Lake. The Gemini lakes were deemed to be a polishing pond for the WWTP which was completed for the Fall of 1964 as an activated sludge, contact stabilization plant with a secondary tank and a digester that was also activated sludge system. The process started with a grit chamber followed by a comminuter and or a bypass bar screen. The settling tank took off the clear water through overflow weirs and the settled sludge was pumped back to the activated sludge tank with its flow returning to the contact tank and mixing with the new influent flow. The clear water was injected with chlorine before running to the outfall and out into the impoundment called Gemini. Before this plant there was no treatment as the campus out fall (combination of sanitary and storm) was dumped in just behind the weir of the Watab dam (originally built in 1860 for a grist mill with a small water powered generator added later) (it was rebuilt in 1935 when the cart path over the dam was replaced with what is now our main entry road) to be mixed and diluted with the outfall water. This outfall was active from the completion of the first main sewer line in 1904. Before this it is unknown what happened but in the early days the small community was served by outhouses.

Before the impoundment the shallower areas of the west side were corn fields with some hay ground but most of the low lying area of the N. Fork of the Watab River including the creek bed

from the west, was cow pasture for cows until the early 50's when the herd was phased out. For the ten years before flooding, the farmable area was put into row crops.

The early days of operating the WWTP consisted of seeing that everything was working properly and cleaning of the grit chamber along with unplugging the comminuter and clearing the bar screen. We were a scheduled campus community in those days with a heavy flow right after wake up and again in the evening, when high flow was extended as the monks preceded the students to bed. Any time it rained more than a quarter inch the grit chamber would overflow and the contact tank wash out with a substantial flow of solids over the weirs. This was the situation that I inherited when I became the operator in 1971 after obtaining by class B license.

The first problem was to address the storm water separation. That process started with a new line from north of Thomas hall in 1975 that ended in the center courtyard of the Quadrangle going between Benet and the Auditorium. This new line took storm water from a section of the campus area. The area was not really expanded until the big utility reconstruction of the campus in the late 80's. In 1978 through the work of an R and D engineering firm, the surface Yeoman aerator in the contact tank was augmented with a compressed air diffuser aeration system. The piping arms for the diffusers did not stand up to the forceful mix of the surface aerator and did not last long. In 1980 the surface aerator was replaced with a jet aeration system with a double piped nozzled system on the west wall of the contact tank. The recirculated sludge was pumped through an inner pipe and ejected through nozzles that was surrounded by another nozzle of compressed air from blowers. This improved the O2 level of the activated sludge tank. At the same time an 80,000 gal. equalization tank was installed (the best improvement ever) that allowed for the steady feeding of the contact tank and an even flow through the settling tank. The comminuter was replaced with a hydroscreen allowing for the removal of much on the un-dissolved solids. This was after the inflow fell into the equalization tank and pumped up to screen by a submersible lift station type pump at a high flow rate, the outfall of the screen went into a weir box that controlled the flow to the plant with the excess returned to the e-tank. The material from the screen fall off into a cart which was daily bagged and put into the garbage bin which was picked up and taken to a landfill.

The steady flow feeding the plant over most of the day and the increased O2 level in the contact tank really improved the outfall weir quality so that rapid sand filters were added and ozone disinfection was introduced. When this was running well, there was drinking water quality water being discharged from the plant. But this was not always true.

As a "student" city for the most part, we have periods of extreme flows (home football, basketball, big concerts and other events which bring a big crowd to the campus) when a plant twice the size could not do the job. On the other side of the coin we have such a minimal flow when the plant is so over-sized that we lose much of our biomass population for lack of food only to be at full flow again in a matter of short time (long weekends, semester break (when the flow goes so low at the coldest time of the year that ice problems happen), spring break and summer (when we are convention city with full house for 3-5 days than hardly nothing again). The only stable population is the monastic community, which provides enough flow prevent freeze over. When big events happen, even with the e-tank, the lack of biomass, and in the winter temperatures providing a big cooling of the process, provides a time lag in getting a system back into operation again. With flows from a resident population that runs from a little over 100 to a high of 2400 and a day time school population of 3600 or more, providing for good WWTP effluent is a troubling job.

The additions of the 1990s I will let others provide. While I do know what went in, I am not the hands on person so cannot comment on how the system is not functioning.

The following is from Mike Ross. The rest of the story on the SJU WWTP: As the previous email indicated, they started chlorinating in 1964. In 1978 they switched to an ozonator system which was replaced with the UV-Lamps in Sept of 1995. Since that time, they have done a couple of modifications to remove phosphate. In 2003 they started a biological removal process and in 2004 they added liquid alum to the phosphate process.

Vegetation

Over half of St. John's land is dominated by forest. The rest is divided between prairie grassland, upland grasses, marsh, water and institutional grounds (inner campus).

An acreage summary is as follows:

Vegetation type	Acres
Forestland (Bundy 1997 plus additions)	
Oak	699
Upland hardwood	447
Lowland hardwood	143
Conifers	146
Aspen	49
Total forest	1484
Non forest	
Upland grass/shrub	204
Restored prairie	56
Restored oak savannah	11
Marsh	200
Shrub marsh	15
Water	169*
Inner campus***	287
Roads-hard surfaced**	19
Total non-forest	962
Total all	2,445

* Includes that part of Stumpf Lake within St. John's ownership, but none of Lake Sagatagan, 1996 level.
** Does not include roads in the inner campus
*** Includes athletic fields, cemetery, work center, houses.

The forestlands were inventoried by Consulting Forester, Peter Bundy, in 1997. Sawtimber volume for red oak was 53 percent, white oak 13, maple 12, basswood 6, ash 4, aspen 7 and other species 4 percent of the volume. Red oak had declined significantly in volume from the

1987 inventory. In the 10-year period it apparently declined from 5890 thousand board feet to 5020. White oak and basswood stayed about the same while aspen and birch had declined significantly. Ash was found to have increased in volume. He concluded:

> "Most of the Abbey oak forest is mature. While active forest management has mitigated some of the effects of recent declines due to wind and drought, management of the forest faces some great challenges brought about by the biological maturity of the red oak resource. A significant portion of the forest is already in the early stages of transition from oak to northern hardwoods. Management decisions may retard or accelerate this situation. Sugar maple will play an increasingly important role in the future forest makeup. It is present in all age classes and dominates seedling and sapling regeneration of both the oak and upland hardwood cover types.
>
> Finally, the white oak and white pine resources of the Abbey are of note. Both are long-lived species. Both have adapted well to the soil conditions of the forest. Both are superlative timber species. And both are uncommon in mature condition in Minnesota today."

Prairie vegetation was restored in 1991 on fifty six acres of abandoned fields, under the direction of Father Paul, east of the entry road. Big bluestem dominates, but over 100 species of wildflowers and grasses were introduced.

Periodic burning on 11 acres northeast of Lake Gemini to favor native flora and fauna has restored bur oak savannah. Large, wide-spreading, open grown bur oaks now have a native grass and herbaceous ground cover. Additional acres are being restored on an adjoining area to the south.

Father Paul (Schwietz 1985) has documented planting of conifers, beginning in 1884. Planting of pine, spruce and tamarack has been done. Refer to the listing under Reforestation and Other Silvicultural Work Done.

There is a significant acreage of wetlands throughout the property. These are found on the south and west shores of Lake Sagatagan and scattered through the forest and other lands. They consist of cattail marsh, grassy marshland and shrub wetland with willow and alder. Forested wetlands usually have black ash. Tamarack is found around Lake Hillary. A sixty-acre wetland east of the entrance road and south of Interstate 94 was restored in 1988 under the direction of Father Paul.

A study of vegetation was done by Cofell in 1977. She recalled reading where Father Riss mentioning scorched timber in section 6 when examined by him in 1856 and theorized that lands east of the lakes and swamps were somewhat protected from wildfire, sweeping in from the west, by these water areas. She found that there were differences in tree cover between northeast and southwest slopes. Trees more commonly found on the cooler, moister northeast slopes were birch, red oak, red maple, basswood trembling aspen and green ash. Trees more common on drier southwest slopes were bur oak, black cherry, ironwood, bigtooth aspen, and American elm

The most common understory shrubs and small trees were ironwood, Prunus sp.(wild cherries), Ribes sp.(wild currents and gooseberries), Rubus sp.(raspberry), Amelanchier sp (juneberry), prickly ash, Symphoricarpus sp. (snowberry), sumac, dogwood, and leatherwood. To this should be added American hazel.

The most common herbaceous species were Carex sp. (sedges), ferns, violets, nightshade, big-leaved aster, hog peanut, sarsaparilla, and goldenrod. For a more complete listing, identified to species, see Appendix B. Also refer to descriptions by cover type under silviculture and management.

Timber Volumes

A 1997 Timber Inventory by Forester, Peter Bundy, summarized timber volumes and compared them with previous inventories. The following is adapted from his Table II:

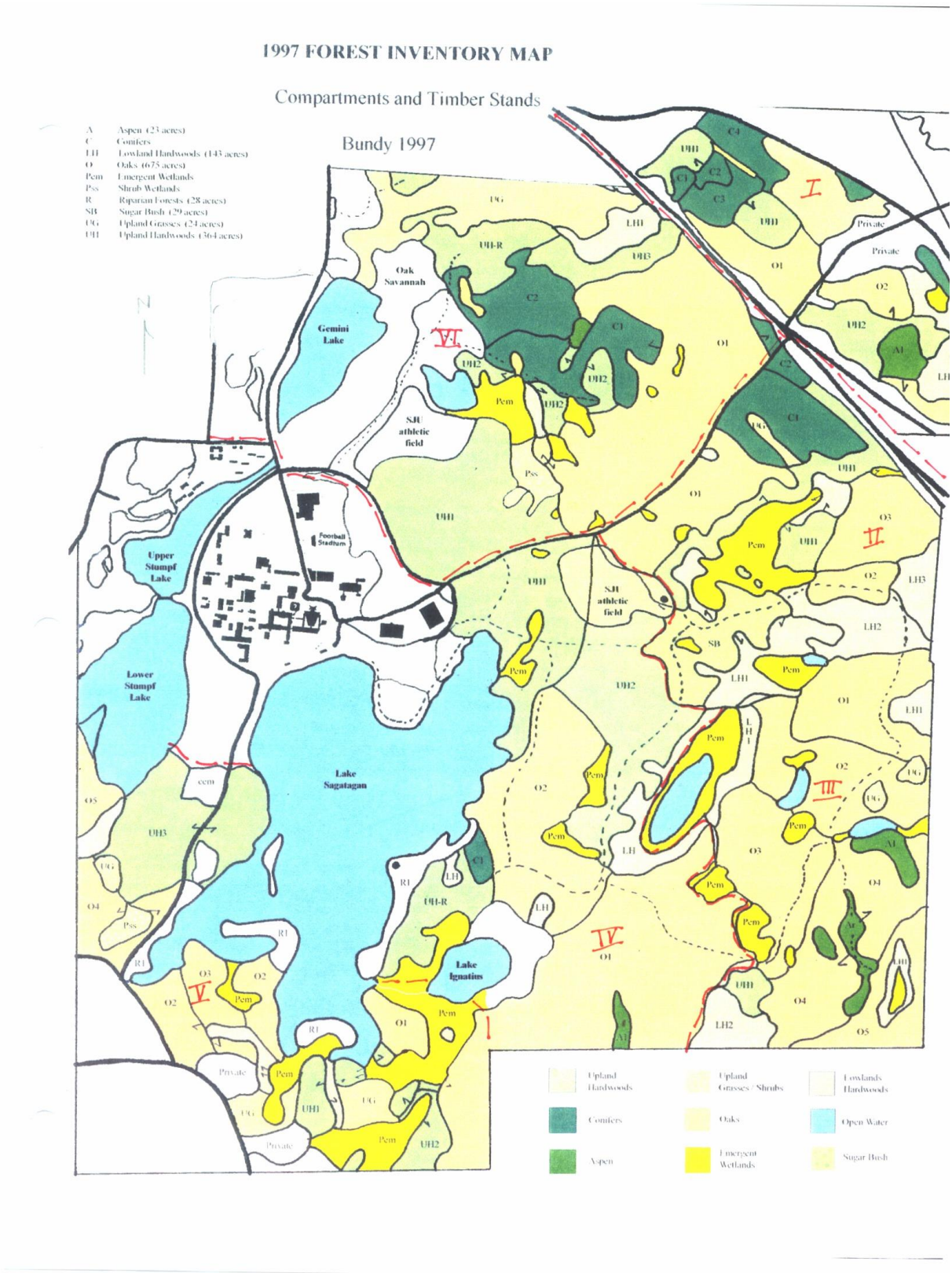
	Inventory Year		
Species	1949	1987	1997
	--thousand board feet---		
Red oak	1540	5890	5020
White oak	550	1230	1225
Maple	230	900	1145
Basswood	375	515	550
Ash	260	255	405
Aspen*		825	700
Birch		115	5
Mixed hardwoods	570	370	410
Totals	3,525	10,100	9,460

- converted from cords at 2 cords per MBF

While these inventories were conducted by different foresters, they no doubt indicate very real trends. The most significant is the decrease in red oak volume and increasing maple volume. Much of the birch has died recently. It is overmature, declining in vigor and probably was finally killed by the 1988 drought and subsequent insect attack.

A map showing the area inventoried, timber stands and other areas is found on the following page. This map also shows 6 compartments used for management and record keeping.

Map showing 6 compartments used for management and record keeping.



Wildlife

The Abbey property, a significantly large property in central Minnesota, has most of the native animal species found in central Minnesota. The area is known as a wintering area for deer. Wild trapped turkeys were released in the St. John's area and other central Minnesota areas in 1992 by the DNR Section of Wildlife (Fred Bengston letter 6/20/00). They are now well established in St. John's woods. Black bear have been known to rarely wander into the area, including one on campus in 2013. Coyotes have long been present, and bobcats possibly. (Vogel pers. com.). Otters are regular users of the wetlands along with other members of the weasel family. Fishers have been captured on camera.

"St. John's officially became a state statutory game refuge on August 10, 1933"(Schwietz 1983). The Collegeville Game Refuge mostly followed the Abbey property lines, but also was "squared off" and included some smaller parts of neighbors land as well.

The meandered part of Lake Sagatagan is public but St. John's owns the entire shoreline. Since there is no public access, St. John's can control entry but permits restricted public use. The DNR has given St. John's permission to not allow any motorized boats or motors of any kind on the lake (Schwietz 1983).

With its great variety of habitats, St. John's has many species of birds. From May 1999 to April 2000, 115 species were observed. This included 9 species of ducks and other swimming birds, including the Common loon. Three species of gulls and terns were seen including the Common tern. Sixteen species of wading birds and shorebirds were spotted including the Sandhill crane that is increasing in central Minnesota. A pair is believed to have nested in Watab Meadows in 1999. There were 9 species of birds of prey spotted including turkey vulture, bald eagle, osprey and red-shouldered hawk. A Bald eagle nest was built in 2007 near the chapel. Fifteen species of non-passerine birds were seen and 61 species of passerine birds. This included cerulean warbler and bobolink, which are no longer common in Minnesota. Refer to Birds of the Saint John's Arboretum 2000 in Appendix C.

Rare, Endangered, Threatened and Special Concern Species

St. John's was visited as part of the Stearns County Biological Survey inventory of 1997. Michael Lee described the value of St. John's woods as follows "St. John's woods represents the largest tract of undeveloped forest in the county and likely in a several county area. Flying over eastern Stearns County this past July, it stands out as the largest remaining 'island' of forest amongst a sea of agricultural and development." He goes on to say no rare plants were found. He regards this as an important tract, along with some nearby wooded areas, because it is large, relatively unfragmented, and contains good populations of red-shouldered hawks and cerulean warblers--more cerulean warblers than any other part of Stearns County. "St. John's may remain as one of the few relatively protected areas for these birds."

The Minnesota Natural Heritage Database for the St. John's area lists the following:

- Threatened: Ram's-head lady's-slipper (found in the herbarium collected at St. John's, but no known locations on the land.)
- Special concern: Red-shouldered hawk, Cerulean warbler, and American ginseng.
- Non-native, RTE species: Bullfrog and Humped bladderwort.

Cerulean warblers are found in mature areas of hardwood forest. Red shouldered hawks inhabit mature forest in lowlands and forest bordering lowlands. In Minnesota the bullfrog is naturally found only along the Mississippi in the extreme southeastern part of the state (Coffin 1988) but is found at St. John's. How, when and why was it introduced? It was only reported in Lake Sagatagan in 1997, but was in Stumpf Lake and neighboring Achmann Lake by 2010. The humped bladderwort is reported from north central and northeastern Minnesota. "This is a

delicate, aquatic plant, usually found floating in shallow water or creeping on wet sand or mud" (Coffin 1988). It is evidently unusual for this part of Minnesota.

Also of significance in the 1997 survey were the following types of Native Plant Communities found at Saint John's. Native Plant Communities are groups of plants that interact with each other and with the environment in ways that are not greatly altered by modern human activities. Specific definitions and maps can be found at http://files.dnr.state.mn.us/eco/mcbs/maps/stearns.pdf and www.dnr.state.mn.us/eco/nhnrp/nhis.html .

- Oak forest – mesic subtype covers much of Saint John's.
- Maple-basswood forest
- Mixed hardwood swamp
- Wet meadows
- Mixed emergent marsh
- Cattail marsh
- Tamarack swamp - minerotrophic subtype in the SE corner.

Protocol for identifying, documenting, and managing Rare, Threatened, and Endangered Species.
Identification:
Saint John's will be licensed to hold a copy of the MN DNR Natural Heritage Database. This inventory was done in 1997 and 1998 and is the best available basis for locating RTE species. Saint John's will also use inventories and field notes of professors and monastic members who have identified RTE species.

Documentation:
Discovery of new occurrences which are relevant to the MN DNR Natural Heritage database will be submitted to DNR. All RTE occurrences will be recorded in the management plan. As Saint John's technological skills develop, map layers of occurrences will be added to the GIS system.

Management:
Saint John's will confer with the MN DNR Natural Heritage Database before initiating any projects which will disturb a site. Saint John's will seek advice from published research and knowledgeable persons regarding the management of sites containing RTEs. Management must give serious consideration to the welfare of these uncommon, native species.

Archaeological and Cultural Resources

The office of the State Archeologist has been consulted in regard to any known archeological or historical features on this property. They have none of record. However, their records are not an exhaustive inventory so historical features could still occur on this property.

Where is the location of the first monastic two story frame building on this property? Where was the "old farm?" One reference states that it was a short distance northwest of the present Collegeville Station on a knoll. The location isn't obvious.

Identification and Protection of Cultural and Historical Sites

Methods to assure that cultural and historical sites have been identified include the following: Check with public records such as MN Historical Society, County Historical Society, and MN DNR to locate any known cultural sites; Use local knowledge such as the historical book,

Worship and Work by Colman Barry, OSB; Interview monks and check the archives to locate historical references; Protect known sites from degradation.

Actions taken to date include the following. In 2005, Pat Emerson of the MN Historical Society with access to both state and tribal records did a review of the entire property. No specific sites were located. (See historical section above.) The original site for the monastery (used only one year before moving to current location) has been generally identified near Collegeville Station, but no specific site has ever been found.

The Stella Maris Chapel is a historical site. The original pioneer road is still visible in the woods and maintained as a trail. Bits of remnant barb wire fence exist throughout the woods. All of the existing campus and the adjacent cemetery are listed on the National Historical Register.

Landscape Level Perspective

This land lies in the Hardwood Hills Subsection as defined by the MN DNR Ecological Classification System. Following is a description of the Hardwood Hills Subsection provided by the DNR:

DISCUSSION

This region forms the transition area between the prairie grasslands and the forests to the east. The area is covered with numerous lakes and wetlands that provided a historic barrier to fire. Trees were intermixed with oak barrens and prairie as fire often changed the vegetation near the western boundary. Today, much of the area is used for agriculture.

CLIMATE

Total annual precipitation is about 25 inches with 11 inches falling during the growing season. The growing season ranges from 122 days in the north to 140 days in the south.

