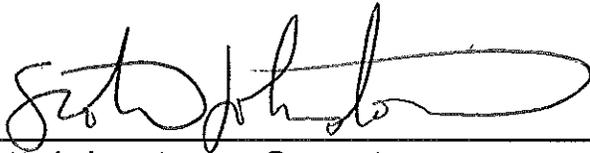


STATE OF VERMONT
AGENCY OF NATURAL RESOURCES
DEPARTMENT OF FORESTS, PARKS AND RECREATION

Alburg Dunes State Park

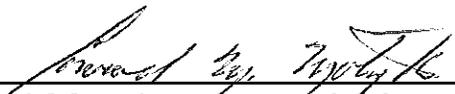
General Management Plan

December, 2002



Scott Johnstone, Secretary
Agency of Natural Resources

1/3/03
Date



Conrad Motyka, Commissioner
Department of Forests, Parks & Recreation

Dec 30, 2002
Date

Hon. Howard Dean, Governor of the State of Vermont

Scott Johnstone, Secretary of the Agency of Natural Resources

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This document is available upon request in large print, braille, and audio cassette.

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Executive Summary

Preface

Purpose & Objectives

Executive Summary

Overview of Resource Management Strategies

Alburg Dunes State Park is 625 acres of public land along Lake Champlain in the Town of Alburg, Vermont. The park includes one of Vermont's premier natural areas and longest natural sand beach, and offers a diversity of land types with outstanding ecological, recreational, and wildlife values. The Management Plan will be implemented to ensure the conservation and protection of the park's natural resources, while allowing for limited day-use for recreation.

To ensure the compatibility of recreational use with park's natural resource base, three management categories are proposed for implementation. They are: low/moderate, moderate/high, and natural area. The low/moderate management area includes the upland areas in the northwest and northeast corners of the park, and midway along the railroad bed. The moderate/high management area includes the day use beach area, the parking lots, the upland areas in the southwestern and southeastern ends of the park, as well as the open lands around the staff residence and associated outbuildings along Coon Point Road, on the western side of the park. The natural area management area encompasses the wetlands, beach and sand dune communities of the park.

Natural Area

- Upon approval of the General Management Plan, the Department of Forests, Parks and Recreation will begin the process to designate the Charles E. Smith Natural Area.

Soils

- Prior to the development of any facilities, site-specific soil investigations will be made. When needed, appropriate mitigation measures will be taken.

Beach and Dune Management

- Fencing the sand dunes area will lessen human impacts on dune dynamics and development, and from disturbing the rare vegetation and wildlife that live there.

Natural Communities and Vegetation Types

- The Department will work toward restoration and preservation of the natural communities within the park, especially the sand dunes and wetlands.

Unique Species

- All rare and endangered plants found in Alburg Dunes State Park will be protected and managed. Further investigation will take place to determine the presence of rare and endangered species in addition to those already identified.

Exotic Species

- Invasive, non-native species will be controlled and/or eradicated from the park as best as possible.

Wildlife Management

- No active management will occur in the wetlands except for designated alder stands.

Agricultural Fields

- Agricultural fields will be leased to a local farmer.

Mixed Upland Forest

- The Northern white cedar component of the upland forest will be managed for this species and for the maintenance of functional winter cover for white tailed deer and other species.
- A combination of cutting techniques will be used to manage the mixed upland forest with entries timed for once in a 5-year period to create browse for wildlife.
- A diversity of tree species will be favored, particularly nut-producing species and winter shelter-providing species.

Appropriate Future Additions

- As lands become available, additional parcels will be purchased to ensure preservation of the wetlands and sand dunes.

Areas of Needed Protection

- The wetlands and deer wintering area (north of the park), as well as the eroding bluffs (east of the park) are areas that need protection. Protection methods will include education of citizens and landowners, or possibly the purchase of easements or fee titles to the land.

Overview of Proposed Uses and Facilities

The proposed uses and facilities will be minimal and compatible with the natural environment of Alburg Dunes State Park.

Primary Uses

- Primary uses of the park will be for nature preservation and interpretation, research and monitoring, nature study/wildlife observation, swimming, picnicking, and hunting in season.

Other Uses

- Other uses for the park are fishing (ice fishing in the winter), community/school events and programs, boating activities, bicycling, hiking/walking, and other appropriate off-season (winter) uses.

Prohibited Uses

- ATV riding will be prohibited on state lands, including the railroad bed.
- Overnight camping will be prohibited at the park.

Access to the Park

- Primary public access to the park will continue to be via Coon Point Road, along the park's western boundary.
- Secondary access will be maintained via Poor Farm Road on the park's east side. The east-side gate may be seasonally opened to enable ice-fishing access to Lake Champlain.

Parking

- There will be an upper parking lot for approximately 150 cars. The lower parking lot will accommodate 5-6 cars for people with physical disabilities. It will also serve as a unloading area.

Beach and Picnic Area

- The contact station will be moved closer to the beach area and lower parking lot. The relocation will make it easier for the attendant to see the entire length of the beach and picnic area.

Restrooms and Facilities

- A composting-type restroom building will be built near the lower parking/unloading area at the southwest end of the park.
- A group (picnic) shelter is proposed for construction in the moderate/high management intensity area in the park's southwest end.

Trails and Viewing Platforms

- Short interpretative nature trails on boardwalks in the wetlands and viewing platforms will be located in the southwest corner of the park near the beach and picnic area.
- There will be pedestrian access links from the beach service road through the dunes so that visitors can have access to the service road and railroad bed for walking and bicycling.

Signs

- Various interpretive and directional signs will be installed at appropriate locations, but will be minimal in number and appropriate to the character and management objectives of the park.
- TIC (Travel Informational Council) signs along VT Highway 129 and US Highway 2 will be installed to direct visitors to the park.

Preface

The objective of public land management by the Department of Forests, Parks and Recreation is the management of all resources on land owned or controlled by the Department for the greatest benefit for the people of Vermont consistent with the capability of the resources. It is the policy of the Department to manage these lands under the concept of integrated use, a strategy of land management which considers public need and the capabilities of the land to meet these needs, and favors the highest and best use or uses. Compatible uses shall be recognized, and as conditions and needs change, uses may be changed. Properly implemented, this multiple use concept maximizes benefits and avoids environmental deterioration.

The following general long-range management plan is prepared to provide a summary of the area's assets, or an inventory of the total resource, and is designed to present the background and goals of management, to set priorities, and to provide the setting for work plans, activities, and methods that will be applied to reach these goals over the next 5 - 20 years.

The Agency and its Departments acknowledges the helpful participation of the Public Planning Group, the Technical Steering Committee, and other professional resource managers in the development of this plan (see Appendix A for listing of committee members). Following public comment on the final draft plan, the Department incorporated constructive suggestions. We thank everyone who has participated for their assistance, and appreciate the importance of their contributions. Continued public support is needed to achieve many of the goals and objectives outlined in this plan.

The Purpose and Objectives of Land Management by the Department of Forests, Parks and Recreation

In addressing the natural resource needs of the people of the State of Vermont, the Legislature has established the Department of Forests, Parks and Recreation, as a part of the Agency of Natural Resources. A major assignment of the Department is the responsibility for management of lands acquired to fulfill these needs.

Consistent with legislative direction, and through a policy of economic management of its lands, the Department will protect, conserve, and enhance resource qualities and provide recreational opportunities, timber products, varied plant and wildlife habitat, clean water, and natural beauty for the enjoyment and use of the people of the state.

Management of public land will be in accordance with the interests of the people of Vermont, as expressed through the democratic process, and through a systematic assessment of needs. Decisions will consider both public needs and inherent resource capabilities, through application of interdisciplinary review by a staff of professional personnel.

Public ownership shall complement private ownership by fulfilling needs which are not readily met by the private sector. The continuity of public ownership provides the opportunity to meet long range goals and objectives, an assurance of public access to diverse natural resources, their availability for use by future generations, and the opportunity for research, education, and study for the enrichment of society.

Public management shall be consistent, yet flexible enough to adapt to changing public needs, technological advances, and relevant economic conditions. The Department recognizes the legislative charge to manage for purposes implied by its title and jurisdictions: the forest, recreation, and natural areas of the state, but will consider and incorporate all other values consistent with expressed goals and policy.

To achieve the Department assignments of fulfilling resource needs through state lands stewardship, the Department is guided by the following objectives:

- A. To manage the land for the greatest benefit of the people of the state, consistent with the capability of the resource, under the concept of integrated use, while favoring the highest and best use, by:
 1. Establishing land use definitions, categories, and objectives;
 2. Identifying resource capability through an inventory process;
 3. Assessing and integrating public needs;
 4. Establishing an input process by other state divisions and departments, individuals, and special interest groups.
 5. Developing long range plans and goals for the land;
 6. Formulating work plans that outline specific tasks to be achieved over a 15-year period;
 7. Reviewing and updating plans regularly;
 8. Establishing a method of monitoring progress on plans; and
 9. Continually reviewing the public land ownership pattern, and making recommendations with respect to acquisition and/or disposition of property.

- B. To protect the resources by:
 1. Identifying for acquisition those lands needed to enhance or protect existing state ownership;
 2. Identifying and recommending acquisitions of land which have outstanding scenic quality, vital ecosystems needing preservation, vulnerable habitat or landforms;
 3. Devising and implementing a fire protection plan;
 4. Reducing insect and disease damage through silvicultural practices, or where necessary, other appropriate techniques;
 5. Implementing the best erosion control measures feasible in all activities;
 6. Including educational efforts in all plans to encourage knowledgeable public uses of the lands;
 7. Monitoring all uses of state lands to ensure protection of the resource and to review or adjust uses as needs demonstrate;
 8. Locating and marking all property lines to maintain the integrity of the property; and

9. Designing facilities which direct use to areas most suited to certain activities.

C. To provide a suitable variety of services and products by:

1. Developing outdoor recreational opportunities such as campgrounds, beaches, trails, picnic areas, and other facilities, where compatible with the resource and where need is demonstrated;
2. Harvesting the timber growth through an orderly sales program, to provide fuelwood, logs, pulpwood, and other marketable forest products, based on a sound silvicultural management system;
3. Maintaining, enhancing, and creating a variety of wildlife habitat;
4. Acquiring and developing access for public use of state lands;
5. Allowing limited special uses through a permit system, when such uses are clearly beneficial to an individual or group, and fully compatible with the primary objectives of the parcel;
6. Administering all leases in a professional and timely manner, demonstrating appropriate and constructive attention to natural resources, viability and private sector interests, economics and the general public good.

Introduction & Background

Introduction

Purpose of Plan

This General Management Plan provides guidance for long-term management and development of Alburg Dunes State Park. It summarizes available information about the park, documents the planning process, and describes data used in making land management decisions and specific development proposals. As conditions change, the plan may be reviewed and updated as necessary to responsibly guide Departmental actions at the park. The plan, however, is not meant to provide detailed plans for site development, resource management, or park operation and maintenance. Day-use visitor numbers, parking capacities, and similar specifics indicated in the plan are approximate only, and may be slightly more or less when specific site and facility plans are prepared and funded for implementation.

The plan represents the comments and recommendations made by the public, through the thoughtful and serious review by the Technical Steering Committee. Discussions about proximate lands not under Department of Forests, Parks and Recreation ownership have been included. These lands represent potential acquisition opportunities, based on available data. However, the discussions are for planning purposes only, and do not represent a commitment for acquisition.

General Management Plan Outline

The plan is made up of the following elements which reflect the Department's responsibility to fulfill certain goals:

The **Introduction** outlines the plan and summarizes the planning process and public involvement component.

The **Background** section includes background information and provides a summary of the park's natural resources.

The **Management Implementation** section provides the park's character statement and operating philosophy, setting the stage for park management, operations, and development. Included are strategies to help guide the operation, management, and development of the park.

The **Land Use Section** describes current land uses and relevant planning issues, determines proposed land uses consistent with the resources, and outlines land use objectives.

The **Facilities and Operations Section** describes current facilities and concerns with those facilities. Also, the park's current operation and maintenance practices are discussed.

The **Appendices** describe the above sections in more detail, when needed.

The Planning Process

The planning process included a comprehensive evaluation of the park's resources, property restrictions, and the roles the property and cooperating agencies play in providing recreational opportunities and in preserving significant natural and cultural values at this site. In addition, public participation played an integral part in developing this plan. The process was completed during an 18-month period.

Public Involvement Process

Prior to undertaking the park acquisition, staff from the Department of Forests, Parks and Recreation, the Department of Fish and Wildlife, and The Nature Conservancy had several meetings and correspondence with the Town of Alburg Select Board in order to gauge support for the project and to identify any issues that the town officials may have had regarding the acquisition. The Town Select Board fully supported the acquisition and establishment of a state park within their town boundaries.

Public Meetings

Shortly after completing the acquisition of the park, a public informational meeting was held on May 1, 1996 at the Alburg Educational Center, Alburg, Vermont. The purpose of the meeting was three-fold: 1) to inform the public about the acquisition, what it meant and what was going to happen; 2) to answer questions regarding the acquisition and management of the park as best as possible; and 3) to solicit input on preliminary ideas for managing the park, including selecting a name of the park.

On June 3, 1996, Governor Howard Dean dedicated and celebrated the establishment of Vermont's newest state park as he unveiled the park sign during a ceremony that was attended by approximately 80 people.

To address the proposed hunting regulations [one of the pressing issues immediately facing state managers], the Fish and Wildlife Board held a public hearing on July 11, 1996 to solicit citizen input and comment. The hearing was attended by approximately 100 people.

After the Management Plan was drafted and ready for public review, a number of public meetings were held for public comment of the final draft plan. Appropriate changes and edits were made prior to the final approval of the plan.

Public Planning Group

An advisory steering committee, the Alburg Dunes State Park Public Planning Group (PPG), was organized to discuss management issues, and to consider and recommend alternatives for park management and development. The PPG consisted of 18 members (see Appendix A), which met monthly from the end of July 1996 until January 1997, for a total of six meetings [July 25, August 25, September 28, October 28, December 11, and January 28]. These meetings were open, public meetings, and at times other citizens participated in the meetings. The PPG provided guidance for writing this plan, and reviewed it twice before the plan was released to the general public.

Technical Steering Committee

The Technical Steering Committee (TSC) was organized prior to the completion of the acquisition in order to address immediate management needs and considerations for the 1996 summer (see Appendix A). Once the 1996 management concerns were addressed, the TSC continued to meet to address issues, monitor the Public Planning Group progress, and make recommendations for management given the two purposes for the establishment of the park: protection of the resources and recreational use of the property. The TSC weighed and balanced the various issues and needs, and provided guidance for the development of the plan. The TSC also reviewed and approved the final draft plan prior to releasing it for review by the public and Public Planning Group, in March, 1999¹.

Recreational User and Hunter Surveys

Two surveys were implemented to gather more public opinion regarding separate concerns. The Recreational User Survey focused on state park visitors coming to the park in the summer for day use activities, and the Hunter Survey focused on hunters using the park during the fall.

The Recreational User Survey was conducted by park staff from the beginning of July through the end of August 1996 for the main purposes of determining who the park users were, what activities they were participating in, and their views and opinions on how the park should be managed and developed. In addition to the survey, a vehicle count was also conducted at the same time. Of the 539 vehicles that were counted on survey days, 166 (31.2%) were given surveys to complete. In total, 91 surveys were completed for a response rate of 54.8%. As might be expected, there generally were more vehicles reported on sunny days with warm or hot temperatures.

The Hunter Survey was conducted by local volunteers for 34 days out of the total 48 deer hunting days available during the three deer seasons (archery, gun, and muzzleloader), including 17 of the 18 available weekend days. Information was collected about hunters,

¹ The Agency of Natural Resources, along with its member departments of Forests & Parks, Fish & Wildlife, and Environmental Conservation adopted a "Stewardship Initiative" later in 1999 in order to bring a more scientific, multidisciplinary, and consistent approach to the various land management planning effort occurring over the broad spectrum of ANR lands. Among other outcomes was the creation the district stewardship teams. The northwestern (Forests and Parks Region 3) stewardship team, whose names appear on the signature page of this document, has superseded the original Alburg Dunes TSC.

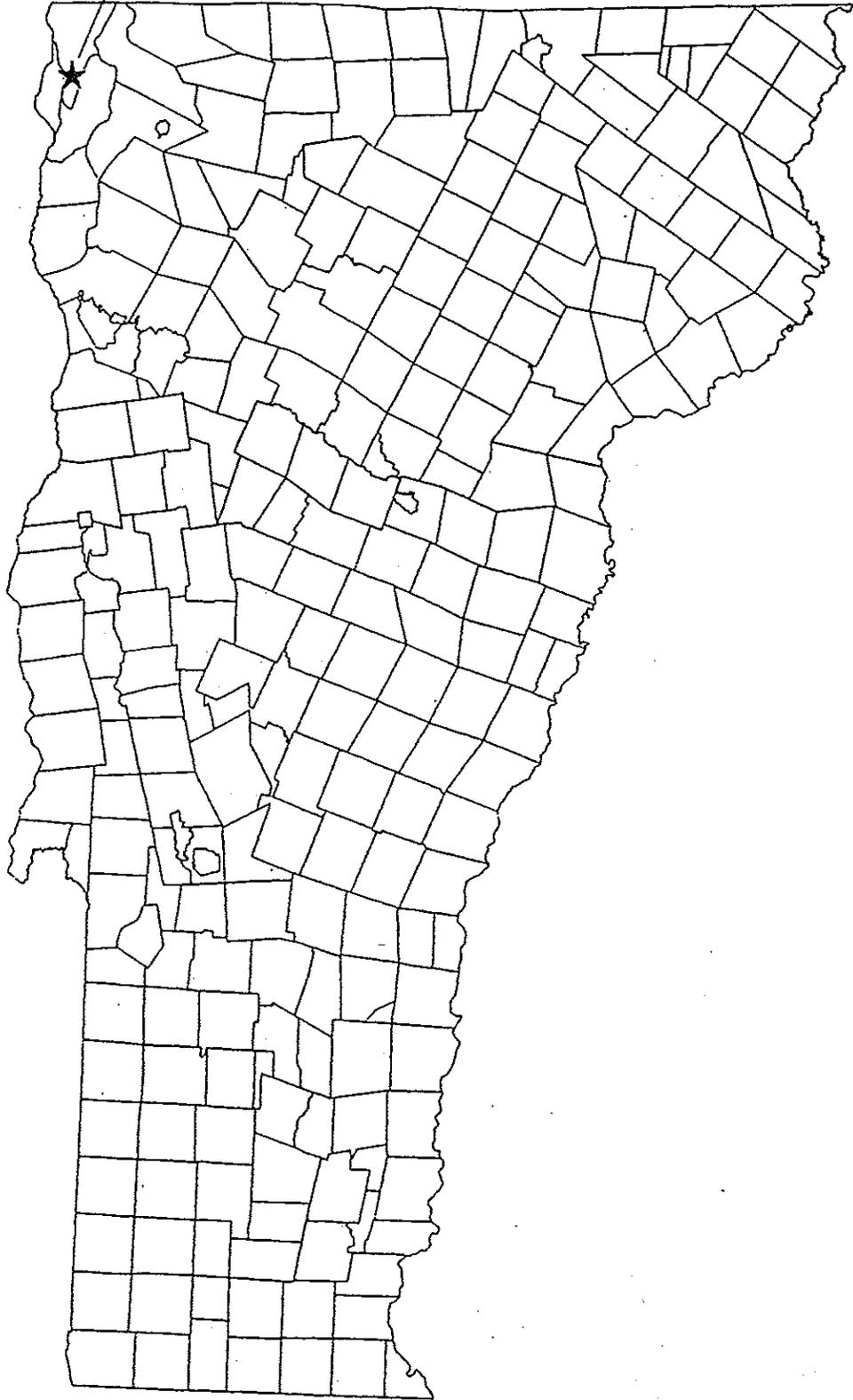
the types of hunting they participated in, opinions on hunting at the park, and socio-demographic information about the hunters. A total of 118 hunters responded to the survey for a response rate of 68.5%.

Complete reports on each of the surveys can be found in the files.

Plan Approval and Adoption

After public review and comment (April - May, 1999), the Agency of Natural Resources entered into an approval process for the plan culminating with the signature of the Secretary of the Agency, and the Commissioner of Forests, Parks and Recreation, in December, 2002. The elapsed time between public comment and final sign-off was mostly attributable to the Lot 20 acquisition in 1999 (for which an interim stewardship plan was completed), a phased-in takeover of Lot 20 from the former owner (3 years), and the possibility of additional acquisition west of the Coon Point Road (this project stalled). Except for editing and updating (including incorporating the recommendations of the Lot 20 interim plan into this document) some details, this "final" plan is the same as was reviewed by the public in 1999.

Alburg Dunes State Park



Background

Becoming a State Park

Alburg Dunes State Park was established as a state park at the end of April 1996. This property, and adjoining lands, have long been recognized by the State which, at various times over the last quarter of the 20th Century, has attempted to acquire this property and surrounding lands for public purposes. On behalf of the State, the Vermont Field Office of The Nature Conservancy (TNC) actively started negotiating to acquire this property in 1994. These efforts ultimately resulted in approximately 579 acres of land being acquired by TNC on April 2, 1996 for \$965,000 from Mr. Robert Phillips. Through a unique partnership involving the Department of Forests, Parks and Recreation (FPR), the Vermont Housing and Conservation Board (VHCB), and other private funds, TNC conveyed the property to the State for \$537,000. Funding sources for the acquisition included a bequest to the FPR for \$60,000 (see Appendix B), a grant from the VCHB for \$477,000, and a grant from the Freeman Foundation for \$477,000. On June 3, 1996, Governor Howard Dean dedicated Alburg Dunes State Park as Vermont's newest state park. An additional 43 acres of land have been acquired since the initial purchase of the park. On October 3, 1996, 38 acres of land were acquired on the eastern edge of the property along the railroad bed from Mr. Fineman for \$22,000. During the spring of 1998, an additional 5 acres of land, which included a residential house and two out-buildings, were added to the park. In 1999, a 3.5-acre parcel at the west end of the beach, referred to herein as "Lot 20", was purchased and added to Alburg Dunes.

As part of the grant agreement with VHCB and under the conservation easement held by TNC (see Appendix C), the Department of Forests, Parks and Recreation was required to develop a long-range management plan accordingly. In keeping with the policies of FPR, a public planning process was developed and implemented shortly after the park was dedicated. This process included an advisory Public Planning Group, which met for approximately 10 months, and general public meetings and hearings. In addition, a Technical Steering Committee² was convened to determine interim management and operation strategies, and to make recommendations for the final plan.

² Ibid. Footnote 1, page 4.

General Description of Property

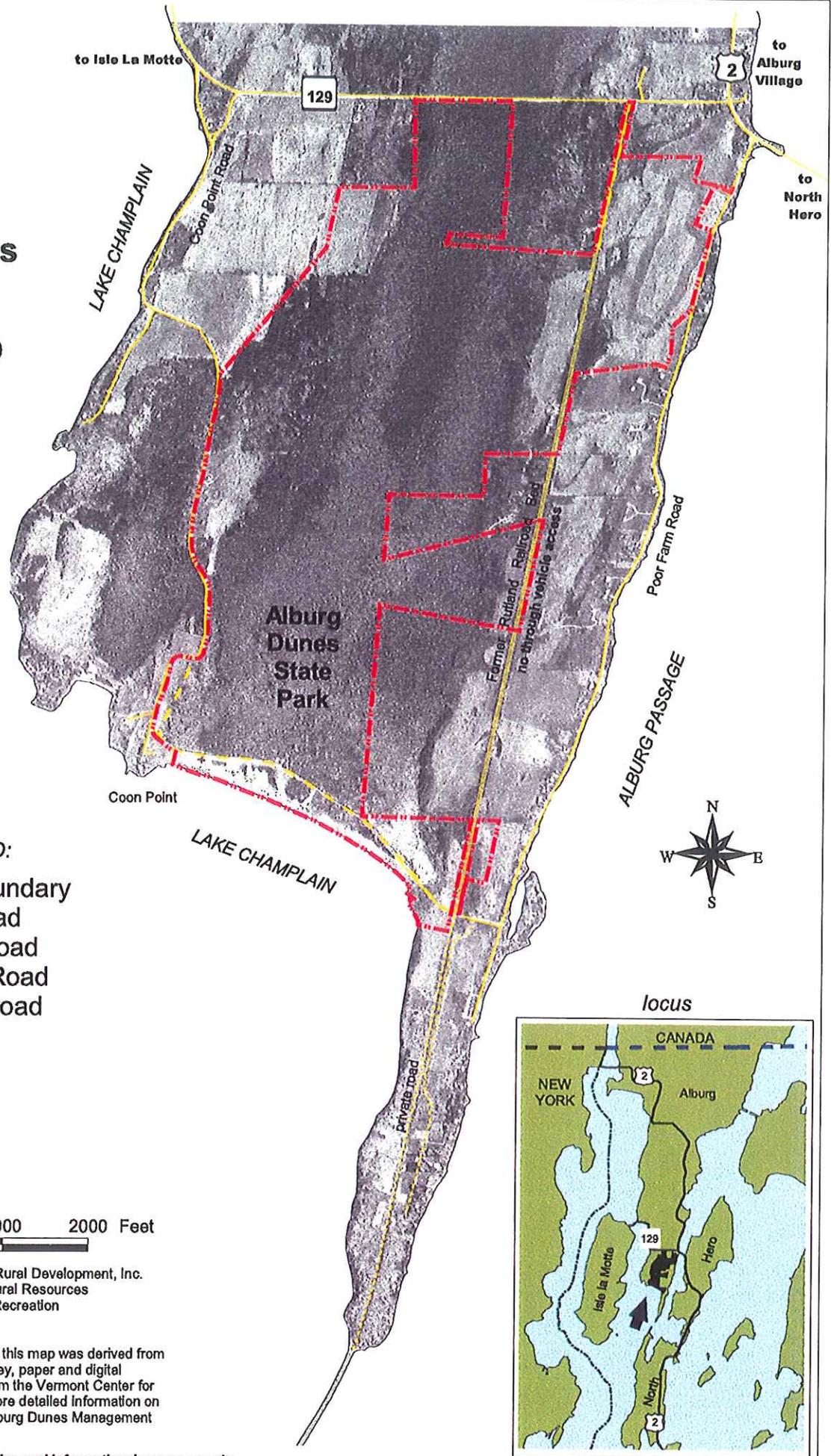
Alburg Dunes State Park contains 626 (+-) acres of land along Lake Champlain in the Town of Alburg, Vermont (see Base Map locator inset). This property includes one of Vermont's premier natural areas, and offers a diversity of land types with outstanding ecological, recreational, and wildlife values.

Located on Lake Champlain at the southern tip of the Alburg Tongue east of the LaMotte Passage and west of the Alburg Passage (see Base Map), Alburg Dunes State Park contains many important natural features. The most outstanding feature of this property is the south-facing, 3/4-mile (3430 linear feet) long natural sand beach. This beach is recognized as Vermont's largest sand beach, and is one of the most extensive natural sand beaches on all of Lake Champlain. The beach area includes an unusual natural sand dune community, which, although disturbed extensively, still serves as the most important example of such a community in the state. The beach and dune area harbors both a state endangered plant species (Champlain beachgrass, *Ammophila champlainsis*) and a state threatened species (Beach pea, *Lathyrus japonicus*). Known locally as "Palmer's Beach," this once private beach was open to public use for a fee. Uses included camping on the beach, and all the associated day activities such as picnicking and swimming. The primary users of this area were people from the southern townships of the Province of Quebec just north of the US/Canadian border.

Immediately north of the beach and dune area is the South Alburg Swamp. This is one of Vermont's most significant wetland communities comprised of several wetland types including a rare black spruce/tamarack swamp. This extensive wetland and adjoining woodlands are also the primary component of the largest and most important deer wintering area in Grand Isle County. The remainder of the property includes a fair amount of open land, some of which is still in agricultural production, along with some upland forested areas. These areas provide productive wildlife habitat and serve to buffer the ecologically significant interior wetland areas.

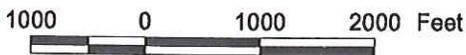
The State Park is surrounded on the eastern and western sides by private property owners that utilize their land as both year-round residences and seasonal camps. The northern boundary consists of VT Highway 129, and the southern boundary abuts Lake Champlain. Access to the park is from VT 129 south on Coon Point Road for approximately 2 miles to the main entrance.

Alburg Dunes State Park Base Map



LEGEND:

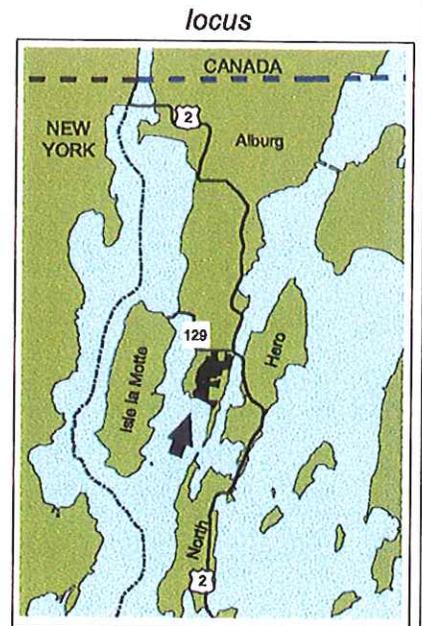
- Park Boundary
- Park Road
- Public Road
- Private Road
- Old Railroad



Produced by: Associates in Rural Development, Inc.
 For: Vermont Agency of Natural Resources
 Dept. of Forests, Parks and Recreation
 Date: October 26, 1998

SOURCES: The information on this map was derived from the Grand Isle County Soil Survey, paper and digital orthophotos, and digital data from the Vermont Center for Geographic Information. For more detailed information on data sources, please see the Alburg Dunes Management Plan.

This map is intended for planning and informational purposes only.



Natural Resources

The natural resources of Alburg Dunes State Park and Charles E. Smith Natural Area are very diverse, from a variety of wetlands to sand dunes. Some of the natural resources in the park are unique and/or rare in the Champlain Valley Region. This section is a brief description of the park's resources. For a more technical and in-depth description of the park's natural resources refer to Appendix E.

A M O T T E

Josephs Ch
La Motte

Motte

Jordan Bay

I O T T E

Quarry

Goodsell

Holcomb Point

ait

NORTH HERO, VT. - N.Y.

SE/4 ROUSES POINT 15' QUADRANGLE
N4445 - W7315/7.5

1966

PHOTOINSPECTED 1972

AMS 6373 IV SE - SERIES V813

LA MOTTE - PASSAGE

ALBURG TONGUE

ALBURG - PASSAGE

CARRY BAY

South Alburg

129

OLD RAILROAD

Cem

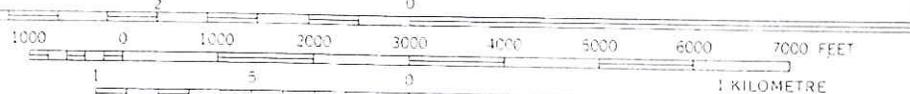
Coon Point

Point of the Tongue

Blockhouse Point

Horseshoe Shoal

SCALE 1:24,000



CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
DEPTH CURVES AND SOUNDINGS IN FEET - DATUM IS MEAN LOW WATER 92.5 FEET

Topography

Alburg Dunes State Park is located on the shores of Lake Champlain in northeastern Vermont at the southern tip of the Alburg Tongue east of the La Motte Passage and west of the Alburg Passage. The topography of the region consists of generally flat terrain (See Topography Map). The park is approximately 622.18 acres in size. Within the park are uplands, shorelines, and wetlands. The dominant features of the park are the large wetland, which makes up about 56% of the total area, and the south-facing, 3/4-mile (3130 linear feet) long, natural sand beach.

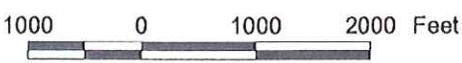
The property is located on the North Hero and Rouses Point topographic quadrangles. Elevations in the park vary from lake level (mean low 94.5 feet) to 130 feet above sea level. Slopes range from flat to moderate in the uplands. The following topographic map represents the topography of the area that was generated from the DEM (Digital Elevation Model) data using ARC/INFO TIN module, and not from the USGS topographic quadrangles. The DEM data was derived from the development of the 1996 digital orthophotos.

Alburg Dunes State Park Topography



LEGEND:

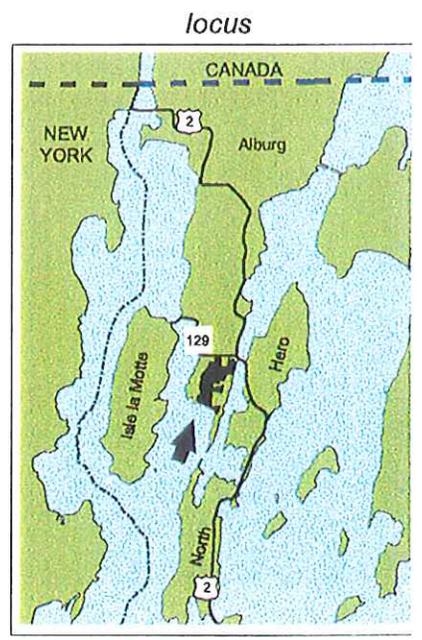
-  Park Boundary
-  Park Road
-  Public Road
-  Private Road
-  Contours
-  Old Railroad



Produced by: Associates in Rural Development, Inc.
 For: Vermont Agency of Natural Resources
 Dept. of Forests, Parks and Recreation
 Date: October 26, 1998

SOURCES: The information on this map was derived from the Grand Isle County Soil Survey, paper and digital orthophotos, and digital data from the Vermont Center for Geographic Information. For more detailed information on data sources, please see the Alburg Dunes Management Plan.

This map is intended for planning and informational purposes only.



Soils

The location and distribution of the soil series are shown on the Soil Map. The approximate acreages of each soil series are shown in following table. Tables indicating the suitability of the various soil types for forestry and agricultural uses can be found in Appendix E. More detailed soils maps can be found in the Soil Survey of Grand Isle County (1959).

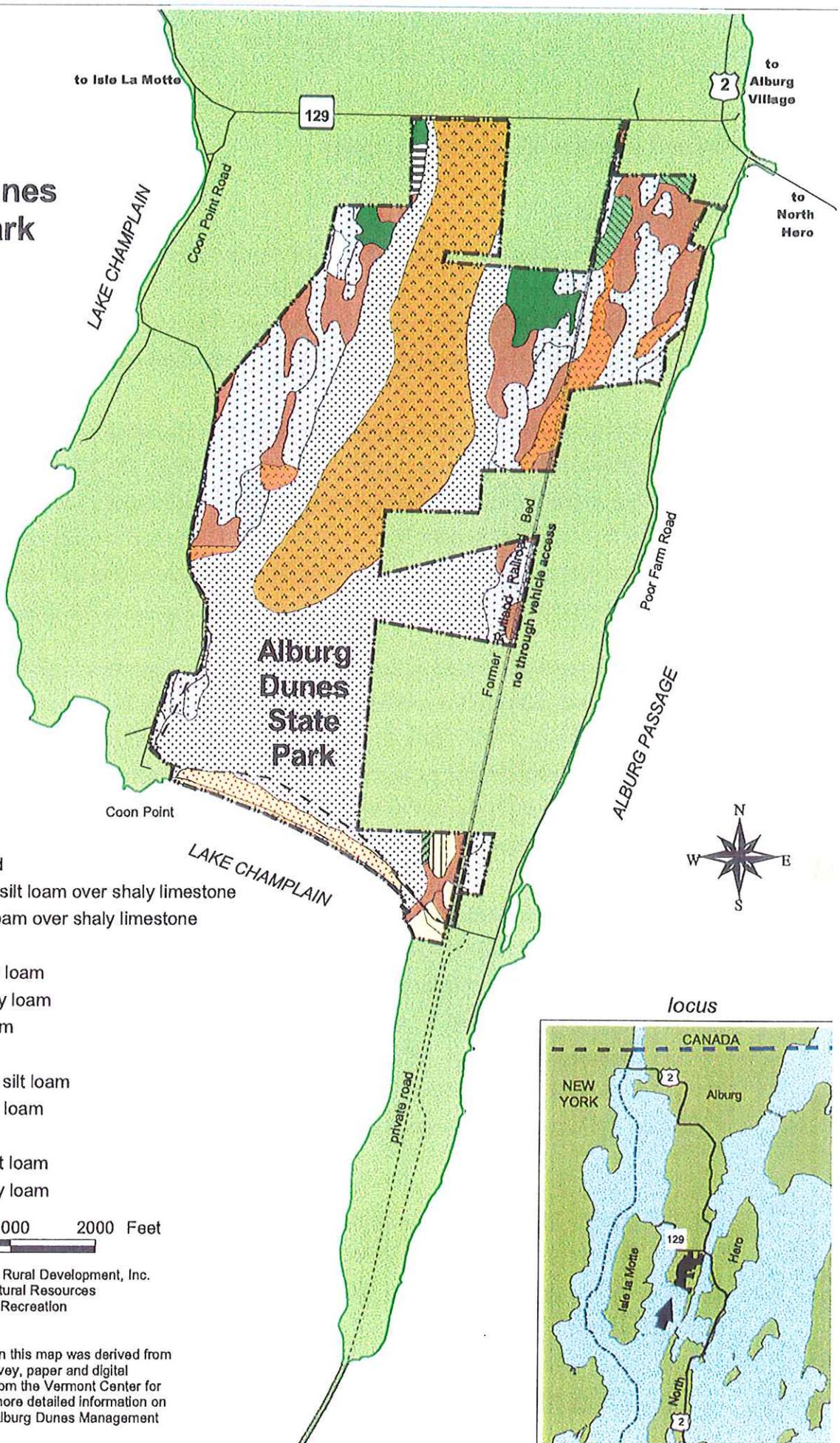
Over half (58%) of the parcel contains two soils, Carlisle Muck and Balch Peat (363 acres) that constitute the wetlands complex. The soils that are suitable to development (129 acres; 20.7%) include the Nellis silt loam (southeast corner), Benson rocky silt loam (southwest and northwest side of park), and Kendaia silt loam (southeast corner). There are limited suitable areas at the park for development.

The primary soils involving forest vegetation management are Benson rocky silt loam, Covington silty clay loam, and Swanton fine sandy loam. These soils are fair to excellent sites for forest management.

Benson Series, Elmwood Series, Kars Series, Kendaia Series, Nellis Series, and Swanton Series are soils with agricultural value; they are suitable for silage corn, small grains, hay, and open pastures. If the Kendaia Series and Swanton Series soils are drained, corn and alfalfa are suitable crops. Elmwood Series soil is suitable to grow clover. Livingston Series soil produces swale grasses, rushes, sedges, cattails, alders, willows, and other water-tolerant plants.

Source: Soil Survey Grand Isle County, Vermont. 1959. United States Department of Agriculture, Soil Conservation Service (now Natural Resources Conservation Service).

Alburg Dunes State Park Soils

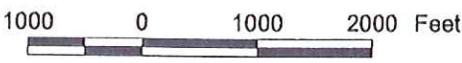


LEGEND:

- Park Boundary
- Park Road
- Public Road
- Private Road
- Old Railroad

Soils

- Balch peat
- Beach & dune sand
- Benson very rocky silt loam over shaly limestone
- Benson rocky silt loam over shaly limestone
- Carlisle muck
- Covington silty clay loam
- Elmwood fine sandy loam
- Kars fine sandy loam
- Kendaia silt loam
- Kendaia very stony silt loam
- Livingston silty clay loam
- Nellis silt loam
- Nellis very stone silt loam
- Swanton fine sandy loam



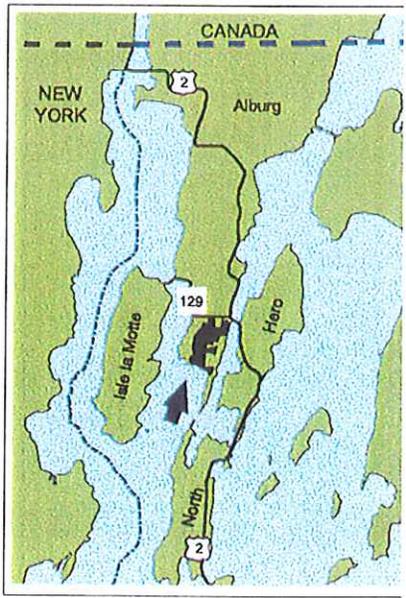
Produced by: Associates in Rural Development, Inc.
 For: Vermont Agency of Natural Resources
 Dept. of Forests, Parks and Recreation
 Date: October 26, 1998

SOURCES: The information on this map was derived from the Grand Isle County Soil Survey, paper and digital orthophotos, and digital data from the Vermont Center for Geographic Information. For more detailed information on data sources, please see the Alburg Dunes Management Plan.

This map is intended for planning and informational purposes only.



locus



Natural Communities and Vegetation

Vegetation Types

One traditional approach to classifying land and forests is through cover typing. A **cover type** describes a forested landscape element based on the species of canopy trees occurring there, and is generally named after the predominant tree species. The Society of American Foresters (SAF) has developed a cover type system that is used as the standard throughout the Northern Forest.

A **natural community approach** to classify and describe forested landscapes is used for the purposes of conservation planning and biodiversity protection. The Nature Conservancy and the nationwide network of Natural Heritage Programs have developed a Standardized National Vegetation Classification System. The Vermont TNC Office and Vermont Nongame and Natural Heritage Program have developed a classification scheme specifically for Vermont in 1996. There are 71 different types of wetland and upland natural communities in Vermont.

A combined approach was used to develop the preliminary vegetation map for Alburg Dunes State Park by students enrolled in the Field Naturalist Program, University of Vermont. The map was then entered into the GIS by a graduate student in the Geology Department (see Vegetation Map). Field visits verified species found in the various vegetative zones. Further inventory and vegetative analysis needs to occur to finalize the preliminary mapping effort.

The main vegetative zones found at Alburg Dunes State Park include:

- 1) Beach and Dunes – 19.63 acres;
- 2) Black Spruce Bog – 34.23 acres;
- 3) Northern White Cedar Swamp – 54.97 acres;
- 4) Red Maple Swamp – 149.33 acres;
- 5) Tamarack Swamp – 44.46 acres;
- 6) Mixed Hardwood Forest – 44.23 acres; and
- 7) Agricultural and Developed Land – 127.73 acres.

The southern end of the wetland complex was not typed as it was difficult to conduct field work because of water levels at this end. There were also other areas along the eastern side of the park that also were not typed. This area of 147.07 acres should be field checked to determine the vegetation type(s).

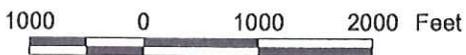
Alburg Dunes State Park

Preliminary Vegetation Map

LEGEND:

-  Park Boundary
-  Park Road
-  Public Road
-  Private Road
-  Old Railroad
-  Beach and Dunes
-  Black Spruce Bog
-  Developed/Ag
-  Mixed Hardwood Forest
-  Northern White Cedar
-  Red Maple Swamp
-  Tamarack Swamp
-  To Be Determined

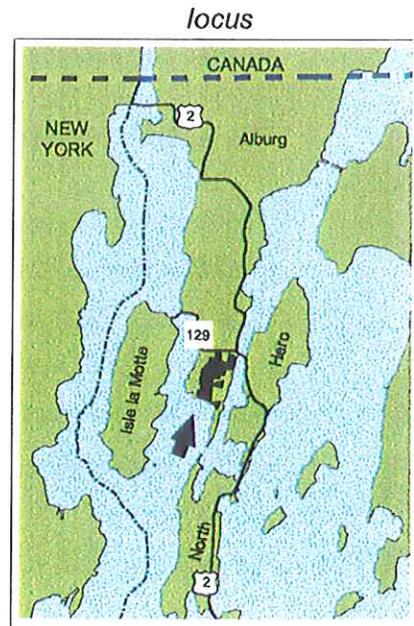
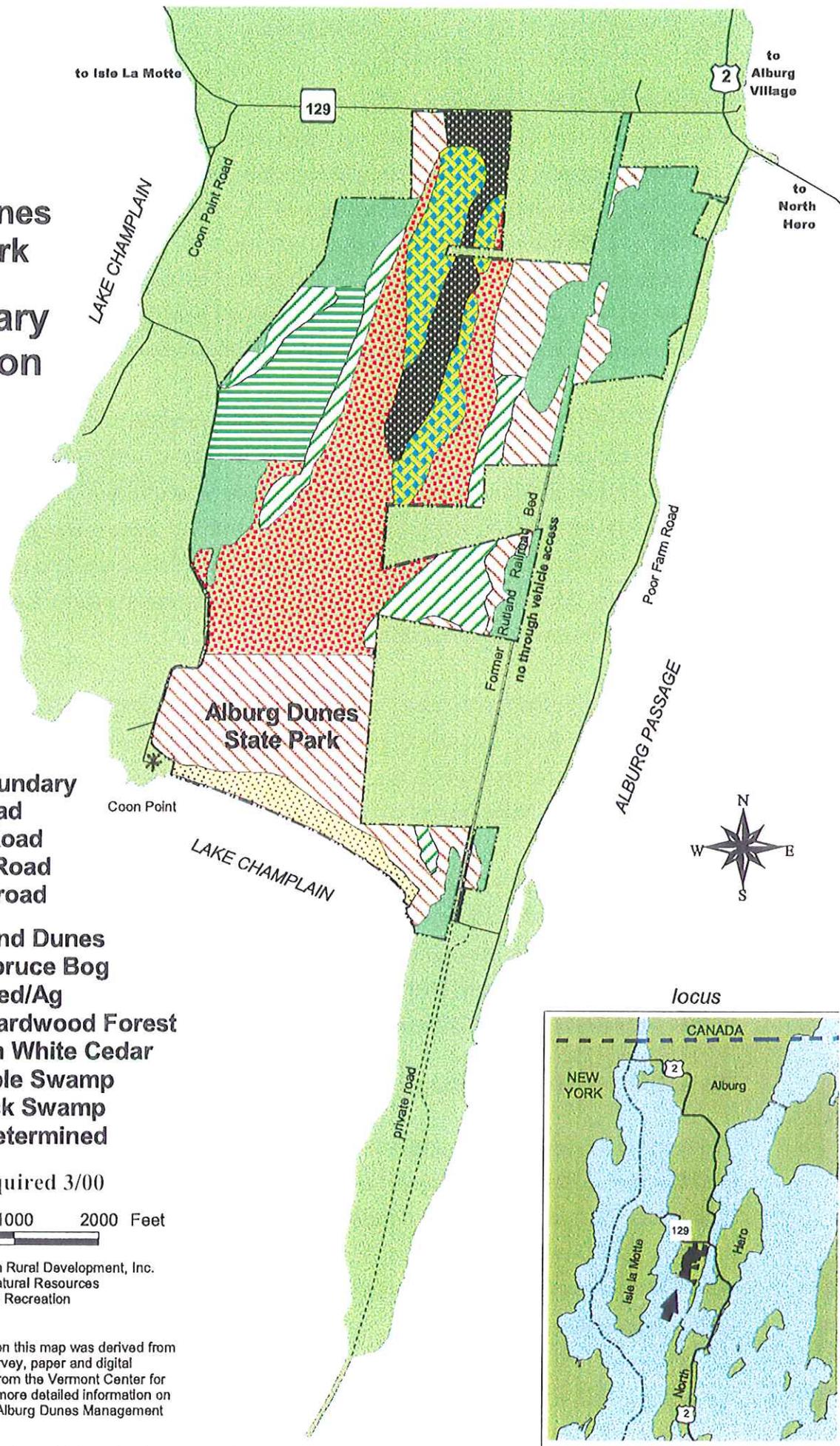
* Lot 20 acquired 3/00



Produced by: Associates in Rural Development, Inc.
 For: Vermont Agency of Natural Resources
 Dept. of Forests, Parks and Recreation
 Date: October 26, 1998

SOURCES: The information on this map was derived from the Grand Isle County Soil Survey, paper and digital orthophotos, and digital data from the Vermont Center for Geographic Information. For more detailed information on data sources, please see the Alburg Dunes Management Plan.

This map is intended for planning and informational purposes only.



Wetlands Complex and Communities

Alburg Dunes State Park contains extensive wetlands, locally known as South Alburg Swamp or Palmer's Swamp (the Critical Resources Map includes the National Wetlands Inventory [NWI] boundaries). These wetlands also extend north of VT 129 to Dillenbeck Bay and west of Coon Point Road to the shores of Lake Champlain; however, only the wetlands south of VT 129 have been inventoried by the Vermont Nongame and Natural Heritage Program, and the Department of Fish and Wildlife. In the northern section of the wetland complex, US Highway 2 bisects the most northern part of the wetland as does the abandoned railroad bed.

The South Alburg Swamp and the associated beach at its southern end is one of Vermont's premier natural areas. The swamp itself contains a diversity of wetland types, from the maple-ash swamps found throughout the Lake Champlain islands, to small areas of white cedar swamp, to tamarack dominated swamps, to the very extraordinary black spruce swamp and open bog found in the center of the wetland. The presence of this very boreal community in this area of Vermont is most striking. Almost certainly it has to be attributed to the microclimate and hydrologic conditions within and created by the wetland itself.

The South Alburg Swamp has been classified as a Class A wetland, and is governed by the Vermont Wetland Rules. It's effectiveness in providing the following functions are HIGH for: providing open space, recreational use, fish habitat, and of value to wildlife (deer yard and furbearers); and MODERATE for: contributing to water quality and erosion and flood control.

Plant diversity is also rated as HIGH, and there are populations of numerous uncommon or rare plants found at the site: state endangered - Champlain beachgrass (*Ammophila champlainensis*); state threatened - Beach pea (*Lathyrus japonicus*); state threatened - white adder's mouth (*Malaxis brachypoda*); Dwarf mistletoe (*Arceuthobium pusillum*); Ovate spike rush (*Eleocharis ovata*), and Tall wormwood (*Artemisia campestris*).

Beach and Sand Dune Community

The beach and sand dune community at Alburg Dunes State Park is one of the longest natural sand beaches on Lake Champlain, and in Vermont. The beach is about two-thirds of a mile long (3430 linear feet) and runs almost directly east to west. Found on the dunes is Champlain beachgrass and beach pea, both important species in Vermont. The beach and dune community is rare in Vermont with very few examples remaining due to the heavy development these areas usually experience.

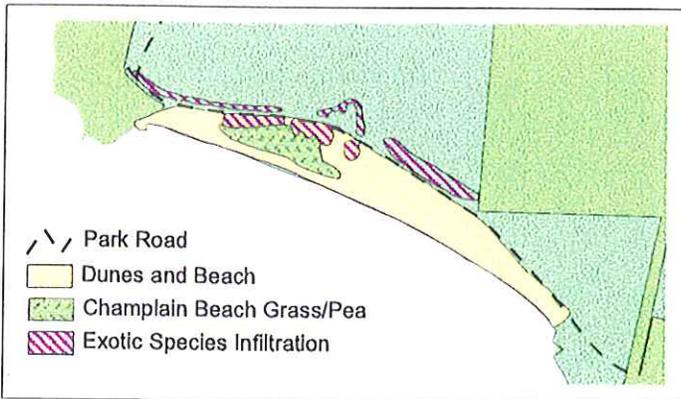
Alburg Dunes State Park

Critical Resources

LEGEND:

- Building
- Sensitive Species
- Park Boundary
- Park Road
- Public Road
- Private Road
- Old Railroad
- Deer Wintering Yard
- Black Spruce Bog
- Dunes and Beach
- NWI Wetland
- Eroding Bluffs
- Sand Movement

detail of beach area

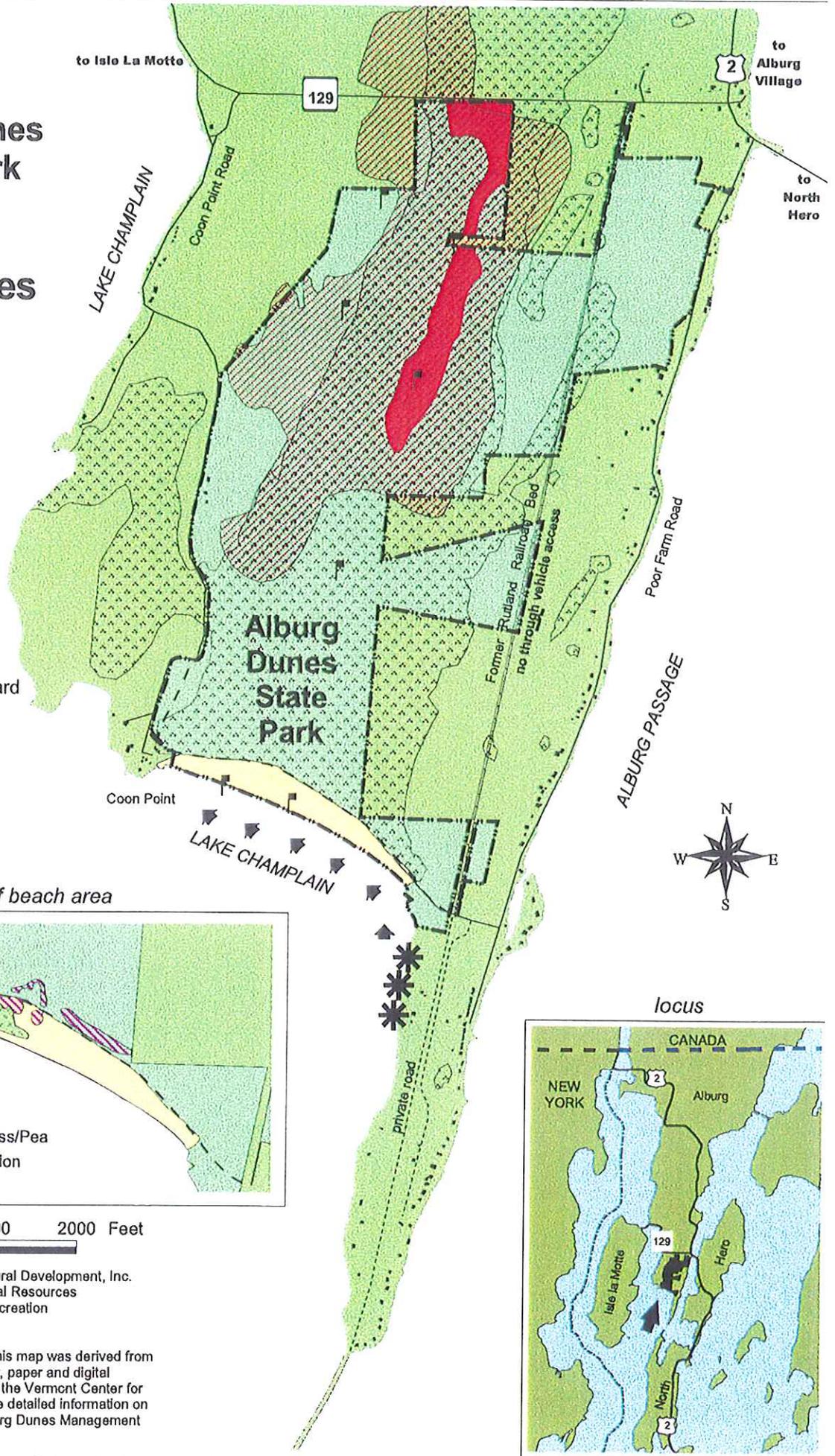


1000 0 1000 2000 Feet

Produced by: Associates in Rural Development, Inc.
 For: Vermont Agency of Natural Resources
 Dept. of Forests, Parks and Recreation
 Date: October 30, 1998

SOURCES: The information on this map was derived from the Grand Isle County Soil Survey, paper and digital orthophotos, and digital data from the Vermont Center for Geographic Information. For more detailed information on data sources, please see the Alburg Dunes Management Plan.

This map is intended for planning and informational purposes only.



Implementation

Implementation

Park Character Statement and Operating Philosophy

Alburg Dunes State Park will be managed as a state park with a portion of the property designated as the Charles E. Smith Natural Area (see Appendix B). The unique resources of the park will be managed in a way to protect, enhance, and restore them to their natural state as much as possible. The park will be managed to provide high quality, passive, day use recreational experiences with minimal facility development. The amount and types of recreational uses and facilities will be compatible with protection of the unique natural resources. The park will also be managed in a way that it will be a good neighbor and asset to the community.

Primary Uses

- Natural Area Protection
- Research and Monitoring
- Nature Study/Wildlife Observation
- Interpretation
- Swimming
- Picnicking
- Short Interpretative Trails
- Hunting/Trapping

Other Uses and Off-Season Use

- Fishing, including Ice Fishing
- Community/School Events and Programs
- Boating
- Bicycling
- Hiking/Walking
- Appropriate Winter uses

Supporting Facilities and Uses

- Parking
- Access Roads
- Entrance Control and Station
- Interpretative Trail, Materials and Signs
- Signs - Directional and Informational
- Sanitary & Group Shelter Facilities
- Maintenance Buildings
- Park Ranger House
- Water
- Utilities

Prohibited Uses

- All-Terrain Vehicles (ATVs)
- Tree Stands for Hunting
- Over-night camping

Management and Operation Strategies

Funding

Begin immediately to seek legislative approval for capital improvement and development funding. Also, continue to search and apply for additional and alternative funding to develop programs and facilities, collect information and data, and to conduct research at the park.