LANDFORMS

Hills (glacial moraines) are common along with plains formed by glacial outwash. Kettle lakes are numerous, both on moraine and outwash deposits. Soil textures range from loamy sands and sandy loams on outwash plains to loams and clay loams on moraines. Loamy soils are prevalent.

HYDROLOGY

The Alexandria Moraine forms a high ridge which is the headwaters region of many rivers and streams flowing east and west. The drainage network is young and undeveloped throughout this subsection. Major rivers include the Chippewa, the Long Prairie, the Sauk, and the Wing Rivers. The continental divide splits this subsection. North of the divide, water eventually flows into the Hudson Bay. South of the divide, water flows into the Mississippi River system. There are over 400 lakes that are greater than 160 acres in size.

PRESETTLEMENT VEGETATION

Irregular topography and presence of numerous lakes and wetlands provided a partial barrier to fire, resulting in woodland or forest rather than prairie vegetation. Along the prairie boundary to the west is a mosaic of Tallgrass prairie, aspen-oak land, and oak openings or savanna. Mixed forests of oaks, sugar maple, basswood, and other hardwoods were found in fire protected sites farther east. Tallgrass prairie grew on more level terrains within the subsection.

NATURAL DISTURBANCE

Fire was important in oak savanna development. Windthrow was common in the sugar maple-basswood forests. Tornados and other high wind events also created natural disturbances.

PRESENT VEGETATION AND LAND USE

Agriculture is the major land use, but many poorly-drained potholes remain for either recreational or wildlife use. Some upland forests adjacent to lakes or on steeper landscapes also remain. Tourism is important, especially in areas around lakes.

RARE ANIMALS AND PLANTS

Rare animals include the Piping Plover, Burrowing Owl, Bald eagle, Loggerhead Shrike, and the Gray wolf. Rare plants of the area are include the Cut-leaved Anemone, Sterile Sedge, Ram's head Lady's Slipper, Missouri Spurge, Indian Ricegrass, Western Prairie Fringed Orchid, Hair-like Beak-rush, Whorled Nut-rush, and a species of lichen called Buellia nigra.

CONSERVATION CONCERNS

Issues of concern include retaining remnant older stands and assuring no further loss of forest lands. The remaining forest is fragmented by agriculture and would benefit from efforts to increase stand size. The oak component is fading from the landscape and regeneration should be encouraged where possible.

Another concern is loss of wetlands and/or restoration of wetlands. This subsection had thousands of acres of wetlands before settlement that were heavily used by waterfowl. Waterfowl numbers are very low presently, so a major emphasis is to restore their habitat. Other concerns include lakeshore development and water quality issues.

Interaction with Surrounding Properties

Saint John's property lies within a hilly landscape locally known as the "Avon Hills." Comprising about 40,000 acres in parts of 4 townships, these hills share many ecological features with Saint John's. Many of the larger holdings in the Avon Hills are still in families who date back 100+ yeas as well. Few functioning farms remain in the area, but the land retains a "rural feel" still at the turn of the century.

Recognizing the growing demand on all properties in the area to be subdivided for housing, the Order of Saint Benedict is working with all interested parties including neighbors and local citizens and organizations to preserve the rural nature of these hills. One such method is the formation of the Avon Hills Initiative in 2003.

MANAGEMENT OF VEGETATION -- OBJECTIVES, DESCRIPTION, RECOMMENDATIONS

General Objectives:

1. Maintain a healthy, diverse, aesthetically pleasing forest.
2. Recognize the great importance of the land for spiritual inspiration, recreation, and enjoyment.
3. Provide a sustainable harvest of forest products for Abbey use and sale.
4. Provide for reasonable populations of all native flora and fauna with special management for any native rare, endangered, threatened or special concern species.
5. Give special attention to large trees and trees or shrubs of special interest. Protect them and keep a record of them.
6. Develop a system for periodic inventory, description, prescription, harvesting, cultural work and record keeping.
7. Use for experimentation, study and education through CSB/SJU and the Arboretum.

Oak Forest

Description

Acres: 699 (includes 121 in natural areas)
Age: nearly all 100 to 130 years
Tree density: 70 to 140 sq. ft. basal area per acre
Site quality: good for red oak (estimated site index 64 for red oak based on soil survey)
Volumes: 4 to 12 thousand board feet per acre, average 8.3
Timber quality: good

The forest type inventoried as oak is the predominant type covering 49 percent of the forest area inventoried. Northern red oak is the predominant species along with some white oak and a few other species found in upland hardwoods. Nearly all is over 100 years old with growth ring counts to 130 years (Bundy 1997). Fifty-two acres, clearcut about 1925 with much of sprout origin, is now 75 years old. The balance is unclassified. The drought of 1987 to 1989 has resulted in considerable mortality. Weakened trees have been infested with the two lined chestnut borer and associated armellaria root fungi, and many have died (Hayes and Albers 1991). This is continuing in these old trees. Through the years, dead, dying and defective trees have evidently been removed, leaving many trees of high quality. Growth is slow as most are past their period of rapid growth and are now growing very little.

The forest inventory of 1997 (Bundy 1997) and the vegetation inventory of 1949 (Cofell 1949) both document the fact of very few or no oak saplings and poletimber are present to replace the old trees. Remaining basal area (stocking) is too high to permit seedlings to grow into saplings. This is common throughout the eastern United States in oak types. The single tree selection system fails to regenerate oak. Instead shade tolerant sugar maple and ironwood increase in the understory which, in the absence of oak reproduction and fire, will make up much of the next stand along with basswood and red maple. Red oak is the species of choice because of its high quality, value and oak mast production for wildlife. Maple tends to be of inferior timber quality.

Fr. Schwietz, beginning in 1991 in compartment 3, began trying to correct this lack of oak reproduction by use of the shelterwood system. The St. John's woods crew and Father Paul marked trees to cut leaving about 60 square feet of basal area per acre of the best oak as a seed source. This provides enough light to the forest floor for oak seedlings to become established and survive while not providing too much light for competing species. Unburned areas have about 1200 oak seedlings per acre while a planned, controlled burn area has 2500, all less then 12 inches in height (in 1999), possibly originating from the bumper acorn crop of 1997 (Peterson 1999).

Common understory small trees and shrubs include ironwood, Prunus spp., wild gooseberry, blackberry, raspberry, serviceberry, arrow-wood, prickly ash, dogwoods, snowberry, hazelnut and leatherleaf. Common herbaceous plants are sedges, grasses, large-leaved aster, hog peanut, sweet cicely, violets, nightshade, sarsaparilla, goldenrod, bedstraw, bellwort, Solomon's seal, false Solomon's seal, ferns, woodbine, lopseed, wild geranium, wild oats and many others (Cofell 1977). For a more complete listing see Appendix B.

Management options

1. Continue the selection system (removal of individual selected trees throughout a stand using predetermined criteria). This leaves the oak forest ever increasingly at risk to drought, windthrow, and insect attack. Inferior sugar maple, red maple and ironwood would replace dying trees. White oak, basswood and an occasional red oak would persist. With loss in stand quality, value, and great risk to natural catastrophe, including the coming gypsy moth, this alternative would seem untenable.
2. Regenerate red oak stands using the shelterwood system (leaving a predetermined part of the best trees for seed and shelter) and the group selection system (making openings of one half to two acres) in special situations. While difficult, and taking perhaps 5 to 20 years to establish a well-stocked oak stand, this is the most promising method. The use of prescribed fire is part of this method in imitation of the natural way in which these stands were probably established.
3. Clearcut (cut all trees in areas two acres and larger) and plant oak. This is an artificial method involving high establishment cost for site preparation, planting stock, planting and tending. It could result in well stocked, high value but unnatural appearing stands. One hundred year old oak are too old for much sprouting to make the next stand.

Recommendations

1. Continue with the shelterwood system so well started by Father Paul. For good chance of success, this must be done under the direction of a forester knowledgeable of oak silviculture, regeneration problems, research, and actual experience.
2. With even-aged management, use a conservative, extended rotation age for red oak of 100 years. Commit to regeneration at least 578 (oak acres) divided by 100 (oak rotation) or 6 acres per year. Given the age class structure now, and the high risk, more than this should be committed to regeneration. At even 100 acres regenerated per 10 year period it would take 60 years to regenerate the now old 100 to 130 year old oak, carrying many stands well beyond their physiological age limit. Commit at least 10 acres to regeneration per year for the next 60 years, increasing this in the years ahead if risk and mortality become untenable.

Use group selection for areas needing modification for aesthetics or where stand structure makes this desirable.

3. Maintain oak forest in oak with an oak management type for timber and wildlife.

Upland Hardwood Forest (Mixed hardwoods)

Description

Acres: 418 (includes 90 in natural areas)
Age: unclassed
Tree density: 70 to 120 sq. ft. basal area per acre
Site quality: good for red oak (site index red oak E64, sugar maple E60 soil survey)
Volume: 0 to 10 thousand board feet per acre, average 4
Timber quality: fair to good

Timber stands with a greater mixture of species than the oak type were inventoried as upland or mixed hardwoods. In addition to the red oak, white oak and basswood, this type includes more sugar maple, along with some white ash, red maple, aspen, bur oak, boxelder, yellow birch, paper birch and black cherry. This type has significant sugar maple in understory along with ironwood. Oak reproduction of all sizes is missing in understory.

Shrubs and herbaceous vegetation includes much the same species as the oak type (Bundy 1997 and Cofell 1949). Depending on stand condition, the most desirable species or management type may be red oak-basswood, aspen, or sugar maple.

Management options

1. For regeneration use selection or group selection for sugar maple, shelterwood or group selection for red oak, or clearcutting for aspen.
2. Intermediate cuttings or timber stand improvement is an option for immature stands.

Recommendations

1. Use a conservative rotation of 100 years for red oak-sugar maple-basswood. Prescribe and commit to regeneration 328 acres divided by 100 years or 3 acres per year, 30 in a ten-year period. Aspen should be cut from stands if aspen is mature, 40 to 60 years old. Clearcut if aspen, especially bigtooth, is the preferred species. A forester should determine management species.
2. If any immature stands are encountered, consider improvement cuttings, thinnings, or possibly crop tree release.

Sugarbush

Description

Acres: 29
Age: uneven, up to 130
Tree density: basal area 80 to 120 (Bundy 1997)
Site quality: good (E60 for sugar maple soil survey)
Volume: 6.4 thousand board feet per acre
Timber quality: good

This sugar maple stand has been operated for maple syrup since 1942. Historically, sap was collected every other year from about 1500 taps. However since about 2002, the stand has been tapped every year with about 1,000 taps and used for many educational events. In a good year 6,000 gallons of sap are collected by hand yielding 150 gallons of syrup. Many stumps in the stand attest to cutting of trees, favoring sugar maple. Most of the stand is now sugar maple, mostly 12 to 16 inches in diameter, but with a few trees up to 30 inches or larger. The understory is quite open. Small trees are sugar maple and ironwood. Shrubs are scarce but leatherleaf was noted. There are many sugar maple seedlings less than 8 inches tall. Herbs include much sedge. Others include grasses, violets, bloodroot, trillium, fern, bedstraw, starflower, columbine, and false Solomon's seal.

The site is rather hilly with soil developed on a bouldary glacial till. Access from the main road is by tractor trails. A sugar building and woodshed are just to the west.

Management objective is to manage this stand for the efficient production of maple sap.

Management options

1. Manage for optimum sap production.
2. Manage for a combination of sap and timber.
3. Use all-aged selection, even-aged shelterwood or group selection in planning for regeneration of part of the stand to maintain a sustainable sugarbush.

Recommendation

Manage the stand for improved sap production for maple syrup. Plan for the gradual reduction of basal area and for the development of large-crowned trees. With the stand as large as it is, continue rotating the tapped trees to different areas within the stand each year. Recommended basal area for best sap production is only 55 to 60 sq. ft. of basal area per acre (Lancaster 1974). Select for sugar maple trees to leave that produce sap with the highest sugar content. Abundant sugar maple seedlings and some saplings are present needing only sufficient sunlight to develop. Group selection could work well.

Lowland Hardwoods

Description

Acres: 143 (includes 6 acres in natural areas)
Age: unclassed
Tree density: basal area 40 to 100 square feet per acre
Site quality: unknown
Volumes: 1 to 7 thousand board feet per acre, average 3.4
Timber quality: fair to good

This timber type occurs on low areas with a seasonally high water table. The most important species is black ash. Associated with it are American elm, red maple, green ash, basswood and white oak. Trees often suffer dieback of the crown, probably due to rising water table levels. Also two defoliators, the forest tent caterpillar and cankerworm, may be problems. Diseases include ash yellows and cytospora canker.

Shrubs to be expected are alder, willows and dogwoods. Herbs include sedges, ferns, grasses and typically nightshade and marsh marigold.

Management options

1. Manage for high value sawtimber or do nothing if site is too poor.
2. Thin overstocked, immature stands to favor black ash.
3. Regenerate by clearcutting if adequate seedlings are present or by shelterwood to establish seedlings.

Recommendation

Where the site is good manage by even-aged management for high value sawtimber. Rotation about 80 years. Regenerate one stand during the plan 10-year period, not to exceed 20 acres. Cutting should be done in winter to avoid rutting and to get vigorous sprouts from ash if needed. Dense stands should be thinned to favor ash.

Aspen Forest

Description

Acres: 49
Age: unclassed, 1 stand with 2 age classes of 55 and 80
Tree density: 60 to 150 sq. ft. basal area per acre
Site quality: good (site index E75 from soil survey)
Volume: 6 to 46 cords per acre, ave. 24 (for merchantable stands)
Timber quality: good for bigtooth aspen, in doubt for quaking aspen in Watab Meadows

Aspen occurs in nearly pure stands and also in a mixture with oak, birch and other species. Bigtooth aspen is of good quality on the better sites. As aspen stands allow considerable light to the ground, the understory is often a rich mixture of shrub and herbaceous species. Quaking aspen in Watab Meadows is young saplings, some bordering on poletimber, has much birch in mixture, and often has a shrub understory.

Management options

1. At maturity of 40 to 60 years, clearcut for sprout regeneration where aspen is the management type.
2. When aspen is about 40 years old, cut from stand and leave oak and other desirable species for further growth.
3. Bigtooth aspen of high quality can be thinned if management is for sawbolts.

Recommendation

Maintain some forest in aspen, especially bigtooth on the better sites. Remove aspen from stands where other species are to be favored as the management type as determined by a forester. Manage aspen on a 40 to 60 year rotation. Young bigtooth aspen stands should be thinned if of good quality and the stand is managed for sawbolts. Regenerate one stand of about 6 acres this 10-year period. Aspen in Watab Meadows needs to grow to merchantable size.

Conifer Forest

Description

Acres: 146 (28 acres not included in Schwietz 1985)
Age: stands 4 to 90 years in 1997 (Schwietz 1985)
Tree density: variable
Site quality: good (site index red pine 60-77, white pine 60-85, white spruce 55-80, Schwietz 1985)
Volumes: see Schwietz 1985
Timber quality: average to good, especially good for white pine.

Fr. Paul Schwietz inventoried all conifer plantations on the St. John's property in 1985. This included 22 plantations established following the 1894 tornado to 1980. These plantations varied in size from less than one acre to 27 acres. Early plantings were Scots (Scotch) pine and Norway spruce. Later plantings include white pine, red (Norway) pine, white spruce, red cedar, black spruce and jack pine. Some tamarack have also been recently planted in Compartment I stand 17, and white pine Compt. IV stand 11.

Management options

1. Manage as directed by Fr. Paul Schwietz's management plan of 1985.
2. Update plan as stands are encountered during compartment prescription work.

Recommendation

Manage as directed by Fr. Paul's 1985 plan that prescribed thinnings, pruning, release, sludge fertilization and gopher control. Review prescribed work and complete any not yet done. Thin periodically to reduce stocking of overly dense stands, including those along interstate 95. Recognize the value of dense, young, conifer stands for winter deer cover. Future plantings for timber should be in manageable stands (blocks) of 10 or more acres.

Forest Wetlands

The 1997 inventory classified 143 acres in the forested area as wetland (Bundy 1997). This does not include the wetland restoration area or wetlands in Watab Meadows. Emergent wetlands were 137 acres and shrub wetlands 6. Also this does not include wetlands classified as forest--lowland hardwood (primarily black ash). Additional inventory added more acres (see Compartment Acreage Summary Appendix I). Common wetland plants are cattail, sedges and marsh grasses. The Phragmites found around Lake Hillary were identified as native by Paul Melchior and Steve Saupe. They also identified a nice stand of wild rice in Lake Hillary. Shrubs include alder, willow and dogwoods. In addition soil survey indicated about 98 seasonal ponds in forested areas.

These areas are important features for natural beauty and their unique plants and animals. They are the breeding grounds for frogs and salamanders. Some birds, such as yellow throat, yellow warbler, swamp sparrow and alder flycatcher, prefer shrub marshes.

Wetland areas should be protected and left in their natural condition. Logging should stay out of non-forest wetlands. Keep slash (treetops and branches) out of non-forest wetlands. It is often best to leave some timber around these areas for this purpose. The consensus is that logging

slash should be kept out but natural windfalls are desirable. Log skidding should avoid these areas. If black ash needs to be cut, do so in winter. Refer to Forest Management Guidelines for best management practices (FRC 1999).

Watab Meadows

Description

Acres: 32 Upland grass
1 Oak
26 Aspen/birch/willow
19 Cattail marsh and marsh grass
Total 128

Site index: unknown (soil survey gives no estimates for Darfur soil)

The land north of Collegeville Road has been called "Watab Meadows." It is the location of the "Old Farm," the cropland and pasture first located by Fr. Riss in 1856. The location of the first monastic buildings in "Indianbush" in the area is not obvious.

This area is now a mix of low, flat grassland, dense young aspen, scattered aspen and birch with willow and grass, marsh grass and cattail marsh. The North Fork of the Watab flows around this area. It was straightened and ditched on the west boundary for agriculture years ago. The Watab flows in a natural channel on the north and east sides of the property. Aspen and willow are aggressively invading the upland grassland in the absence of mowing for hay.

Management Options

1. Continue to mow for hay in upland grass (local farmers?)
2. Develop and manage for timber allowing aspen invasion, plant white pine and spruce.
3. Sell and acquire land on south border of St. John's property.

Recommendation

Depending on agreements with farmers harvesting hay, consider management for timber and wildlife. Do not harvest hay before July 15 to allow any birds to complete nesting. Allow aspen acreage to expand and plant white pine and white spruce. Habitat would improve for ruffed grouse and deer. Encourage wildlife food plants by release and possibly planting.

General Objectives for Oak Savannah, Native Prairie and Wetlands Restoration Projects

1. Continue these areas as a major focus for environmental education and land management.
2. Continue ongoing maintenance of restored prairie, continued flora and fauna inventories, and completion of projects begun recently (Anon 2000).

Bur Oak Savannah

Description

Acres: 11 plus 22 acres east of Lake Gemini in the process of restoration
Age: 100+ for bur oak
Tree density: low (BA 40 in restored) to moderate (30 to 130 in unrestored
Tree quality: moderate for timber

The north 11 acres is wide spreading old bur oak that have been restored to oak savannah by prescribed burning beginning in 1987. The bur oaks are widely spaced, mostly 16 to 28 inches in diameter and about 50 to 60 feet tall. Some oaks are larger and have their own particular wide spreading majesty. The understory is very open with few shrubs, much grass, sedge, black-eyed Susan and other native dry prairie species. The stand is located on a small hill on droughty soil.

The south part, in the process of restoration, is a mixture of bur oak, aspen, red oak, and birch, with some basswood, sugar maple and ash. The area is very hilly with xeric species on tops of hills. Understory is grasses, sedges, prickly ash, goldenrod, honeysuckle and others. Some of the drier areas have been prescribed burned.

Management options

1. Continue to maintain savannah conditions by periodic burning following the management plan.
2. Let revert to a stand with understory shrubs and increasing oak understory.

Recommendation

Continue spring burning and mowing to maintain and restore savannah. Formerly, in this Minnesota prairie border country, on sandy soils the type was common. Now full development of this vegetation type is rare. Refer to the Oak Savanna Restoration Plan and Controlled Burning Plan, Appendix H, for a more detailed plan and scheduling of spring, summer and fall burning.