Limitations on Use

Recreational use including the day use beach area will be limited and concentrated in the southwestern portion of the park. Use will be controlled by the number of parking spaces available for park visitors. The number of park spaces will be limited to 150 vehicles (equating to about 300 visitors in the park if the lot was full).

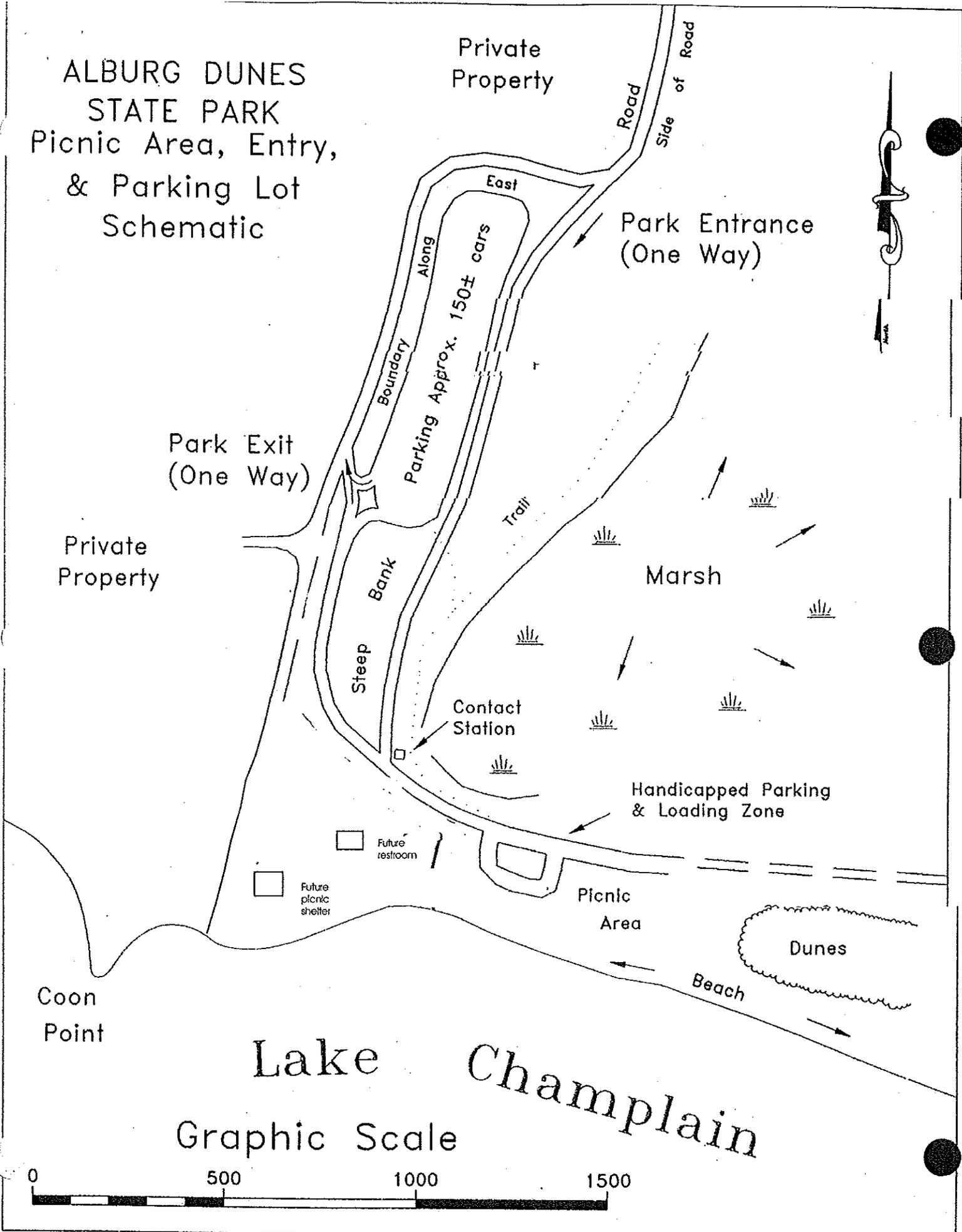
Staff will inform the public when the parking lot is full and inform them about other parks and beaches available in the area.

Proposed Facilities

The conceptual design drawing on the following page provides preliminary ideas on how the park will be developed. The final design and layout of Alburg Dunes State Park, as well as building designs and construction drawings, will be contracted to an architectural, landscape architectural, or planning firm after approval of the General Management Plan, in consultation with the District Stewardship Team.

The new park design and facilities will have people arriving at the park coming in on the entrance road, stopping at the contact station, and being directed down to unload near the beach. Once unloaded, the driver of the vehicle will drive back up past the contact station and through what is now the upper parking lot. The driver will park in the parking lot in the meadow, and walk back to the beach on a foot path (to be constructed). From this parking lot, the driver can drive back to the beach to pick up passengers, and then would drive out the parking lot. The exit from the park will be directly from this parking lot onto Coon Point Road, via an exit only gate.

ALBURG DUNES STATE PARK Picnic Area, Entry, & Parking Lot Schematic



Park Design

The Department of Forests, Parks and Recreation does not have the in-house capabilities to develop design and construction drawings for the proposed facilities. Professional design drawings are necessary to obtain permits and funding for capital improvements. After approval of the General Management Plan and securing funds, the Department of Forests, Parks and Recreation will contract with a consulting firm to develop design drawings for park layout and for the structures and buildings as proposed within the General Management Plan.

Access

Primary access to the park will continue to be from Coon Point Road via the existing (1996 developed) park entrance road. This access was initially selected because historically this is how people gained access. In addition, there is limited residential development along the road and it is close to the most desirable swimming beach. Poor Farm Road, an alternate park entrance east of the beach, will remain a secondary access, primarily for winter use and access by east side residents, open for pedestrian access only. Potential future access location(s) and park development are dependent on acquiring additional lands for such purposes.

Swimming Beach and Picnic Area

Entrance Road and Contact Station: The present park entrance road off of Coon Point Road will become one way (enter only). The park contact station will be relocated where the entrance road now splits (one fork leads to the upper parking lot and the other to the beach and lower parking lot/drop off turnaround). The contact station will be placed closer to an electrical supply, in the shade, and allow the attendant to see the entire length of the beach and picnic area.

Parking Areas: The lower (beach) parking area may be closed or downsized for general parking, and redesigned to include five or six handicapped parking spaces, a turnaround loop or area, and five or six "loading zone" parking spaces. The remaining space currently devoted to parking will be converted to lawn, to enlarge the picnic area.

Just north of the present upper parking lot is a meadow (approximately 480' × 110'), between the park entrance road and Coon Point Road. This meadow will become the primary parking lot, to accommodate approximately 150 cars.

Restroom Facilities: A composting-type restroom building will be built, probably on the side hill at the west end of the beach, a part of the former "Lot 20". This sloped site lends itself to this purpose, as the composting vault will be above the flood plain, and easily accessible for maintenance purposes.

Group Picnic Shelter: A possible future location for a group picnic shelter is atop the knoll of "Lot 20", or, somewhat to the north, on a similar knoll overlooking the western edge of the wetlands.

Trails and Viewing Platforms

Short interpretative nature trails (on boardwalks in the wetlands) and viewing platforms will be located in the southwest corner of the park near the beach and picnic areas in order for visitors to see the wetland community. Viewing platforms (with possibly blinds) and boardwalks may be constructed at various locations along the beach road and possibly in the upland areas in the northwestern section of the park and along the railroad bed. Included at these sites will be interpretative materials and/or signs (see Appendix H).

There will be pedestrian access links from the beach to the service road (beach road) through the dunes. If needed, boardwalks will be constructed to protect the dunes. The service road will be closed to vehicles, except service vehicles, but will be open for walking, hiking, and bicycling. The railroad bed will also be maintained as a trail for the above uses, as well as for horseback riding.

Parking for Hunting and Ice Fishing

There will be four primary access points and small (5 -6 cars) parking areas for hunters: 1) at the northern end of the open fields near the Park Ranger's residence; 2) along the entrance road to the beach and day-use area; 3) near the gate along the railroad bed in the northern section of the park; and 4) near the southeastern end of the property off of Poor Farm Road.

A small parking area will be developed for ice anglers near the lake shore on the southeastern end of the park. The Poor Farm Road gateway will be opened from the time the lake freezes (mid-December) until ice fishing ends (early April). The existing roadway will be improved and plowed throughout the winter.

Signs

Various informational and directional signs will be constructed at appropriate locations. Signage will be kept to a minimum and fit in with the character of the park. Interpretative signs will also be provided at various locations, determined once the design of the park is final.

Informational signs along VT Highway 129 and US Highway 2 will not be installed until the General Management Plan is approved and ready to implement.

Appropriate Future Additions

As lands become available, additional parcels, or interests in parcels of land, adjacent to the existing park land holdings will be acquired as possible. Priorities include:

- a. The adjacent privately-owned campground and wetlands west of Coon Point Road;
- b. The remaining wetlands and surrounding uplands for a buffer to the park (along the eastern edge of the park to include the railroad bed).

Areas of Needed Protection

The wetlands and deer wintering area north of VT Highway 129 should be protected. The most appropriate protection method would include education of citizens and landowners, landowner agreements, or possibly the purchase of easements. Fee acquisition of this area is not warranted at this time.

The sediment supply for the beach and dunes (eroding bluffs to the east of park on the Pointe of Tongue) needs to be protected to ensure the rehabilitation and the longevity of the system. Ownership of these areas should be determined, and protection strategies developed, which could include education of landowners, purchasing easements, or fee acquisition.

Resource Data

Information and data on the resources in the park will continually be collected and existing information updated. GIS data layers will be developed and updated on all collected information.

Soils

Prior to the development of facilities, site-specific soil investigations will be done. When needed appropriate mitigation measures will be taken.

Natural Area

Beach and Dune Management

Protection and restoration of the sand dunes are top priority. Protective fencing will be placed around the most critical dunes during the operating season to keep people from impacting the dunes and the rare and endangered plant species. An adequate buffer will be maintained to allow revegetation to occur, and will be adjusted as necessary. The fencing will be removed in the fall to enable maximum sculpting by fall and winter winds. Additionally, the Champlain beachgrass and beach pea will be protected from human trampling and degradation, and management actions undertaken to restore their habitat.

If natural dune restoration is not progressing, manual assistance may be used. This could include staggering fences and/or laying old Christmas trees down to trap more sand, and/or bringing in off-site sand to replenish the dunes. Any off-site sand must be from a similar parent material, of similar particle size, and clean and free of rhizomes.

Partnerships with biologists, geologists, and researchers will be developed to assist in long-term monitoring or studies of the beach, dunes and wetlands.

Talk to adjacent landowners on the importance of maintaining the beach/dune/wetland complex in as natural state as possible, which would include allowing the cliffs to continue to erode.

Natural Communities and Vegetation Types

The Department will work toward restoration and preservation of the beach/dunes/wetlands complex. The principal objective will be to manage toward restoration of natural processes by minimizing disruptive or deleterious human impacts. The secondary objective will be to restore

and perpetuate the native plant communities that prevailed in the park prior to Euroamerican influence. Natural and dynamic establishment and re-establishment of native vegetation shall be allowed to occur.

Rare, Threatened and Endangered Species

Protective fencing around the dunes will be installed annually, and is expected to provide adequate protection for the threatened plants growing therein. If necessary, and as these plant communities spread, the fenced areas will be enlarged and/or adjusted. If grants can be secured, or if there is sufficient volunteer or research interest, the Department of Forests, Parks and Recreation will support attempts to propagate or re-introduce beachgrass into new areas. If other threatened or endangered species are discovered in the park, recreational use and park facility development, including trail construction, will be done so as to avoid or minimize negative impacts.

Rare and endangered plants found at Alburg Dunes State Park shall be protected and managed for their perpetuation. Systematic surveys shall be conducted to monitor population status.

A thorough and complete plant survey and inventory will be done to determine locations of rare, threatened, or endangered plant species. Recreational use and park facility construction, including trail construction, will be located and designed so as to avoid or minimize negative impacts.

Keeping the dune area fenced from human use minimizes the disturbance and trampling of habitat necessary for tiger beetle survival (see Appendix E). Also, minimal beach management and maintenance along most of the beach will also help in the survival of tiger beetles if they find their way to Alburg Dunes State Park.

Exotic Species

Develop and implement a long-range implementation plan for controlling and eradicating two exotic plants (see Appendix E) in the wetlands immediately, through a partnership of the Vermont Wetlands Office, The Nature Conservancy, and the Nongame and Natural Heritage Program. Such a control plan should include training seasonal park staff on identification and control procedures, so they in turn could oversee and direct volunteers. It is anticipated that the park will not have funds, or personnel to do the control.

To minimize the likelihood of future exotics introduction, care will be taken to assure that any revegetation or planting within the park, particularly within the dune and wetland complex, is with appropriate species. Noninvasive indigenous species will be used in landscaping recreational facilities and employee residences. Also, any sand imported for beach replenishment will be clean and free of weed-seeds and rhizomes.

Protective measures against zebra mussel infestation along the shorelines shall be implemented, as feasible.

Wetlands

No active management will occur in the wetlands except for designated alder stands, which will be managed for woodcock habitat by periodic cutting as per guidelines published by the Vermont Department of Fish and Wildlife.

Agricultural Fields

Agricultural use of the fields using a crop rotation of corn and legume grass (in any one crop year, a portion would be in corn and another portion in legume grass) will continue in accordance with the Department of Fish and Wildlife guidelines. This will provide grazing and foraging for white tailed deer and turkey, especially.

When a field is planted in corn, a portion of the corn will be left standing to provide winter feed for turkey, deer, squirrels, and other wildlife.

The agricultural fields will be licensed to a local farmer(s) for use and maintenance. If an agricultural license(s) cannot be arranged, the state may annually plant a portion (to be determined) of the land to corn and mow the remainder of the fields at least once per season.

For fields in the northwestern portion of the park, in addition to the above, wildlife travel corridors through the softwoods into the fields will be created and expanded, and an ecotone (edge border) between the forest and field of about 30-40 feet wide will be developed by a combination of not mowing and fencing.

Mixed Upland Forest

The Northern white cedar component of the upland forest will be managed for this species, and for the maintenance of functional winter cover for white tailed deer and other species according to management guides recommended by the Vermont Department of Fish and Wildlife. A Northern white cedar understory will be created for winter browse and future replacement shelter. The Department of Fish and Wildlife will experiment with fencing and site preparation procedures to create an understory.

A diversity of tree species will be favored, particularly nut producing species (such as the oaks, hickories, butternut, and hophornbean) and species providing winter shelter (hemlock and white pine).

A combination of cutting techniques will be used to manage the mixed upland forest with entries timed for once in a 5-year period to create browse for wildlife species.

In the vicinity of the railroad bed, the forests will be managed for early succession forest of hardwoods and soft mast species (berries and grape).

Visual Resources and Scenic Quality

All management actions will consider the impacts on the visual resources of the park, and every effort will be taken to ensure that they will not be adversely impacted.

Efforts will be taken to reduce the existing negative effects on the scenic quality within the park. Already, a set of overhead power lines and utility poles which bisected the western beach area have been removed. So, too, have two older and inadequately-serviced restroom buildings which had been utilized by the former owners been removed. A pair of ramshackle storage buildings and a dilapidated seasonal cottage, or "camp" that occupy Lot 20 slated for removal.

Physical features, such as parking bollards (i.e., boulders), should be of similar materials found at the park, surrounding area, or region. The three iron-pipe gates presently in place at the park entrance, in the lower parking area at the entrance to the beach road, and at the east end of the beach road on Poor Farm Road, will likewise be replaced with the more aesthetically appealing entrance gate seen in other Vermont state parks.

Buildings and structures will be designed along a horizontal plane (i.e., roof lines) in order to work with the park's open quality, to the relative flatness of the area, to fit into the wetlands, beach and dune environment, and to relate to Lake Champlain. Buildings and structures will also be designed and located to minimize blockage of views of Lake Champlain.

The exterior finish of new structures should be of wood, which is compatible with the Park's lake and wetland influence. If possible, exterior wood finishes will be allowed to weather naturally. When the structures must be painted, earth-tone colors will be selected to blend in with the natural surrounding landscape.

Signs will be used sparingly, and designed to blend with the surrounding environment by using wood, stone, etc. Signs should not block scenic views, and should be appropriately scaled.

Cultural Resources

Seek grants to fund a Level One Archeological Survey at Alburg Dunes State Park.

Prior to any ground disturbing activity, such as park facility construction, a cultural resources survey will be conducted at the site.

State Park Operations

District Stewardship Team

Integrating environmental protection and recreational use at Alburg Dunes State Park requires a delicate and constant balance. The District Stewardship Team (see footnote, page 4) will serve as a consultant forum to discuss and review major issues and changes in park management, operations, and development.

The Stewardship Team will also approve and coordinate all research activities in the Park.

Staffing

Staffing levels at the Park will remain the same (one seasonal Park Ranger and two full-time seasonal park attendants) until such time that visitation levels, future land additions, or development warrants additional staff.

Following current State Park policy, there will be no lifeguard services at the park.

Volunteers

Volunteerism will be encouraged at Alburg Dunes. A couple of examples for which volunteer efforts are needed are for vegetative management (i.e., common reed and purple loosetrife control; beach grass propagation and re-introduction) and visitor interpretation and education (i.e., sand dune ecology, wetland ecology). It is likely these activities will not occur if left solely to park staff. However, staff could coordinate and direct the volunteers, once they have been recruited and trained. Initially, the Department of Forests, Parks and Recreation will look to other partnering organizations (e.g., Nongame and Heritage Program, The Nature Conservancy, DEC-Wetlands Office, Friends of Alburg Dunes) to recruit and train them.

Employee Housing

The Park Ranger will continue to live at the park as a condition of employment. The Park Rangers' residence is large enough to accommodate a Park Ranger with family and/or other staff members if necessary. It is expected (and desirable) that park staffing needs can be fully satisfied by hiring locally.

The outbuildings at the Coon Point Road residence will become needed equipment storage and maintenance structures. Relocating the Park Ranger to the Coon Point Road residence³ eliminated the need for electrical service to the former toilet building along the beach road. Therefore, the overhead utility lines and poles were removed. The toilet building itself, partly because it was in an area no longer convenient for park visitors, was also removed.

³ This residence was not a part of the original Alburg Dunes acquisition. Consequently, for the first two seasons of park operation ('96 - '97) the ranger lived in a travel trailer adjacent to one of the former restroom facilities, midway along the beach road.

Enforcement

Signage advising visitors that they are entering a fee area will be erected at all pedestrian entry points. For visitors arriving by boat, offshore buoys with boater information will be placed parallel to the beach every 200 feet or so as needed.

Having a staff presence at the relocated entrance station and along the beach will help alleviate other enforcement issues. It is important that the beach road be kept open and maintained for service vehicle use in order that staff on park patrol are able to get quickly from one end of the park to the other without driving along the beach, or having to go five miles around via VT Highway 129. During peak season, patrols are needed several times daily to the east end of the beach. Staff should also have a boat at their disposal, something fairly maneuverable and with a shallow draft (e.g., personal watercraft), so they could approach and speak to visitors arriving by boat.

Staff presence and visitor education is also key to keeping people out of the fenced dune areas. Keeping up and maintaining informational signage along the fence is necessary. Also, having staff and/or volunteers walking along the beach will help inform and educate visitors on the importance of the dunes and why the fencing is there. In addition, improving and managing the westernmost 500- to 700-feet of beach, such that this area becomes the most desirable section of beach to swim and picnic, will keep the majority of park visitors away from the areas where they could significantly impact dune restoration.

In the off-season, staff presence could likewise also play a role in enforcement. The park has not been staffed in the off-season, yet the Park Ranger's residence (formerly Phillips) is a year-round house. There has been success in keeping undesirable activities under control in other park areas by renting to people who, in exchange for reduced monthly rents, keep an eye on the properties.

With or without off-season staff presence, some actions are necessary to more effectively manage off-season problems. Additional gates, fences, and curbing are suggested to better direct and/or restrict vehicle access from inappropriate areas. The fences around the dunes may

also need to be left in place later in the season to discourage entry in the areas of needed protection. Hunter information maps will continue to be placed at key hunting access points around the park each fall, and will be revised annually to reflect evolving property lines and hunter etiquette suggestions.

An effort to remove the myriad of tree stands for hunting already located throughout the property will be necessary to eliminate this illegal use.

Revenue Generation and Enhancements

Alburg Dunes State Park will continue to operate as a state day-use park under the same fee schedule, rules, and regulations in effect at other state parks. Beyond park user fees, some revenue enhancement may be derived from rowboat and/or canoe rentals. License fees, specifically for the rental of agricultural lands within the park, and for the off-season rental of the Park Ranger's (formerly Phillips) residence will generate some additional income. If the need arises, a group picnic shelter may be constructed on the knoll above the wetland.

Concession operations (i.e., food service, merchandise, and sailboard rental and school) could yield additional income, however, it is anticipated that the amount of visitation will not be sufficient to attract concession operations. This is mainly due to the type of park development proposed and the limitations on the amount of use. A significant consideration relating to potential revenue-generating facilities (i.e., concessions, picnic shelters, rental equipment) is that there is limited space available and suitable for development as envisioned in the conceptual design for the park (to concentrate visitor facilities at the western edge of the property). This fact limits what can occur within the western edge of the park area. In addition, these types of services and facilities do not necessarily fit into the character of the park, which is to provide a natural outdoor experience with limited facilities and services.

Special Use Permits and Licenses

Requests for Special Use Permits and Licenses will be administered by the Parks Regional Manager. Depending upon the nature of the request, and in accordance with existing policy and procedures, the Parks Regional Manager will prepare and issue Special Use Permits, or will prepare Licenses for issue (subject to approval by the Commissioner of Forests and Parks).

A prospectus for the use of agricultural lands and fields within the park will be prepared and advertised in the spring, with a multi-year agricultural license issued to the person or persons whose proposed use of the property best meets the management objectives established for those lands. Those objectives will be developed with input from a District Fish and Wildlife Biologist.

Requests for permits and/or licenses to conduct scientific research within the park will be routed by the Parks Regional Manager through the District Stewardship Team. The Team will make a determination as to the appropriateness of the request, possible tie-ins or conflicts with on-going area research, and may impose additional conditions to be included in a research license or permit.

Maintenance Functions

Monitoring

As holders of a conservation easement on the original purchase, The Nature Conservancy (TNC) conducts semi-annual monitoring at Alburg Dunes, to assure management activities which have occurred or are occurring are in keeping with those described and approved in this plan. Additionally, District Stewardship Team members will monitor beach-road maintenance activities (page 37), with an eye on their effect on wetland water levels within the natural area boundaries.

Beach

The beach will be managed in such a way as to afford protection to the sand dunes and beach, and therefore, the Champlain beachgrass and beach pea, while still allowing for public use of the entire beach. Management and maintenance of the beach will be determined by location and water level. Management will be more intense on the most western 600-700 feet of beach graduating to limited or no management and maintenance on the eastern most half to two-thirds of the beach. The most important aspect of beach management is to limit the amount of sand that is removed from the system, mainly from human actions. In times of high water, sand may be trucked in to develop a beach. In times of low water, no sand will be brought in. If sand is brought in, it will match as closely as possible the type of sand that currently exists on the beach and will be free of seeds and rhizomes of other plant species (see Appendix I for more specific strategies).

There will be access links to the beach service road through the dunes, and these will be maintained and kept open for pedestrian use. The beach road will remain closed to vehicles

(except service vehicles), but will be open for through hiking, walking, bicycling, and equestrian use. Vehicle traffic will not be permitted on the beach, except that park staff may: a) patrol the beach by driving its length with an ATV; and b) operate equipment on the western end of the beach to smooth and maintain it. It is anticipated that the frequency of ATV trips along the beach will be reduced once the staff has an appropriate watercraft available for offshore patrols.

Beach Road

The beach service road is necessary as a means of easily accessing both sides of the park and will be maintained. Maintenance will include those activities necessary to keep the road stable and useable. Culverts on the eastern side of the park will be kept clear of debris so in times of high water, the water will be able to flow through the culvert. This is seen as desirable, though perhaps controversial, management activity. When the area has not been allowed to drain, water has backed up to the extent that the lower parking area and portions of the picnic area have remained flooded and not suitable for recreation use, even after the spring high-water levels in Lake Champlain have receded.

Health and Safety

Garbage Disposal

The State Park's "carry-in -- carry-out" policy for rubbish has been modified for Alburg Dunes State Park. A dumpster, and trash cans in the picnic area, have been provided for park users in order to eliminate illegal dumping along the roadways and problems at the U.S./Canadian border.

Water Testing

Swim water testing will continue at Alburg Dunes State Park as it does at other state swimming areas. Currently, drinking water is not available to the visitors of the park; therefore no testing of drinking water is necessary at this time.

Other Utilities

Electricity and telephone services will be provided at the park entrance station and at the Park Ranger's residence once these facilities have been relocated.

Visitor Services

Interpretation, Public Information, and Education

Opportunities for interpretation about the dunes, threatened plants, geology, and wetland ecology and evolution, as well as wildlife abound at Alburg Dunes State Park. Facilities and media should be chosen that best serve visitors' needs, match how they use the park, work well with staffing levels, and are environmentally and aesthetically appropriate. Outdoor interpretative panels, formalized wetlands boardwalks and overlooks, and self-guiding trails and materials are appropriate and would be effective permanent interpretative developments for Alburg Dunes State Park (see Appendix H).

All public information and educational materials and programs that are developed and published will be bilingual with English and French versions. The Park's informational brochure will be immediately published and available to all visitors.

All staff will be trained about the unique resources at the park, and the reasons why certain management actions/strategies are being implemented so they can adequately relay this information to the public.

A display area or bulletin board will be built and installed at the Park possibly designed as part of the restroom building.

Currently, there are no plans to have staff lead interpretive programs or activities at the park. However, it is hoped that interpreters and educators from the surrounding area will take advantage of the interpretive opportunities within the park, and will bring groups to the park to learn.

Concessions

No permanent food service facility is planned; however, if there is sufficient interest or volume on peak weekends, a portable food service concessionaire could be accommodated. If needed, vending machines could be provided as an alternative to a concessionaire.

For other types of concessionaires, such as a windsurfing concession, there could be special license agreements with providers of various services so that they could bring clients into the Park for certain activities, such as nature interpretation, windsurfing schools, etc.

Programs and Community Programs

Programs and community use of the park will be encouraged, especially as there is such a great opportunity for environmental education and recreational activity within the park. Events that can be accommodated, without overtaxing facilities or the natural features of the park, will be considered on a case-by-case basis.

Community Relations

Park staff will continue to develop positive relationships with the Town of Alburg and surrounding residents by communicating periodically with elected officials about activities occurring at Alburg Dunes State Park, including proposed new acquisitions, park events, user conflicts, hunting issues, etc.

The continuation and expansion of the "Friends of Alburg Dunes" will be encouraged as well as their involvement in volunteer activities at the park.

An annual "Town Day" for town residents where admission to the park is free could be held to show and tell residents about the Park's activities and to enjoy the resources of the park.

Other Uses and Off-Season Use

Trail Use

Informal trail activities, such as walking, and bicycling, will not be discouraged on the service road and railroad bed. These two facilities provide an excellent natural link to Coon Point Road

in the west and Poor Farm Road to the east. In the future, the railroad bed could provide additional links to other trails in the Town and region as appropriate. However, horseback riding on the service road will be prohibited, due to the horse's incomplete digestion of grains that pose a threat of transporting wheat and other grains' seeds into the park's natural area. Horseback riding will be allowed on the railroad bed.

ATV riding will be prohibited on state lands, including the railroad bed.

Snowmobiling will only be allowed on the railroad bed to provide a link to Lake Champlain and other trails, if appropriate.

No trails (other than the railroad bed, beach road, and short interpretative nature trails on the western side of the park) will be developed into the interior of the wetlands.

Nature Study, Bird Watching, and Wildlife Viewing

The interpretative trails, boardwalks and viewing platforms in the wetlands will provide many opportunities for bird watching and wildlife viewing. If appropriate, blinds could be constructed on some of the viewing platforms. Alburg Dunes State Park is a designate "birding trail" site on the Lake Champlain Birding Trail..

There may be other opportunities for wildlife viewing along the railroad bed and in the upland areas, especially in the northwest section of the Park. If appropriate, viewing blinds or stands could be constructed at appropriate locations to provide unobtrusive opportunities for viewing wildlife, such as white tail deer and turkeys.

Boating

People coming to the park by boat will not be discouraged from doing so. They will be expected to pay user fees if they come ashore. Boaters will be discouraged from mooring or docking near the western end of the beach where the greatest amount of beach use will be concentrated.

If needed, there will be offshore buoys and signs placed parallel to the shore every 200 feet or so with boater information indicating that this is a fee area and locations where they can moor or dock their boat.

If this type of use becomes too popular, a limited number of transient moorings may be established. The number of boats allowed to access the park by water would be limited to the number of established moorings. Too many boats would have a negative impact on the scenic quality of the views from the beach and on the type and quality of recreational experience being managed for.

There also will be no trailered boat launching facility at this park within its present boundary. If people want to launch car top vessels, such as kayaks, canoes, rowboats, and sailboards, they will be allowed to do so.

Lake Champlain Paddlers' Trail Site

Presently, the operational philosophy of a day use only park does not lend itself to designating a camping site to be used specifically by paddlers. In the future, if the campground area is purchased, then there could be a possibility of designating a Lake Champlain Paddlers' campsite on park lands.

Off-Season General Use

To the greatest extent possible the entrance gate on Coon Point Road will remain unlocked so that people visiting in the off-season can use the parking lot to access the park.

If off-season users impact the dunes or vandalize facilities, it may be necessary to leave the protective dune fencing up later into the fall, and/or to restrict vehicle access further back from the beach.

To restrict ATV and other vehicle access from inappropriate areas may require better gates, fences, curbing, and informational signage.

Hunting

The Park will be open for hunting with no restrictions unless recommended by wildlife biologists (for herd management purposes) and rules are passed by the Vermont Fish and Wildlife Board.

The four primary hunter access points and parking areas will be continued. Access to the gate along the railroad bed will be continued unless residents again insist on spring road maintenance, at which time this issue will need to be resolved.

Hunter information maps will continue to be provided at appropriate locations around the property, most likely at each of the primary hunting access points, and to local businesses for distribution. The handout will be updated and revised as needed.

Special Use Permits will continue to be available to adjacent landowners to post 500-foot safety zones on state land.

Ice Fishing

The Poor Farm Road gateway will be developed and maintained as a winter-time ice fishing access area opened from the time the lake freezes (mid-December) until ice fishing ends (early April) by the Department of Fish and Wildlife. The beach road, from the culvert to the gateway, will be improved so that it can be plowed and maintained even when not frozen.

Land Use,

Facilities,

&

Operations

Land Use, Facilities and Operations

This section of the Plan summarizes the current situations and practices that are occurring at Alburg Dunes State Park. The current land use practices are discussed, as well as the current facilities and the problems with the operation of those facilities and the park as a whole. The strategies for improving the park's current situations and practices are in the General Management Implementation Plan section.

Park Purpose and Challenges

Alburg Dunes State Park was acquired for its unique resources and to provide water-based recreation. The management challenge is to integrate these dual and sometimes conflicting purposes.

This challenge, preserving and protecting a unique natural resource while providing recreational opportunity at a site which has tremendous revenue potential if fully developed, is compounded when one considers that the Vermont State Park system, between 1991 and 2002, received virtually no general fund tax support for park operations. Consequently, there is a temptation and inherent mindset, particularly amongst operation staff in each park, to maximize park income so that each park is as self-supporting (or even money-making) as possible. At the same time, resource management strategies and actions, interpretive services, etc. tend to be relatively labor intensive (and therefore expensive) relative to income production. The goal at Alburg Dunes will be to strike a balance between an efficient operation, one that is as cost-effective as possible, yet one that places resource value above revenue potential.

Park Visitors and Service Area

Prior to state ownership, visitors to Palmer's Sand Beach were mainly Canadian, from Montreal and the southern townships of Quebec. There was some visitation by Vermonters, especially local residents from the Lake Champlain islands. The place was well-known for loud, late-night parties and other unrestricted activities (e.g., camping anywhere on the beach).

The allowable activities changed dramatically from an overnight, camping experience to a day use only park after the Department of Forests, Parks and Recreation acquired the park. However, during the first two seasons of operations, the majority of visitors were still from Montreal and the southern provinces of Quebec. But, there also was proportionally more visitation by Vermonters and local residents. The greatest change was in the type of clientele. More and more families have discovered the park's amenities, especially the beach. It is anticipated that as more public information and marketing occurs, as well as from word-of-mouth, more and more Vermonters will be visiting Alburg Dunes State Park.

As Alburg Dunes State Park is currently a day-use park, visitors are unlikely to drive more than 1 to 2 hours to visit the park. The service area includes Montreal (over 2 million people), the southern townships of Quebec, the northeastern section of New York (mostly near Rouses Point), and mainly northwestern Vermont (Grand Isle, Franklin, and Chittenden Counties). There are also a number of other day-use state parks along Lake Champlain (Sand Bar State Park, Kamp Kill Kare Day Use Area, Knight Point State Park, and St. Albans Bay State Park). Additionally, a number of other state parks provide camping facilities along Lake Champlain. They include: Grand Isle State Park, North Hero State Park, Knight Island State Park, and Burton Island State Parks.

Land Use

Vermont State Parks (a Division of Vermont's Department of Forests, Parks and Recreation) carries on the dual mission of protecting the resources of the State Park system and providing recreation opportunities and facilities for the public. The resources at Alburg Dunes State Park present diverse and high-quality recreational, interpretative, and educational opportunities. Reference the Natural Resources Section (Appendix E), to better understand the natural resource base at Alburg Dunes.

A land use plan defines the desired degree and pattern of human activity in a given area, and establishes the character of a place by determining what happens, where, and to what extent. It defines routes of travel and use-areas. It controls use and development, and arranges park activities and facilities so visitor enjoyment of the park is commensurate with protection of the park's resources. The Land Use element considers a range of desirable and necessary land uses – undeveloped (natural and open space) and developed (interpretative, operations, recreation, and concession facilities) – and determines which are appropriate and where. The Facilities and Operations element more specifically addresses the siting of facilities and activities.

Considerations in Land Use Determination

Regional Setting and Surrounding Land Uses

Location

The Town of Alburg is a rural town with a 1995 estimated population of 1441 (1362 population in the 1990 US Census). The main land uses in the Town are agricultural and year round residences and seasonal camps scattered throughout the Town. There are a number of significant wetlands in the Town, and the town is surrounded on three sides by Lake Champlain.

Alburg Dunes State Park

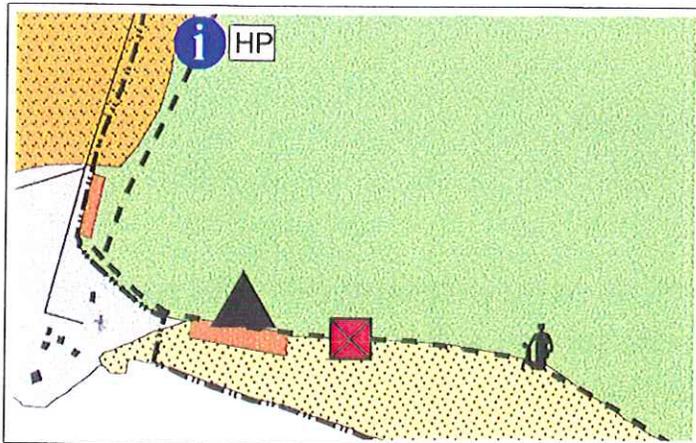
Current Land Use

LEGEND:

- Park Boundary
- Public Road
- Private Road
- Park Road
- Old Railroad
- Park Amenities**
- Contact Station
- Existing Port-o-lets
- Existing Restroom
- Park Ranger House
- Hunter Parking
- Gate
- Land Use**
- Building
- Airstrip
- Beach
- Campground
- Openfields/Ag
- Parking
- Residential
- Sand/Gravel Pit
- Undeveloped/Forest

* Lot 20 acquired 3/00

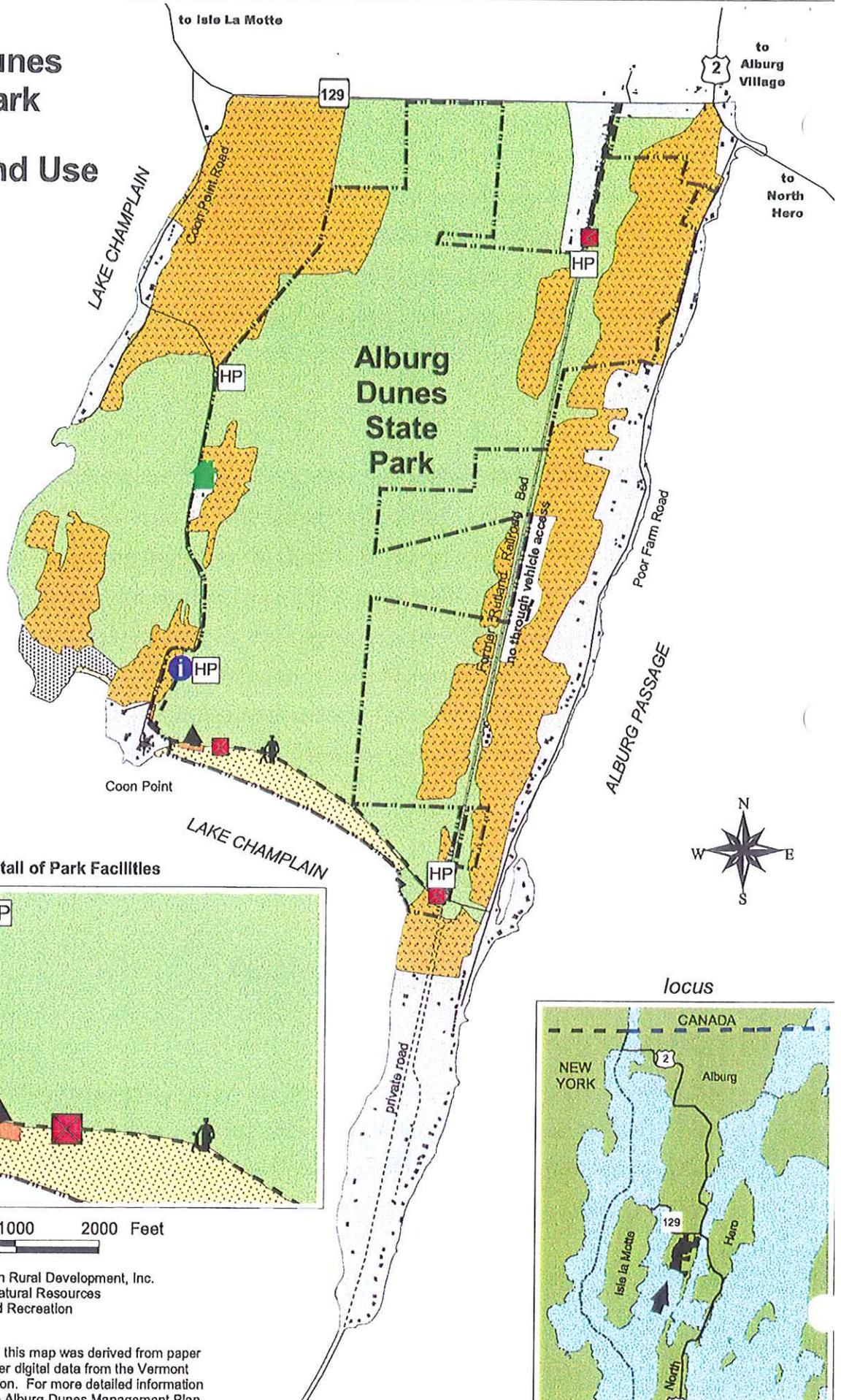
Detail of Park Facilities



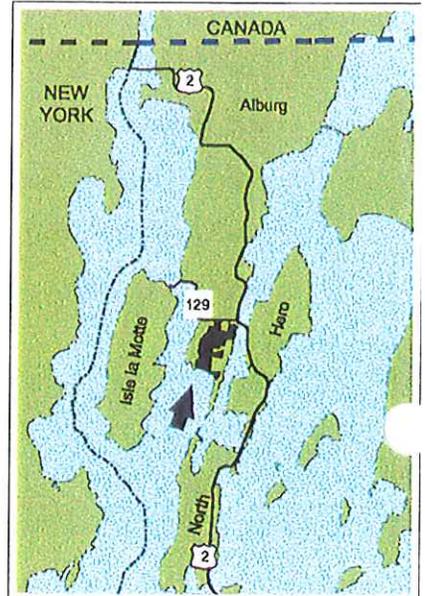
Produced by: Associates in Rural Development, Inc.
 For: Vermont Agency of Natural Resources
 Dept. of Forests, Parks and Recreation
 Date: October 27, 1998

SOURCES: The information on this map was derived from paper and digital orthophotos, and other digital data from the Vermont Center for Geographic Information. For more detailed information on data sources, please see the Alburg Dunes Management Plan.

This map is intended for planning and informational purposes only.



locus



Transportation Routes

The main transportation route, US Highway 2, runs north and south through the town and Lake Champlain Islands eventually connecting to the mainland at South Hero across the Sand Bar Causeway. US Highway 2 crosses Lake Champlain north of the Village of Alburg and heads west into New York. VT Highway 129 runs east-west from US Highway 2 just before the bridge to North Hero (as you travel south). VT Highway 129 connects the Town of Alburg to Isle La Motte via a causeway. One other major thoroughfare that needs mentioning is VT Highway 78, which runs east from US 2 approximately 3 miles south of the Village of Alburg across the Inland Sea/Missisquoi Bay to the Town of Swanton (on the mainland). VT 78 connects into Interstate 89 on the eastern side of the Village of Swanton. Alburg Dunes State Park is located approximately within a one hour drive of Chittenden County (approximately 40 miles south and includes the metro area of Burlington, Vermont), and of Montreal, Quebec (approximately 60 miles north).

Local and Regional Plans

The Town of Alburg does not have a Town Plan and there are no zoning ordinances and subdivision regulations. The Northwest Regional Planning Commission is currently developing the regional plan, which includes Grand Isle and Franklin Counties. The purpose, management, and development of Alburg Dunes State Park is consistent with the goals of the regional plan.

The Northwest Regional Planning Commission is committed to conserving Grand Isle and Franklin Counties natural and cultural resources. Some of the natural resources that the “drafted” Regional Plan identifies as necessary for conservation are similar to the ones discussed in this General Management Plan for Alburg Dunes State Park. They are concerned with preserving the history of the topography and geology of the area, as well as the wetlands. The draft Regional Plan states that the wildlife and vegetation in the wetlands are in need of protection along with the habitat that the wetland provides.

Surrounding Land Uses

The immediate land uses surrounding the park on the west and east have been generally categorized (see Land Use Map). On the eastern shore along Lake Champlain and Poor Farm Road are a number of year-round residences and seasonal camps. Immediately behind these

residences are open fields in active or inactive agricultural use. Midway down this area and near the railroad bed is a grass airstrip and hanger used by local residents for small twin engine planes. The Pointe of Tongue has been predominantly residential.

Off of VT 129 in the north, but still near the eastern boundary of the park, are five residences, four of which use the railroad bed as the main access to their houses.

On the western edge of the park to the north, are a number of residences along Coon Point Road and a private road that follows the shoreline. Immediately behind these residences is a large area in productive agricultural use. Midway from VT 129 is a large area that is undeveloped, mainly forested, and containing a wetland. Nearer to the entrance of the park and beach, are additional residences and a privately-owned campground.

The majority of the park is undeveloped and is forested wetlands and uplands. The beach and dunes run along the southern boundary, which is Lake Champlain.

Legal Constraints

Conservation Easement

As part of the original acquisition, The Nature Conservancy holds a conservation easement on the original parcel purchased (see Appendix C). The additional purchases of the Phillip and Fineman parcels do not fall under the conservation easement. The easement spells out required components of the Management Plan, restricted uses of the property, and permitted uses. In sum, the easement reflects protection of the resources, appropriate dispersed outdoor recreation, and operation of a seasonal beach as all important. The Nature Conservancy has been an integral member of the Technical Steering Committee and must approve the final Management Plan.

Conservation Agreement – Lot 20

With the subsequent purchase of “Alburg Dunes Lot 20” in the spring of 2000 came a conservation agreement, held by the Vermont Housing and Conservation Board (VHCB). As with the TNC easement on much of the rest of the park, this details permitted and restricted uses of the

property, and prescribes the development of a management plan, of which VHCB is to receive a copy in advance of final approval. That agreement, along with the Baseline Documentation Report and Interim Stewardship Plan for Lot 20, comprise Appendix L.

License # 083-00-BU1-00

With Lot 20 came an agreement for phased acquisition from the former owner. Specifically; Robert Phillips was authorized continued use of Lot 20 as a campground through the 2000 season; year-round use of residential and storage structures on lot 20 through March, 2002; and off-season use of the Ranger's Residence along Coon Point Road for residential purpose at no charge through April, 2003. As Mr. Phillips passed away in April, 2002, and the license was not assignable, the remaining condition (off-season residency through April '03) is assumed to no longer apply.

Bequest Funds Used in Acquisition

A bequest was used to cover acquisition costs associated with the original purchase when the grant moneys fell short. These same funds were also subsequently used to acquire the 38 acre Fineman parcel. The main stipulation for the bequest money was that it be used for an acquisition of a "natural area", to be dedicated in the name the person for which the bequest was made. The core wetlands of Alburg Dunes State Park will be designated as the Charles E. Smith Natural Area (see Appendix B).

Natural Area Constraints

The Charles E. Smith Natural Area must comply with the State of Vermont's Natural Areas Law (see Appendix F). Land uses and practices in natural areas shall be managed or maintained for the preservation of its natural condition, ecological values and wilderness character, including scenic and contemplative recreation. Appendix G proposes permitted activities within the area to be designated.

Easements

The following easements are in place at Alburg Dunes State Park:

- 1) From 1971, Vermont Telephone Corporation holds an easement that runs along the edge of the beach road for 5279 feet from the eastern boundary at Poor Farm Road to the western boundary at Coon Point Road. The purpose of this easement is for electrical, power, or other utility systems transmission lines.
- 2) The five residences along the railroad bed in the northeastern part of the park have deeded rights of way to use the railroad bed for pedestrian and vehicular traffic to access their residences. These rights of way extend to the southern boundary line for each residence. In addition, each property owner bears the cost for repairing and maintaining the rights of way.
- 3) A right of way exists for telephone lines along the side of Poor Farm Road.
- 4) A right of way exists for power lines that run along the western edge of Poor Farm Road.
- 5) A right of way for power lines run along Coon Point Road.

General Land Use Goals and Objectives

Goals

In setting land uses for Alburg Dunes State Park, the following three general goals are important considerations, which also affect visitor experience:

- 1) **Ecological Integrity.** Ecological integrity means insuring that natural ecosystems and processes will continue to operate without undue or permanent negative human impacts.
- 2) **High Quality Experience.** Individuals seek high quality experiences when participating in recreational activities. The quality of the experience directly relates to the satisfaction the visitor feels after visiting the park. Often visitor satisfaction determines whether or not the visitor will return to the park. Concepts that help achieve a high quality experience include separating conflicting uses; preserving significant natural, cultural and visual resources; maintaining the park's open quality, scenic views, and vistas; and minimizing negative visual impacts.
- 3) **Diversified Experience.** Diversified experiences mean being able to provide opportunities for a variety of user needs and values compatible with natural environment.

Objectives

Based on existing conditions, assumptions, resource protection needs, and public comment, the land use objectives outline ways to reach the land use goals above.

1) *Resource Management*

- Preserve the character and natural beauty of the Alburg Dunes State Park landscape, forests, open lands, wetlands, beach, and dunes.
- Designate the Charles E. Smith Natural Area to perpetuate a portion of the park in a natural state.
- Integrate recreational use while maintaining and respecting resource and facility capabilities.
- Any new facility that is developed should not adversely affect the park's natural resources, particularly the sensitive wetlands and dunes.

2) Recreation

- Provide opportunities for park visitors and the community to learn about and enjoy Alburg Dunes State Park's unique natural, cultural, and scenic resources.
- Recreational activities are to continue to be low-to-medium intensity in use areas.
- Provide limited facility development and amenities in order for park visitors to experience a more natural park setting.
- Meet appropriate and diverse recreational needs.
 - Minimize conflicts between recreational users.
 - Promote safety through facility design.
 - Promote passive, day use activities.
 - Provide accessible facilities, where practical.
- Encourage "non-automobile" circulation in the park.
- Plan facilities and programs that tie into local recreation trails, where practical and desired by locals.
- Recreational activities are to be compatible with the natural environment, making sure not to destroy or degrade the park's natural resources.

3) Interpretation

- Develop facilities, programs, and appropriate media consistent with the park's purpose, public interests, and the relative importance of the resources.
- Make programs and facilities accessible to persons with disabilities, where appropriate and practical.

4) Access and Transportation

- Proportion the transportation and parking requirements with the need to preserve the resources that visitors have come to see and enjoy.
- Provide a balance between the number of park accesses and the ability of staff to monitor and properly operate them.
- Limit facilities to those that serve the park and its operation.
- Reduce motor vehicle traffic in the beach area.
- No motorized All-Terrain Vehicle use will be permitted in the park, per ANR rules.

5) Landscape and Architectural Design Criteria

- Planted species should be indigenous or native to the Champlain Valley. Priority will be given to natives of the site, the surrounding area, or region.
- Physical features, such as parking bollards (i.e., boulders), should be of similar materials found at the park, surrounding area, or region.
- Design buildings and structures along a horizontal plane (i.e., roof lines) in order to work with the park's open quality, the relative flatness of the area, to fit into the beach and dune environment, and to relate to Lake Champlain, the beach, sand dunes, and wetlands. Buildings and structures should also be designed and located to minimize blockage of Lake Champlain views.
- The exterior finish of new structures should be of wood, which is compatible with the park's lake and wetland influence. If possible, allow exterior wood finishes to weather naturally. When structures must be painted, select earth-tone colors to blend in with the natural surrounding landscape.
- Design new facilities to be accessible and usable by persons with disabilities.
- Design structures that conserve energy and other resources.
- Use signs sparingly. Design signs to blend with the surrounding environment by using wood, stone, etc. Signs should not block scenic views, and should be appropriately scaled (such as interpretative displays along trails being a maximum of 36 inches high).

Proposed Management Areas

Management areas prescribe general management and use goals based on the resource values, environmental sensitivities, and compatible recreation use. They establish limits of development and use of an area.

Resource constraints are factors that limit or prohibit certain uses, make facilities unsafe or economically impractical, and/or are limiting of the natural environment. They are determined by evaluating such factors as soil erodibility, compaction potential, geology bedrock, hydrology, and the potential for pollution of surface waters.

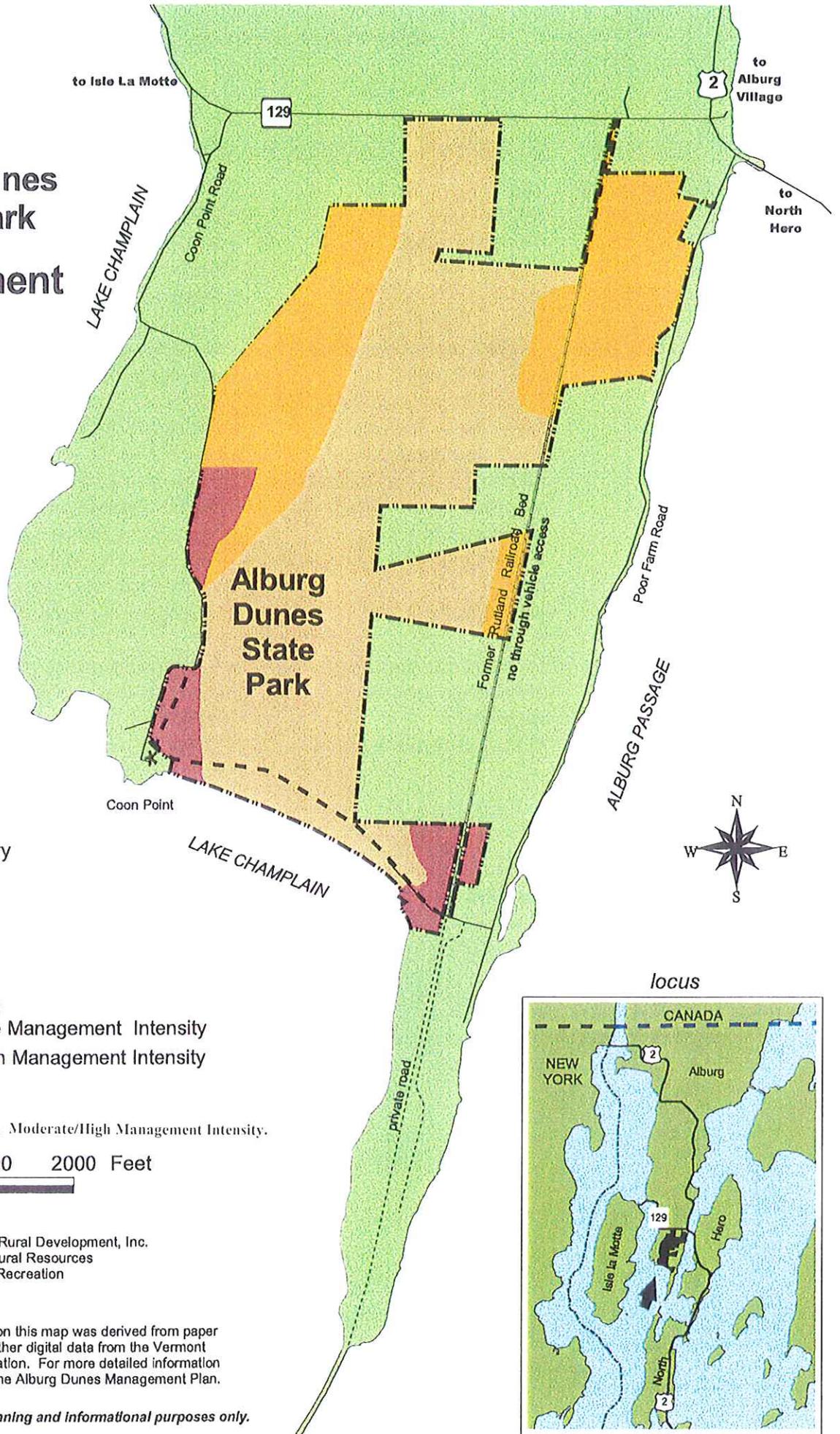
Legal constraints prohibit certain uses of the area and/or facilities. Laws and/or easements implement those legal constraints. TNC Conservation Easement (see Appendix C) places certain legal constraints on Alburg Dunes State Park. Vermont's Natural Area Law (see Appendix F) and conditions of the bequest place legal constraints on the Charles E. Smith Natural Area.

Sensitive areas warrant protection or restricted use, and are evaluated by such factors as the ability of the ecosystem to withstand human impact; vegetation characteristics such as rarity, fragility, and regeneration rates; and wildlife considerations such as tolerance to human activity, habitat values, population levels, and population stability. Sensitivities may also include rare, threatened, or endangered species, and their habitats; unique or scientifically important botanic or geologic features; cultural resources such as archeological sites and historic structures; scenic resources; and other resources of regional or statewide significance.

Based on the preceding factors, management areas (intensities for management activities and uses for lands) in Alburg Dunes State Park were determined and are shown on the Management Areas Map. There are three management and use intensity categories proposed.

- 1) The low/moderate category includes the upland areas in the northwest and northeast corners of the park and midway along the railroad bed, which is also upland areas. Most of the land in these areas are in active agricultural use, or are forested upland areas.
- 2) The moderate/high management and use intensity category includes the day use beach area, parking lot, and upland areas in the southwestern end of the park; the southeastern corner of the park that is upland; and the open land surrounding the outbuildings and the swamp immediately south of this area.
- 3) The natural area (Charles E. Smith Natural Area) encompasses the wetlands and beach and dune communities of the park.

Alburg Dunes State Park Management Areas



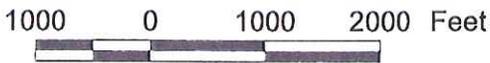
Legend

- Park Boundary
- Public Road
- Private Road
- Park Road
- Old Railroad

Management Areas

- Low/Moderate Management Intensity
- Moderate/High Management Intensity
- Natural Area

* Lot 20 acquired 3/00. Moderate/High Management Intensity.

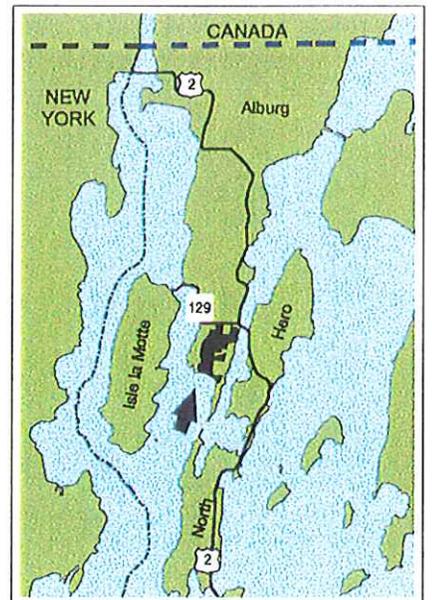


Produced by: Associates in Rural Development, Inc.
For: Vermont Agency of Natural Resources
Dept. of Forests, Parks and Recreation
Date: October 27, 1998

SOURCES: The information on this map was derived from paper and digital orthophotos, and other digital data from the Vermont Center for Geographic Information. For more detailed information on data sources, please see the Alburg Dunes Management Plan.