Restored Prairie

Description

Acres: 56

In 1990 work was begun to restore fifty acres of abandoned fields to native prairie. Over one hundred species of wildflowers and grasses were reintroduced. Work was done prior to planting to restore something of the rolling landscape believed to be have existed prior to cultivation. The area is now dominated by big bluestem but many other species of grasses and wildflowers can be found.

Management options

1. Continue a prescribed burning regime to maintain native prairie.
2. Let nature take its course without burning or other management work.

Recommendation

Continue a planned regimen of prescribed burning to maintain and enhance native prairie. Native prairie is rather rare and therefore valuable for educational reasons.

Restored Wetlands

Description

Acres: Total 94
Wimmer Pond 11
Wetlands water 20 (10/96 aerial photo)
Lowland grass, cattail marsh and lowland shrubs 54
Lowland hardwoods 9

This restored wetland has water, cattail marsh, lowland shrubs, some lowland hardwoods, (mostly black ash), and lowland grass. This varied habitat had 28 species of wetland birds identified in 1999 (Anon. 2000). This highly interesting area is great for wetland restoration education, bird watching and study. The wetland pond has shallow water that varies in depth and area depending on rainfall, although water level can be regulated by control of the outlet.

Recommendation

Continue to manage and improve as a natural wetland. Monitor bird-life and vegetation changes. If a detailed plan has not been made, develop one directed toward need to control water level, improve nesting and feeding habitat for geese, ducks and other species. Consider need for burning, possible removal of red pine, and other habitat management needs. Assess the importance of high phosphate and nitrogen levels from the sewage treatment plant. Build the planned boardwalk to give easy access to wetland areas for viewing birds, other wildlife and vegetation.

Natural Areas

Two natural areas are established. One is northeast of the inner campus and adjacent to it, the other is remote from the campus, south of Lake Sagatagan. The adjacent area encompasses 149 acres. It has a variety of vegetation including mixed hardwood forest, oak forest, and some lowland hardwood forest, and shrub wetlands. Sugar maple is prominent in the mixed forest while red oak dominates the oak forest. This area has been little disturbed for many years. It has a good representation of St. John's species including trees, shrubs and herbaceous plants. It is readily accessible to the campus for study and hiking.

The second natural area is in the area south of Lake Sagatagan. It too includes a variety of vegetation types. Its 143 acres include low marsh areas that are under water at times when Lake Sagatagan is high. Upland types include mixed upland and oak forest. There is a significant area of wetlands, lowland hardwoods and upland grass. Parts of the area have been heavily grazed in the past, probably before St. John's acquisition. Its variety of habitats, remoteness and difficulty of development for timber management, suggest it for a natural area. It should be good habitat for the red-shouldered hawk.

Management is to let nature take its course in these natural areas. Commercial timber cutting will not be done except for possible salvage of extensive windthrow or insect killed trees. Hazard trees along trails will be cut. Trails for nature observation and study are permitted. These areas will serve to contrast with areas managed with timber production. They will also serve to provide more old forest for birds, squirrel and other wildlife that thrive in mature forest. Birds needing mature forest include cerulean warbler, wild turkey, pileated woodpecker and barred owl. Use for educational purposes, contrasting with more intensively managed areas, is a major objective.

A vegetation and acreage summary for the two areas is as follows:

	Compt V	Compt. VI	Total
		----Acres----	
Red Oak, Oak	60	52	112
White Oak	9		9
Upland hardwoods	22	68	90
Lowland hardwoods	3	3	6
Upland grass	14		14
Lowland shrub		6	6
Marsh	35	14	49
Water (Cichy Pond)	6		6
Totals	143	149	292

Aesthetic Areas and Zones

General objectives

1. Recognize the high importance of natural beauty around St. John's and manage accordingly. Aesthetic values can outweigh timber or other values.
2. Modify management of bordering stands rather than designating strips of designated width.

Lake Sagatagan

Most would agree that Lake Sagatagan should retain its appearance as a pristine lake, surrounded by woods, much as first seen by Fr. Riss and his fellow Benedictines. The lake is a central landscape feature and gives a fine panoramic view when seen from the heights of the monastic area. The north end is in the inner campus and probably no more shoreline will be developed. The south and southwest is in the proposed natural area. On the east, forest management will maintain a continuous, natural, forested aspect.

Lakes Stumpf and Gemini

These lakes are important visually. All lake riparian areas should at least meet Minnesota Forest Management Guidelines (FRC 199) and Visual Quality Best Management Practices for Forest Management in Minnesota 1994.

Highway, Roadsides and Trailsides

The entrance to St. John's from Interstate 94 is admirable. On the horizon one sees the Abbey church bell banner. Plantings of red pine and spruce give winter color and variety. Lakes Gemini, restored prairie, wetlands and savannah add variety and interest.

The Land Manager needs to have a good sense of aesthetic values along these travel routes. The landscapers form, line, color and texture need to be part of the prescriber's thinking along with being sensitive to the type of travel, fast highway, slow roadside or very slow walking. Rather than designate roadside/trailside zones of definite width for modification, we choose to prescribe stand by stand when cutting or cultural work are contemplated. Techniques that can be used to mitigate, or better yet improve beauty are:

1. Extended rotations – grow the trees longer and larger.
2. Leave specimen or character trees – trees of unusual beauty, form, etc.
3. Leave groups of trees – to break up view of areas in regeneration.
4. Feathering – if sharp stand lines are deemed unacceptable, grade one stand into the next.
5. Scalloping – vary the width between the forest edge and roadside to avoid a straight tree line.
6. Slash treatment – drag back, lop and scatter slash to lie close to the ground.
7. Limit the extent of obvious cutting areas along roadsides to less than one-tenth mile in most cases.
8. Do active work to improve appearance such as cutting out unsightly trees and thinning to develop character trees with wide spreading crowns.

Thinning is seldom any problem, right up to the roadside or trailside, if slash (tree tops and branches left on site) is treated. Treatments will be planned by individual stand prescription. Cutting and cultural work can add variety to vegetation, to bird and animal diversity, and be a positive improvement, especially along trailsides. Along I-94 favor retention of sugar and red maple for fall color.

Hard surfaced roads are beyond the scope of this plan except for vegetation management on the roadsides. Many of the lesser roads are used both for vehicle access and as foot trails. Roads are a necessity for timber harvesting and must be carefully located. New forest roads should be located and constructed to standard of the Site-level Forest Management Guidelines (FRC 1999). Use of trails is a major use for recreation, study and solitude. They need to be more accurately mapped, perhaps named, and unobtrusively signed. The present fine trail brochure can be revised to show this. Integrate the woods roads and the trail systems.

Aggressive Exotic Plants and Animals Policy

The Land Manager needs to be aware of invasive, alien plants and animals. Horticultural plantings are appropriate for the inner campus but not for the rest of the property. Invasive plants will be noted and it has been suggested that a committee be formed to decide on appropriate action, tolerate, control or try to exterminate objectionable species. A good reference for plants is the Journal of Forestry for August 2000, Vol. 98 no. 8, insert pages 4 and 5.

European Buckthorn:

European Buckthorn is a found primarily on far west side of the property on Watab Island. Adjacent neighbors also have existing Buckthorn. The plant is abundant within several miles, but is not yet common on the property or on neighbors except for this location.

Saint John's will aggressively act to reduce or even eradicate European Buckthorn from the property and from neighboring properties as allowed. In 2004 a map was made of the Watab island area populations. Volunteer groups have removed many of the plants small enough to be pulled by hand. Permanent employees have cut and used Tordon RTU to treat stumps of all stems too large to pull on the property and on the neighboring Eich property.

Monitoring and eradication efforts will be continued every year.

Fire and Controlled Burning Policy

Fire is natural in the environment. Lightning starts wildfires. Many plants are adapted to fire, particularly native prairie plants. Native Americans before the 1870's greatly increased fire in the environment. They used fire to improve the forage for grazing animals and to flush out enemies. The incidence of fire greatly decreased in the late 1800's as Europeans settled the land. They plowed the prairies, built timber homes, barns and other outbuildings and initiated fire protection for their crops and buildings.

We have learned that burning is needed to maintain natural prairie and bur oak savannah. Burning also has a role in regeneration of oak though it can be very damaging after establishment. Therefore we have to understand the benefits of fire as well as the destruction it can cause. We know that controlled fire when done under the right weather conditions, and at a predetermined time, with competent burners, is a natural and effective tool.

Controlled burning must be done only under the right weather conditions, by experienced people, for specific purposes, in conformity with state burning regulations, and with due regard to safety, traffic, people and buildings. It should be done following a plan approved by the Land Management Committee.

Use of Herbicides and Insecticides

Herbicides vary from innocuous with a short half-life in the environment, affecting little other than the target species, to more toxic to a variety of plants and persistent. Insecticides are more likely to be toxic to animals. The general policy should be to minimize the use of herbicides and particularly insecticides. Favor individual target tree/stem application over broadcast spray. Use a policy of integrated pest management. That is, consider the problem in the broad context of the whole environment. In what ways can the problem be managed effectively without the use of a pesticide? If a pesticide is considered, what are the benefits and the potential environmental losses? After a complete evaluation, if a pesticide is decided upon, the Land Management Committee should approve its use. Use only under direction of qualified applicators and according to label instructions. Follow approved safety practices.

WILDLIFE MANAGMENT

A diversity of habitats is needed for diverse plant and animal species. St. John's has upland and lowland forest, upland grass, lakes, ponds, marsh and shrub wetlands. The forested part is very subject to habitat manipulation for forestry and wildlife management. The greatest number of species is found in regeneration and mature forest condition classes. Regeneration areas are those recently cut and in the seedling/shrub phase. Mature areas are older forest, perhaps 60 or more years old for oak. This habitat diversity is most efficiently and economically managed by forest management. It coordinates with the usual forestry objective of having a proportionate acreage in all age classes; seedlings, saplings, poletimber, immature and mature sawtimber. Integrating wildlife and timber management is done primarily in the compartment prescription process (see plan implementation).

Whitetail Deer

St. John's has always had a good population of whitetail deer; in fact it has had too many deer. They interfere with the timber regeneration process and can be a factor in impoverishing the diversity of herbaceous plants. In recent years, beginning in 1997, the Minnesota DNR has given St. John's authority to manage a fall deer hunt. See appendix for harvest and hunt data.

Early hunts were conducted on two weekends in November of each year. The first weekend was 2 days, the second 3 days each year. About half the permitees hunted each weekend. Hunters with a management permit could kill two deer. Since 2000, the hunt has been on one weekend per year and was skipped in 2003 when it conflicted with home football games.

Hunting has probably reduced the herd to a reasonable population but should be continued. Deer have a voracious appetite for stump sprouts and other preferred browse including tree seedlings. A biologist and forester should propose deer population objectives to the Abbey. It is recommended that future hunts be designed so that there will be closer to one doe per buck.

The area east of Lake Sagatagan, of about 1500 acres, is large enough for some effective deer management. For larger bucks, with impressive antlers, the better, younger bucks should be allowed to grow to the 6 to 8 year age class for good antler development. The diversity of timber age classes will provide areas with abundant, nutritious browse plants. Prescribed burning will add to the nutrient content of resulting browse. St. John's has been regarded as a wintering area for deer. Conifer plantations are heavily used during extreme cold, windy, winter conditions.

Squirrel and Small Mammals

Gray squirrel numbers are in proportion to mast producing oak and mast production. A lower acreage of mature oak will result in some decrease in the squirrel population. However good mast production will begin by the time oak are 40 to 50 feet tall, when mature forest characteristics are developing (Probst 1979). With an extended rotation, two thirds of the oak forest will have mature characteristics. In addition natural areas will have old, mature forest.

Some small mammals are more numerous in younger age classes. All den trees will be retained. Rabbits will increase in young, brushy stands. Bats thrive in a mix of mature and regenerating stands (Harlow 1997).

Wild Turkey

St. John's now has a good turkey population. Turkeys benefit from mast producing oak forest. Timber cuttings and openings will benefit them by providing nesting sites and insect areas for bugging which are necessary for young poults. No turkey hunting has been done on the St. John's property.

Songbirds, Raptors and Others

A diversity of habitat ages, sizes and structures results in a diversity of birdlife. Birds are very sensitive to changes in forest age (tree size) and structure. Bird diversity is greatest in regeneration areas and in mature forest. Lesser species numbers are found in dense sapling and poletimber stands, though some species prefer this habitat. Compartment prescription work should keep birds in mind in prescribing work. Use Birds and Forests by Green (Green 1995). Twenty or more species at St. John's use snags for nesting. An objective should be to have an average of 2, 12 inch diameter or larger snags (dead, dying trees), per acre. Natural game food plants such as wild plums and cherries, serviceberry, blackberry, raspberry, hazelnuts, dogwoods and others are of great benefit to birds and other wildlife. These should be favored, retained and sometimes released from competing vegetation.

The Cerulean warbler, and possibly other mature forest specialists, will have some loss of habitat with increased upland hardwood regeneration work. However, in the long run having a more diverse age class distribution, is insurance against the specter of catastrophic forest devastation by drought, insects, or windstorm that would likewise devastate these species. Having part of the forest in younger age classes is insurance against all of these risks. See Appendix C for listing of bird species commonly found at St. John's.

Snakes and Amphibians

Forested wetlands, marshes and ponds, including seasonal ponds, will be protected and left in natural condition. Any logging will avoid them. A border of trees will be left around them. Avoid heavy timber cutting on all sides. Leave at least part of the border uncut. Stay away from them with any new roads or skid trails to avoid sedimentation. Avoid any chemical contamination. Trees will not be felled into them nor tops left in them. Follow Minnesota Site-level Forest Management Guidelines for Sustaining Minnesota Forest Resources (MFRC 1999) as in all other forest activities. The value of downed logs will be recognized for salamander habitat and for other plants and animals. The value of seasonal ponds for beauty and wildlife habitat, especially for amphibian breeding sites, will be recognized.

Insects including Gypsy Moth

A diversity of native insects is desired. Temporary forest openings and shelterwood areas will benefit numerous insects, including butterflies. Cutting will give more light to the forest floor allowing sun loving native wildflowers to develop and bloom. Log decking areas (log landings) will have any logging debris utilized for firewood or scattered to the surrounding forest. Resulting open spots will be left as forest openings. Consider seeding them to native grasses and favor plants beneficial for wildlife.

A very serious threat to St. John's forests is the gypsy moth. This insect, introduced to Massachusetts from Europe in 1869, has spread from the northeast since the 1950's and has become established in Michigan, Wisconsin and is now invading Minnesota. This defoliator, unlike many other insects, feeds on a great variety of trees. It prefers oaks, aspen, birches, willow and basswood, but will also feed on pines, maples, Prunus sp. and elm. It generally avoids ash and red cedar. Two or more years of successive defoliation can cause death of weakened trees. St. John's forest, with large areas of mature oaks on droughty soils, is very susceptible. In perhaps ten years or less, control with some Bacillus thuringensis product may need to be considered.

Recommendations to avoid Gypsy moth usually include the diversification of the forest types away from preferred species such as oak. Saint John's will do that on many of the stands that are of mixed species, but a major goal for the property is to retain large areas (700 acres) which are predominately oak. To do that successfully, the stands must be kept vigorous and the crown size must be large enough to refoliate well. We will thin the older stands to remove the sparse crowned trees and salvage trees with defects that will likely cause severe value loss or death within 5 years. We will cover the entire property at least every 5 years to complete the salvage/thinning. The land manager will keep current with the literature and monitor the spread of moths into the state and the property. Gypsy moths are expected at Saint John's by 2015 if not sooner.

CLIMATE CHANGE

Climate in Minnesota has been and is changing. Paleo pollen profiles from Minnesota lakes document these shifting climates. Five thousand years ago our climate was warmer and drier with more prairie in central Minnesota than now. Most Minnesota ecologists believe we are now in a period of accelerated warming due to the increases in green house gases (carbon dioxide, methane and others) that burning of fossil fuels puts into the atmosphere. From a "little ice age" 100 years ago Minnesota has warmed about 2 to 5 degrees. Projections are that the global climate will warm 4 to 11 degrees in the next 100 years (Weflen 2001). Temperature increases are fairly certain. Whether we would get less rainfall as most computer models predict, the same or more, is less clear.

Impacts on land management at St. John's would therefore be large, particularly as St. John's is not far into the forest from the prairie to the west. Vegetation patterns, under a warming trend, will shift to the northeast. This would leave more oak savannah and prairie. Species that could tolerate a hotter, drier climate such as bur oak and red cedar would increase. Those that could not such as spruce, tamarack, big tooth aspen, birch and black ash would tend to die out. Some think the area of St. John's forest in 100 years will be changing to bur oak savannah and prairie. Climate changes would affect fauna as well. We might lose neotropical migrant warblers, for instance, that breed in the north woods and replace these with other species.

For now the following need to be considered by the St. John's Land Manager:

1. Be aware of possible warming climate and effects on habitats of plants and animals. Be aware of soil water level changes. Consider climate change as a reason for declines and increases not explained by other factors.

2. Consider lowering of stocking levels from the normal in forest stands for all species to adapt to lower soil moisture levels.
3. Don't waste time, effort and dollars trying to save declining species on their way out due to climate change.

EDUCATION AND LAND MANAGEMENT ETHICS

The American Bishop's pastoral statement, Renewing the Earth, 1991, is a sublimely wonderful statement on Christian attitudes toward use of the earth's resources for the benefit of all people, and with continuing regard to conservation and stewardship, so that God's beautiful, bountiful creation can be passed on to unborn generations undiminished.

There are many quotable statements--here is one:

> "Reverence for the Creator present and active in nature, moreover, may serve as ground for environmental responsibility. For the very plants and animals, mountains and oceans, which in their loveliness and sublimity lift our minds to God by their fragility and perishing likewise cry out, "We have not made ourselves." God brings them into being and sustains them in existence. It is to the Creator of the universe, then, that we are accountable for what we do or fail to do to preserve and care for the earth and all its creatures. For "the Lord's are the earth and its fullness; the world and those who dwell in it" (Ps 24:1). Dwelling in the presence of God, we begin to experience ourselves as part of creation, as stewards within it, not separate from it. As faithful stewards, fullness of life comes from living responsibly within God's creation."

In a "Call to Conversion" we read "as individuals, as institutions, as a people, we need a change of heart to save the planet for our children and generations yet unborn" (U.S. Catholic Conference 1991).

The Benedictines have a long tradition of land management stretching back nearly 1500 years. Apparently little is found in historical documents about their land management policies, their management of livestock, farm fields, vineyards and other activities on the land, including management of forests. However we can believe, like the St. John's Benedictines, they had a great sense of place, reverence for the land, and used it to be self sufficient, a Benedictine tradition.

St. John's Arboretum was dedicated in 1997. Under the direction of Fr. Paul, a Strategic Plan was developed (see Appendix). This included vision and mission statements, directives, goals and objectives. The first goal, and probably the most important, is to use St. John's for education in the many aspects of land and its management. Development of the oak savannah, the wetland restoration, and restored prairie were important projects in this endeavor. Work in timber management, particularly oak regeneration is also a part, but takes much longer for results. For a statement of Arboretum goals see "A Green Banner" Appendix F.

The fields, forests and wetlands surrounding the inner campus give many opportunities for study and research by monks, students and professors. The Arboretum and others organize field trips for students, visitors, biologists, foresters and others. The significant oak forest area is great for learning, study and demonstration of oak forest management. It is possibly the best place for this research in this part of the northwest range of oak. St. John's, with the land selected and

purchased by Fr. Riss and Abbot Wimmer, has used their fields and forests for almost 150 years. They obviously have a magnificent property. They have demonstrated good management. The Abbey is in a unique position to demonstrate good land stewardship as contemplated by the Bishop's pastoral statement.

Refer to the Appendix G for a listing of some educational, research, and study opportunities.

PLAN MAINTENANCE, PLAN IMPLEMENTATION, WORK SCHEDULE, AND RECORD KEEPING

General Protocol and Procedure for Inventory, Mapping, Stand Records, and Planning

(Revised 12-07)

The general procedure is to go from inventory to a long range, strategic plan (10-15 years) to stand-based prescriptions to annual project plans and then to record keeping of completed work.