This map is intended for planning and informational purposes only.

locus



<u>CATEGORY</u>	<u>SITE CHARACTERISTICS</u>	<u>REPRESENTATIVE ACTIVITIES</u>
Low/Moderate	<ul style="list-style-type: none"> +Agricultural fields. +Open space. +Wooded areas. 	<ul style="list-style-type: none"> +Agricultural activities. +Wildlife habitat enhancement. +Low concentration of park users. +Trail activities, hunting, wildlife viewing. +Small parking areas.
Moderate/High	<ul style="list-style-type: none"> +Upland areas either open fields or forested. +Park Ranger's residence and maintenance buildings. +Tag alder swamp. +Sites of existing facilities and proposed day use beach and picnic area facilities. +Parking lots, both large and small. +Open wetland. 	<ul style="list-style-type: none"> +Moderate to high concentrations of park users, mainly at day use area and parking lots. +Access corridors – authorized motor vehicles restricted to designated park roads or service roads, public trail and bicycle use of service road, and parking lots. +Nature observation and study, interpretative facilities and trails. +Park operation and maintenance activities. +Wildlife habitat enhancements. +Fishing access, especially winter access.
Natural Area	<ul style="list-style-type: none"> +Wetland communities. +Beach and sand dune community. +Beach park service road. 	<ul style="list-style-type: none"> +Access restricted to prevent adverse impacts to sensitive wildlife and plant species. +Scientific research coordinated through Technical Steering Committee. +Very low concentration of park users in wetland area; moderate level of use along beach and beach road. +Nature observation and study along designated trails and boardwalks. +Beach activities.

These examples serve as a general guide to appropriate uses. Detailed field investigations shall be made prior to approval of any site-specific development.

Natural Area

Part of the acquisition moneys were from a bequest donation in honor of Charles E. Smith. The bequest stipulated that the donated money be used to purchase a natural area for public enjoyment. The Charles E. Smith Natural Area will be proposed for acceptance into the State's Natural Area System once the General Management Plan is finalized. The procedure includes developing a proposal outlining acceptable and unacceptable management practices and uses within the natural area to be presented to the Governor of Vermont. By declaration, the Governor establishes natural areas. A sign or placard will honor the bequest donation that provided acquisition moneys for the establishment of Alburg Dunes State Park. The Natural Areas Policy for the Department of Forests, Parks and Recreation is found in Appendix F.

The Natural Area's proposed boundaries are: Lake Champlain along the southern edge and VT. Route 129 along the northern edge. Along the western edge of the wetland the boundary will be where the vegetation type changes abruptly to Northern White Cedar. Along the eastern edge of the wetland, the boundary will be the park property line and the vegetation change-line, such that the agricultural fields will be excluded. Within the sand dune complex, the eastern boundary will be along the drainage course marked by a culvert under the beach road. Along the western edge of the sand dune/beach complex, the boundary will be the protective fencing around the western most dune, proceeding south, across the beach, to the lake.

This means that most of the beach road, plus the area surrounding and including a toilet building presently located along that service road, will be included within the Natural Area.

Current Facilities

The **Facilities Section** discusses the existing facilities and concerns with the facilities at Alburg Dunes State Park. Facilities include the restrooms, and contact station, as well as the roads, trails, parking areas, maintenance yards, signs, utilities, and administrative offices at the park.

Contact Station (Park Entrance Station)

The existing contact station is an 8' x 8' wood-frame building set on 6" x 6" pressure treated wooden skids at a wide spot in the park entrance road, just inside the entrance gate. The present building was purchased from a defunct golf-driving range in Grand Isle, moved to the park, and retrofitted into its present condition and use immediately prior to the Park's official opening in May 1996. There is telephone service to the contact station, but no electricity. The present facility was intended only to meet an interim need for a fee collection booth. Seven seasons of interim operation have shown the present station to be inadequate as regards to location, layout, and construction. Besides being placed in a more optimal location, the long-term contact station will need to be insulated, more secure, and have electrical service.

Parking Areas

Two parking areas were developed to meet interim operating needs in 1996. The first, upper parking area, is approximately 100 yards long and begins uphill and west of the beach approximately 400 feet. Before the present park entrance road was build, this lot sat along what had previously been the entrance road to "Palmer's Sand Beach," a private operation that preceded Alburg Dunes State Park. Much of this upper parking area is built atop fill that a former owner was directed by the US Army Corp of Engineers to remove from some wetlands had been filled without permission. It was hoped, as this parking lot was built, that it would be large enough to absorb overflow from what was intended to be a deliberately small lower parking area at the west end of the beach and service road.

The lower parking area parallels the beach along the widened western end of the service road. Varying in width from 45' on the east to 55' on the west, this lot is roughly 430 feet long. It

To Route 129

Ranger Station and Facilities
(House, Barn, and Hanger building)

ALBURG DUNES STATE PARK

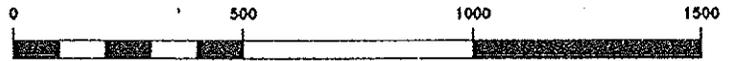
Building locations are Approximate

State of Vermont
Dept. of Forests, Parks, & Recreation

Private Property

Private Property

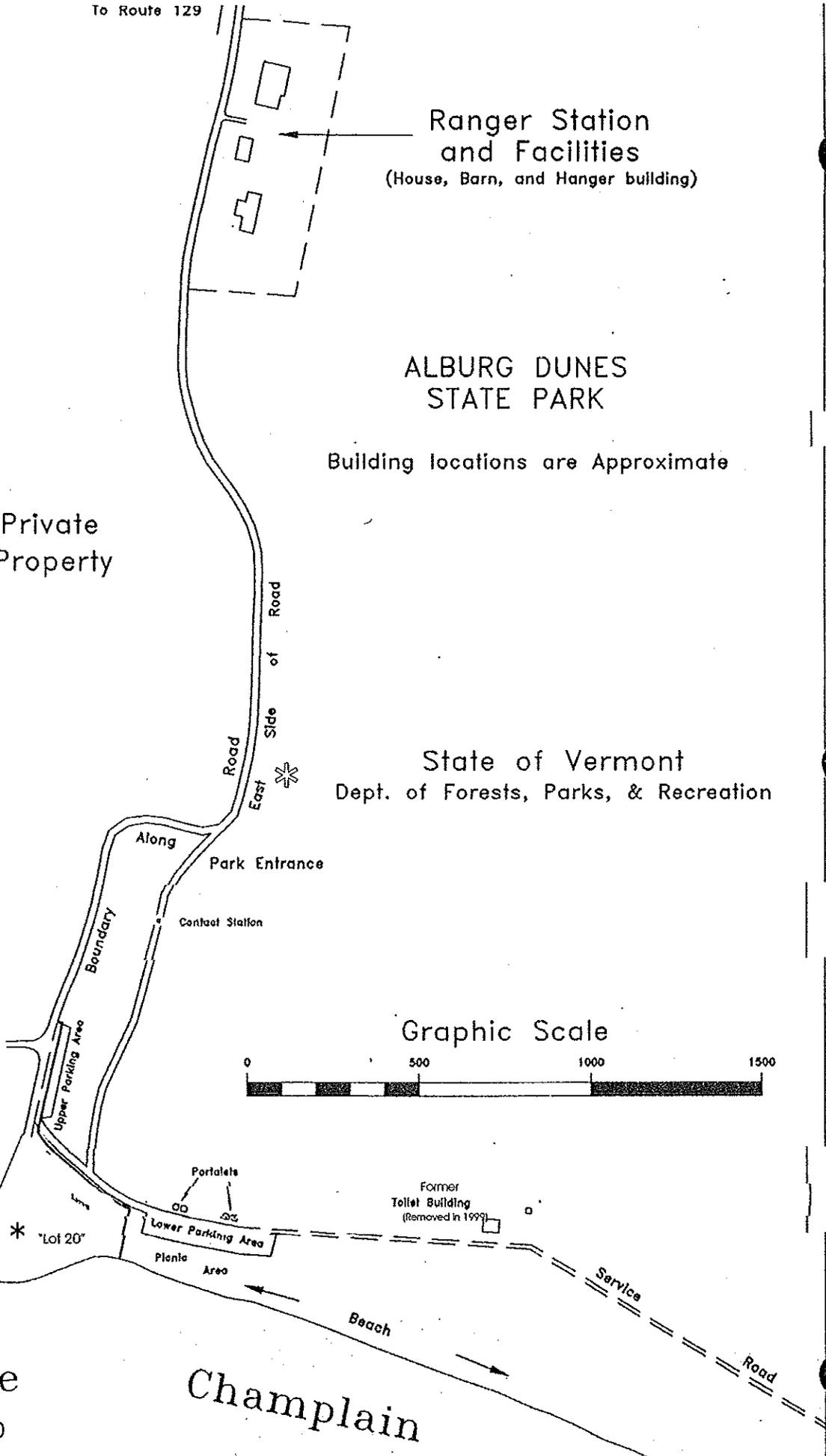
Graphic Scale



Coon Point

Lake Champlain

*Lot 20 acquired 3/00



cannot be made wider without either encroaching and filling into wetlands, or taking away from the already narrow section of grassy picnic area between the parking lot and beach. This lower parking lot could be expanded by lengthening eastward along the service road, except that doing so would put it even further behind one of the least-disturbed sets of remaining sand dunes and established beach grass, thus increasing the likelihood that park visitors would cut through the dunes as the shortest route to the beach. Because of some problems with the upper parking area, the lower parking area, under the interim operations plan, was built larger than had been intended.

The upper parking area receives minimal use, primarily because people prefer to park as close to the beach as possible. Another problem with the upper area, when it was built, was that much of what could have been useable space needed to be kept open for access to "Lot 20" by non-park visitors. With acquisition of Lot 20 in the spring of 2000, and expiration of the former owner's right to continue to use part of Lot 20 through March, 2002, that space now may be reconfigured, such that it should accommodate 40 – 50 cars instead of the present 20 or so. This reconfiguration will have to occur before the lower area can be downsized.

Picnic and Beach Area

For the first five seasons of park operation (1996 - 2000), space was at a premium in the picnic area. The original area blended with and overlapped the beach, but was primarily that mostly grassy section of level ground (between 70 and 90 feet wide) between the lower parking area and the edge of the sand beach. The western edge was the park boundary with (then) Phillips' Lot #20, and it extended eastward perhaps 250 feet ending, at a fence intended to discourage pedestrian traffic through the sand dunes. Originally less than one-third of an acre in size, the amount of useable space was more than tripled by the acquisition of Lot 20. It could be enlarged further by down-sizing the lower parking area. This will be a possibility if the upper parking area is reconfigured.

The amount of useable picnic space has been increased by overlapping onto the beach, where several picnic tables and charcoal grills have been placed along the upper slope of the sand. The beach itself is that strip of sand along the lakeshore, beginning at the Park's western boundary, continuing east-southeast approximately 3400 feet, to the point where a drainage course from the

wetland enters the lake, and the shoreline becomes more rocky. Beach width depends upon lake level, and can vary between almost no beach at all in early May to as much as 100 - 200 feet by late summer. The beach is widest at the west end, which is also the most popular. Besides its close proximity to parking, the wider beach and more finely-grained sand contribute to greater popularity of the west end. The western one-third, consequently, is the most intensively managed and groomed, while the only "beach maintenance" conducted along the central and eastern sections is litter and trash removal. Generally speaking, beach use diminishes the further east one goes, except that visitors arriving by boat seem most likely to come ashore in lesser used areas, while the extreme eastern end receives slightly more use than central sections because of pedestrians accessing the park from Poor Farm Road.

Park Beach Service Road/Trail

A service road (also known as the beach service road) extends east beyond the gated end of the lower parking area, passing a toilet building after a couple of hundred yards, then continuing past the east end of the beach, and up a short hill to a gate. This gate opens onto the railroad bed and Poor Farm Road at the eastern boundary of the park. The service road parallels the beach, but is set back some 200 - 300 feet and is separated from the beach by the sand dunes and a series wetland and floodplain forest ponds. North of the service road is the swamp and wetland, extending nearly two miles to Route 129. The service road is all that separates the smaller ponds from the larger wetland, and it is obvious that it was a single wetland prior to road construction. Nonetheless, the road has been in place for so long and the wetlands behind has adapted to the hydrologic impact such that removing the road (as some have suggested) would not necessarily be a positive action. Additionally, removing the road would isolate the east end of the park from the west end of the park requiring service vehicles to either drive nearly 5 miles around, or to drive along the beach to reach either end. Driving along the beach is discouraged, while the road, as is, has value as a pathway for walkers, hikers, bicyclists, and even equestrians.

Restrooms

A multi-stall toilet building, built in the late 1960s, came with the purchase of the property. This building was along the service road, located approximately 200 yards east of the lower parking area. It had an inadequate sewage disposal system and the water supply did not meet the health

standards for public water supply. The building was open for public use over the first two seasons of interim park operation, receiving light-to-moderate use. A reason for the light use was that the building is well beyond the end of the parking area, and obvious or highly visible, from either the beach or picnic area. With relocation of the ranger's residence (which had been in a trailer next to this toilet building) in 1998, water and electric service to the site was discontinued, and the building was closed. It was removed in 1999; the site has reverted to a more natural condition.

A second toilet building came with the acquisition of Lot 20. Similarly, it lacked a potable water supply, and the waste water disposal system was questionable. This building was removed in 2001. It is on this former building site that the park's restroom/toilet facility will most likely be constructed.

The present restroom facilities, after seven years of interim operation, continue to be rented "Portalets," each a self-contained, single-seated fiberglass or plastic unit with a built-in holding tank, which are serviced weekly by a contracted vendor. Depending upon park use levels between May to September, anywhere from two to four of these units are set up along the backside of the lower parking area. The restroom situation at Alburg Dunes during the interim operation has been inadequate.

Maintenance/Residential Area

The Park Ranger's residence and associated outbuildings are approximately a half-mile north of the park entrance along Coon Point Road. The residence is a relatively large (3 bedroom, 1 ¾ - bath), year-round home on a foundation with a full basement. This residence fully satisfies park housing needs. With the house acquisition came a mid-sized barn (used as a garage) and a good-sized steel building (approximately 30' x30'), originally an airplane hangar. These structures, although somewhat removed from the center of Park activity, are nonetheless valuable structures and will be used as maintenance project and equipment storage spaces.

Utilities

The local electric company is Citizens' Utilities. An overhead secondary powerline extended from the former Phillips' Lot #20 at the west end of the beach, through the picnic area and dunes, to the

site of to former toilet building mid-way along the beach road. Following acquisition of the ranger's residence (along Coon Point Road), and closure and removal of the former toilet building on this site, the overhead line and utility poles were removed

Presently, there is electric service to ranger's residence and the adjacent barn. There is also power to the former Lot 20, but no active service from this site. Eventually; this service will need to be activated, for power to the contact station, the future restroom/toilet building, and the future group use shelter

The local telephone company is Northern Telephone, with whom the Park has had service through three seasons of interim operation. There are telephones in the contact station and in the Park Ranger's residence. The telephone service at the Park Ranger's residence is connected to the Park's account (802-796-4170).

There is no public water supply at the park. Over the first two seasons of interim operation, the Park tapped into a small private water system owned by Robert Phillips, drawing water from Lake Champlain. In exchange for the Department's reimbursing Phillips for the whole cost of the electric bill for the account servicing both his toilet building and the one in the park, Mr. Phillips allowed the park to use the water at no cost. The water supply, however, did not meet public health potability standards and so, was used only to flush toilets in the restroom. The Park Ranger's residence has its own water supply from a deepwell. It is expected that this well will continue to meet staff residential needs. The need for a water supply to the Park will need to be addressed as the park is developed. It is likely that the restroom facility to be built will be of a composting, no-water design. This would leave the Department with a decision as to whether it wants to provide public drinking water at all.

Operations

The **Operations Section** is intended to define broad operational goals for Alburg Dunes State Park, and outline objectives for implementation of the General Management Plan. This element also identifies existing or potential problems, (and the strategies for dealing with them) and serves as a guide for developing and implementing the park's operations plan that best accomplishes the park's purpose, while properly managing and protecting the parks resources. All other information in the General Management Plan will be incorporated into this element as it describes existing conditions and proposes possible and needed actions.

Current Operational Practices

Administrative Functions

Technical Steering Committee (TSC)

The TSC was an interdisciplinary team comprised of staff from the Agency of Natural Resources, The Nature Conservancy, and the University of Vermont. It was formed as soon as the lands were acquired for Alburg Dunes State Park. Initially, the TSC assisted with directing the formation of the Park General Management Plan by reviewing recommendations from public meetings and the Public Planning Group. The TSC debated issues of park development and resource management, which at times presented conflicting goals that were difficult to resolve. The TSC later reviewed and sponsored the final draft Plan for public review and comment.

As referenced earlier (footnote, page 4), the TSC has been superceded by the District Stewardship Team, an interdisciplinary team of ANR (Agency of Natural Resources) land management professionals representing each of the Agency's land managing divisions.

Staffing

A suggestion heard early in the planning process by members of both the Technical Steering Committee (TSC) and Public Planning Group (PPG) was to close the park for a multi-year, natural resource-recovery period, and to not staff it during that period. Such an action would have been incompatible with one of the primary purposes of acquisition (to provide water-based recreation). This suggestion is also impractical to the necessary protection needs of the dunes. People will continue to go to the park even if it is "closed." A better policy is to maintain a staff presence in order to deal with and manage the visitors who inevitably will be coming to the park.

In each seven seasons of operation as a day use park, Alburg Dunes State Park has had three on-site seasonal staff, including a live-in park ranger and two 40-hour/week park attendants. The on-site staff have been supported by a year-round park maintenance technician based out of a regional park maintenance facility in North Hero.

Volunteers

Given current staffing and budget levels, it is unlikely that the Department of Forests, Parks and Recreation will be able to staff Alburg Dunes at a level higher than described above. Thus, there is great potential for volunteer involvement at the park. Interested volunteers could accomplish interpretive services, research opportunities, and resource management activities. Indeed, some desirable and needed management activities, probably will not happen without volunteers.

Employee Housing

Through the first two summers of State Park operation, the Alburg Dunes Park Ranger lived in a travel trailer set up adjacent to a toilet building approximately midway along the beach road. In the spring of 1998, the (former) Phillips' residence was purchased. The Park Ranger lives at that location and the travel trailer on the beach service road has been removed. Other staff have been hired locally and have not needed on-site housing.

Enforcement

The experience of our first few seasons of "interim" operations at Alburg Dunes State Park identified a few enforcement issues. During the operating season (mid-May through Labor Day), the primary enforcement issues have been:

- 1) attempts to avoid paying the park user fee by boaters; pedestrians, bicyclists, and equestrians accessing the park via Poor Farm Road; and campers from the former Phillips "Lot 20" campsites walking across the line into the picnic area (the issue with visitors from "Lot 20" disappeared in the 2001 season, following State acquisition of that of;
- 2) attempts at illegal camping by boaters and/or persons entering the park from the east access; and
- 3) Park visitors walking around and/or climbing over the protective fencing around the sand dunes.

During the off-season (September - May), enforcement issues include unauthorized vehicle and ATV access to inappropriate areas, including:

- 1) driving along the beach and beach road (around gates) and, in at least one instance, over the dunes after the protective fencing had been taken down for the season;
- 2) driving along the old railroad bed;
- 3) driving into the upland woods north of the (former) Phillips residence on Coon Point road; and
- 4) driving into and /or through fields between Poor Farm Road and the railroad bed (particularly during the rifle hunting season for deer).

Other off-season enforcement issues (as have been determined to date) have been related to hunting and fishing access and deer-stand construction.

Revenue Generation and Enhancements

For three seasons of "interim" operation as a Vermont State Park, Alburg Dunes has operated under the same regulations and fee schedule that are in effect at other State Park day use areas. The operating season (the period when a user fee is collected) is from Memorial Day weekend through Labor Day. Daily operating hours (in season) are from 10:00 A.M. until sunset. A "service and maintenance" (user) fee is collected from all children (ages 4-13) and adults (age 14 and up) entering the park during these hours. Exceptions to this are season pass holders, registered campers visiting from another state park, persons that hold a specific type of senior citizen pass, or those meeting any of several other alternative entry conditions. During the off-season no fee is collected for park entry.

Attendance and revenues for Alburg Dunes State Park for the first seven operating seasons are as follows:

Attendance

Year	Resident Visitors	Non-Resident Visitors	Total
1996	674	4680	5354
1997	738	4282	5020
1998	493	2586	3079
1999	na	na	5505
2000	1757	3717	5474
2001	3550	6047	9597
2002	3649	5728	9377

Non-resident visitors are primarily Canadians. It is interesting to note, however, that the proportion of resident visitors continues to increase yearly, from about 12% in 1996 to nearly 40% in 2002. This shift may be due to changed nature of park operations compared to the private operation that preceded it.

Revenues

<u>Year</u>	<u>Adult Day Use</u>	<u>Child Day Use</u>	<u>Other</u>	<u>Total Income</u>
1996	\$ 6463.50	\$ 1236.00	\$ 45.00	\$7,774.50
1997	\$ 7076.00	\$ 1720.50	\$337.50	\$9,134.00
1998	\$ 4644.00	\$ 1269.00	\$345.00	\$6,258.00
1999	\$ 6797.25	\$ 2111.25	\$ 1252.38	\$10,160.88
2000	\$ 4754.00	\$ 1489.50	\$ 1352.25	\$ 7,596.75
2001	\$ 10186.00	\$ 2502.00	\$ 2463.80	\$15,151.80
2002	\$ 10932.50	\$ 3488.00	\$ 2767.80	\$17,028.15

"Other" income is primarily vehicle pass, multi-admission punch card sales, and (beginning in the 1999 season) boat rental income. There were system-wide fee increases that became effective before the beginning of the 1997 and 2002 seasons. Adult day use, which had been \$1.50 per person per day, has increased to \$3.00. Child day use, which had been \$1.00 per person per day, has become \$2.00. Hence, there was a higher total income in 1997 and 2002 despite decreased attendance from the year(s) previous.

The budget for park seasonal operations staffing has been for three positions in each of the first two years. It has funded a 48-hour/week "Ranger 1" for a 19-week period, a 40-hour/week "Attendant 2" for a 17-week period, and a 40-hour per week "Attendant 1" for a 13-week period. The budgeted amount to cover the cost of those positions was \$ 14,495.52 in 1998, and \$18,235.00 in 2002 (the increase is solely attributable to rising wage scales. The staffing level has not changed since the second year of the park's operation).

The budgeted amount for seasonal staffing does not give a true picture of the whole cost of operations and maintenance at Alburg Dunes State Park. The regional maintenance staff codes time spent while engaged in Alburg Dunes-related projects back to the park, and these amounts are not considered a part of the staffing budget. While it varies somewhat depending on the scope and nature of maintenance projects in the park in any given year, \$25 - \$30,000.00 per year, rather than the budgeted \$18,500.00, is probably closer to the actual cost of the present park operation at Alburg Dunes.

Income Potential

There is no doubt that visitation (and income) will increase with increasing population pressures, recreation demands, facility development and marketing of the Park. Under the interim operation the past three seasons, there has been a deliberate low-key, go-slow approach, to avoid being overwhelmed as the character and scope of the park operation changed from what had previously been a wide-open situation.

Alburg Dunes, because of the desirability (southern exposure, clear water, clean sand, clear bottom, great views) and size (length) of the beach, and its proximity to greater Montreal, has the potential to become one of the most popular day-use park in the Vermont State Park system. In a largely self-funded park system such as Vermont's (receiving minimal General fund tax support for park operations), there was some thought given to having the Park break even, if not actually make money. Alburg Dunes, however, even when fully developed as proposed within this plan, may not meet its operating cost.

Alburg Dunes will not be developed to maximize its income potential, for to do so might endanger the very things the park was primarily purchased to protect. Therefore, a limited number of parking spaces will be developed, and only near (not adjacent to) the west end of the beach. This alone will somewhat limit and restrict use of the park facilities and natural resources.

It is expected that the gap between cost of operation and income will narrow when new facilities (restrooms, picnic area, picnic shelter, some landscaping improvements, etc.) are completed, making the area more attractive and desirable (from the perspective of the recreational user). It is also likely that some other revenue-generating activities will occur at Alburg Dunes (e.g., increasing the boat rental fleet).

Special Use Permits and Licenses

In accordance with Department procedures, Special Use Permits and Licenses were issued over several seasons of "interim" operation, for research purposes and to authorize adjacent property owners to extend "Safety Zone" posting onto state land within 500 feet of a qualifying structure. In addition, a farmer who had permission from the previous owner to harvest hay and grow corn on approximately 35 acres of fields in the northeastern corner of the park has been allowed to continue the practice.

Maintenance Functions

Beach

Prior to state acquisition, visitors to "Palmer's Sand Beach" pretty much had free run of the area once they had paid the use fee and entered via the west end (Coon Point Road). The full length of the beach road was open to vehicles, and there were several spurs that were bulldozed through and filled in across the dunes and wetland ponds between the dunes and beach road. These spurs accessed and served as beach-side parking areas. Much of the wetlands between the road and dunes were filled in, partly with dune sand and partly with fill brought from off site. The beach itself was extensively "managed," with the dunes utilized as a source material to replenish the ever-shifting beach.

The filling of the wetlands between the beach road and dunes was done without necessary permits. The former owner was required, as a mitigation measure, to re-excavate the filled areas. Re-excavation was completed within a year prior to state acquisition. This work, and the beach management policy described, accounts for the severely impacted and disturbed condition of the dunes and beach at the time of acquisition.

Interim operation over several seasons has restricted vehicle traffic restricted to a relatively small parking area along the westernmost 430 feet of the beach road, with the remainder of the road being closed to all but pedestrian and bicycle use by park visitors, and service vehicle use by park staff. Open fires are also no longer permitted on the beach or in the dunes (except in the provided picnic grills). Approximately 1500 feet of protective snow fencing is installed around two sand dune areas each spring, and is removed after park closing in September. The purpose

of the fencing is to keep people out of the dunes. It is removed in the fall so that autumn and winter winds can work the sand, re-sculpting and eventually rebuilding the damaged dunes.

Most of the 3130-feet of sand beach between the dunes and lake is no longer actively managed, except that trash left by visitors, or that has floated in, is picked up. Driftwood and other "natural" flotsam is allowed to accumulate along the eastern two-thirds or so of the beach, and is not picked up. This section of beach is also not graded, raked, or manicured in any way.

At the western end of the beach, extending eastwardly approximately 75 feet into the park, was a loose stone beachwall, or rip-rap section, with a base elevation of approximately 96.5 feet, and a top elevation of 102 feet (above mean sea level). East of this was another 75-80-foot section of weedy, grass-choked beach. This beach wall was removed in fall of 1997, and it and the weedy section of beach were mechanically graded and smoothed to more newly match the slope of the more desirable section of beach. This section begins at the east end of the weeds, and is presently the most desirable (from a recreational perspective) because of the abundant, clean sand, and gentle slope. This section of beach, its width dependent upon lake level, continues eastward, beyond the limits of the present parking area, to the front of the first set of relatively undisturbed sand dunes.

Management along the westernmost 650-700 feet of this beach over several seasons of interim operation has included garbage and trash removal. It also included driftwood and seaweed removal. The organic debris, which has sand trapped within, is not lost to the system but is deposited in the dunes. This section of the beach is occasionally "dragged" to smooth out sand castles, etc. Stumps left from cutting of trees, and that have been uncovered as sand has eroded away, have been dug out and removed.

Beach Service Road

The beach service road has been maintained over the first three seasons of interim park operations. Maintenance has included: 1) erecting gates at either end of the road to close the road to vehicles other than park service vehicles; 2) adding gravel to stabilize the bed in areas where drainage and wetness has been a problem; 3) replacing a culvert; and 4) mowing

alongside the roadway. The road is used by walkers, hikers, bicyclists, and horseback riders as a trail, linking one end of the beach to the other, providing non-motorized access between two town roads.

Health and Safety

Garbage Disposal

The State Park System has a "carry-in – carry-out" policy for rubbish. However, at Alburg Dunes State Park the majority of visitors are from Canada and it is extremely difficult for them to take trash across the border. During the "interim" operational years, this problem was evident the number of State Park garbage bags cast along the roadways on the way back to Canada. Realizing that this could become a serious issue with the Town, staff accepted full garbage bags and properly disposed of them later. Alburg Dunes is, now, probably the only day-use area in the Vermont Park system where garbage cans are placed for visitor trash collection.

Beach Water Testing

Swim water samples are collected weekly at all Vermont State Park swimming areas during the park operating season. The samples are analyzed at the Vermont Health Department laboratory in Burlington. Samples with an e-coli bacteria count in excess of 77-parts per milliliter necessitate immediate beach closure and re-sampling. Re-sampling continues until contaminant levels come down, at which time the beach is re-opened.

Other Utilities

Electricity and telephone services are currently available at the Park. Telephone services have been provided to the Park Ranger's residence and to the park entrance station. Electricity is currently provided for the Park Ranger's residence but not for the entrance station.

Visitor Services

Interpretation, Public Information, and Education

Interpretation enhances public enjoyment and benefit at a park through increasing understanding and appreciation of its natural, cultural, and recreational resources, and such knowledge provides lasting benefits to individuals and society in general.

The Park's unique natural resources, including open spaces, and endangered and threatened species, wetlands, sand dunes provide an excellent opportunity for interpretation and education.

Most park users come specifically to the beach for picnicking, swimming, and relaxing. While there, they could take advantage of interpretative and educational materials, programs, and facilities. Also, such offerings would encourage other people to come, to study nature and watch birds or partake of other activities on their own or as part of organized trips. Since the majority of park visitors are from Quebec, all materials and programs should be in French as well as English.

Currently, bilingual informational/interpretive signs, developed by The Nature Conservancy and the Department of Forests, Parks and Recreation, are posted approximately every 75 feet along the protective fencing around the dunes, to explain the reason for the fence.

Additionally, five themed interpretive signs have been developed for Alburg Dunes, utilizing the "wayside exhibit" template developed by the Lake Champlain Basin Program, and will be installed for the 2003 season. Four of these signs were researched, designed, and purchased with National Park Service funding through the Lake Champlain Basin program. The fifth sign was researched and developed by the Lake Champlain Birding Trail, in partnership with Vermont Forests and Parks, with Basin Program funding. These 24" x 42" signs featuring high-quality colored illustrations and photo graphics with bi-lingual text, will add much to visitor's understanding and appreciation of the many natural attributes found at Alburg Dunes.

Concessions

There currently are no concession facilities or arrangements in place.

Programs and Community Programs

Currently, there are no programs offered at the park. However, provisions in the Department of Forests, Parks and Recreation "Rules and Regulations for the Use of Recreational Areas" accommodate reduced fees or waivers for educational field trips, municipal group use, and/or special community events.

Community Relations

The local residents and elected officials in Alburg have been very supportive of the State purchasing lands in their community to develop into a state park. The PPG (Public Planning Group) held a number of meetings with the Selectboard prior to acquisition; also it held meetings with the public prior to the beginning of the planning process. The community is enthusiastic about this Park. At the dedication ceremony, over 80 local residents were present to celebrate. The Friends of Alburg Dunes, a local group of interested and concerned citizens formed early on, has become an integral part of the PPG and assisted with the Hunter Survey. The Friends of Alburg Dunes could possibly form a core of volunteers, if interested.

Other Uses and Off-Season Use

The park now experiences other uses (legal or otherwise) besides picnicking and swimming. These include walking, boating, wildlife viewing, bicycling, horseback riding, ATV riding, berry picking, etc. Off-season use is mostly hunting and ice fishing.

Other Uses

People informally visiting the park for walking, bicycling, horseback riding, and berry picking are generally residents living around the park. Most often they are using the railroad bed, beach, beach road, Coon Point Road, and Poor Farm Road for these activities, which provide excellent places for informal trail activities. Local residents have also been using the railroad bed, and to a limited extent the beach, for All-Terrain Vehicle (ATV) riding. In the past, people coming to the beach via boat were discouraged from doing so by the previous landowner. During the first two

“interim” operating seasons, there has been an increase in the number of boats anchoring off-shore to use the area for swimming and other day use activities. As word gets out, this type of use will most likely increase.

Lake Champlain Paddlers’ Trail Site

In recent years there has been a boom in interest in paddling activities, specifically sea kayaking or kayak touring. The Lake Champlain Paddler’s Trail was conceived in 1993 to develop a system of designated remote camping sites along the Lake Champlain shoreline for overnight, long-distance paddling experiences. By 2002, twenty-eight sites had been designated on public and private lands along on Lake Champlain (in New York and Vermont). Gaps remain, and the LCPT has expressed interest in a paddlers’ site at Alburg Dunes. It is anticipated that once the Paddlers Trail is completed and catches on, there will a tremendous amount of interest in visiting Lake Champlain for these experiences. Nonetheless, designating a site at Alburg Dunes, with the fragile nature of the dune complex, the pending natural area designation, and limited space available for day-use experiences, would be problematic unless and until additional land acquisition occurs.

Off-Season General Use

Many times, people use state parks outside of the operating season, generally just to check them out. Ordinarily, the off-season user will walk or bike through the area, just for something to do, or to gain an off-season perspective. Alburg Dunes State Park receives such off-season use for walking and bicycling. This use might also include ATV riders, who may or may not become problematic later on. These off-season users generally park at the closed and locked gates, and walk around them to use the park. Off-season use is free to the public.

Hunting

For several years preceding state acquisition, Alburg Dunes State Park was closed to hunting, except by permission from the landowner. It was opened to public hunting in 1996, for the first time in many years. Four primary "hunter access and parking areas" were established, which are located: 1) at the Poor Farm Road gateway, east of the beach; 2) at the end of the railroad bed off of Route 129, on the property's northern end; 3) one about midway down Coon Point Road

into the park a few hundred feet north of the Park Ranger's (former Phillips) residence; and 4) at the park entrance off of Coon Point Road. Hunter information maps/fact sheets have been available at each access point. In the spring of 1997 there were complaints from residents along the railroad bed that hunter traffic the previous fall had led to the deterioration of the roadbed over which they have access rights to their residences. As a one-time gesture, the Department of Forests, Parks and Recreation arranged to have the roadbed upgraded and graveled.

Ice Fishing

Horseshoe Shoals and other Lake Champlain waters south of the Alburg Dunes State Park beach are very popular ice fishing areas. There are limited access points to get to these areas for ice fishing. Anglers trying to access the area have traditionally driven down Poor Farm Road to Pointe-of-Tongue and have parked along and in the roadways, or on private property. They have, to the chagrin of residents (many of them summer only), cut through private property, leaving ruts and rubbish that the residents discover in the spring. Beginning during the winter of 1996-97, the Poor Farm Road gate, at the east end of the beach, has been opened for angler access, with a flagged cable placed across the beach road near the culvert. Anglers now are able to get off of Poor Farm Road, avoid private property, and to park closer to (or drive out on) to the frozen lake surface.

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Appendix A: Committee Lists

Public Planning Group

Ron Baluch
Margaret Bozik
Sid Bradley
Steven Dulude
Frank Edmonds
Pat Elmer
Dwight Kinney
Jocelyne LaCroix

George Meigs
Raleigh Palmer
Gene Parker
Steve Stata
Terry Tatro
Christine Tepper
Pierre Tiboulet
Nick Yurchuck

Technical Steering Committee

Agency of Natural Resources

Susan Bulmer, *(formerly) Resources Planner and Project Leader, Dept. of Forests, Parks and Recreation*

Bill Crenshaw, *District Wildlife Biologist, Department of Fish and Wildlife*

David Flint, *(formerly) Alburg Dunes State Park Ranger, Department of Forests, Parks and Recreation*

Mike Fraysier, *(formerly) Lands Administration Specialist, Department of Forests and Parks*

Ed Leary, *(formerly) State Lands Administrator, Department of Forests, Parks and Recreation*

Ed Koenemann, *(formerly) State Parks Director, Department of Forests, Parks and Recreation*

Bill Moulton, *Forestry Regional Manager, Department of Forests, Parks and Recreation*

Carl Pagel, *Chief of Wetlands Office, Department of Environmental Conservation*

Bob Popp, *Nongame and Natural Heritage Program, Department of Fish and Wildlife*

Larry Simino, *(formerly) Chief of Park Operations, Department of Forests, Parks and Recreation*

Craig Whipple, *(formerly) Park Special Projects Chief, Department of Forests, Parks and Recreation*

Chuck Woessner, *Regional Park Manager, Department of Forests, Parks and Recreation*

Chuck Vile, *Forestry Regional Manager, Department of Forests, Parks and Recreation*

The Nature Conservancy

Chris Fichtel, *(previous) Director of Conservation Programs, The Nature Conservancy*

John Roe, *The Nature Conservancy*

Rose Paul, *Director of Stewardship, The Nature Conservancy*

University of Vermont

Beth Astley, *(formerly) Graduate Student in Geology, University of Vermont*

Rob Young, *(formerly) Professor, Department of Geology, University of Vermont*

Appendix B: Charles E. Smith Natural Area Bequest

On May 26th, 1995, the Department of Forest, Parks, and Recreation (FPR) received \$118,389.90 from the estate of Laura S. Burnham. The bequest to FPR was for the purpose of purchasing a piece of undeveloped land in the Vermont. The land was to be "inhabited by animals and upon which plant life grows indigenous to the State of Vermont." The land was to be used for "the use and enjoyment of the general public." The piece of land was to be named after her late brother, Charles E. Smith, who was "born, raised and educated in the State of Vermont." A portion (\$60,000) of that bequest was used in the original purchase of Alburg Dunes State Park. An additional \$22,000 of this bequest was used to purchase the 38 acre Fineman property, which has subsequently been added to the park.

Appendix C: Summary of Deed Restrictions Conservation Easement -- The Nature Conservancy

I. Purposes of the Grant; Management Plan

1. To conserve and protect the natural communities of the sand beach and dunes, along with their constituent rare plant and animal species, and the natural ecological processes which maintain those natural communities.
2. To conserve and protect the natural ecological processes that create and maintain the large wetland complex, which is a mosaic of several natural communities including black spruce swamp, red maple-black ash swamp, and dwarf shrub bog, and which is also part of the most important deer wintering yard in Grand Isle County.
3. To conserve and protect the natural area, wildlife habitats, scenic and open space resources, and passive outdoor recreation opportunities of the protected property for present and future generations.
4. To allow public access to and use of the protected property, and particularly to maintain public access and use of the sand beach for present and future generations, provided that such use is compatible with all the Purposes of this Grant, above.

At a minimum, the Management Plan shall identify actions necessary to accomplish the following:

- a) provide for but control public access to and use of the sand beach;
- b) sustain and/or restore the natural ecological processes responsible for beach/dune formation and maintenance.

- c) maintain and/or restore natural dynamics of the wetland ecosystem as long as this does not detrimentally affect adjacent private lands;
- d) consistent with a, b, and c, above, protect the viable populations of rare native plant and animal species.

II. Restricted Uses of the Property

- 1. The protected property shall be used for educational, scientific, public outdoor recreation, natural area, and open space purposes only.

III. Permitted Uses of the Protected Property

- 1. The right to use the property for all types of dispersed outdoor recreational purposes (including, but not limited to, hunting, trapping, fishing, bird watching, walking, snowshoeing, cross-country skiing) not inconsistent with the Purposes of this Grant or the Management Plan.
- 2. The right to conduct all activities allowed by the Management Plan, including the operation of a seasonal beach recreation area, provided such activities are reasonably necessary to carry out the Purposes of this Grant and are not inconsistent with the Grant. Such activities may include, but are not necessarily limited to, the management of vegetation, wildlife and recreation.
- 3. The right to clear, construct, repair, improve, maintain and replace trails, roads, parking areas, structures or facilities, together with necessary access drives and utilities, on the protected property, provided the trails, roads, parking areas, structures or facilities are used for the Purposes of this Grant and not inconsistent with the Management Plan.
- 4. The right to charge the public reasonable fees for admission to and use of the property.

Appendix D: History and Development of Town, Property, and Surrounding Land

General

The aboriginal occupants of this part of the country were Abenaki Indians. They were driven out by Iroquois Indians, who invaded the territory during the colonial wars between the French and the English. The first European explorers and settlers were French. In 1609, Samuel de Champlain first visited the lake now known by his name. In 1666, the French built Fort St. Anne, on Isle La Motte, as an outpost of their settlements along the Richelieu River. From this outpost they launched raids against the Iroquois.

Town of Alburgh History (changed to Alburg in the 1930's)

Alburgh is a peninsula extending south from the Canadian border into Lake Champlain for about 10 miles. Along the border, the town is about six miles wide. The French called it "Point Algonquin." Afterwards it was called "Missisco Leg," then "Missisco Tongue," after this "Caldwell's Upper Manor," but finally "Alburgh," a shortened version of "Allenburgh" named after Major-General Ira Allen. The first established settlement was made by the French in 1731, at Windmill Point, under a charter from the French crown to Senior Francois Foucault. This settlement was shortlived. Another commenced in 1741, but was also soon abandoned. Senior Foucault transferred his grant to General Frederick Haldimand, who subsequently conveyed it to Henry Caldwell of Belmont, Quebec. Henry Caldwell purchased the land in 1801 after having it for 30 years. He rented land to settlers who were almost entirely Loyalists and British sympathizers. Residents who settled before the Revolution fled during the war, but many returned and settlement grew in the 1780s. The title of Henry Caldwell descended to John Caldwell, his son, and it was afterwards purchased from him by Heman Allen of Highgate.

About 1782 immigrants from St. Johns settled in the town. They thought they were living in Canada, and were principally British refugees. The lands at this point in time were covered with dense forests. There were no roads or bridges, so travel was by means of canoe or bateaux, and on the ice in the winter. The town was then called "Caldwell's Upper Manor." Other settlers came soon after from various localities. For many years, this territory was the subject of much controversy in relation to legal titles. The

Definition Treaty of 1781 established the boundary on latitude 45^o so that these lands were in the Province of New York. On February 23, 1871, the Assembly of Vermont gave a charter to the town of Alburgh to Iran Allen and 64 other individuals. The Town was first represented in the legislature by Thomas P. Loid in 1786.

The population of Alburgh was 446 in 1791. In 1792 the town was organized. The population increased steadily from 1791 to 1860 when it reached a peak of 1793. It declined from about 1800 people in 1860 to 1300 people in 1910, but has since increased steadily throughout the years to its 1995 estimated population of about 1441 (1362 population from 1990 US Census). During the first half of the 19th Century, settlement appears to have been sparse throughout Alburgh. Settlement centers began to grow in the northern part of the town, which included Alburgh Springs, East Alburgh, and Alburgh Center.

As there was no water power available, the town was never developed industrially, and has always remained essentially agricultural. About 1880, Ephraim Mott built a stone wind mill for grinding flour on the west shore of town about three miles south of the border. About 1830, a steam saw mill was erected in the western part of town near the province line at the Center by William L. Sowles and William H. Lyman.

Transportation was the theme around which Alburgh prospered. There were a number of ferries connecting Alburgh with New York, and with towns in Vermont: Isle La Motte, North Hero, and Highgate. Later came the railroads, the "Vermont & Canada Rail Road" in 1852 (later the "Vermont Central Rail Road") and the "Rutland - Canadian Rail Road" (later known as the "Islands Line") in 1901. The railroads opened up trade to Boston and the Great Lakes carrying butter and milk from northern New York and Vermont. Around 1870, Alburgh Village (formerly West Alburgh) was just a small settlement with about a dozen residences, a railroad depot, and two stores.

With the advent of the "Island Line" Alburgh Village became quite a railroad terminal and prospered greatly as a result of the railroad activity. Businesses followed suit, and in 1930 businesses listed were the Swanton Savings Bank & Trust Co.; Alburgh Inn; Colonial Theatre; Livery; Bresult Bros. Bakery; H.P. Hood & Son Creamery; Pearl Bros. Dry Goods; W.E. Flynn & Co., Dry Goods; J.E. Gardner, Meat Market; A.G. Blair, Auto Sales; W.O. Morton, Feed, Grain & Flour; Wm. Goyette's Majestic Restaurant. Also located in the Village were three churches, a library, a school, a post office, and a

telephone office. During the 1930's the post office changed the spelling of the Town of Alburgh. They dropped the letter "h" from Alburgh, hence the current spelling, Alburg.

Up through the 1950s, Alburg Village's economic future certainly looked bright. However, certain events over a few decades caused the demise of the Rutland Railroad. In 1962, the Rutland Railroad was ordered to be abandoned by the Interstate Commerce Commission (ICC), and all railroad activity at Alburg was shut down. Other industries in Alburg include farming, tourism through vacation homes and camping, and frog rearing and shipping to school and research laboratories and hospitals.

Property History

The expanse of land encompassing Alburg Dunes State Park has been locally known as Palmer's Swamp and Palmer's Beach for many years. Land records show that the most recent landowner was Robert Phillips, from whom the state purchased the property. Mr. Phillips amassed landholdings on the peninsula over the years from a number of individuals.

Surrounding Land History

Poor Farm

The Town's Poor Farm was established in 1867 at Town Meeting to provide a place for the town's destitute (individuals and families) to live and to be provided for. The "healthy paupers" also had to perform labor for the farm six days a week. This farm was located on the very south tip of Alburgh Town, now known as Alburg Tongue. This land was first settled by Abel Phelps (1774-1859) before 1820, and later owned by Marcellus B. Phelps when the town purchased it. The Phelps operated a sail scow Ferry crossing to Royal Blanchard's landing (later "Vacation Camp") on the west shore of North Hero. The Poor Farm was finally sold in 1947. Today, the Pointe of Tongue has been further subdivided into second and vacation homes.

Railroad

By 1899 construction of the "Rutland-Canadian Railroad" was underway and entered the south end of the Town of Alburgh at the Point of the Tongue and where the Poor Farm was located. There was considerable dissention over the arbitrary "taking of land" by the railroad, and numerous disputes and suits brought by various residents of Alburgh. The

railroad was abandoned in 1962. Today, the southern section of the railroad bed is used as a private drive to the residences on the Point of Tongue. The section between Poor Farm Road and VT 129 is owned by the Town, the Department of Forests, Parks and Recreation, and a number of private landowners. It is currently used as an informal trail and roadway.

Roads

As early as 1793, the inhabitants of Alburgh were attempting to solve the problem of no roads. The Town was divided into 12 Highway Districts, and a "Publick Highway" survey was commissioned. The Alburg Dunes State Park property is located in the 2nd and 8th districts of that time. Town roads were laid out around the perimeter of the peninsula. It is not clear if the proposed road along the beach was ever constructed by the town. A beach road, however, does exist behind the beach today.

Schools

Located at the end of the present North Hero-Alburg Bridge, was the "O'Neil School - District No. 8, so named for John O'Neil who lived there. He owned and operated the Ferry between Alburg and North Hero for many years before the first bridge was built in 1886. The last schoolhouse at this location, remains to the present, remodeled as a residence.

Cemetery

Located about half-a-mile south of the North Hero-Alburg Bridge on Poor Farm Road is the Alburgh Tongue Cemetery. The earliest burial here is of Ruth Phelps, who died in 1828. In 1850, John Truman gave 44 sq. rods of land for this cemetery. The cemetery is adjacent to state park lands.

Airport

A privately-owned grass airstrip just east of the railbed has been used by small twin engine planes since 1981.

Appendix E: Natural, Recreational, Visual and Cultural Resources

Natural Resources

Topography

Alburg Dunes State Park is located on the shores of Lake Champlain in northeastern Vermont at the southern tip of the Alburg Tongue east of the La Motte Passage and west of the Alburg Passage. The topography of the region consists of generally flat terrain (See Topography Map). The park is approximately 622.18 acres in size. Within the park are uplands, shorelines, and wetlands. The dominant features of the park are the large wetland, which makes up about 56% of the total area, and the south-facing, 3/4-mile (3130 linear feet) long, natural sand beach.

The property is located on the North Hero and Rouses Point topographic quadrangles. Elevations in the park, range from lake level (mean low 94.5 feet) to 130 feet above sea level. Slopes range from flat to moderate in the uplands. The following topographic map represents the topography of the area that was generated from the DEM data using ARC/INFO TIN module, and not from the USGS topographic quadrangles. The DEM data was derived from the development of the 1996 digital orthophotos.

Climatology and Lake Levels

No climatological data are recorded in Grand Isle County or at the park; however, the U.S. Weather Bureau reports that the climate is approximately the same as at Burlington, Vermont.

The primary influence on the weather is the close proximity of Lake Champlain, which moderates the climate, particularly during the winter. The prevailing wind during the winter is predominantly from the north-northwest and from the south-southwest in the summer time. The annual average precipitation total is 32.22 inches. Snowfall amounts are 66.9 inches annually. The month of February typically has the lowest average monthly precipitation total, while July has the highest.

The mean annual air temperature is 70.4 degrees F for the month of July and 17.9 degrees F for the month of January. The average surface water temperatures of Lake Champlain in the summer are:

- 48 degrees F in May;
- 60 degrees F in June;
- 69 degrees F in July;
- 72 degrees F in August; and
- 65 degrees F in September (personal conversation with Gary Sadowsky, Weatherman for WCAX - TV in Burlington, Vermont and based on statistics kept from the King Street Ferry Dock in Burlington).

Lake levels vary from low water levels during late summer to high water levels during late winter and early spring. Low lake levels correspond to lower precipitation months and high lake levels with snow melt and higher precipitation months. Since the 1870s, when annual lake level records have been kept, lake levels have been steadily rising. The mean low has been 94.5 feet and the mean high has been 99.7 feet (at Rouses Point, New York) since the mid-1980s. The record low was 92.4 feet (1908) and the record high was 101.89 feet (1993), both recorded at Rouses Point, New York. The range between the low and high water levels of Lake Champlain normally averages six feet annually. Since the 1870s, when annual lake level records levels have been kept, the maximum range between low and high in one year was 9.4 feet.

Geology

Geology of Lake Champlain

The origin of Lake Champlain is not known, although Hunt (1972) suggests a combination of both high angle normal faults and glacial scouring are responsible for its formation. Repeated glaciations were effective in carving out and removing incompetent shales, creating the deepest portions of the lake. The bedrock of the eastern Champlain Valley is made up of Cambrian to Ordovician (555 – 440 mybp) unmetamorphosed and low-grade metamorphosed carbonates, sandstones and shales, which strike mainly North-South (Doll, 1961). The bedrock of the western side of the Champlain Valley in New York is composed of high-grade metamorphic Precambrian (590 – 550 mybp) rocks of the Adirondack dome and unmetamorphosed sandstones and carbonates. The bedrock under most of the lake is probably composed of Ordovician shales and limestones since they are exposed on the islands and along the eastern shore.

Post-Glacial History

Retreat of the ice sheet during the Wisconsin glaciation began about 20,000 to 18,000 years BP (Before Present) (Denton, 1981). The ice sheet covered land as far south as Northern New Jersey, and extended onto the continental shelf off of New England at its maximum extent. The weight of the continental ice sheet, which is estimated to be as thick as 1 to 2 km over Northern New England, depressed the crust (Farrand, 1962). The northern end of the lake experienced a greater amount of crustal depression than the southern end due to a greater thickness of ice in the northern end. As the ice sheet began retreating, thinning of the ice reduced the load on the crust, and isostatic rebound began when the ice mass was reduced, prior to complete ice removal. The Champlain Valley experienced a greater amount of rebound at the northern end of the lake due to a thicker ice mass, and a later unloading of the ice in the north end of the valley. This differential rebound has caused shoreline features such as beaches and wave-cut terraces to tilt to the south, with the youngest shorelines tilted the least (Chapman, 1937).

The ice sheet had generally melted from the mountains of Vermont by 13,000 BP, but a lobe of ice remained in the Champlain Valley (Chapman, 1937). The edge of the ice lobe began retreating from the southern Champlain Valley between 13,000-13,600 years BP (Parent and Occhietti, 1988). As the ice retreated northward, it dammed up the waters in front of the ice sheet creating proglacial Lake Albany in the Hudson Valley. Early isostatic rebound raised a sill at Coveville, New York, which separated the waters in the Champlain Valley from Lake Albany (Chapman, 1937). This divide created Lake Vermont, which lasted from approximately 13,000-11,800 years BP, and flooded the depressed land extensively (Parent and Occhietti, 1988).

Continued retreat of the ice sheet northward removed the ice-barrier to the ocean and allowed marine waters from the St. Lawrence to enter the Champlain Valley. This stage, termed the Champlain Sea, lasted from 11,800-10,200 yr BP (Schlegel, 1994). Five stages of the Champlain Sea were defined by Chapman (1937) including the Beekmantown, Port Kent, Burlington, Plattsburgh, and Port Henry Stages, with progressively lower water levels associated with each stage. The tilted water plane at about 11,700 BP had a tilt of approximately 0.9m/km within the Champlain Basin (Parent and Occhietti, 1988). The marine invasion ended when the land under the Richelieu River rose to an elevation high enough to exclude marine waters. The basin freshened as the marine waters were diluted and the modern Lake Champlain formed. Lake-level was at least 8 meters lower in the north end at Alburg Dunes State Park and an estimated 27 m

lower in the south end of the lake than the present mean lake level during the transition from the Champlain Sea to modern Lake Champlain, about 10,200 years BP (Astley, 1997).

Alburg Dunes State Park

The Alburg Dunes system contains an active barrier island, which is presently migrating back over the modern wetland. Peat (dark brown, spongy areas, composed of dead plant material) can be seen emerging from the sand on the beach and some distance offshore, providing evidence for a past lake-level rise. The wetland, which is now located behind the parking lot and park road, once existed in the position where the beach is today. The beach has migrated northward over the surface of the wetland as lake level has risen over the past 10,000 years.

The barrier beach separates the wetland from the main lake, protecting the vegetation from the impact of wave attack from southerly winds. The layer of wetland peat extends beneath the barrier beach which allows for wetland drainage directly into the lake. Brown water, stained by the organic acids in the peat, can be seen flowing out of the beach face when the water level in the wetland is higher than the lake water elevation. The Alburg Dunes wetland contains no inflow streams, however, as it is lower in elevation than the surrounding lands it is possible that general runoff occurs from these higher lands into the wetland area, and also that the hydrology of the wetland is controlled by lake level. The wetland floods in the springtime, coinciding with snowmelt and high lake level. The peat acts like a sponge due to the high porosity of the peat mat, storing water for long periods of time, and draining slowly into the lake.

Sometime this century, a drainage ditch was dug along the wetland side of the barrier beach. This ditch flows actively all summer, draining into the lake at the east end of the barrier beach. The natural drainage pattern for this wetland is over and through the barrier beach. The drainage ditch allows for faster, more efficient drainage of the southern end of the wetland. Faster drainage could result in a slower peat accumulation rate since decomposition rates are increased as the water table within the peat falls and the peat becomes aerated. If lake levels continue to rise and the drainage ditch is maintained as an actively flowing channel, the peat mat could be drowned in the areas with the slowed rates of peat accumulation since the peat mat will be unable to maintain its elevation relative to annual high lake levels. In addition, natural wetland transgression onto the upland could be slowed and perhaps reversed, thereby reducing the wetland area.

It is recommended that the wetland hydrology, vegetation patterns, and wildlife usage of the wetlands be studied and monitored continuously over a period of years in order to determine what effect discontinued maintenance of the drainage ditch has on the wetland ecosystem.

The local bedrock outcrops around Alburg Dunes State Park are the Stony Point Formation (Osp), composed of predominately calcareous black shale and fine-grained dark-gray limestone (Doll, 1961). A good place to observe this bedrock is at the east end of the beach. The flat pebbles on the beach are pieces of this limestone that have been eroded and broken up by ice and waves. A thin layer of glacial till, which was deposited during the last ice age, can be seen on top of the bedrock. The glacial till is the source of sand that formed the beach. The sand is eroded from the top of the bluff, and moved by currents produced by incoming waves toward the west end of the beach. The widest part of the beach is at the west end due to the east-to-west transport of sediment in this system.

The sand dunes behind the beach are formed by blowing sand. The vegetation growing on the dunes helps to trap the sand, preventing erosion of the dune. Beachgrass (*Ammophila champlainensis*) has rhizomes, which grow horizontally in a network just under the surface. This network of rhizomes is important for dune stabilization, and reduces loss of sand from the dunes back into the wetland. The dunes are important as they serve as a barrier between the storm waves in the lake and the fragile wetland ecosystem. In areas where past owners have bulldozed the dunes to produce a flat beach, this action has accelerated the dynamic, natural process of overwash fans of sand covering over the wetland vegetation, converting the wetland to a beach environment. Protection of the dynamism of the dune system is important to preserve the dune vegetation, dune processes, and the wetland environment.

The supply of sand to the Alburg Dunes System is limited. The sandy beach will cease to exist if large amounts of sand are removed from the beachface. Presently, sand is removed by wind, currents, and human activity. Wind removes sand from the system by blowing it into the wetland where it is trapped. Promotion of beachgrass growth on the dunes will slow this process. Currents remove an unknown amount of sand during large wave events when sand is transported offshore into deeper water where it is lost from the beach. Human activities, such as walking on the dunes and bulldozing, speed up the wind removal of sand by destroying dune vegetation. An unknown amount of sand is also

removed by beachgoers on towels, feet, etc. In the future, the continuation of this beach as a wide, recreational beach may depend on beach replenishment at the western end. The beach is naturally wider at the western end due to the westward long-shore drift; therefore, the western end will always be more desirable for recreational activity.