This strategic Land Management Plan is intended to direct management of St. John's land outside of the inner campus. It is for a 10 to 15-year period with reviews of accomplishment and adjustments at 5-year intervals.

Stand description/prescriptions are more detailed history and proposals of each forest stand and need to be fleshed out as individual stand activities are proposed and accomplished. . It is a formal written report giving description of forest stands and detailing all work needing to be done. This includes specific location of regeneration areas (stands), type of cutting needed, cultural work needed such as thinnings, timber stand improvement, planting, release work etc. It includes location of any needed access roads and landings. It also includes coordination with other resources such as aesthetics, educational opportunities, wildlife needs etc. This provides the opportunity to update work needs, compartment records, determine specific site index, renumber stands as needed etc. This work goes on a work schedule.

The mapping of the individual stands will be updated on the GIS database at least every 3 years and will be tied to the current inventory. By the end of a 10-15 year period, these stand based descriptions and prescriptions will be the basis of the revision of the strategic plan.

The record keeping of individual projects and activities will be kept on paper copies. The stand descriptions/ prescriptions will be updated with general information as activities occur (e.g. planted with 2,000 red oak in 1999 or prescribed burned in 2004), but will reference the project plans for detailed info on that project.

General Protocol and Procedures for Tracking Harvested Forest Products

\Timber sales are used for forest management and to provide wood products for the Abbey, primarily the Abbey Woodshop. To assure that the harvested wood which leaves OSB is accounted for and to assure that OSB can be confident in tracking its certified wood, the following procedures will apply.

All harvested wood will be sold using an invoice which describes the species mix, the products, and the volume sold in addition to the price, date, and buyer. The invoice will also include the appropriate forest certification logos and information.

All products which are sold subject to a scale (e.g. pulp, sawlogs, but not a pile of firewood "sold as appraised") will use a standard load ticket for each individual truckload hauled. The load ticket will use a distinct load number, the date, the trucker, the destination, and the buyer. It will also describe the species mix, the products, and the volume per truckload. Copies of the load ticket will be provided to OSB, the trucker, and the buyer. In many cases, the trucker will be responsible for scaling, completing, and distributing the form.

Logs whose ownership is retained by OSB and which are being hauled from OSB to a mill for sawing into lumber will be branded with an "SJ" branding hammer. Additionally both ends of all such logs will be end-coated with paint which distinguishes them even after they are sawn to lumber.

Lumber owned by OSB at off-site mills will be handled in a manner that allows for easy tracking and retains clear separation of the products and ownership. Lumber will be graded as needed and each pack will be labeled as to species, volume, grade, year, and sawmill. The labeling (e.g. aluminum tags) must allow for tracking the lumber until the wood is used or sold.

Work Schedule states year and time in which prescribed work is to be done, who will do it, how it is to be done etc. (project plans). Stands in process of regeneration should be examined each year, and needed work prescribed, from initiation of work to when the stand is free to grow.

Record keeping is a simple but important system for keeping records of work accomplished, when, what, how and where (map record), and certain other records kept currently as needed for land management.

Work List and Schedule

Job	Year	Who	Date completed
Plans			
Stand prescriptions /Descriptions	Annual	Forester	
Review land management plan accomplishment	2005	Forester	
" " " " "	2010	"	
" " " " "	2015	"	
Work			
Mark timber for cutting	yearly	Forester/woods crew	
Logging marked timber	yearly	Woods crew	
Regeneration cutting			
Thinnings			
Commercial timber sales		Forester	
Timber cultural work as prescribed	yearly	Forester/woods crew	
Prescribed burning			
Oak regeneration as prescribed		Forester/woods crew	
Prairie management as planned		Forester/woods crew	
Bur oak savannah as planned		Forester/woods crew	
Monitor wildlife populations, birds, deer, turkey, squirrel	yearly		
Monitor tree seed crops, oak and conifer species	September		
Land line marking in forested areas		Woods crew	
Road and trail mapping and signing		Forester/woods crew	
Arboretum Information and Education Programs			
Education and education plans	ongoing	I & E person	
Sagatagan Seasons editing, writing, mailing	quarterly	I & E person	
Field trips for various groups	as planned	I & E person	
Coordinate field studies	as needed	I & E person/Forest	

(This listing will be refined regularly by the Land Manager)

RECORDS

Reforestation and Tree Planting Summary

See individual stand and project records for specific information and locations. This data does not include campus plantings.

Calendar Year		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
TOTAL Planted			2,500	5,200	7,100	5,500	7,425	9,420	12,220	1,980	
White pine			500	1200	1000	1500	500	500	500	1500	
Norway pine				500	1000	1000	500	500	500	100	
Jack pine											
Scots pine							100	100			
White spruce				500	1000	500	1000	500	500	80	
Norway spruce							300	100	100	80	
Black spruce								3000	3000	50	
Meiers spruce							5	100	100		
Black Hills Sp										120	
Tamarack				1000			100	500	1000		
White Cedar			2000								
Balsam fir					100		20	100		50	
Frasier fir											
Bur oak								20	20		
N. red oak				2000	4000	3000	4900	3000	5500		
White oak									1000		

OSB SEEDLING NEEDS AND PLANTING PLANS											
Spring 2003			101	119	150	303&319	604&606	611	618	621	115
	Seedling Source	TOTAL Seedlings by species	Tamarack	Jack pine cutover	Avon Lime buffer	Shelter-wood					
Norway pine 2-0 bare root	MN DNR	0									
Norway pine transplants	Lees	500		500							
		0									
White pine bare root	MN DNR	1200		900	300						
White pine transplants	MN DNR	0									
		0									
Jack pine		0									
Balsam fir 2-0 bare root		0									
White spruce 2-0 Bare Root	MN DNR	500			500						
White spruce transplants	MN DNR	0									
White spruce 2-0 Bare Root		0									
		0									
Black spruce		0									
Norway spruce containerized 4A	NCR	0									
		0									
		0									
Tamarack	NCR	1000	500		500						
		0									
		0									
N. Red oak 1-0 bare root	MN DNR	2000				2000					
White oak	MN DNR	0									
		0									
		0									
		0									
		0									
		0									
TOTAL SEEDLINGS		5200	500	1400	1300	2000	0	0	0	0	0
Planting Crew											

OSB SEEDLING NEEDS AND PLANTING PLANS											
Spring 2004			117	119	150	414	604&606	611	618		
	Seedling Source	TOTAL Seedlings by species	Christmas trees	Hillside pine N of I-94	Avon Lime Buffer	Shelter-wood	Board-walk buffer	Philippi Buffer	White pine field		
Norway pine 2-0 bare root	MN DNR	1000		500			500				
Norway pine transplants	MN DNR	0									
		0									
White pine bare root	MN DNR	1000		450	100		40	10	400		
White pine transplants	MN DNR	0									
		0									
Jack pine		0									
Balsam fir 2-0 bare root		100	100								
White spruce 2-0 Bare Root	MN DNR	1000	500		425			75			
White spruce transplants	MN DNR	0									
White spruce 2-0 Bare Root		0									
		0									
Black spruce		0									
Norway spruce containerized 4A	NCR	0									
		0									
		0									
Tamarack	NCR	0									
		0									
		0									
N. Red oak	MN DNR	4000				4000					
White oak	MN DNR	0									
		0									
		0									
		0									
		0									
		0									
TOTAL SEEDLINGS		7100	600	950	525	4000	540	85	400	0	0
Planting Crew											

OSB SEEDLING NEEDS AND PLANTING PLANS											
Spring 2005			117	119	414	207	604&606	611	618	621	115
	Seedling Source	TOTAL Seedlings by species	Christmas trees	Jack pine cutover	Hoffman cabin	Shelter-wood	Board-walk buffer	Philippi Buffer	White pine field	White pine near footbridge	Hill pine N of I94
Norway pine 2-0 bare root	MN DNR	1000		350							650
Norway pine transplants	MN DNR	0									
		0									
White pine bare root	MN DNR	0									
White pine transplants	MN DNR	1500		350					200	250	700
		0									
Jack pine		0									
Balsam fir 2-0 bare root		0									
White spruce 2-0 Bare Root	MN DNR	500	300								200
White spruce transplants	MN DNR	0									
White spruce 2-0 Bare Root		0									
		0									
Black spruce		0									
Norway spruce containerized 4A	NCR	0									
		0									
		0									
Tamarack	NCR	0									
		0									
		0									
N. Red oak 1-0 bare root	MN DNR	3000			2000	1000					
White oak	MN DNR	0									
		0									
		0									
		0									
		0									
		0									
TOTAL SEEDLINGS		6000	300	700	2000	1000	0	0	200	250	1550
Planting Crew											

SAINT JOHN'S SEEDLING NEEDS AND
PLANTING PLANS
Spring 2006

			State Land	113	117	119	207	301	411	604 & 606
	Seedling Source	TOTAL Seedlings by species	DOT Triangle	Collegeville Station Field	Christmas trees	Hillside pine N of I-94	Shelter-wood	Vogelberg	Cutover south of chapel	I-94 buffer
		0								
		0								
		0								
White pine 2-2 Transplants - Bare root	MN DNR	500	250		50	100			50	50
Norway pine 2-0 bare root	MN DNR	500				100				400
Jack pine		0								
Scots pine - Belgian Containerized Styro 6	North Central	100			100					
		0								
		0								
		0								
White spruce 2-0 Bare Root	MN DNR	1,000	200	750	50					
White spruce transplants Bare Root		0								
Norway spruce containerized 4A		0								
Norway spruce 2-2 transplants Bare Root	Schumacher's	300	150		100					50
Black spruce		0								
Meier’s spruce containerized 20 cu in	NCR	5			5					
		0								
		0								
Tamarack	NCR	100								100
		0								
		0								
Balsam fir containerized 20 Cu in	NCR	20			20					
		0								
		0								
		0								
N. red oak	MN DNR	4,900					1,000	3,900		
White oak	MN DNR	0								
TOTAL SEEDLINGS		7,425	600	750	325	200	1,000	3,900	50	600
Planting Crew			Snowy Pines	Snowy Pines	SJ -Vogel	Snowy Pines	Snowy Pines	Snowy Pines	SJ Vogel	Snowy Pines

SAINT JOHN'S SEEDLING NEEDS AND PLANTING PLANS

Spring 2007

Stand Number and Name

				101	105	113	117	119	207	604	618	641	
	Seedling Source	Seedlings on order now	TOTAL Seedlings needed	Watab marsh	Collegeville Scraped Field	Station field	Christmas Trees	Jack pine co	Freeway Shelterwood	Freeway fence	White pine field on pine knob	Wimmer pond prairie	DOT
				plan done	plan done	plan done	plan done	plan done	plan done	plan done	plan done	plan done	plan done
			0										
Norway pine 12-18"	MN DNR	500	500					100		350			50
Norway			0										
White pine 2-2 Transplants - Bare root	MN DNR	500	500				50	100		100	250		
Norway pine 2-0 bare root	MN DNR		0										
Jack pine			0										
Scots pine - Riga Containerized Styro 6	North Central	100	100				100						
			0										
			0										
			0										
White spruce 2-0 Bare Root	MN DNR		0										
White spruce transplants Bare Root	MN DNR	500	500			500							
Norway spruce containerized 6A	NCR	100	100				25						75
Norway spruce 2-2 transplants Bare Root	Schumacher's	0	0										
Black spruce bare root	MN DNR	3000	3,000		3,000								
Meier's spruce containerized 6A	NCR	100	100				100						
			0										
			0										
Tamarack Containers 6A	NCR	500	500	500									
Tamarack bare root	MN DNR	1000	1,000		1,000								
			0										
Balsam fir containerized 4A	NCR	100	100				100						
			0										
			0										
Bur oak	NCR	20	20									20	
N. red oak	MN DNR	3000	3,000						3,000				
White oak	MN DNR		0										
TOTAL SEEDLINGS		9,420	9,420	500	4,000	500	375	200	3,000	450	250	20	125
Planting Crew				Dan V	Snowy P	Snowy P	Dan V	Snowy P	Snowy P	Snowy P	Snowy P	Br. Ben	Snowy P

SAINT JOHN'S SEEDLING NEEDS AND PLANTING PLANS

Spring 2008 Stand Number and name

				301	105	113	117	119	207	218	604	618	641	
	Seedling Source	Seedlings on order now	TOTAL Seedlings needed	Vogelberg oak	Collegeville Scraped Field	Station field	Christmas Trees	Jack pine co	Freeway Shelterwood	Clay Pile Shelterwood	Freeway fence buffer	White pine by gravel pit	Wimmer pond prairie	DOT
				plan done	plan done	plan done	plan done	plan done	plan done	plan done	plan done	plan done	plan done	plan done
			0											
Norway pine 12-24" Transplants -bare root	MN DNR	500	500					100			350			50
Norway			0											
White pine 2-2 Transplants - Bare root	MN DNR	500	500				50	100			100	250		
Norway pine 2-0 bare root	MN DNR		0											
Jack pine			0											
Scots pine - Riga Containerized Styro 6	North Central		0											
			0											
			0											
			0											
White spruce 2-0 Bare Root	MN DNR		0											
White spruce transplants Bare Root	MN DNR	500	500			450	50							
Norway spruce containerized 6A	NCR	100	100				25							75
Norway spruce 2-2 transplants Bare Root	Schumacher's		0											
Black spruce bare root	MN DNR	3000	3,000		3,000									
Meier's spruce containerized 6A	NCR	100	100				100							
			0											
			0											
Tamarack Containers 6A	NCR	1000	1,000		1,000									
Tamarack bare root	MN DNR		0											
			0											
Balsam fir containerized 4A	NCR	0	0				0							
			0											
			0											
Bur oak	NCR	20	20										20	
N. red oak	MN DNR	5500	5,500	800					3,500	1,200				
White oak	MN DNR	1000	1,000	200					500	300				
TOTAL SEEDLINGS		12,220	12,220	1,000	4,000	450	225	200	4,000	1,500	450	250	20	125
Planting Crew				Snowy P	Snowy P	Snowy P	Dan V	Snowy P	Snowy P	Snowy P	Snowy P	Snowy P	Br. Ben	Snowy P

SAINT JOHN'S SEEDLING NEEDS AND PLANTING PLANS														
Spring 2009					Stand Number and Name									
							117	221					641	
	Seedling Source	Seedlings on order now	TOTAL Seedlings needed	Dorm buffer	Phillipi Buffer	Parish & Phillipi home	Christmas Trees	White p on St. Joe road					Wimmer pond prairei	
				plan done	plan done			plan done					plan done	
			0											
White pine 2-2 Transplants - Bare root	MN DNR	1500	1,500	40	50	10		1,400						
Norway pine 12-24" Transplants -bare root	MN DNR	100	100	60	40									
Norway pine 2-0 bare root	MN DNR		0											
Jack pine			0											
Scots pine - Riga Containerized Styro 6	NCR		0											
			0											
			0											
Black Hills Spruce Styro 10	NCR	120	120	55	50	15								
White spruce Stryo 6	NCR	80	80	35		25	20							
White spruce 2-0 Bare Root	MN DNR		0											
White spruce transplants Bare Root	MN DNR		0											
Norway spruce containterized 6A	NCR	80	80	10	50	20								
Norway spruce 2-2 transplants Bare Root	Schumacher's		0											
Black spruce bare root	MN DNR		0											
Black spruce Stryo 4	NCR	50	50		25		25							
Meier's spruce containerized 6A	NCR		0											
Frasier Fir Styro 4	NCR	50	50				50							
			0											
Tamarack Containers 6A	NCR		0											
Tamarack bare root	MN DNR		0											
			0											
Balsam fir containerized 4A	NCR		0											
			0											
			0											
Bur oak	NCR	0	20										20	
N. red oak	MN DNR		0											
White oak	MN DNR		0											
TOTAL SEEDLINGS		1,980	2,000	200	215	70	95	1,400	0	0	0	0	20	
Planting Crew				Grounds	Snowy P	owner	Dan V	Snowy P	Snowy P	Snowy P	Snowy P	Snowy P	Br. Ben	Snowy I

SAINT JOHN'S SEEDLING NEEDS AND PLANTING PLANS

Spring 2010 Stand Number and Name

						115	117	119	411	604		
	Seedling Source	Seedlings on order now	TOTAL Seedlings needed	Phillipi Buffer	Phillipi home	West hillside pine	Christmas Trees	East Hillside pine	Blowdown back of Chapel	Frewway buffer		
				oral plan	no plan	plan done	oral plan	plan done	oral plan			
			0									
White pine 2-2 Transplants - Bare root	MN DNR		0									
White pine - Containerized Styro 6	NCR		650	5		400		200	15	30		
Norway pine 12-24" Transplants -bare root	MN DNR		0									
Norway pine 2-0 bare root	MN DNR		0									
Norway pine - Containerized Styro 4	NCR		600	5	5	250		100		240		
Jack pine			0									
Scots pine - Riga Containerized Styro 6	NCR		0									
			0									
			0									
Black Hills Spruce Styro 10	NCR		0									
White spruce Stryo 6	NCR		0									
White spruce 2-0 Bare Root	MN DNR		0									
White spruce transplants Bare Root	MN DNR		0									
Norway spruce containterized 6A	NCR		0									
Norway spruce 2-2 transplants Bare Root	Schumacher's		0									
Black spruce bare root	MN DNR		0									
Black spruce Stryo 4	NCR		0									
Meier's spruce containerized 6A	NCR		0				0					
Frasier Fir Styro 6	NCR		50		5		45					
			0									
Tamarack Containers 6	NCR		65							65	These 65 will come late and be planted by Dan.	
Tamarack bare root	MN DNR		0									
			0									
Balsam fir containerized 6	NCR		10				10					
			0									
			0									
Bur oak	NCR	0	10									
N. red oak	MN DNR		0									
White oak	MN DNR		0									
TOTAL SEEDLINGS		0	1,385	10	10	650	55	300	15	335	0	
Planting Crew				Dan V	owner	Snowy P	Dan V	Snowy P	Dan V	Snowy P	Snowy P	Sno P

SAINT JOHN'S SEEDLING NEEDS AND PLANTING PLANS

Spring 2011

				301	301	303	327		218	207			411	117	641	
	Seedling Source	Seedlings on order now	TOTAL Seedlings needed	West of East landing	Vogelberg	North of Klein See	West of Hillary trail		By clay piles	Along 94			Blowdown back of Chapel	Christmas Trees	Wimmer pond prairei	Tom Joyce
				5.5 ac	1 ac	4.5 ac	2.5 ac		3.5 ac	8 ac						2 ac
				plan done	plan done	plan done	plan done		plan done	plan done			oral plan	oral plan	oral plan	plan done
			0													
White pine 2-2 Transplants - Bare root	MN DNR		0													
White pine - Containerized Styro 6	NCR		25								0		25			
Norway pine 12-24" Transplants -bare root	MN DNR		0													
Norway pine 2-0 bare root	MN DNR		0													
Norway pine - Containerized Styro 4	NCR		0								0					
Jack pine			0													
Scots pine - Riga Containerized Styro 6	NCR		0													
			0													
			0													
Black Hills Spruce Styro 10	NCR		0													
White spruce Stryo 6	NCR		0													
White spruce 2-0 Bare Root	MN DNR		0													
White spruce transplants Bare Root	MN DNR		0													
Norway spruce containterized 6A	NCR		0													
Norway spruce 2-2 transplants Bare Root	Schumacher's		0													
Black spruce bare root	MN DNR		0													
Black spruce Stryo 6	NCR		0													
Meier's spruce containerized 6A	NCR		20											20		
Frasier Fir Styro 6	NCR		0											0		
			0													
Tamarack Containers 6	NCR		0													
Tamarack bare root	MN DNR		0													
			0													
Balsam fir containerized 20	NCR		20											20		
Hemlock syro 4	NCR		10											10		
Wildlife Packet	MN DNR		500													500
Bur oak	NCR	0	10												10	
N. red oak 2-0 SJ seed source	MN DNR		10,500	2,000	500	2,000	1,000		1,000	3,000						1,000
White oak	MN DNR		0													
TOTAL SEEDLINGS		0	11,085	2,000	500	2,000	1,000		1,000	3,000	0	0	25	50	10	1,500
Planting Crew				Snowy P	Evander	Snowy P	Snowy P		Evander	Snowy P			Dan V	Dan V	Br. Ben	Evander
				Scalped			Scalped									

SAINT JOHN'S SEEDLING NEEDS AND PLANTING PLANS

Spring 2013

				301	401	328		207	218	207	619	221	411	117	641	
	Seedling Source	Seedlings on order now	TOTAL Seedlings needed	West of East landing	blowdown knob by chaple trail	North of Schoen See	West of Hillary trail		By clay piles	Along 94	Pine Knob		Blowdown back of Chapel	Christmas Trees	Wimmer pond prairei	Campus
					0.5	2.0 ac		9	3.5 ac	9 ac.	2	3				
														oral plan		
White pine 2-0 - Bare root	MN DNR		1,000								500	500				
White pine 2-2 Transplants - Bare root	MN DNR		0													
White pine - Containerized Styro 6	NCR		0													
Norway pine 12-24" Transplants -bare root	MN DNR		0													
Norway pine 2-0 bare root	MN DNR		0													
Norway pine - Containerized Styro 4	NCR		0													
Jack pine			0													
Scots pine - Riga Containerized Styro 6	NCR		0													
			0													
			0													
Black Hills Spruce Styro 10	NCR		25											25		
White spruce Stryo 6	NCR		0													
White spruce 2-0 Bare Root	MN DNR		0													
White spruce transplants Bare Root	MN DNR		0													
Norway spruce containterized 6A	NCR		0													
Norway spruce 2-2 transplants Bare Root	Schumacher's		0													
Black spruce bare root	MN DNR		0													
Black spruce Stryo 6	NCR		0													
Meier's spruce containerized 6A	NCR		25											25		
Frasier Fir Styro 6	NCR		0											0		
			0													
Tamarack Containers 6	NCR		0													
Tamarack bare root	MN DNR		0													
			0													
Balsam fir containerized 20	NCR		0											0		
Hemlock syro 4	NCR		0											0		
Wildlife Packet	MN DNR		0													
N. red oak 3-0 SJ seed source	MN DNR	0	0		0	0			0							
N. red oak 2-0 SJ seed source	MN DNR		1,500		150	350		1,000								
White oak 3-0 SJ seed source	MN DNR		500				0	450								50
TOTAL SEEDLINGS		0	3,050	0	150	350	0	1,450	0	0	500	500	0	50	0	50
Planting Crew					Reoh	Reoh		Reoh			Snowy Pines	Snowy Pines	Dan V	Dan V	Br. Ben	Jean D

SAINT JOHN'S SEEDLING NEEDS AND PLANTING PLANS

Spring 2014

				604	401	328		207	218	207	619	221	411	117	641	612
	Seedling Source	Seedlings on order now	TOTAL Seedlings needed	Watab Creek outlet	blowdown knob by chaple trail	North of Schoen See	West of Hillary trail		By clay piles	Along 94	Pine Knob		Blowdown back of Chapel	Christmas Trees	Wimmer pond prairei	Trap shoot
					0.5	2.0 ac		9	3.5 ac	9 ac.	2	3				
														oral plan		
White pine 2-0 - Bare root	MN DNR		0													
White pine 2-2 Transplants - Bare root	MN DNR		0													
White pine - Containerized Styro 6	NCR		0													
Norway pine 12-24" Transplants -bare root	MN DNR		0													
Norway pine 2-0 bare root	MN DNR		0													
Norway pine - Containerized Styro 4	NCR		0													
Jack pine			0													
Scots pine - Riga Containerized Styro 6	NCR		0													
Ponderosa pine	NCR		25	25												
			0													
Black Hills Spruce Styro 6	NCR		25													25
White spruce Stryo 10	NCR		10													10
White spruce 2-0 Bare Root	MN DNR		0													
White spruce transplants Bare Root	MN DNR		0													
Norway spruce containterized 6A	NCR		10													10
Norway spruce 2-2 transplants Bare Root	Schumacher's		0													
Black spruce bare root	MN DNR		0													
Black spruce Stryo 6	NCR		0													
Meier's spruce containerized 6A	NCR		20											20		
Frasier Fir Styro 6	NCR		0											0		
			0													
Tamarack Containers 6	NCR		0													
Tamarack bare root	MN DNR		0													
			0													
Balsam fir containerized 6	NCR		10											10		
Hemlock syro 4	NCR		0											0		
Wildlife Packet	MN DNR		0													
N. red oak 3-0 SJ seed source	MN DNR	0	0			0			0							
N. red oak 2-0 SJ seed source	MN DNR		0													
White oak 3-0 SJ seed source	MN DNR		0				0									
TOTAL SEEDLINGS		0	100	25	0	0	0	0	0	0	0	0	0	30	0	45
Planting Crew				Dan v	Reoh	Reoh		Reoh			Snowy Pines	Snowy Pines	Dan V	Dan V	Br. Ben	

SAINT JOHN'S SEEDLING NEEDS AND PLANTING PLANS

Spring 2015

						401	119	105	103	207	619	521	411	117	641	612
	Seedling Source	Seedlings on order now	TOTAL Seedlings needed	Dorm buffer	Philippi Buffer	blowdown knob by chaple trail	Jack Pine cutover	scraped field		Along 94	Pine Knob	Brugemeirs Field	Blowdown back of Chapel	Christmas Trees	Wimmer pond prairei	Trap shoot
						0.5	2.0 ac	4	7 ac	9 ac.	2	3				
				oral plan	oral plan		plan ok	plan ok	plan ok			plan ok		oral plan		
White pine 2-0 - Bare root	MN DNR		500	15			350		135			0				
White pine 2-2 Transplants - Bare root	MN DNR		1,500						1,500							
White pine - Containerized Styro 6	NCR		0													
Norway pine 12-24" Transplants -bare root	MN DNR		0													
Norway pine 2-0 bare root	MN DNR		0				0					0				
Norway pine - Containerized Styro 4	NCR		0													
Jack pine			0													
Scots pine - Riga Containerized Styro 6	NCR		0													
Ponderosa pine	NCR		0													
			0													
Black Hills Spruce Styro 6	NCR		60	60												
White spruce Stryo 10	NCR		0													
White spruce 2-0 Bare Root	MN DNR		500						500							
White spruce transplants Bare Root	MN DNR		0													
Norway spruce containterized 10A	NCR		685	35					500			150				
Norway spruce 2-2 transplants Bare Root	Schumacher's		0													
Black spruce bare root	MN DNR		0		0											
Black spruce Stryo 6	NCR		0													
Meier's spruce containerized 6A	NCR		0													
Frasier Fir Styro 6	NCR		0													
			0													
Tamarack Containers 6	NCR		0		0											
Tamarack bare root	MN DNR		2,000		25			675	1,300							
N White Cedar Styro 4	NCR		25		25											
Balsam fir containerized 6	NCR		25		25											
Hemlock syro 4	NCR		0													
Wildlife Packet	MN DNR		0													
N. red oak 3-0 SJ seed source	MN DNR	0	0													
N. red oak 2-0 SJ seed source	MN DNR		0													
White oak 3-0 SJ seed source	MN DNR		0													
TOTAL SEEDLINGS		0	5,295	110	75	0	350	675	3,935	0	0	150	0	0	0	0
Planting Crew				Dan v	Dan v		Snowy Pines	Snowy Pines	Snowy Pines			Snowy Pines				

TIMBER HARVEST RECORDS

Timber volumes cut from fall of 1989 through spring 1999:

	R. Oak	W. Oak	Basswd	Ash	Maple	Aspen	Birch	W. Pine	Total
				---Thousand Board Feet---					
11 year total	484	16	33	42	14	11	6	20	626
0%	77	3	5	7	2	2	1	3	100
Ave.MBF/Yr	44	1	3	4	1	1	1	2	57

Volumes cut from fall of 1989 through spring 1999 are summarized as follows:

	R. Oak	W. Oak	Basswd	Ash	Maple	Aspen	Birch	W. Pine	Total
				---Thousand Board Feet---					
11 year total	484	16	33	42	14	11	6	20	626
0%	77	3	5	7	2	2	1	3	100
Ave.MBF/Yr	44	1	3	4	1	1	1	2	57

In addition about 397 cords of fuelwood were cut or an average of 36 cords per year, presumably much aspen, red oak, maple and white oak.

A**ctual Annual Wood Harvest 2001+**

Fiscal Year	**Cords Harvested (Pulp and bolts and fuelwood)**	**MBF Harvested**	**Harvest converted to Cubic Feet and sorted by Vegetation Classes. (92 cubic feet per cord & 177 cubic feet per Thousand Board Feet –MBF)** **Saint John's forests are broken into 3 major Vegetation Classes for harvest purposes. (see allowable harvest above)**							
July of previous year to June of year shown			**Hardwoods with usual harvest restrictions.** **Allowable annual harvest = 40,311 cu ft**	**% of Allowable harvest actually completed.**	**Hardwoods with special harvest restrictions.** **Allowable annual harvest = 8,229 cu ft**	**% of Allowable harvest actually completed.**	**Conifers with usual harvest restrictions.** **Allowable annual harvest = 5,143 cu ft**	**% of Allowable harvest actually completed**	**All forest cover types and harvest restrictions combined. Allowable annual harvest = 53,683 cu ft**	**% of Allowable harvest actually completed**
2001	**394 Cords**	**74 MBF**	**49,356 cu ft**	**122%**	**0**	**0%**	**0**	**0%**	**49,356 cu ft**	**92%**
2002	**501 Cords**	**44 MBF**	**53,408 cu ft**	**132%**	**0**	**0%**	**460 cu ft**	**9%**	**53,868 cu ft**	**100%**
2003	**311 Cords**	**6.5 MBF**	**25,025 cu ft**	**62%**	**0**	**0%**	**4,730 cu ft**	**92%**	**29,755 cu ft**	**55%**
2004	**158 Cords**	**28 MBF**	**19,531 cu ft**	**48%**	**0**	**0%**	**828 cu ft**	**16%**	**20,359 cu ft**	**40%**
2005	**139 Cords**	**31 MBF**	**18,295 cu ft**	**45%**	**0**	**0%**	**0**	**0%**	**18,295 cu ft**	**34%**
2006	**145 Cords**	**31 MBF**	**18,827 cu ft**	**47%**	**0**	**0%**	**0**	**0%**	**18,827 cu ft**	**33%**
2007	**151 Cords**	**19 MBF**	**17,255 cu ft**	**43%**	**0**	**0%**	**0**	**0%**	**17,255 cu ft**	**32%**

2008	**163 Cords**	**34 MBF**	**20,095 cu ft**	**50%**	**0**	**0%**	**903 cu ft**	**18%**	**20,998 cu ft**	**39%**
2009	**89 Cords**	**5 MBF**	**1,223 cu ft**	**3%**	**0**	**0%**	**7,875 cu ft**	**153%**	**9,098 cu ft**	**17%**
2010	**47 Cords**	**9 MBF**	**5,476 cu ft**	**14%**	**0**	**0%**	**368 cu ft**	**7%**	**5,844 cu ft**	**11%**
2011	**37 Cords**	**0 MBF**	**3,437 cu ft**	**9%**	**0**	**0%**	**0**	**0%**	**3,437 cu ft**	**6%**
2012	**144 Cords**	**84 MBF**	**23,015 cu ft**	**57%**	**805 cu ft**	**10%**	**4,558 cu ft**	**87%**	**28,378 cu ft**	**50%**
2013	**106 Cords**	**52 MBF**	**17,356 cu ft**	**43%**	**803 cu ft**	**10%**	**739 cu ft**	**14%**	**18,898 cu ft**	**35%**
2014	**55 Cords**	**14 MBF**	**7,538 cu ft**	**19%**	**0**	**0%**	**0**	**0%**	**7,538 cu ft**	**13%**
2015	**89 Cords**	**13 MBF**	**10, 541cu ft**	**26%**	**0**	**0%**	**0**	**0%**	**10,541 cu ft**	**20%**
2016	**0 Cords**	**0 MBF**	**0 cu ft**	**0%**	**0**	**0%**	**0**	**0%**	**0 cu ft**	**0%**
2017	**0 Cords**	**0 MBF**	**0 cu ft**	**0%**	**0**	**0%**	**0**	**0%**	**0 cu ft**	**0%**
2018	**0 Cords**	**0 MBF**	**0 cu ft**	**0%**	**0**	**0%**	**0**	**0%**	**0 cu ft**	**0%**
2019	**0 Cords**	**0 MBF**	**0 cu ft**	**0%**	**0**	**0%**	**0**	**0%**	**0 cu ft**	**0%**
2020	**0 Cords**	**0 MBF**	**0 cu ft**	**0%**	**0**	**0%**	**0**	**0%**	**0 cu ft**	**0%**

DEER HARVEST RECORD

Year	No. hunters or permits	Hunting days	Does		Bucks		Total	Remarks
			fawns	adults	fawns	adults		
			--number harvested--					
1997	39	5	4	36	3	1	44	9 killed 2 each
1998	59	5	4	31	10	0	45	1 hunter took 2
1999	61	5	10	25	5	2	42	3 killed 2 each
2000	32	2					21	
2001	36	2					18	
2002	34	2					28	
2003	No hunt – conflicted with home football games							
2004	32	2					29	
2005	35	2	1	11	5	1	18	
2006	No hunt – change in season allowed 9 days of hunting on adjacent property. Evaluate							
2007	No hunt – SJ respected neighbors request to allow area herd to grow, even if not agreeable.							
2008	26	2					21	
2009	35	2	2	12	3	1	18	
2010	32	2	2	10	5	2	20	
2011	No hunt – conflicted with home football games							
2012	No hunt – conflicted with home football games							
2013	108	68	8	37	5	1	51	All archery
2014	104	74	2	15	2	1	20	All archery
2015	108	71	7	14	5	6	32	All archery

MAMMAL POPULATIONS (Good, average, low, increasing, decreasing

Year	Deer	Gray squirrel	Rabbit	Coyote	Red Fox	Grey Fox	Remarks by/date
2000							
01`							
02							
03							
04							
05							
06							
07							
08							
09							

TREE SEED CROP*

Year	RedO	White O	BurO	WhiteP	RedP	JackP	Spruce	Remarks	By/date
1997	good	good							dwp 10/97
1998	Poor								dv 10/98
1999	failure								dv 10/99
2000	good	good	bumper						dwp/dv 10/99
2001	bumper	bumper							tk 8/03
2002	v. good	v. good							TK 8/03
2003	failure								TK 7/05
2004	fair								TK 7/05
2005	bumper - Ave								tk 10/05
	Collected 4.5 bushels of RO and .7 white oak – sold to Badoura Nursery								
	400,000 RO acorns per acre on ground in early April 2006 with 50% germinating. By April 25 only 20-40,000 per acre were still viable due to the warm, dry spring.								
2006	fair	good					v good		TK 11/06
2007	poor	poor							
2008	good	good							
	Collected about 4 bushels of RO and 2 white oak – sold to Badoura Nursery								
2009	v. good	good							TK 11/09
	Collected about 4 bushels of RO – sold to Badoura Nursery								
2010	Average fair - Sold 4 bushels to Badoura Nursery								TK 2/11
2011	Average								TK 11/11
2012	Not surveyed - Forester leading Study Abroad in Austria.								
2013									
2015	Excellent red oak acorn crop - collected 12 bushels of seed for Badoura								TK 11/15

*use excellent (bumper), good, average, fair, poor, failure

RECORD OF LARGE TREES AND OTHER SIGNIFICANT PLANTS TO BE RECOGNIZED AND PROTECTED

People are interested in large, rare and unusual things, including trees and plants. They add interest to hikes and are useful in education. Here is format for record keeping. In addition to this listing a separate sheet should be prepared which includes a map of location, dimensions (tree circumference at dbh, total height, crown spread) and other information often including a picture.

Species	Location*	Description	Proponent name/date
Cypripedium calceolus	–	Yellow ladies slipper – stand 514 along power line	

* Compartment/stand

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DRAFT PLAN REVIEWERS

The following were given the opportunity, had the interest and took the time to review and comment on the draft Land Management Plan. The plan was somewhat enlarged in scope and significantly improved based on their comments. Their thoughtful and constructive comments were evaluated and most were used. The plan is better because of their input.

Fr. Bruce Wollmering, OSB
Bro. John Brudney, OSB
David Hartwell, Bellcomb Technologies Incorporated
John Kulas
Gordon J. Bailey, Bailey Nurseries, Inc.
Fred Bengtson, Minnesota DNR Interim Area Wildlife Manager
Peter P. Bundy, FSC Certified Forest Manager, Masconomo Forestry
Thomas Kroll, Forester, MDNR Division of Forestry
Jeff Haas, Forester, MDNR Division of Forestry
Bill Lamberts
Peter Olin, Minnesota Landscape Arboretum

APPENDIX

A In the Beginning and 1880 Plat Map
B Prevalent Plant Species in St. John's Upland Forest
C Birds of the Saint John's Arboretum
D Land Use Task Force Committee report
E Saint John's Arboretum Strategic Plan 2000-2004 Draft 4+
F A Green Banner
G Educational, Research, Study, Demonstration Opportunities
H Oak Savannah Restoration
I Compartment Acreage Summary
J Stands to Regenerate Next 10 Years
K Listing of Timber Stands/Areas and Compartment Maps

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The following was extracted from sixteen articles written by Father Bruno Riss for the Record. It extracts those parts which pertain to selection of the land for a Monastery, claiming the land, first development and some of the problems encountered. Would that we knew more of land and forest description and of the work of the Brothers in construction, clearing and planting fields, introduction of livestock and other work. The extensive work of Father Riss as a pastor is not included nor is the extensive pastoral work and privations of the other Benedictine Priests.

In the Beginning

In 1856, six Benedictines departed St. Vincent Abbey in Pennsylvania for Minnesota. Minnesota was a wilderness beginning to be rapidly settled. One of these was P. Bruno Riss, a young cleric, who was ordained March 22, 1856, after arrival at St. Paul. His recollections, many years later in the Record, give us insight into the early days of the Benedictines in Minnesota.

Indian treaties of 1847 with the Chippewa, and 1851 with the Sioux, ceded the St. John's area to the federal government. When the small group of Benedictines arrived in the St. Cloud area the land was just being surveyed by the government for sale to settlers. Collegeville Township had only township lines surveyed and blazed.

Rejecting a location in St. Paul, they considered locating in the Minnesota River valley or northward on the Mississippi. "The aged Indian Missionary, Father Pierz, appeared upon the scene and reminded His Lordship that he—Pierz—had first suggested the introduction of the Benedictines, to labor among the German Catholics of Stearns County. This tipped the scales and Stearns County was made our choice." They traveled upriver by boat from St. Anthony on May 19." to find St. Cloud was a rather more difficult task than it would be today, comprising as it did one house and four less dignified edifices and these far apart." The three Priests and two brothers settled at the Rothcopp farm log house along the Mississippi "A similar log edifice 12X12 was reared at a distance of 12 feet from the former and the intervening space roofed over, making he whole length of the building 36feet. The intervening space served as chapel." The two Rothcopp claims, of 160 acres each, were transferred to the Benedictines.

Father Riss recollects further, "I was instructed by the Rt. Rev. Abbot of St. Vincent's to select a suitable piece of land on which a monastery could be erected. The two claims held by the Rothkopp's furnished little fuel and no pasture. In making selection, therefore, I had to keep in view these two essentials, besides a third, water. This task presented difficulties which the present inhabitants would not imagine. 1) the Government had but recently purchased the land from the Indians; it had been surveyed to some extent, that is township divisions had been marked by notches cut into trees; 2) I was stranger, had no idea as to where suitable land might be found; 3) I could devote but one day a week, Monday, to the task, and was expected home at St. Cloud in the evening. I made this distance on foot. 4) One great difficulty was the greed of the settlers, who were well enough pleased to have the monastery in their vicinity. Everyone wished to hold a claim close by the land selected for the monastery, so close in fact, that we would have been under the necessity of erecting an air castle."