Current Geological Research

Sediment cores were taken in three main areas of the Alburg Dunes wetland during the 1996 summer (Figure 1) by Beth Astley and Robert Young, Geology Department, University of Vermont. Two transects across the northern portion of the wetland were completed (Figures 2 and 3) to determine peat thickness and to map the base of the wetland (Figure 4). In general, peat thickness is greatest in the center of the wetland, and thins toward the edges. Basal peat is defined as the bottom of the organic layer in the wetland, which represents the transition from an upland or from an aquatic (lake/pond) environment to a wetland environment. Initiation of wetland growth began first at the lowest elevations on the pre-Holocene surface, composed primarily of sands and clays. As lake-level rose throughout the Holocene, wetland vegetation began growing at progressively higher elevations. Therefore, the higher the basal peat elevation, the later the wetland developed in a particular location.

A lake-level curve was produced from the basal peat dates which shows that lake-level has risen overall throughout the Holocene on the order of 8 m (Figure 5) at this location. Lake-level rise was rapid from about 10,000 to 7,500 years BP, followed by a still-stand, or a possible small magnitude regression from approximately 7,500 to 5,000 years BP. Lake-level began to rise again about 5,000 years BP. The magnitude of rise between 5,000 BP and the present is on the order of 2m. Continued small-scale isostatic rebound of the Richilieu Sill and cooler, wetter conditions that have persisted since about 4,000 years BP may have contributed to the 2 m rise in lake-level from 5,000 years BP to the present.

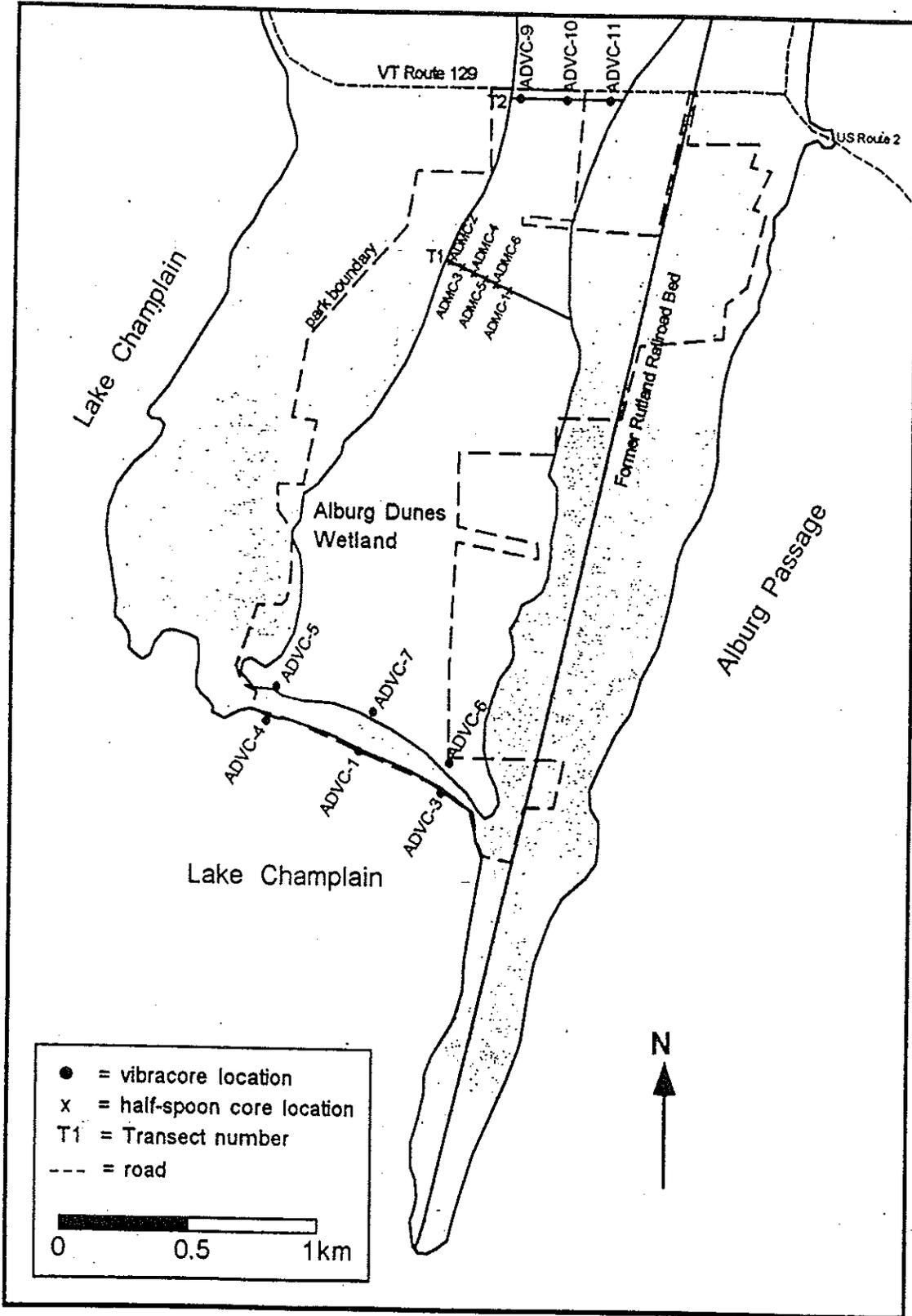


Figure 1 . Core locations within Alburg Dunes Wetland.

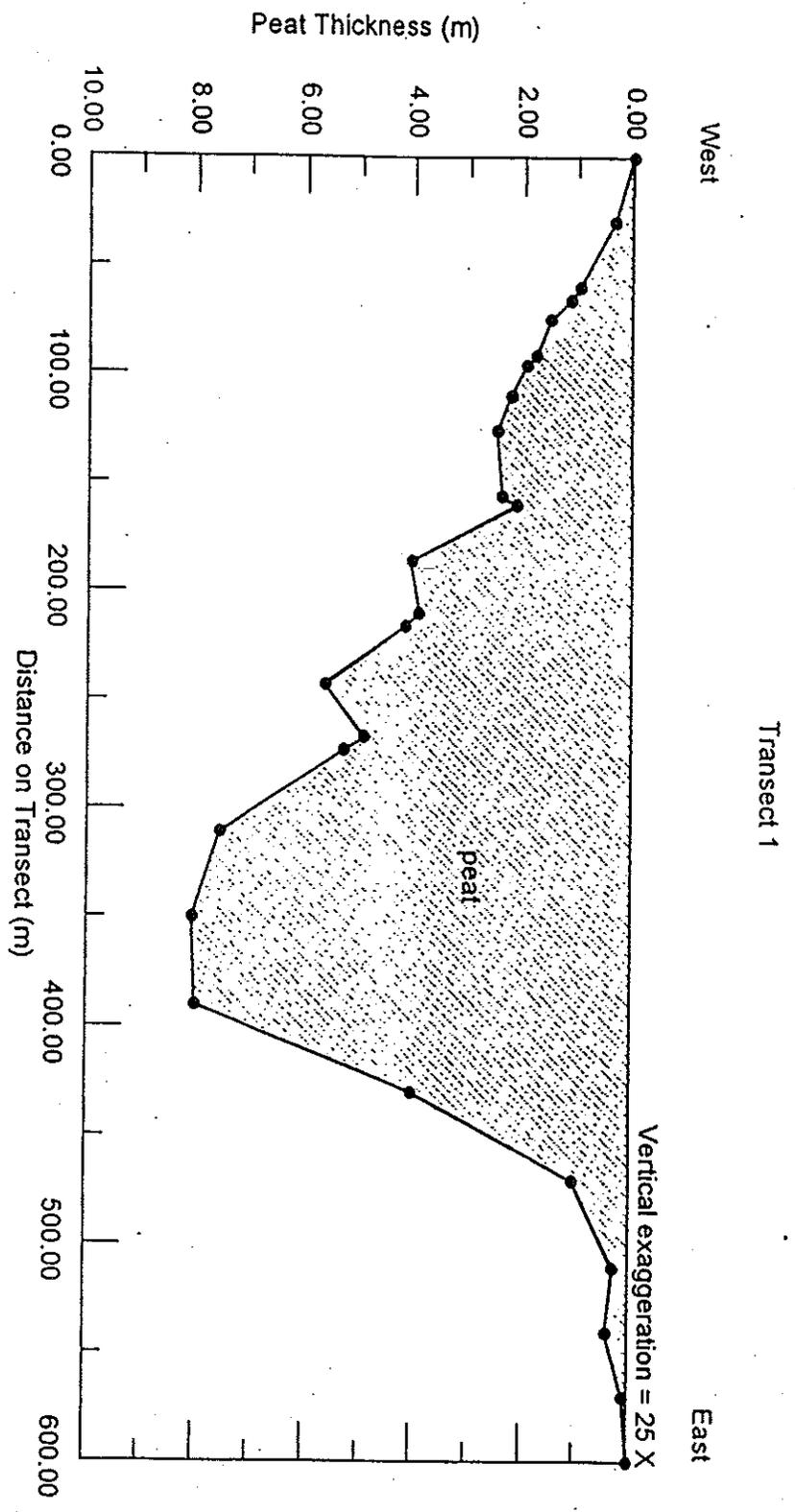


Figure 2. Depth of peat along transect 1 from west to east across the wetland.

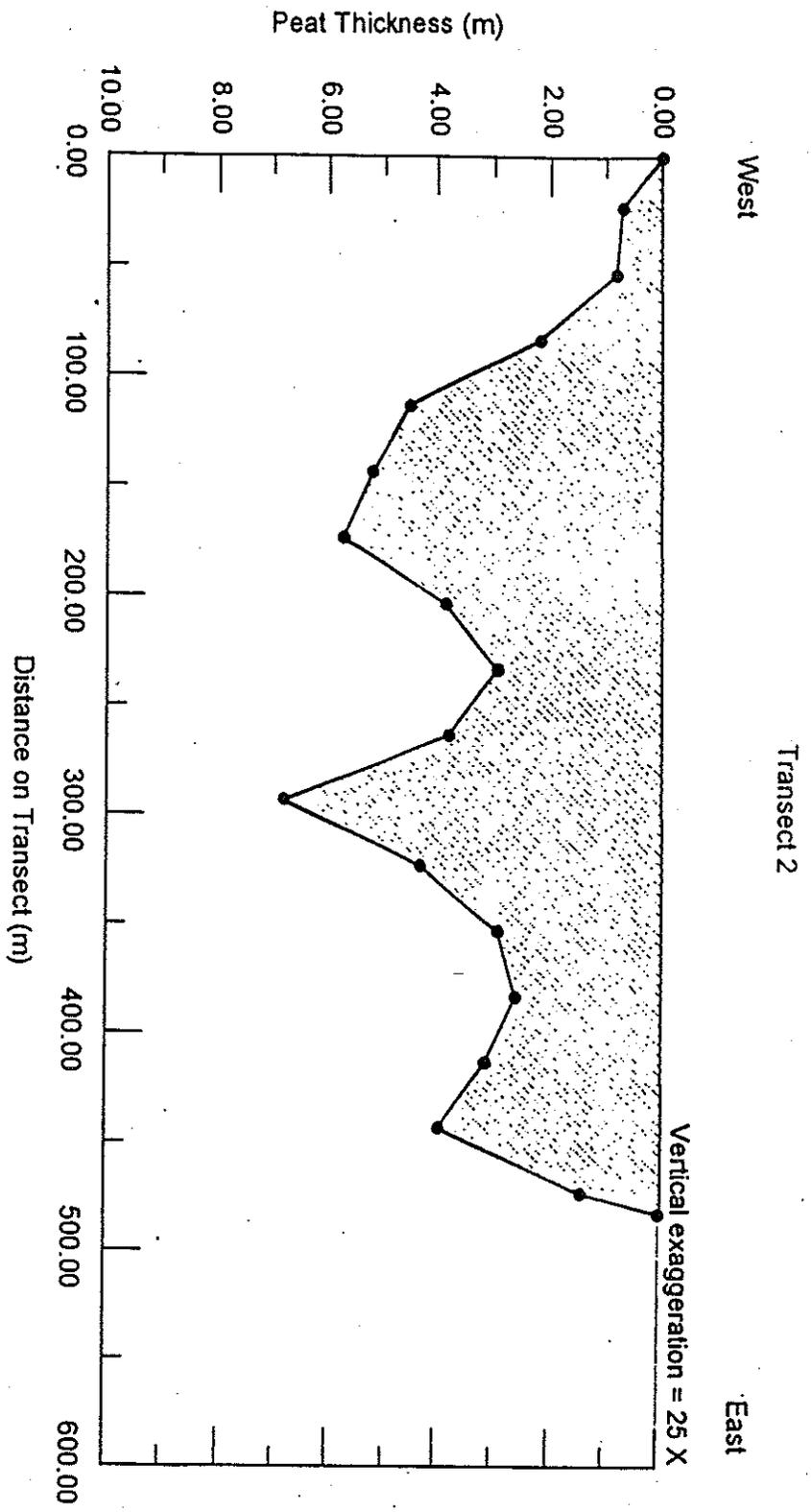
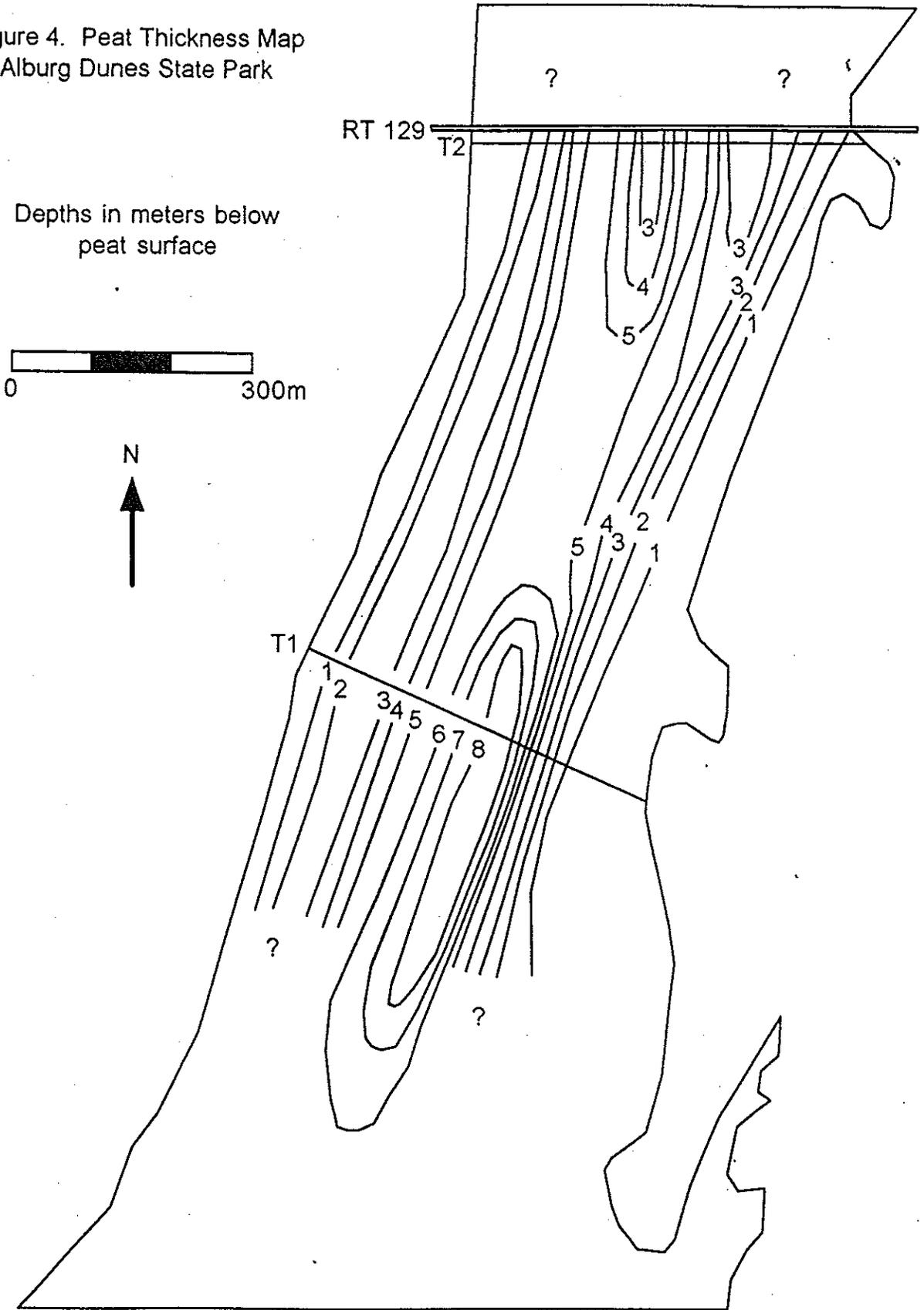


Figure 3. Depth of peat along transect 2 from west to east just south of Route 129.

Figure 4. Peat Thickness Map
Alburg Dunes State Park



Depths in meters below
peat surface



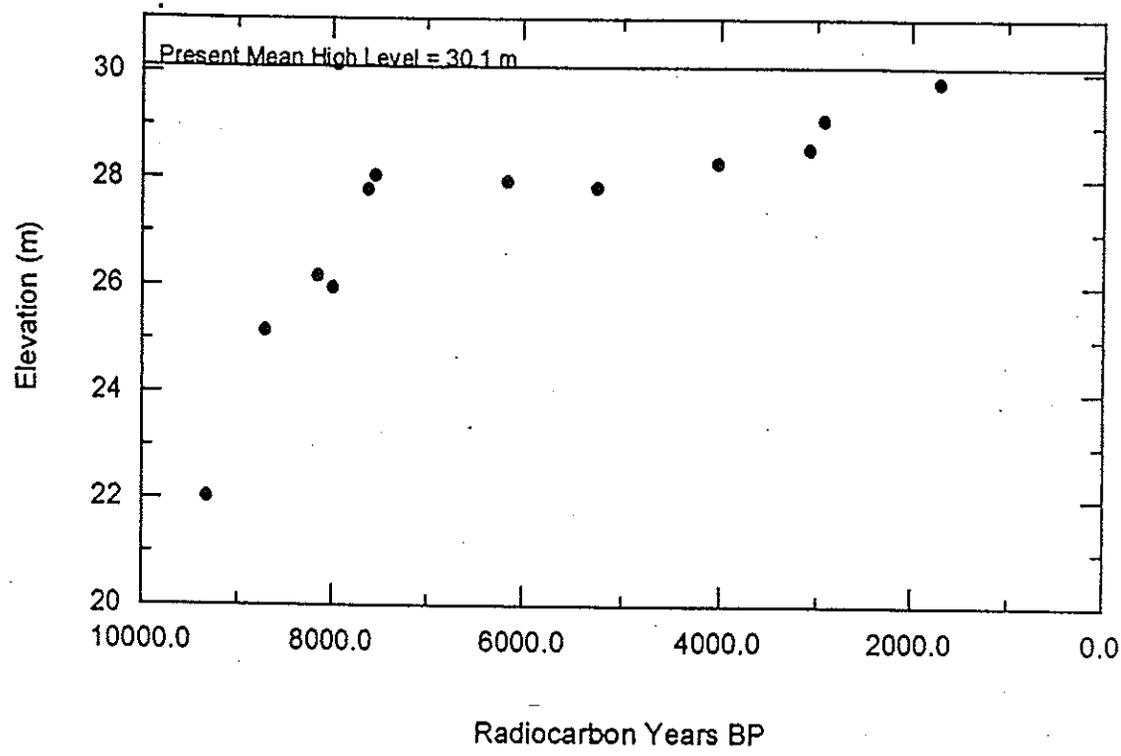


Figure 5. Lake Champlain mean high lake levels during the Holocene from basal peat radiocarbon dates at Ajbürg Dunes Wetland.

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Soils

This section describes the soil series found at Alburg Dunes State Park. The location and distribution of the soil series are shown on the Soil Map. The approximate acreages of each soil series are shown in following table. Tables indicating the suitability of the various soil types for forestry and agricultural uses can be found in Appendix Q. More detailed soils maps can be found in the Soil Survey of Grand Isle County (1959).

Balch Peat

Balch Peat is a brown, very wet, acid soil that is waterlogged or covered by water a large part of the year. It has formed from organic matter, mainly partly decomposed forest vegetation. The organic deposits are generally at least 4 feet deep over clay or other mineral soil material. It occurs in nearly level or depressed areas, mainly on large flats. Practically all of this soil is found in the southern end of the Town of Alburg. The trees that mostly grow here are black spruce and tamarack. Many 50-year-old spruce and tamarack are only 8 to 12 feet tall. Also found are some white pine and red maple. The soil is not suitable for crops and will not produce good trees for timber.

Balch peat is found mainly in the center of the wetland complex at Alburg Dunes State Park. It comprises 137 acres and 22.1% of the acreage.

Beach and Dune Sand

This land type consists of very droughty sands that were deposited by water and, in a few places, by wind. They are typically found along the shoreline of Lake Champlain and are mainly level to gently sloping. Few trees grow in these areas. This land type is not suitable for cultivated crops, pasture, or forests. Many of the beaches are excellent places for swimming and picnicking.

Beach and dune sand is found only at the southern end of the property along the shore of Lake Champlain. It is narrow and linear, comprising 11.6 acres and 1.9% of the acreage in the State Park. The beach is 3130 linear feet in length. At the western edge, the beach is comprised of finer particles where the winds have blown the sands into dunes, while at the eastern end, flat fragments of shale predominate. There is an additional 180 linear feet of beach on the western end of the park boundary that is privately owned.

Alburt Durbin State Park

Soil Summary

November 1997

SOIL NAME	COUNT	AREA (Sq Meters)	ACRES
Balch peat-	1	555599.3398	137.29
Beach & dune sand	1	46847.0718	11.58
Benson rocky silt loam over shaly limestone	32	476844.1953	117.83
Benson very rocky silt loam over shaly limestone	3	25611.9272	6.33
Carlisle muck	4	914599.6576	226.00
Covington silty clay loam	20	273932.8714	67.69
Elmwood fine sandy loam	1	6346.6953	1.57
Kars fine sandy loam	2	8363.6724	2.07
Kendaia silt loam	2	23672.8311	5.85
Kendaia very stony silt loam	1	3486.8938	0.86
Livingston silty clay loam	4	74105.1482	18.31
Nellis silt loam	5	19929.7702	4.92
Nellis very stone silt loam	1	8864.1816	2.19
Swanton fine sandy loam	3	65799.6791	16.26
Water	2	13883.7690	3.43

Table: Soils Suitability for Forestry

Soil Symbol	Soil Name	Slope	Site Class	Forest Type	Volume per Acre		Suitable Species for Planting	Acres	Percent of Park
					Cubic Feet	Cords			
CaA	Carisle Muck		4	SH	2000 or less	17 or less	None	226.00	36.30
BaA	Balch Peat*		4	SH*	1000 or less	12 or less	None	137.29	22.10
Bb	Beach and Dune Sand							11.58	1.90
BeB	Benson Rocky Silt Loam, over Shaly Limestone	3-8%	1	NH	2700-3100	28-32	Red & White Pines; White Cedar, Norway Spruce; Sugar Maple		
BeC	Benson Rocky Silt Loam, over Shaly Limestone	8-15%	1	NH	2700-3100	28-32	Same	117.83	18.80
BeD	Benson Rocky Silt Loam, over Shaly Limestone	15-25%	1	NH	2700-3100	28-32	Same		
BfC	Benson Very Rocky Silt Loam, over Shaly Limestone	8-15%	3	NH	2000-2400	18-20	Same	6.33	1.00
BfD	Benson Very Rocky Silt Loam, over Shaly Limestone	15-25%	3	NH	2000-2400	18-20	Same		
CbA	Covington Silty Clay Loam	0-3%	3	SH-NH	2100-2400	23-25	White Cedar, White Spruce, possibly European Larch **	67.69	10.90
CbB	Covington Silty Clay Loam	3-8%	3	SH-NH	2100-2400	23-25	Same		
EaB	Elmwood Fine Sandy Loam	3-8%	1	NH	2700-3100	28-32	Norway, White & Red Spruces; Red & White Pines; Sugar Maple, and European Larch	1.57	0.25
KaA	Kars Fine Sandy Loam	0-3%	2	NH	2400-2800	25-29	Sugar Maple, Red & White Pines; Norway & Red Spruces; and European Larch	2.07	0.33
KaB	Kars Fine Sandy Loam	3-8%	2	NH	2300-2700	24-27	Same		
KbA	Kendaia Silt Loam	0-3%	3	SH-NH	2400-2800	25-28	Norway, White & Red Spruces; White Pine; White Cedar; and European Larch	5.85	0.94
KcB	Kendaia Very Stony Silt Loam	3-8%	3	SH-NH	2400-2800	25-28	Same	0.86	0.10
LaA	Livingston Silty Clay Loam	0-3%	4	SH	1400-1800	12 - 16 cds.	Possibly White Cedar	18.31	2.90
NaB	Nellis Silt Loam	3-8%	1	NH	3200-3600	30-34	Norway, White & Red Spruces; Sugar Maple; Red & White Pines; European Larch; and White Cedar	4.92	0.79
NaC	Nellis Silt Loam	8-15%	1	NH	3200-3600	30-34	Same		
NbC	Nellis Very Stony Silt Loam	8-15%	1	NH	3200-3600	30-34	Same	2.19	0.35
SdA	Swanton Fine Sandy Loam	0-3%	3	SH-NH	2100-2400	16-20	Norway, White & Red Spruces; Red & White Pines; Sugar Maple; European Larch; and White Cedar **	16.26	2.60

TOTAL *** 618.75 98.26

NH = Northern Hardwood or Mix of Northern Hardwood or Oak-Hickory Types
 SH = Swamp Hardwoods
 SH-NH = Mixture SH and NH - Predominantly SH
 * Many Black Spruce and Tamarack grow on this soil.
 ** Seedlings may die on this soil. If possible, plant on hummocks or on top of plowed furrows.

Trees: Sugar Maple, Beech, White Ash, Red Oak, Shagbark Hickory
 Trees: Red Maple, American Elm, Aspen, Yellow Birch, Black Ash
 Trees: Red Maple, American Elm common

*** Total does not include 3.43 acres or .55% in water.

Benson Series

[Benson rocky silt loam, over shaly limestone, 3-8% slopes; Benson rocky silt loam, over shaly limestone, 8-15% slope; Benson rocky silt loam, over shaly limestone, 15-25 % slopes; Benson very rocky silt loam, over shaly limestone, 8-15% slope; and Benson very rocky silt loam, over shaly limestone, 15-25% slopes]

The Benson series consists of shallow, rocky, somewhat droughty to droughty soils that overlie limestone. Water moves readily through the profile. As the soils are generally less than 2 feet over bedrock, they dry out early in the spring. In most areas the dark-gray limestone bedrock is soft and shattered, but in some places it is hard and massive. These soils have formed from high-lime materials deposited by glaciers or from the fragments weathered from the bedrock itself. The slopes are mostly gentle but range from nearly level to very steep.

The forest trees are mixed hardwoods, mainly sugar maple, beech, basswood, white ash, hickory, and white cedar. The stands contain some red oak, white birch, hophornbeam, white pine, red cedar, and hemlock trees.

The Benson series soils are found on 124 acres, or 20%, of the park acreage. They are typically found along the periphery of the wetland area mostly on the upland areas. Currently, some of these soils are forested, but most are in agricultural use as pasture and rotational crops.

Carlisle Muck

Carlisle muck is a very wet, black soil that is waterlogged or covered by water a large part of the year. It has formed from organic matter, mainly decomposed forest vegetation. The organic deposits are generally 2 to 4 feet thick over mineral soil, usually clay. It occurs in level or depressed areas on large flats. It is not subject to erosion. Most of it is found in the Town of Alburg. The forested areas contain swamp trees - chiefly elm, red maple, yellow birch, poplar, and white cedar. Cattails, alders, willows, rushes, and other water tolerant plants grow in most of the cleared areas. Some areas of this soil are habitats for waterfowl.

At Alburg Dunes, Carlisle muck is found directly behind the beach and dune complex. It also extends northward surrounding the areas of Balch peat, which is found in the center of the wetlands. Carlisle muck comprises 226 acres, or 36.3% of the park acreage.