Father Riss writes, he was "led through the thickets along the banks of the Watab, and here it was, that I struck upon the splendid pastures of Sec. 31. Irrigated by the northern branch of the

Watab. Then the Indians had burned bush lying toward the south in the previous year. The land thus cleared might be turned into pasture. To the west, as far as my eye could reach, I could see nothing but dense forest. I concluded to make a detailed exploration of the country." On the following Monday he "proceeded to inspect, mounting hills and climbing trees, to get a view of the surrounding country…" "Despite its scorched hills, Section 31 pleased me, because it furnished water and meadows with fine grass. Now for timber. I went prospecting in Sec. 36 during the ensuring week, but with little success. Section 6 suited me better." Falling and breaking his crude compass, he lost his way and was harassed by wolves, eventually finding his was back to St. Joseph where he had taken up residence in a log house.

He then had two sections that he wished to claim for the Benedictines. The land laws of the time permitted a man to claim up to 160 acres and pay $1.25 per acre. Since the other two fathers had used their claim for the two 160 acre Rothcopp claim, how was he and two brothers going to claim and area requiring at least 8 men?

Father Riss writes of the terrible plague of grasshoppers their first year in Minnesota. "the 15th of August…….During the discourse of the missionary a heavy darkness suddenly set in, accompanied, as we thought, by a tremendous hail-storm, the clatter of which drowned the voice of the preacher. But it was something worse than hailstones, for when we left the church our eyes beheld nothing but greedy grasshoppers, which had darkened the sun and in their descent had struck so heavily upon the roof of the chapel. This small, voracious, yet invincible monster had in a short time devastated all that grows and blooms upon the face of the earth. Within about 2 or 3 days the fields presented the appearance of having been newly plowed. Then an indescribable misery entered the homes of the poor settlers of Stearns County. The entire harvest was a dead loss for those settlers who had taken their abodes in this region during the previous year; those, of course, who had settled during the year of the famine had no crop to lose, as they had not planted any. The first terrible winter was at hand."

He describes the hunger, grasshoppers eating clothes and vestments. "The corn ground in coffee-mills, so that there was no waste, and then boiled together with the frozen potatoes furnished a scanty meal. There was abundance of game about, but we had no money to purchase powder and shot. Once we succeeded in capturing a few owls which were quite a delicacy. In winter there was a good chance for fishing. A hole was cut in the ice and this was soon so full of fish that we could easily catch them with willow baskets. So we did not famish; we had fish to eat although they were not fried in salt and lard. But we were contented with what we had, for hunger is the best of cooks."

Writing about their claim near the present Collegeville, Father Riss writes "we cut timber for our new home on the monastery land. For the sake of greater security we kept close to the township line and began cutting tamaracks for small hut 16x20. Nearby we had cleared a small space for building. This clearing was a short distance south of the present Collegeville station. None of us ever imagined a railroad would be built in that vicinity so soon. We were interrupted in our building by a heavy snowfall. We had no teams to bring the logs to the building site, but had to carry them. We proceeded to build, but as we had neither shingles nor boards for the roof, we made one side of the building higher than the other, laid tamarack poles across and covered these with brush and sods. Over this we spread a layer of ground to add weight to the roof. The house was finished in two days. The larger spaces between the logs were filled out with wood and the whole structure rendered weatherproof by a coating of clay. A pane of glass in the door and one in the wall admitted light very sparingly. We returned to St. Joseph on the evening of the first

day. On the next morning we brought with us a small stove, a board to serve as a door, and our bedding. All these materials we lugged on our shoulder, as there were no roads. Grass gathered from beneath the snow was the filling for out ticks. The brisk fire in the middle of the room dried the damp grass of the roof and bedding and the moist clay on the walls. The hut was occupied by the three lay-brothers, and thus was laid the foundation of the future Abbey."

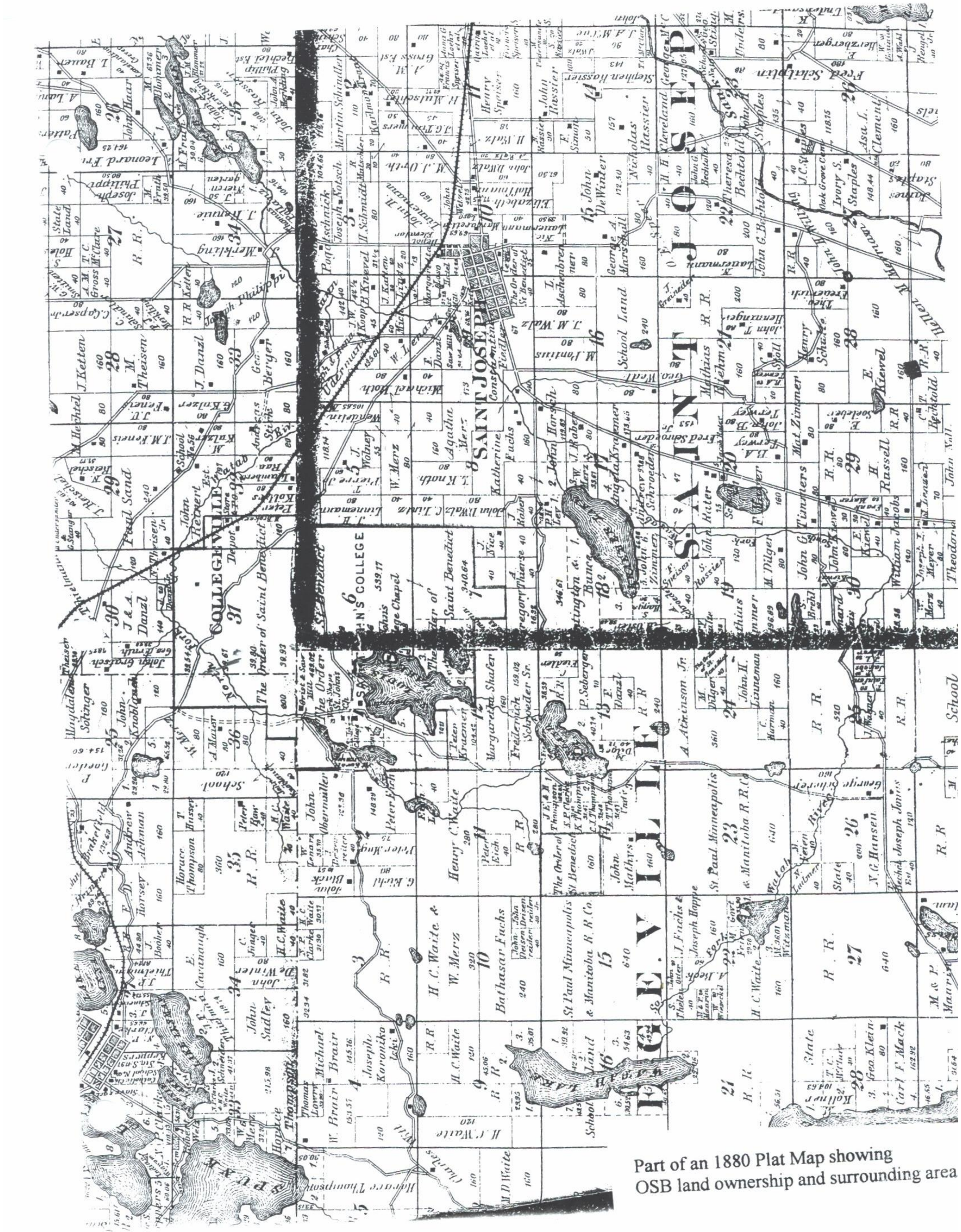
Father Riss continues, "It would be difficult to imagine or describe the privations endured by the pioneers. F. Bruno daily carried provisions and other necessaries to the Brothers, and made

measurements and selected places where the improvements required by law could be easiest and most speedily made. We were beset at all points by claim-jumpers. These measurements were made with rather primitive instruments. I went ahead with my compass and sighted some distant tree that stood in the direction pointed out by the compass. Then I made for that tree reckless of shrubs, thorns and marshes. I could not mind my feet for fear of losing sight of the tree. In this way I sacrificed several pair of trousers. I had to mark off quarter sections. With my short legs I could make only 1000 steps to each quarter-mile. To avoid danger of losing tract of my count I picked up 10 chips and threw away one of them after every 100 steps. When the chips were exhausted, I had arrived at the end of the quarter section. The brother, who followed me with an axe, marked the trees along the line. In the course of this survey, we one day arrived on the shores of the beautiful lake, near which the University now stands. I was bound to acquire this sheet of water for the monastery. But how? Of course I must claim it. But how could I claim it? There were not enough of us to establish a legal claim besides those we held already. Eight men were required and we were but six. All, however, insisted that the lake must be ours. I might easily have sacrificed the two quarter sections of section 31, because most of the woods had been badly scorched, but in that case the section would have been broken, we would have lost our approach to the meadows and probably some undesirable neighbor might have been wedged between our possessions. I was unwilling to lose hold of Section 6 on account of the timber on it. This put me in a quandary. Moreover, how was all this land to be paid for? We had no money on hand, debts enough on account of our provisions, and could expect nothing of the grass-hopper-stricken congregations.

In later years I was frequently reproached for not claiming more land west of the lake. Nowadays the eggs are always smarter than the hen. At this juncture a solution of this puzzle occurred to me. I had a personal friend in Washington, whom I requested to submit to Congress a petition for land for a monastery and college for the foundation of which Fr. Demetrius had already acquired a charter. At the same time I put up about 20 signs in different parts of the land I intended to claim, with the inscription: "Application for this land is made to Congress for St. John's College". These signs effectually kept off intruders. My application to Congress was unsuccessful, but we were no longer disturbed by land-sharks."

In the fall of 1857 another Priest and four lay-brothers arrived enabling the Benedictines "to hold and preempt our lands."

1880 Plant Map



Part of an 1880 Plat Map showing
OSB land ownership and surrounding area

Prevalent Plant Species by L. Cofell

PREVALENT PLANT SPECIES IN ST. JOHN'S UPLAND FOREST

By Loraine W. Cofell 1977

Species	Presence	Frequency	f x p index	Community of Modality
Carex spp.	100%	51.2%	5120	
Acer saccharum	100	48.9	4890	SM
Acer rubrum	100	32.9	3290	NWM
Ostrya virginiana	100	30.8	3080	SM
Osmorhiza Claytoni	100	28.7	2870	SDM
Viola spp.	100	22.3	2230	
Circaea quadrisulcata	100	22.1	2210	SDM
Aster macrophyllus	100	19.0	1900	BF
Oryzopsis asperifolia	100	18.7	1870	BF
Quercus borealis	100	18.7	1870	SDM
Amphicarpa bracteata	100	17.7	1770	SDM
Prunus spp.	100	17.1	1710	SD
Aralia nudicaulis	100	14.2	1420	NDM
Solidago flexicaulis	100	11.7	1170	SM
Galium triflorum	100	11.5	1150	BF
Uvularia grandiflora	100	10.4	1040	SDM
Polygonatum pubescens	100	10.0	1000	NM
Ulmus americana	100	7.9	790	SWM
Ribes cynosbati	100	7.7	770	SDM
Smilacina racemosa	100	7.7	770	SD
Fraxinus pennsylvanica	100	7.3	730	SWM
Asplenium sp.	100	6.2	620	
Parthenocissus sp.	100	5.8	580	SD
Phryma Leptostachya	100	5.8	580	SDM
Rubus spp.	100	3.5	350	SDM
Amelanchier spp.	100	3.5	350	
Viburnum Rafinesquianum	100	1.0	100	SDM
Quercus macrocarpa	100	0.4	40	OO
Quercus alba	100	0.2	20	SD
Geranium maculatum	92	11.5	1058	SDM
Uvularia sessilifolia	92	11.2	1030	NDM
Tilia americana	92	6.7	616	SM
Zanthoxylum americanum	92	5.4	497	SDM
Desmodium nudicaulis	92	4.6	423	SDM
Cornus alternifolia	92	3.5	322	SDM
Betula papyrifera	92	3.3	304	NDM
Anemone quinquefolia	83	8.7	722	NDM
Pyrola spp.	83	4.0	332	
Caulophyllum thalictroides	83	1.7	141	SM
Botrychium virginianum	83	1.5	124	SDM
Vitis aestivalis	83	0.6	50	SDM
Maianthemum canadense	75	4.0	300	BF

Appendix B

Species	Presence	Frequency	f x p index	Community of Modality
Populus grandidentata	75	1.9	142	ND
Oryzopsis racemosa	75	1.3	97	SDM
Aquilegia canadensis	75	0.8	60	CG
Brachyelytrum erectum	75	0.4	30	SDM
Milium effusum	67	2.7	181	NM
Sanicula gregaria	67	2.5	167	SDM
Geum canadense	67	2.1	141	SDM
Populus tremuloides	67	2.1	141	SDM
Symphoricarpus sp.	67	1.9	127	
Rhus radicans	67	1.0	67	SW
Smilax herbacea	67	1.0	67	SD
Cryptotaenia canadensis	67	1.0	67	SDM
Actaea rubra	67	0.2	13	BF
Trillium cernuum	58	1.5	87	BF
Smilacina stellata	58	1.5	87	SD
Goodyera pubescens	58	0.2	12	SDM
Hepatica americana	50	7.3	365	BF
Trientalis borealis	50	1.9	95	BF
Cornus racemosa	50	1.5	75	SD
Aster shortii	50	1.0	50	SDM
Fragaria virginiana	50	0.8	40	
Carpinus caroliniana	50	0.2	10	BF
Dirca palustris	42	2.3	97	NM
Laportea canadensis	42	2.1	88	SW

Key to Communities of Modality:

BF	Boreal Forest
CG	Cedar Glade
ND	Northern Dry Forest
NDM	Northern Dry-Mesic Forest
NM	Northern Mesic Forest
NWM	Northern Wet-Mesic Forest
OO	Oak Opening
SD	Southern Dry Forest
SDM	Southern Dry-Mesic Forest
SM	Southern Mesic Forest
SWM	Southern Wet-Mesic Forest
SW	Southern Wet Forest

Birds of Saint John's

Visit the Saint John's Arboretum's Plants and Wildlife website for more information.

1979 Land Use Task Force Report (only available in hard copy)

Saint John's Outdoor University Environmental Education Strategic Plan

Visit the latest Strategic Plan on the website.

1977 Arboretum Task Force: A Green Banner – Values of an Arboretum at Saint John's

APPENDIX H

A GREEN BANNER
VALUES OF AN ARBORETUM AT SAINT JOHN'S

Theological and Spiritual Values

- An arboretum celebrates the beauty and the intrinsic value of creation. It proclaims the truth that the world is a sacred place. In all its earthiness, it reflects the beauty of its maker and is itself an implicit worship statement: "Praise the Lord for all the wonderful works of creation."

- The sense of mystery and sacredness at the heart of an arboretum is a value which attracts believer and nonbeliever alike. It is fundamental to the spirituality of Benedictines who attach themselves to a particular place and who dedicate themselves to a program of stewardship which encompasses preservation, sustainability, and biodiversity.

- These values can be perceived even if they are not explicitly stated. Accordingly, an arboretum provides for all beholders an environment for repose and contemplation. It instills in them, as well, a recognition of the common responsibility to maintain this natural bounty.

Educational and Academic Values

- An arboretum is a physical manifestation of the intrinsic value of nature and the integrity of the web of life. As such, it offers the visitor a natural learning experience. It introduces all who come to it to the beauty of creation and the value of biodiversity. It can make people aware of the beneficial and deleterious impact human actions have on the natural environment.

- An arboretum is also a natural laboratory, offering many educational opportunities from nature trails and class field trips to field research and examples of prudent management. It affords opportunities on the collegiate level for studies in eco-literacy, biology, the general liberal arts, and environmental science. Elementary and high school teachers and their students can be instructed through the Natural Science Enrichment for Teachers Program (NSET) and the School Nature Area Project program (SNAP).

- It provides examples of conservation, of the sustainable use of the forest and of wildlife protection. Various practices can demonstrate to landowners how the land is managed in a sustainable fashion.

- An arboretum integrates into our land-use policy the scientific and educational principles expounded in the incorporation documents on the Order of Saint Benedict.

Physical and Recreational Values

- An arboretum will manifest the commitment to physical education and recreation that is an essential part of the educational endeavor in the liberal-arts tradition. The arboretum will sustain multiple

Appendix F

recreational activities such as hiking, cross-country skiing, boating, swimming, fishing, and birdwatching.

- Recreational benefits will be available not only for our own students but for the larger community as well. The sense of place which undergirds a Benedictine community must embrace its neighbors if it is to be true to its mission of service and outreach. Dedication to the reasonable extension of recreational opportunities to the local community becomes a living expression of such an outreach.

Values Related to Institutional Mission and Image

- An arboretum espousing these values is the embodiment of what Saint John's perceives itself to be: a worshipping community rooted in a place, dedicated to the liberal education of its students, committed to service for the local and wider community.

- An arboretum at Saint John's is a tangible expression of treasured natural resources which are held in trust. This is what we have received; this is what we will be handing on.

- An arboretum is clearly congenial to the original articles of incorporation of Saint John's as it integrates education and ecological objectives in this place.

- An arboretum is a project of leadership in the local community and of partnership in the regional and national arena.

- An arboretum is an instrument of public relations in its most positive sense. We become known in association with a project that is unabashedly dedicated to the common good with ramifications for esthetics, ecology, science, theology, and recreation..

Values for Recruiting: Transmitting the Heritage

- An arboretum genuinely professes a set of values which could draw students to the University and the Preparatory School. An arboretum implicitly says: "We REALLY value life and beauty." The less introspective will recognize that this place is like a lake cabin! Cool!

- A students' decision to attend college is heavily based on the physical appearance of the school. An arboretum will make an already beautiful campus even more enticing.

- It could also be an attraction for potential monks and faculty who desire a more natural environment.

- It has the potential for bringing people to our summer programs.

Values for Fund Raising: Supporting the Heritage

- An arboretum will provide opportunities for investment in the use and prescrvation of our natural resources.

- An arboretum with its commitment to enduring beauty transcends the current generation. Donors might be interested in joining a work for the ages by considering bequests for the arboretum project.

- Supporting an arboretum becomes a way of developing, as it were, a savings account for the next generation.

Arboretum Task Force
March 1997

Educational, Study, and Research Opportunities (only available in hard copy)

Oak Savanna Restoration (only available in hard copy)

COMPARTMENT ACREAGE SUMMARY

	Compartment No.						
	I	II	III	IV	V	VI	Total
Forest land	----standard/modified acres-----						acres
Oak	14/18	65/7	197/	156/26	20/84	46/66	699
Upland hardwood**	21/11	19/34	5/	93/12	42/78	42/90	447
Lowland hardwood	/13	57/	28/	23/	4/3	/15	143
Conifers	31/8	27/2		24/	/2	49/3	146
Aspen	31/		13/	5/			49
Total forest	97/50	168/43	243/	301/38	66/167	137/174	1484
Non forest							
Upland grass/shrub	103	5			24	72	204
Restored prairie						56	56
Oak savannah						11	11
Marsh	25	25	20	15	55	60	200
Shrub marsh	2				4	9	15
Water			11		13	79	103
Roads-hard surface*	5	2			7	5	19
Total non-forest	135	32	31	15	103	292	608
Total all	282	243	274	354	336	603	2092

Inner campus	287
Stumpf Lake within St. John's	66
Lake Sagatagan flooded St. John's land above meander boundary	?
Total St. John's	2,445

* exclusive of those in inner campus
** includes Sugarbush

APPENDIX I

TENTATIVE LISTING OF STANDS TO REGENERATE NEXT 10 YEARS

Compartment	Stand No.	Type	Acres	Remarks
I	23	Od"	10	½ of stand
II	7	ROd"	23	3 modified acres
	12	LHd"	20	
III	10	Ac"	7	
IV	4	ROd"'	18	part of stand
	14	ROd"	35	" " "
	15	Ac"	3	
V	7	Od"/SMc'	11	
	9	Uhd"/SMc'	19	part of stand
VI	21	Od"'	20	part of stand

Totals

Oak and Upland hardwood	130	acres
Lowland hardwoods	20	"
Aspen	10	"

A listing of stands to regenerate is a legitimate part of a long range management plan. However inventory data is not intensive enough to do a good job of delineating and selecting stands to regenerate. Therefore this is only a tentative listing pending more intensive compartment prescription examination work.

APPENDIX J

LISTING OF STANDS/AREAS AND COMPARTMENT MAPS

CODES USED IN STAND LISTING

Forest type	Size class	Density
A aspen	a seedling	‘ sparce
O oak	b sapling	“ moderate
RO predominantly red oak	c poletimber	“’ well stocked
WO predominantly white oak	d sawtimber	
UH upland hardwoods		
Sugar maple		
LH lowland hardwoods		
WP white pine		
RP red pine		
JP jack pine		
T tamarack		
Spr spruce		
E elm		
I ironwood		

Us upland shrubs/grass
Ug upland grass/open
Ls lowland shrubs/grass
marsh grass/sedge/cattails
W water

Pvt. private land
foot trail
woods road/trail
hard surface road
railroad

compartment boundary
inclusion (unlike rest of stand)
natural area boundary

Area Classification

Standard (Std) – usual management, does not need to be modified for aesthetics of other reasons.

Modified (Mod) – the usual cutting method needs to be modified to no cutting or some modification to coordinate with aesthetics or other reason.

APPENDIX K

Compartment I – Stand Listing/Description/Prescription

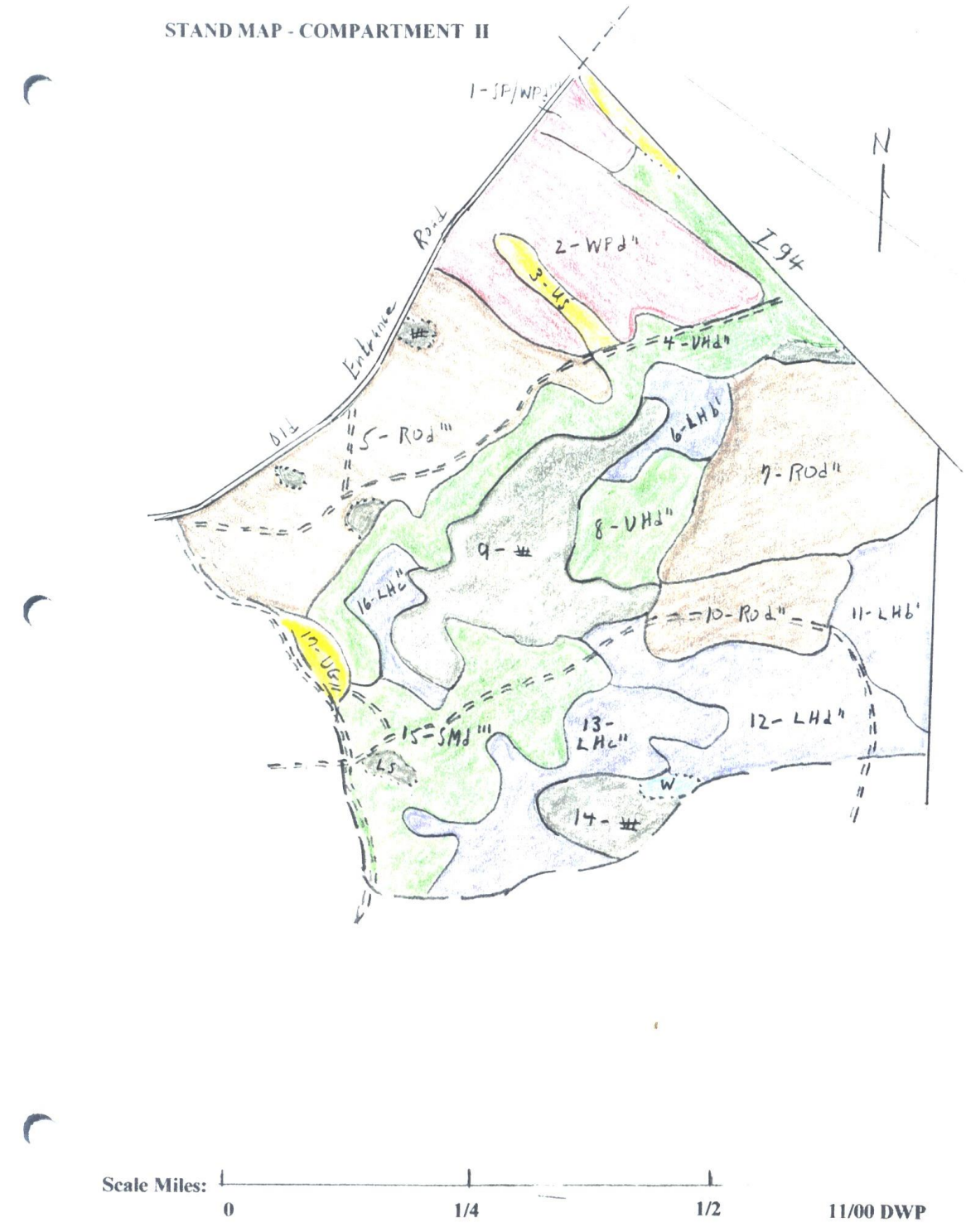
Stand	Type/cond. No.	Age class	Acres	Std.	Site Mod.	Mgt. Qual.	Prescription/Remarks Type
1	marsh		14				
2	Ab'/Ls		5			A	let grow, willow/grass
3	Ug		74				mow for hay or plant WP/Spr
4	Ab'/Ls		1				let grow, willow/grass
5	Ug		6				
6	Ab'/Ls		14			A	let grow, willow/grass
7	Od"		1		poor	O	railroad border
8	marsh		3				
9	marsh		1				
10	EAb'/Ls		5			A	let grow, willow
11	marsh		1				
12	Ab"		1			A	let grow
13	Ug		2				mow or plant WP/Spr
14	Ls			2			willow/grass
15	JPc'	1980	7	3	mod.	RP	site prep. interplant RP
16	Uhc"	all	4	3	low	O	let grow, cut aspen in 10 years
17	RPc"'	1980	10		mod	RP	prune to 8',to 17' in 6 yrs
18	WPc"	1982	4		good	WP	" " in 5 yrs
19	JPc"'	1940		2	mod	RP	clearcut, plant RP, much mortality
20	RPc"'	1980	6	3	good	WP	prune to 8'now, to 17' in 5 yrs
21	Uhc"	all	8		mod	O	tsi for firewood, much I 5'+
22	Ug		21			WP	plant WP or RP, lv some open for wildlife
23	Od"'		10	10	good	O	burn, grp sel, along hwy, shelwd, much I"'
24	RPc"'	1964	1		good	RP	prune now to 8', 5 yrs to 17'
25	Spr"'		3		good	Spr	complete pruning to 17'
26	Od"	100+	3		good	O	I"', cut culls for firewood
27	Uhd'/Smb"	1990	9	8	good	SM	two aged
28	Ab"'	1992	6		good	A	let grow
29	LHc"		13		good	WO	tsi culls, I"
30	marsh		6				
31	Od"	100+		8	good	O	I"', burn, gr sel.
	Totals		239	39			

Map of Compartment 1

Compartment II – Stand Listing/Description/Prescription

Stand	Type/Cond. No. Class	Age	Acres	Std.	Site Mod.	Mgt. Qual	Type	Prescription/Remarks
1	SP/WPd”’	1928		2	WP80	WP		some mortality, WP best tree, thin E part, much prickly ash
2	WPd”	1932	27		WP80	WP		burn to control pr. Ash, shelhwd, heavy deer use st 1,2
3	Us		3			G		pr.ash, grass, few sap ash, elm, RO, A. mg. for wildlife opening
4	Uhd”	all	112	5	mod	O		oak-ash, understocked
5	ROd”’	100+	35		OE70	RO		burn, shelwd, herbicide culls & I”
6	LHb’		5			Ash		reed canary grass, birch, merch trees only along edge
7	ROd”	100+	20	7	OE70	RO		grp sel along hwy. burn, shelwd central, I” much dead & dn
8	Uhd”	all	7		mod	O		oak/ash, understocked. small hills open.
9	marsh		20					
10	ROd”’	100+	10			OE70		burn/shelwd. no shrubs.
11	LHb’	1996	10		mod	Ash		much reed canary grass, lv unmg
12	LHd”	uneven	21		mod	Ash		
13	LHc”	uneven	17		mod	Ash		
14	marsh		5					
15	SMd”’	uneven		29	good	SM		manage for sugarbush. develop large crowns on young trees
16	LHc”		4					
17	Ug			2				
	1/2 ent. Road		2					
	Totals		200	43				

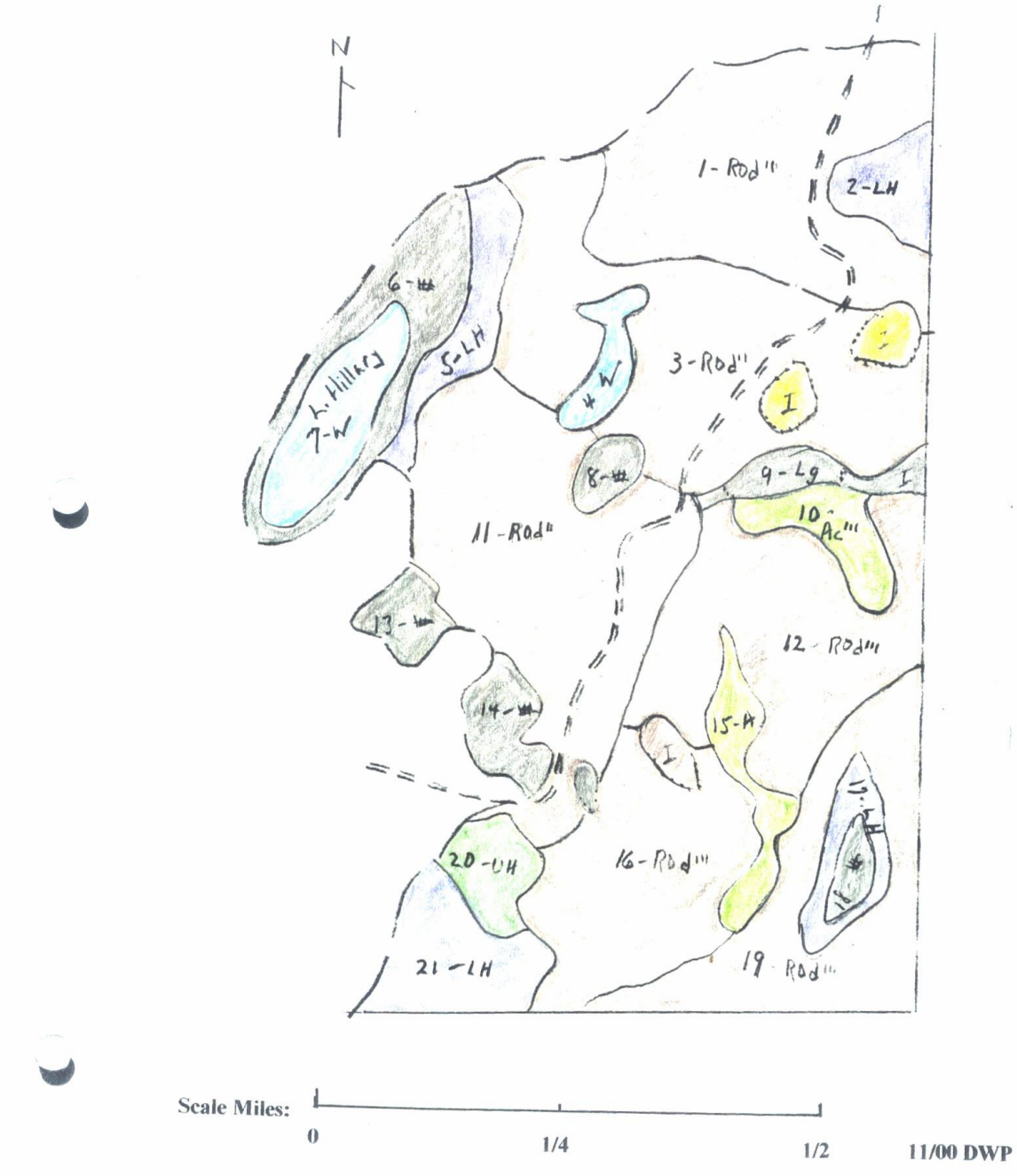
Map of Compartment 2



Compartment III – Stand Listing/Description/Prescription

Stand	Type/Cond. No.	Class	Acres Age	Std.	Site Mod.	Mgt. Qual	Type	Prescription/Remarks
1	ROd”	100+	37		good	RO		now in shelwd,, burn
2	LHc’		5		mod	Ash		poor stand-leave as is
3	ROd”	100+	46		good	RO		now in shelwd. burn. Ug inclusions were cut ‘90, ‘91.
4	W		4					water/marsh
5	LHc”	uneven	6		mod	Ash		Ash, r maple, elm, bass.
6	marsh	9						
7	W		7					Lake Hillary
8	marsh		2					
9	Lg		3					leave as is – grassy lowland
10	Ac”’	55-80	7		good	RO		2 age classes in separate pockets, clearcut
11	ROd”	100+	41		good	RO		In shelwd. burn, I”
12	ROc”’	70	30		good	RO		Shelwd, burn
13	marsh		3					
14	marsh		4					
15	Ab”’		6			A		aspen recently cut
16	ROd”’	70	22		good	RO		shelwd and burn
17	LHc”		4			Ash		ash, elm, rm, bass
18	marsh		2					
19	ROd”’	100+	21		good	RO		some aspen.
20	Uhd’/Ma”	2 aged	55			O		residual oak, maple over seedlings following recent cutting
21	LHc’/Asha”	10				Ash		ash, bass; bl ash seedlings
	totals		274	-				

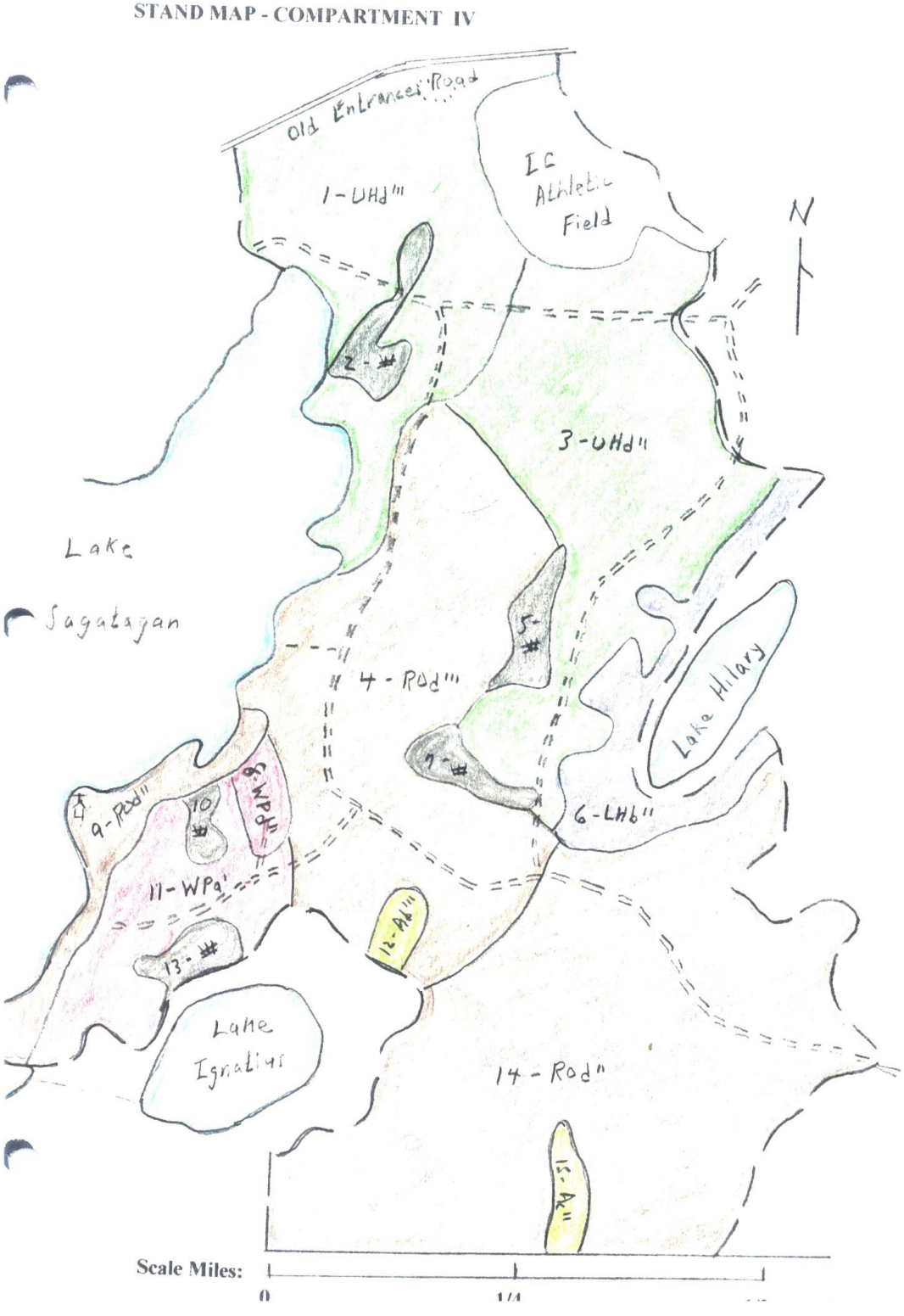
Map of Compartment 3



Compartment IV – Stand Listing/Description/Prescription

Stand	Type/Cond No.	Class		Acres Age	Std.	Site Mod.	Mgt. Qual.	Type	Prescription/Remarks
1	Uhd”’		uneven	36	12	good	RO		gr sel along lake or no cut. burn shelwd rest. I”
2	marsh			4					grassy
3	Uhd”		uneven	57		good	SM/O		burn, shelwd. I”’ mixed SM, RO, WO, bass
4	ROd”’		100+	50	15	good	RO		leave as is. I’, some SMb to I”, otherwise open
5	marsh			3					grass/sedge, very little cattail.
6	LHb”		uneven	23		mod	Tam/ash		bl ash, y bir, RM, tam, grass, alder, sedge, moss cut some trees when logging adjacent or leave as is
7	marsh			3					grassy marsh, some cattail, shrub
8	WPd”		1935	4		WP80	WP		thin a few, some mortality raspberry 2’, I”
9	ROd”		uneven		11	mod/poor	RO		leave as is – natural
10	marsh			2					grassy with willow
11	WPa’		1998	20			WP		WP 2’tall, need seedling count, site prep & plant as needed for full stocking
12	Ab”’			2					dense aspen 20’ tall. consider thinning to 8’x8’
13	marsh			3					grassy marsh
14	ROd”	100+		106		good	RO		shelwd, burn, I”, SMc’
15	Ac”			3			A		
		Totals		316	39				

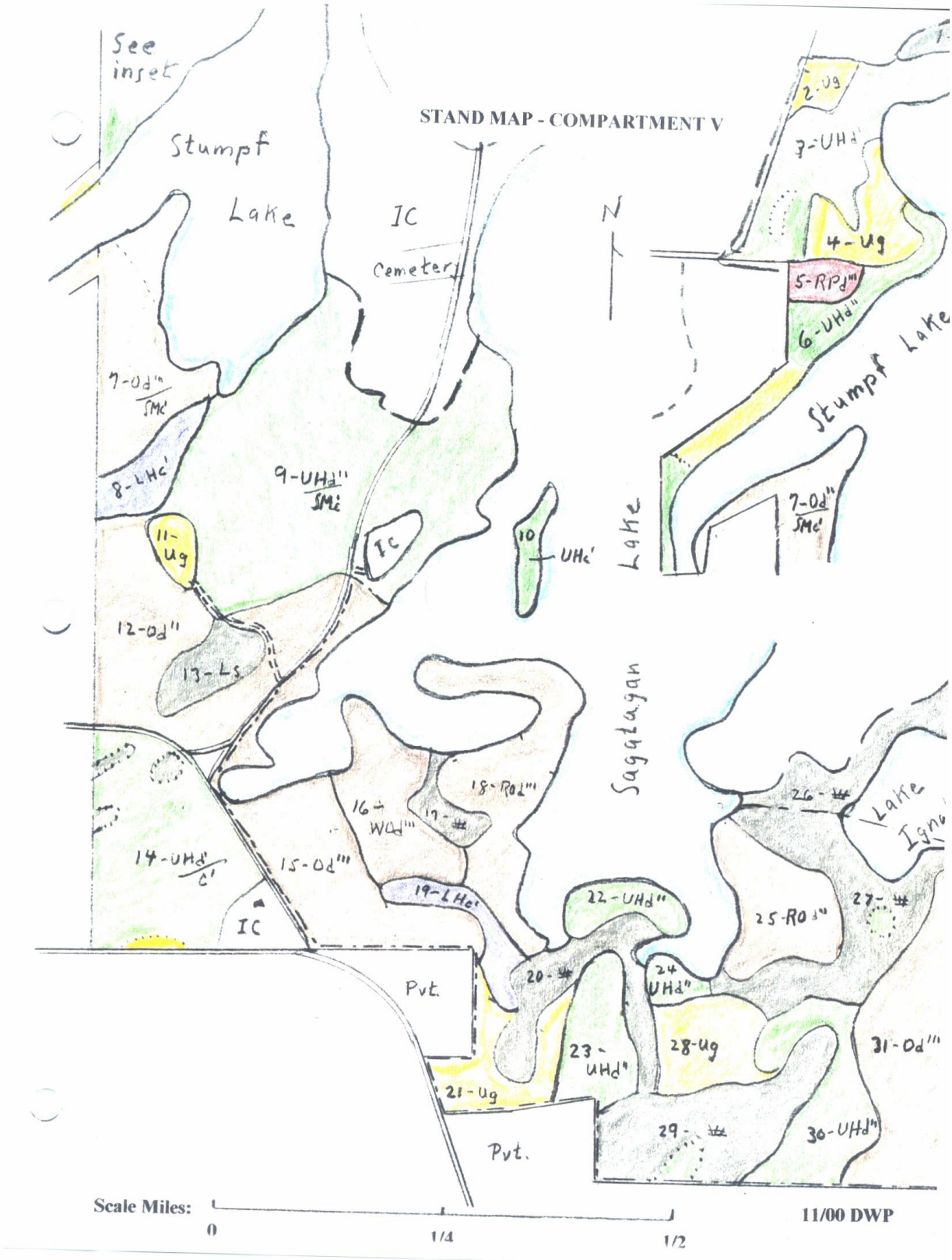
Map of compartment 4



Compartment V – Stand Listing/Description/Prescription

Stand	Type/Cond No.	Class	Acres Age	Std.	Site Mod.	Mgt. Qual.	Type	Prescription/Remarks
1	marsh		2					
2	Ug			2				
3	UHd’	all		13	good	UH		mixed species and ages. mg for recreation/aesthetics
4	Ug			6				
5	RPd”’			2	good	RP		grow long and large for scenic beauty. thin few trees
6	UHd”	uneven		10	mod	UH		some Ug, riparian, upgrade by TSI or leave natural.
7	Od”/SMc’	100+	8	7	good	RO		tsi same as stand 9
8	LHc’/b’	all	4		mod	Ash		tsi, thin & cull removal. some ybir,
9	UHd:/SMc’	uneven	25	25	good	UH		recent cut, mix of stbr, ptbr, seedl, . sapl. tsi. use sel. or gr sel.
10	UHc’	uneven		2	poor	UH		island, riparian, leave natural
11	Ug		2					grass opening, firewood deck area
12	ROd”/SMc’	100+	12	8	good	RO		tsi culls for firewood
13	Ls		4					few tamarack
14	UHd’/c’	uneven	17	6	mod	UH		evidence of recent cutting. tsi, gr sel
15	ROd”’	100+		18				natural area. improve N rip. strip by cull removal & character tree development.
16	WOd”’	100+		18				natural area
17	marsh			2			“	“
18	ROd”’	100+		16			“	“
19	LHc’	all		3			“	“ ash elm bass, oak
20	marsh			8			“	“
21	Ug			7			“	“
22	UHd”			4			“	“
23	UHd”			7			“	“ oak, A, ash, M, I regen.
24	UHd”			2			“	“
25	ROd”	100+		18			“	“
26	marsh		18				-	-
27	marsh			12				natural area
28	Ug			7			“	“
29	marsh			13			“	“
30	UHc”	25-35		9			“	“
31	ROd”’	100+		16			“	“
32	water		13					Lake Ignatius
	highway		7					
	Totals		112	224				

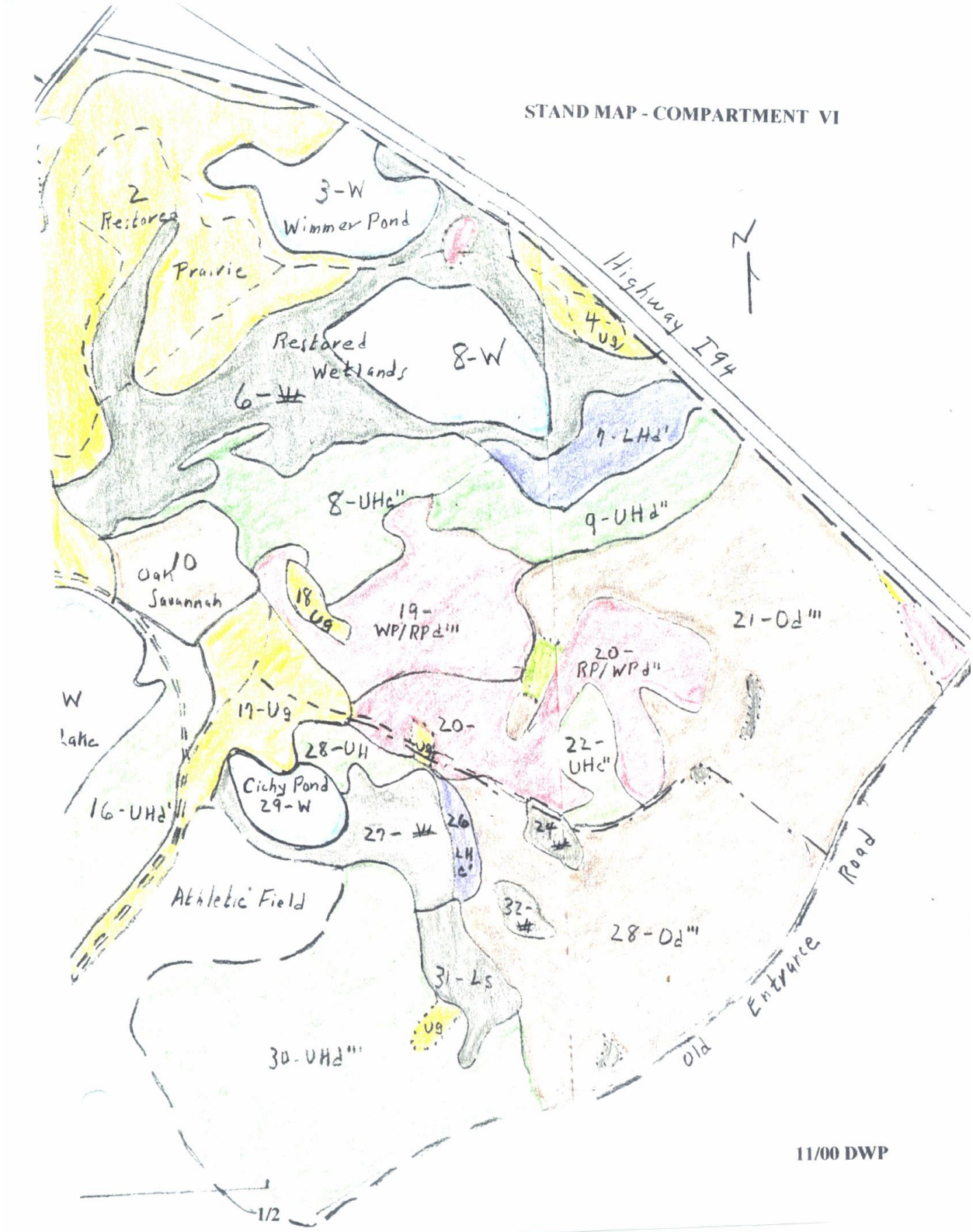
Map of Compartment V

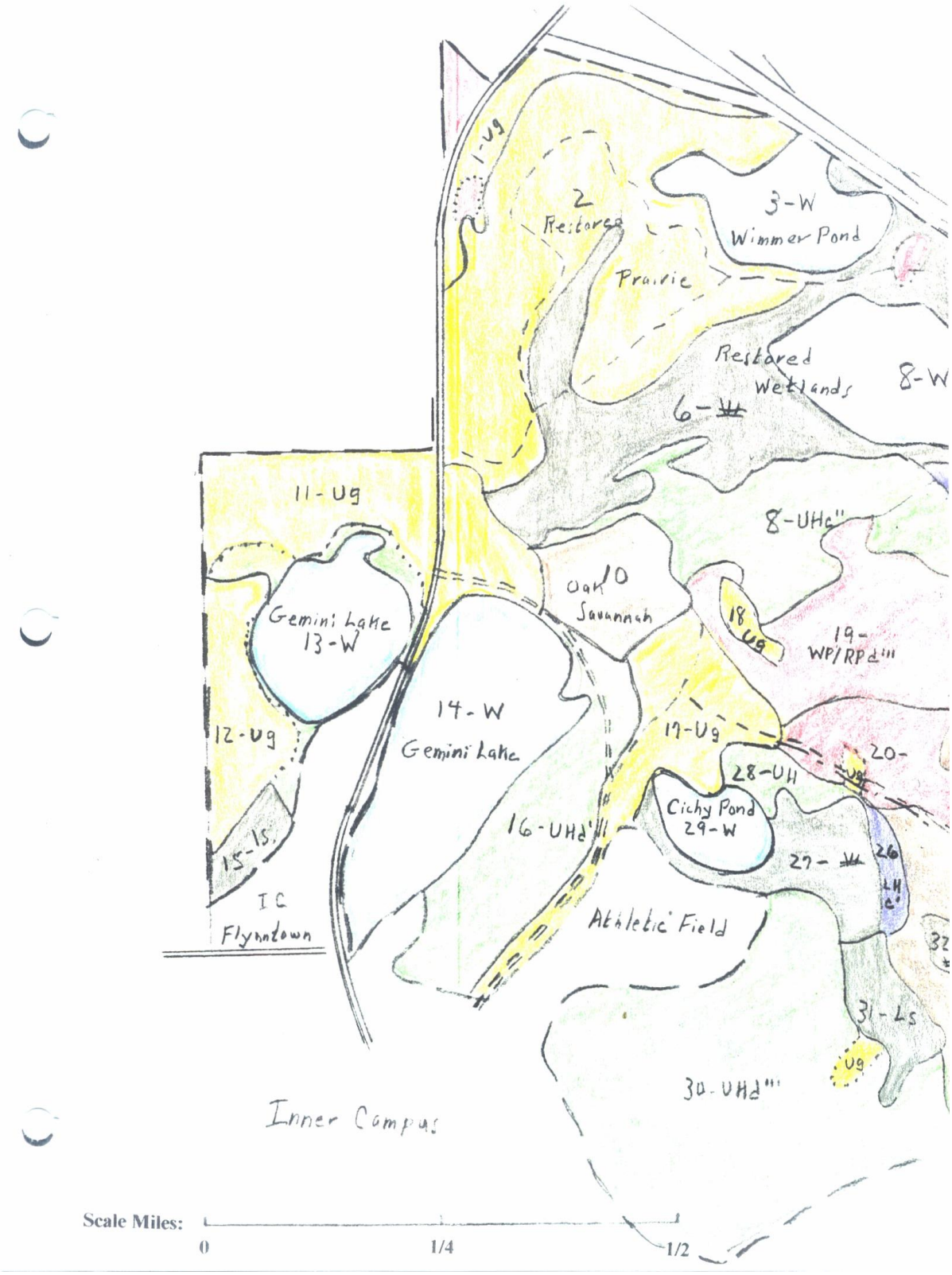


Compartment VI – Stand Listing/Description/Prescription

Stand No.	Type/Cond Class	Age	Acres Std	Mod	Site Qual	Mgt Type	Prescription/Remarks
1	Ug			10			spruce seedlings E of road
2	Ug		56				restored prairie
3	W		11				Wimmer Pond
4	Ug			4			some RPd", consider removal of RP
5	W		20				wetland pond
6	marsh		46				restored wetland
7	LHd'	uneven		12			flooded, bl ash & other
8	UHc"		21		mod	UH	mixed species incl. aspen
9	UHd"		16		good	UH	mixed hdwds
10	Od'			11			restored bur oak savannah
11	Ug		28				alfalfa with boxelder in S & W. used for overflow parking area
12	Ug		12		mod	WP	grass with boxelder saplings. site prep and plant white pine
13	W		12				Gemini Lake W
14	W		30				Gemini Lake E
15	Ls			3			
16	UHd'			22	mod	Bur O	cut and burn for oak savannah
17	Ug		16				part an active gravel pit
18	Ug		2		good	WP	insect killed pine?
19	WP/RPd"	60-70	23		RP73,WP84		WP wind and insect damaged, thin dense parts of stand
20	RP/WPd"'	70	26		"		thin dense parts
21	ROd"'	100+	46	14	good	RO	not a uniform stand, some mixed hdwd, areas of old RO over SM. improvement cut, try grp. select.
22	Uhd"		55				
24	marsh			2			natural area
25	UHc"'			4			" "
26	LHc'			3			" "
27	marsh			11			" "
28	Uhc"'			3			" "
29	W			6			" " Cichy Pond
30	UHd"'	uneven		61			" "
31	Ls			6			" "
32	marsh			1			" "
33	Od"'	uneven		52			" " nice old growth
	Total		375	228			

Map of Compartment VI (6)




1-Ug
2
Restored
Prairie
3-W
Wimmer Pond
Restored
Wetlands
8-W
6-
11-Ug
8-UHc''
Oak
Savannah
10
Gemini Lake
13-W
18 Ug
19-
WP/RPd'''
14-W
Gemini Lake
12-Ug
17-Ug
20-
28-UH
Cichy Pond
29-W
16-UHd'''
15-Is
27-
26
IC
Flynntown
Athletic Field
31-Ls
Ug
30-UHd'''
Inner Campus
Scale Miles:
0
1/4
1/2

Appendix L

History of the Waste Water Treatment Plant and the Effects on Water Quality in Gemini Lake.

By Br. Walter Kieffer, OSB 2011

The campus has a waste water treatment plant (WWTP) and the outflow from it goes into East Gemini Lake. The campus has continually upgraded the process treating the waste water. The impoundment of the N. fork of the Watab River forming the Gemini Lakes was completed in 1966 with the building of the intermural/baseball/football practice field. The hill of sandy clay that provided for the dam also provided for the Watab road which moved Co. RD 159 from the center of the campus to the back edge along the Watab Lake. The Gemini lakes were deemed to be a polishing pond for the WWTP which was completed for the Fall of 1964 as an activated sludge, contact stabilization plant with a secondary tank and a digester that was also activated sludge system. The process started with a grit chamber followed by a comminuter and or a bypass bar screen. The settling tank took off the clear water through overflow weirs and the settled sludge was pumped back to the activated sludge tank with its flow returning to the contact tank and mixing with the new influent flow. The clear water was injected with chlorine before running to the outfall and out into the impoundment called Gemini. Before this plant there was no treatment as the campus out fall (combination of sanitary and storm) was dumped in just behind the weir of the Watab dam (originally built in 1860 for a grist mill with a small water powered generator added later) (it was rebuilt in 1935 when the cart path over the dam was replaced with what is now our main entry road) to be mixed and diluted with the outfall water. This outfall was active from the completion of the first main sewer line in 1904. Before this it is unknown what happened but in the early days the small community was served by outhouses.

Before the impoundment the shallower areas of the west side were corn fields with some hay ground but most of the low lying area of the N. Fork of the Watab River including the creek bed from the west, was cow pasture for cows until the early 50's when the herd was phased out. For the ten years before flooding, the farmable area was put into row crops.

The early days of operating the WWTP consisted of seeing that everything was working properly and cleaning of the grit chamber along with unplugging the comminuter and clearing the bar screen. We were a scheduled campus community in those days with a heavy flow right after wake up and again in the evening, when high flow was extended as the monks preceded the students to bed. Any time it rained more than a quarter inch the grit chamber would overflow and the contact tank wash out with a substantial flow of solids over the weirs. This was the situation that I inherited when I became the operator in 1971 after obtaining by class B license.

The first problem was to address the storm water separation. That process started with a new line from north of Thomas hall in 1975 that ended in the center courtyard of the Quadrangle going between Benet and the Auditorium. This new line took storm water from a section of the campus area. The area was not really expanded until the big utility reconstruction of the campus in the late 80's. In 1978 through the work of an R and D engineering firm, the surface Yeoman aerator in the contact tank was augmented with a compressed air diffuser aeration system. The

piping arms for the diffusers did not stand up to the forceful mix of the surface aerator and did not last long. In 1980 the surface aerator was replaced with a jet aeration system with a double piped nozzled system on the west wall of the contact tank. The recirculated sludge was pumped through an inner pipe and ejected through nozzles that was surrounded by another nozzle of compressed air from blowers. This improved the O2 level of the activated sludge tank. At the same time an 80,000 gal. equalization tank was installed (the best improvement ever) that allowed for the steady feeding of the contact tank and an even flow through the settling tank. The comminuter was replaced with a hydroscreen allowing for the removal of much on the un-dissolved solids. This was after the inflow fell into the equalization tank and pumped up to screen by a submersible lift station type pump at a high flow rate, the outfall of the screen went into a weir box that controlled the flow to the plant with the excess returned to the e-tank. The material from the screen fall off into a cart which was daily bagged and put into the garbage bin which was picked up and taken to a landfill.

The steady flow feeding the plant over most of the day and the increased O2 level in the contact tank really improved the outfall weir quality so that rapid sand filters were added and ozone disinfection was introduced. When this was running well, there was drinking water quality water being discharged from the plant. But this was not always true.

As a "student" city for the most part, we have periods of extreme flows (home football, basketball, big concerts and other events which bring a big crowd to the campus) when a plant twice the size could not do the job. On the other side of the coin we have such a minimal flow when the plant is so over-sized that we lose much of our biomass population for lack of food only to be at full flow again in a matter of short time (long weekends, semester break (when the flow goes so low at the coldest time of the year that ice problems happen), spring break and summer (when we are convention city with full house for 3-5 days than hardly nothing again). The only stable population is the monastic community, which provides enough flow prevent freeze over. When big events happen, even with the e-tank, the lack of biomass, and in the winter temperatures providing a big cooling of the process, provides a time lag in getting a system back into operation again. With flows from a resident population that runs from a little over 100 to a high of 2400 and a day time school population of 3600 or more, providing for good WWTP effluent is a troubling job.

The additions of the 1990s I will let others provide. While I do know what went in, I am not the hands on person so cannot comment on how the system is not functioning.

The following is from Mike Ross. The rest of the story on the SJU WWTP: As the previous email indicated, they started chlorinating in 1964. In 1978 they switched to an ozonator system which was replaced with the UV-Lamps in Sept of 1995. Since that time, they have done a couple of modifications to remove phosphate. In 2003 they started a biological removal process and in 2004 they added liquid alum to the phosphate process.

Appendix M

Properties which are not contiguous to the campus property.

Swenson Cabin - 59.75 acres
Property Address:
203 Wagon Wheel Dr SE; Bemidji, MN 56601
Legal Description:
Sect-13 Twp-146 Range-032
NE1/4 OF NE1/4 & Lot 1

Eagle Cabin – 1 acre
Property Address:
16851 N Eagle Lake RD Fifty Lakes, MN
Legal Description:
Sec:24 Twp: 138.0 Rg:27 Lot: Blk: Acres 1.00
PART OF GOV.LOT 1 24 138 27 DESC.:BEG. AT
THE NE CORNER OF SAID LOT 1, THENCE W'LY
ALONG THE N. LINE THEREOF 252FT, THENCE S. 15

Both of these properties are used as retreats and are not included in the Forest Stewardship Council (FSC) assessment.