Covington Series

[Covington silty clay loam, 0-3% slopes and Covington silty clay loam, 3-8% slopes]

The Covington series consists of dark-colored clay soils. In most years they are wet for a long time in spring and fall. These soils have formed from clays and silts that were deposited in inland seas. The surface layer is fairly easy to work if the moisture content is right, but most of the time it is difficult to work. Water moves slowly through the subsoil. They are mainly level or nearly level, but some are gently sloping. They occur on broad flats and in pockets between ridges.

Covington soils are productive, but need artificial drainage. They are high in organic matter. It can be used for silage corn, small grains, hay, and improved pasture. The choice of crops is wider if the soils are drained. Crops will grow faster if fertilizer high in nitrate nitrogen is applied early in the spring. A good rotation consists of corn, a small grain, and at least 2 years in succession of hay or pasture. Grading to fill small depressions will improve surface drainage. Forests consist of red maple, American elm, white ash, and white cedar. Some yellow birch, black ash, white pine, and hemlock are also found in the stands.

The Covington series comprises only 68 acres or 10.9% of the park acreage. Most of it is in pasture or is forested.

Elmwood Series

[Elmwood fine sandy loam, 3-8% slopes]

The Elmwood series consists of slightly wet sandy soils underlain by clay at depths of 1 to 4 feet. They have formed from water-laid sands. They are mostly nearly level to gently sloping. Most areas lie near or adjacent to the somewhat droughty Kars soils, the well-drained Melrose soils, and the wet Swanton soils. The trees are mixed hardwoods, such as sugar maple, beech, red maple, red oak, white oak, elm, gray birch, white pine, and hemlock. Management concerns involve slight wetness and erosion, where soils are wet late in spring.

This series is found only in the northwest corner of Alburg Dunes State Park where it currently is in pasture. Elmwood soils comprise only 1.6 acres, or 0.25% of the park acreage.

Kars Series

[Kars fine sandy loam, 0-3% slopes and Kars fine sandy loam, 3-8% slopes]

The Kars series consists of brown, somewhat droughty, deep sandy and gravelly soils. They have formed from sands and gravels that are high in natural lime. These soils tend to be slightly droughty but in most years are neither very wet nor very dry. Water moves rapidly through the uppermost 35 to 40 inches and very rapidly through the layer of sand and gravel. The slopes are dominantly gentle, but range from nearly level to steep. Management problems are minor. The forest trees are sugar maple, beech, white ash, basswood, red oak, white pine, and white cedar.

Kars soils are found only in the upper northwest corner of Alburg Dunes State Park. There are only 2 acres, or 0.33% of soils, found in this location. The major portion of Kars soils in this location are on adjacent private property.

Kendaia Series

[Kendaia silt loam, 0-3% slopes and Kendaia very stony silt loam, 3-8% slopes]

The Kendaia series consists of wet, dark, loamy soil that have formed from high-lime materials left by glaciers. In most years, these soils are wet for a long time in spring and fall. Because of the poor drainage, all of the subsoil is mottled. It is productive, however, and they are fairly easy to work when not too wet. The surface layer is high in organic matter. Most of this series is nearly level, but does range from level to gently sloping.

The trees of the forested areas include elm, red maple, white ash, black ash, white pine, white cedar, and some sugar maple and yellow birch. This series is found in the northeast corner of Alburg Dunes State Park where it currently is in pasture. Kendaia soils comprise 6.7 acres, or 1.1% of the park acreage.

Livingston Series

[Livingston silty clay loam, 0-3% slopes]

The Livingston series consists of clay soils that are waterlogged or covered by water much of the time. These soils formed from clays and silts that were deposited in inland seas. The surface layer is high in organic matter. They occur in level or depressed areas that are generally small in size and at the level of the lake. The trees of the forested areas are white cedar and swamp hardwoods -- elm, red maple, and yellow birch.

Livingston soils are found to a limited extent at Alburg Dunes State Park. They comprise 18.3 acres, or 2.9% of the park acreage.

Nellis Series

[Nellis silt loam, 3-8% slopes, Nellis silt loam, 8-15% slopes, and Nellis very stony silt loam, 8-15% slopes]

The Nellis series consists of brown, well-drained, loamy soils that have formed from high-lime materials left by the glaciers. They are mostly gently sloping, but can range from nearly level to steep. In most years, these soils are neither very dry nor very wet. In most years, the moisture conditions are favorable for plant growth. They are found near or adjacent to the droughty Benson soils, the slightly wet Amenia soils, and the wet Kendaia soils.

It is also well suited to trees of the Northern hardwood and Oak-hickory forest types, which grow well and produce large amounts of good timber. Trees that are found in the forested areas are mixed hardwoods, mainly sugar maple, beech, yellow birch, white ash, and basswood. Some red oak, white oak, red maple, hophornbeam, white pine, white cedar, and hemlock trees are also in the stands. Among the native grasses are Kentucky bluegrass and povertygrass. White clover grows wild.

Nellis soils are only found in the southeastern corner of Alburg Dunes State Park where they are currently in pasture. They comprise 7.1 acres, or 1.1% of the land base.

Swanton Series

[Swanton fine sandy loam, 0-3% slopes]

The Swanton series consists of wet, dark-colored, sandy soils that are underlain by clay at depths of 1 to 4 feet, most commonly at 2 feet. These soils formed from sands that were deposited in glacial lakes and inland seas. In most years, they are wet for a long time in the spring and fall making them hard to work. They are easy to work when not too wet. Consequently, the subsoil is mottled with bright colors. These soils contain a large amount of organic matter. They occur on broad flats with the largest areas in the Town of Alburg.

The trees of the forested areas are elm, red maple, black ash, white ash, yellow birch, gray birch, white pine, white cedar, and hemlock. Swanton soils are found in a limited number of areas at Alburg Dunes State Park. They comprise 16.3 acres, or 2.6% of the park acreage.

Summary

Over half (58%) of the parcel contains two soils, Carisle Muck and Balch Peat (363 acres) that constitute the wetlands complex. The soils that are suitable to development (129 acres; 20.7%) include the Nellis silt loam (southeast corner), Benson rocky silt loam (southwest and northwest side of park), and Kendaia silt loam (southeast corner). There are limited suitable areas at the park for development.

The primary soils involving forest vegetation management are Benson rocky silt loam, Covington silty clay loam, and Swanton fine sandy loam. These soils are fair to excellent sites for forest management.

Benson Series, Elmwood Series, Kars Series, Kendaia Series, Nellis Series, and Swanton Series are soils with agricultural value; they are suitable for silage corn, small grains, hay, and open pastures. If the Kendaia Series and Swanton Series soils are drained, corn and alfalfa are suitable crops. Elmwood Series soil is suitable to grow Ladino clover. Livingston Series soil produces swale grasses, rushes, sedges, cattails, alders, willows, and other water-tolerant plants.

Source: Soil Survey Grand Isle County, Vermont. 1959. United States Department of Agriculture, Soil Conservation Service (now Natural Resources Conservation Service).

Natural Communities and Vegetation

Vegetation Types

One traditional approach to classifying land and forests is through cover typing. A **cover type** describes a forested landscape element based on the species of canopy trees occurring there, and is generally named after the predominant tree species. The Society of American Foresters (SAF) has developed a cover type system that is used as the standard throughout the Northern Forest.

A **natural community** approach to classify and describe forested landscapes is used for the purposes of conservation planning and biodiversity protection. The Nature Conservancy and the nationwide network of Natural Heritage Programs have developed a Standardized National Vegetation Classification System. The Vermont TNC Office and

Vermont Nongame and Natural Heritage Program have developed a classification scheme specifically for Vermont in 1996. There are 71 different types of wetland and upland natural communities in Vermont.

A combined approach was used to develop the preliminary vegetation map for Alburg Dunes State Park by students enrolled in the Field Naturalist Program, University of Vermont. The map was then entered into the GIS by a graduate student in the Geology Department (see Vegetation Map). Field visits verified species found in the various vegetative zones. Further inventory and vegetative analysis needs to occur to finalize the preliminary mapping effort.

Alburg Dunes State Park
Vegetation Summary

11/97

VEGETYPE	COUNT	AREA (Sq Meters)	ACRES
Beach and Dunes	2	79422.1387	19.63
Black Spruce Bog	2	138537.4529	34.23
Developed/Ag	12	516915.8209	127.73
Mixed Hardwood Forest	1	178987.2947	44.23
Northern White Cedar Swamp	5	222469.5343	54.97
Red Maple Swamp	3	604344.8556	149.33
Tamarack Swamp	4	179912.3503	44.46
Unknown	15	595170.9808	147.07

901

The main vegetative zones found at Alburg Dunes State Park include:

- 1) Beach and Dunes – 19.63 acres;
- 2) Black Spruce Bog – 34.23 acres;
- 3) Northern White Cedar Swamp – 54.97 acres;
- 4) Red Maple Swamp – 149.33 acres;
- 5) Tamarack Swamp – 44.46 acres;
- 6) Mixed Hardwood Forest – 44.23 acres; and
- 7) Agricultural and Developed Land – 127.73 acres.

The southern end of the wetland complex was not typed as it was difficult to conduct field work because of water levels at this end. There were also other areas along the eastern side of the park that also were not typed. This area of 147.07 acres should be field checked to determine the vegetation type(s).

Wetlands Complex and Communities

Alburg Dunes State Park contains extensive wetlands, locally known as South Alburg Swamp or Palmer's Swamp (see Critical Resources Map, includes the National Wetlands Inventory [NWI] boundaries). These wetlands also extend north of VT 129 to Dillenbeck Bay and west of Coon Point Road to the shores of Lake Champlain; however, only the wetlands south of VT 129 have been inventoried by the Vermont Nongame and Natural Heritage Program, and the Department of Fish and Wildlife. In the northern section of the wetland complex, US Highway 2 bisects the most northern part of the wetland as does the abandoned railroad bed (see Appropriate Future Additions and Areas for Protection Map).

The South Alburg Swamp and the associated beach at its southern end is one of Vermont's premier natural areas. The swamp itself contains a diversity of wetland types, from the maple-ash swamps found throughout the Lake Champlain islands, to small areas of white cedar swamp, to tamarack dominated swamps, to the very extraordinary black spruce swamp and open bog found in the center of the wetland. The presence of this very boreal community in this area of Vermont is most striking. Almost certainly it has to be attributed to the microclimate and hydrologic conditions within and created by the wetland itself.

The South Alburg Swamp has been classified as a Class A wetland, and is governed by the Vermont Wetland Rules. It's effectiveness in providing the following functions is HIGH for: providing open space, recreational use, fish habitat, and of value to wildlife (deer yard and furbearers); and MODERATE for: contributing to water quality and erosion and flood control. Plant diversity is also rated as HIGH, and there are populations of numerous uncommon or rare plants found at the site: state endangered - Champlain beachgrass (*Ammophila champlainensis*); state threatened - Beach pea (*Lathyrus japonicus*); state threatened - white adder's mouth (*Malaxis brachypoda*); state threatened - dwarf mistletoe (*Arceuthobium pusillum*); Ovate spikerush (*Eleocharis ovata*), and Tall wormwood (*Artemisia campestris*).

The wetland types include: forested wetland community with both broad leaf deciduous and needle leaf evergreen vegetation and a seasonal water regime (PFO1/4C); emergent wetland community with a seasonal water regime (PEMC); scrub shrub wetland community with needle leaf evergreen vegetation and a saturated water regime (PSS4B); and forested with a broad leaf deciduous and scrub shrub with broad leaf evergreen vegetation and a saturated water regime (PFO1/SS3B). Wetland Classification are as follows:

- P – Palustrine
- FO – Forest Wetland
- EM – Emerged
- SS – Scrub Shrub

- 1 – Broad leaf trees
- 2 – Needle leaf evergreens
- 3 – Broad leaf evergreens

- C – Seasonal flooded
- B – Saturated

The maple-ash swamps are fairly typical for the Lake Champlain islands: red maple and green ash codominate the canopy, but there are also cedar, yellow birch, hemlock, red spruce, and white pine. Where these swamps come near the black spruce areas, they tend

to have more boreal species in the understory, such as goldthread, starflower, and mountain holly.

The tamarack-red maple swamp in the southeast portion of the wetland is an unusual community in the islands, and throughout the state. Tamarack and red maple codominate the canopy, though yellow birch and white birch are present as well. Shrubs are boreal in character: leatherleaf, Labrador tea, and mountain holly are common, though the most abundant shrub is huckleberry. The forest floor has abundant sphagnum mosses.

There is a hardwood-cedar swamp area in the southern portion of the wetland, and here the forest is somewhat drier than in surrounding areas. The canopy is largely dominated by hardwoods, but the tall shrub layer is a virtual thicket of northern white cedar. The rare white adder's mouth grows here.

Towards the center of the wetland, black spruce becomes common. Trees are low in stature and close together, the ground layer becomes hummocky with sphagnum mosses, and more boreal species appear. The rare dwarf mistletoe, a parasitic flowering plant, occurs in this community, growing on black spruce. There is a small area of open bog in the midst of this black spruce thicket. The soils in this area are mapped as peat rather than the muck that predominates in most of Grand Isle County's wetlands. Peat is poorly decomposed organic matter that accumulates in places where temperatures are cool and oxygen has been depleted, so that decomposing organisms are scarce or function poorly. It appears that VT 129, bisected the wetland, with resulting hydrologic changes from road construction altering the vegetation composition on either sides.

At the south end of the wetland is a small area of mixed shrub and emergent wetland, very similar to the vegetation in many of the lakeside wetlands in the county.

Beach and Sand Dune Community

The beach and sand dune community at Alburg Dunes State Park is one of the longest natural sand beaches on Lake Champlain, and in Vermont. The beach is about two-thirds of a mile long (3130 linear feet) and runs almost directly east to west. Found on the dunes is Champlain beachgrass and beach pea, both important species in Vermont (these are further discussed below). The beach and dune community is rare in Vermont with very few examples remaining due to the heavy development these areas usually experience.

Unique Species

Champlain Beachgrass

Champlain beachgrass (*Ammophila champlainensis* Seymour) is a species occurring on shifting sand dunes on the shores of Lake Champlain in Vermont and New York and nowhere else in the world. The sand dunes habitat type, once more abundant around Lake Champlain, is now greatly reduced. As a result, Champlain beachgrass is currently found at only four locations, two in Vermont and two in New York. It is listed as a state endangered species in Vermont.

Although the Champlain beachgrass was first described in 1966 as a species distinct from the more widespread North American beachgrass (*Ammophila breviligulata* Fernald), its taxonomic status has, until recently, been controversial. Some botanists have discounted the significance of morphological differences (e.g., smaller inflorescences, shorter, more acute glumes) between the North American and the Lake Champlain beachgrasses and have chosen to recognize the latter as a mere variety of the former. However, recent work at the University of Vermont (1996) by Peter Walker and Cathy Paris (Department of Biology) has demonstrated that the Champlain beachgrass is strongly differentiated genetically and morphologically from its coastal progenitor as well as flowering significantly earlier. Based on these factors, Champlain beachgrass is described as a distinct variety, thus increasing the likelihood that it could eventually be a candidate for federal listing as a threatened or endangered taxon.

The Champlain beachgrass is found on the western sand dunes. It grows vigorously, spreading via the growth of its underground rhizomes at the rate of up to one meter per year. Previous management activities that altered and removed much of the sand dunes has changed the local hydrology of the sand dune ecosystem so that wet meadow vegetation now grows in front of the former dune line on the beach. Aerial photographs indicate that this vegetation was not present 50 years ago. This invasive vegetation is preventing sand from being transported by wind landward of the beach to form dunes. It is precisely this wind blown sand that *Ammophila champlainensis* needs to thrive and expand. Also found old aerial photos there is evidence of more trees associated with the sand dunes.

Beach Pea

Beach pea (*Lathyrus japonicus*) is a state threatened species in Vermont although it is quite common on the coast of New England and New York. It is found on the sandy shores of Lake Champlain, and in particular at Alburg Dunes State Park. It is a low plant with showy purple flowers.

White Adder's Mouth

White Adder's Mouth (*Malaxis brachypoda*) is typically found in bogs, wet woods, and cedar swamps. At Alburg Dunes State Park it is found in the black spruce-tamarack bog. It is a state threatened species in Vermont and one of the smallest members of the orchid family.

Dwarf Mistletoe

Dwarf mistletoe (*Arceuthobium pusillum*) is a minute parasitic shrub that grows most commonly on the twigs of black spruce growing in bogs or other low nutrient conditions. Although it becomes more common north of Vermont, it is quite rare in the state. It is related to the Christmas mistletoe, but the dwarf mistletoe has seeds that are explosively discharged when ripe.

Ovate Spikerush

Ovate spikerush (*Eleocharis ovata*) is a small, annual grasslike member of the sedge family. It is restricted to shores of marshes and bogs and believed to be uncommon throughout its range, but quite rare in Vermont. It has not been observed at Alburg Dunes State Park since 1983 and may no longer be present here.

Tall Wormwood

Tall wormwood (*Artemisia campestris* subspecies *caudata*) is a small, slightly aromatic shrub in the aster family. It occurs in open, sandy soil and becomes quite common in coastal Massachusetts and Connecticut. In Vermont, it is very rare. It has not been observed at Alburg Dunes State Park since 1983 and may no longer be present here. There is a closely related subspecies that is also rare in Vermont, but is restricted to mountainous areas.

Tiger Beetle

Tiger beetle (*Cicindela hirticollis* Say) is one of the most widely distributed tiger beetles in North America, a littoral riparian species inhabiting sandy shorelines of the Atlantic and Pacific oceans, Great Lakes, and some larger rivers. Larvae inhabit burrows in sand that remains moist near the bottom; pupation occurs in these burrows. Larvae and adults are predators. Since the Wisconsin Glaciation, *C. hirticollis* has redistributed itself into formerly ice-covered habitats. Populations became isolated, such that eleven subspecies are recognized. *C. Hirticollis* Say occupies a narrow niche and is relatively susceptible to extirpation by habitat destruction.

Known historically in over 40 states and parts of Canada, in 1987, Vermont surveys found it only on two Lake Champlain beaches in northwestern Vermont (Delta Park in Colchester and Knight Point in North Hero). Ten or fewer beetles were found at each location.

In 1988, Robert C. Graves, writing on the geographic distribution of *C. hirticollis* Say, made this plea for conservation, "Whole populations of *C. hirticollis* have disappeared from many areas because of human activities. Fragile seashore and lakeshore habitats have been destroyed by human over-use... Larval habitats are trodden by human visitors, and beaches and sand dunes are scarred by off-the-road vehicles. Shoreline areas are "developed" for housing... Once common in New Hampshire, *C. hirticollis* has not been seen there since 1958... is no longer present at many of its former localities along the Great Lakes. We hope that all of the subspecies of this fascinating insect will be allowed to survive, and that portions of its habitat will be set aside and protected from destructive human intrusion."

The tiger beetle (*Cicindela hirticollis*), as of the summer of 1997, was not found at Alburg Dunes, according to Professor Ross Bell at the University of Vermont. Professor Bell did search for tiger beetles and, although none were found, Bell feels that his team may have looked during the wrong time of the season, or that his search was not extensive enough on the single day that he was able to get out and look for tiger beetles.

Professor Bell does believe that more extensive and frequent searching might have found beetles. He also feels that tiger beetles, if not present at Alburg Dunes now, may be eventually. That optimistic belief is based on two factors: the habitat is ideal, and adult tiger beetles have been seen at Knight Point State Park. (The beach at Knight Point is artificial, built in 1976, in an area where tiger beetles would not have been previously [wrong habitat]. This indicates that tiger beetles can and do move into areas with appropriate habitat).

Exotic Species

Infiltration of exotic species is a recent phenomena at Alburg Dunes State Park (see Critical Resources Map). Currently, purple loosestrife, Phragmites, and zebra mussels are the main exotic species found at the park. Eurasian watermilfoil is also found throughout Lake Champlain, and it is not uncommon that fragments of the plant wash up on the beach at Alburg Dunes State Park.

In 1994, the US Army Corps of Engineers required that the previous landowner conduct mitigation efforts in areas where the wetlands were filled without a permit. These disturbed areas provided a prime location and opportunity for Phragmites and purple loosestrife to invade. The areas of invasion are still controllable, but as each year passes, the likelihood of gaining control over these invasive species is less likely. The areas where Phragmites and purple loosestrife are now found are along the beach road on both sides, and in the wetland areas between the beach road and the shoreline of the lake.

In addition, zebra mussels are also a recent phenomena in Lake Champlain. They were first discovered in 1993, and have since been found in all areas of the Lake. Evidence of adult zebra mussels have been found on the shells of native mussels shells that have washed up on the beach at Alburg Dunes State Park. The shaley shoreline areas are most threatened by zebra mussels because of the substrate whereas the sandy beach is very unlikely to be affected.

Common Reed

Common reed (*Phragmites australis*) is a tall perennial wetland grass, up to 15 feet in height, with a distinctive purplish-brown plume that appears in late July. The plant can spread over large areas from horizontal shoots that grow either above or below ground level. Common reed thrives in sunny wetland habitats and prefers fresh or brackish water. It can also be found in drier elevated marsh areas and along lakeshores, riverbanks, and almost any moist area. It is particularly prevalent in disturbed or polluted soils, and can tolerate highly acidic conditions.

Common reed is found in temperate zones all over the world, and can be found in every state in the United States. It is common in the Northeast. Contrary to popular thought, common reed is native to America; however, a non-native strain of *Phragmites australis* may have been imported in the early 1900s. Common reed has become more widespread due to human-induced changes in nutrient and salinity levels. It grows rapidly, displacing more diverse marsh vegetation, and has come to symbolize marsh degradation. Aggressive common reed growth is indicative of symptoms of environmental imbalance, and not the cause. Containing its spread is best obtained by minimizing land disturbances (particularly those involving erosion and sedimentation), fluctuating water levels, nutrient loading (especially nitrates), and pollution. Control methods include herbicides, controlled fire, and mechanical cutting.

It was once thought that common reed had low wildlife value. Preliminary research has shown that geese and muskrats will eat its rhizomes. It also attracts redwing blackbirds, swamp sparrows, and other birds for cover and nesting.

Purple Loosestrife

Purple loosestrife (*Lythrum salicaria*) is a perennial plant native to Europe. It was brought to North America in the early 1800's by immigrants who valued its striking purple flowers. Since then, purple loosestrife has expanded its range. It is now a serious pest of wetlands and pastures. Once it enters a wetland, it takes over. Common native plants, such as cattails and sedges, cannot compete with it. Once the native plants are choked out, the wildlife that depends on them for food and shelter are also eliminated. Purple loosestrife has little value as food for animals, and populations of the plant become so thick that they cannot serve as cover for wildlife.

Purple loosestrife reproduces prolifically – one plant can produce several million seeds in a single summer. In addition, root or stem fragments can take root and form new plants. River water and floods are the primary ways that seeds and plant fragments are transported to new areas. There are no natural enemies against purple loosestrife that are native to North America.

Control of purple loosestrife is difficult. Methods include pulling by hand, mowing, treating with herbicides, and burning. These methods have shown some success against small recently established populations; however, they are ineffective against large well-established populations. Biological control is another method that has seen dramatic success, and a method that has been used in Vermont since 1995. Three European insect species (two leaf-eating beetles, and one stem boring weevil) were released by the US Fish and Wildlife Service. In July 1996, the Vermont Department of Environmental Conservation began releasing two species of leaf-eating beetles (*Galerucella* spp.) at a few locations around Vermont on an experimental basis, none of which were at Alburg Dunes State Park.

Zebra Mussels

Zebra mussels are thumbnail-sized mollusks with D-shaped shells that are often striped with alternating light and dark bands like a zebra. They are native to fresh surface waters of southeast Europe. It is believed that zebra mussels were unknowingly transported in the ballast waters transatlantic freighters around 1986. They were first found in North America in 1988 in Lake St. Clair, Michigan. Since that time, zebra mussels have spread quickly through the interconnected waterways of North America to the Mississippi and Ohio River systems. Zebra mussels were first found in the southern part of Lake Champlain in July 1993. By 1994 they were found in all areas of the Lake, except for the northeast arm from Mallets Bay northward. Since then, they have been found in every part of the Lake.

Zebra mussels attach themselves to solid, submerged surfaces and may rapidly form dense colonies that can clog water intake or outflow pipes, disrupt sensitive water-dependent systems (boat motors, municipal water facilities, industrial facilities), and harm tourism by covering beaches with sharp shells and decaying odor. Zebra mussels also have ecological impacts as they filter-feed on phytoplankton and detritus, main elements of the aquatic food chain. If present in large numbers, they could alter established food chains such that the survival of some species is threatened, harm or kill

fish and wildlife who consume zebra mussels containing high concentrations of toxic materials, and starve or suffocate native mussels.

Currently, controls exist only for protecting vulnerable mechanical water supply systems. There are no known, environmentally-sound methods for eliminating zebra mussels from a waterbody once they have become established. Therefore, it is essential to prevent the spread of zebra mussels to other water bodies. If Lake Champlain becomes the water supply for Alburg Dunes State Park, control methods will most likely be needed on any system to prevent clogging by zebra mussels.

Wildlife Habitat

Animal life is an important part of natural ecosystems, and adds interest and variety to visitor experiences. The wetlands at Alburg Dunes State Park are extremely important as wildlife habitat. (Approximately two-thirds of Alburg Dunes State Park provides critical deer wintering habitat, which is part of the largest and most important deer wintering area in Grand Isle County (see Critical Resources Map and Appropriate Future Additions and Areas for Protection Map).) Protection and perpetuation of natural wildlife populations within and adjacent to the wetland is an important management objective at Alburg Dunes State Park. The following vegetative wildlife habitats have been identified:

<u>Landscape Type:</u>	<u>Approximate % of Park</u>
Sand beach	3
Wetlands	58
emergent	
scrub-shrub	
forested	
Agricultural fields	21
Mixed upland forest	18

Agricultural fields are found in the upland areas on the western and eastern sides of the park within and outside of the park boundaries. The agricultural fields located within the park east of old railroad bed are currently used as hay fields, while the fields located west of the old railroad bed within the park are currently planted in corn. The agricultural

fields located northwest of the park boundaries are currently used for hay production. These agricultural fields are very important to wildlife for food and cover.

The mixed upland forest contains stands of northern white cedar in the pole stage (trees 5"- 9" in diameter) and mixed hardwoods and softwoods in the pole/small saw timber stage. The overstory species present include: 1) northern white cedar, eastern red cedar, and white pine, which are important for winter cover for wildlife; 2) red oak, shag bark hickory, butternut, and hophornbean, which are important for their production of nuts for wildlife food; and 3) red maple, sugar maple, and ashes, which are important for browse. In the northern white cedar dominated areas, an understory is lacking probably due to overbrowsing by deer.

These habitats provide for a rich variety of wildlife species. The following landscapes have been researched to determine the following wildlife species that habitat the area.

Wildlife Species for Various Types of Habitat

General

Wildlife species:

- Salamanders
- Frogs
- Turtles
- Snakes
- Great Blue Heron
- Green Backed Heron
- Black Billed Cuckoos
- Yellow Billed Cuckoos
- Gray Catbird
- Least Flycatcher
- Arcadian Flycatcher
- Yellow Warbler
- Chestnut Sided Warbler
- Prothonotary Warbler
- Eastern Kingbird
- House Wren
- Wood Duck
- Hooded Merganser
- Screech Owl
- Common Raven
- White Eyed and Yellow Throated
- Vireos
- American Redstart
- Common Yellow Throat
- Rose-Breasted Grosbeack
- Swamp Sparrow
- Song Sparrow
- Red Winged Blackbird
- Common Grackle
- Snow Shoe hare
- Star-Nosed Mole
- Water Shrew
- Cotton Tail Rabbit
- Meadow Vole
- Mink
- Bobcat
- White-Tailed Deer
- Moose
- Coyote
- Red Fox
- Raccoon

Cultivated Fields

Tilled agricultural cropland provides preferred habitat for the following wildlife species:

- Eastern Hognose Snake
- American Kestrel
- Ring-Necked Pheasant
- Killdeer
- Rock Dove
- Mourning Dove
- Barn Swallow
- House Sparrow
- European Hare
- Woodchuck
- Red Fox
- Raccoon
- Striped Skunk
- Common Barn Owl
- Snowy Owl
- Northern Flicker
- Horned Lark
- Common Grackle
- Brown-Headed Cowbird
- American Crow
- American Robin
- European Starling
- Lapland Longspur
- Snow Bunting
- Red-Winged Blackbird
- Northern Rough-Winged Swallow

Grass Openings

Upland grassy openings such as hayfields provide typical preferred habitats for the following wildlife species:

- Northern Black Racer
- Eastern Smooth Green Snake
- Turkey Vulture
- Broad-Winged Hawk
- Red-Tailed Hawk
- Rough-Legged Hawk
- American Kestrel
- Gray Partridge
- Ring-Necked Pheasant
- Northern Bobwhite
- Horned Lark
- Northern Rough-Winged Swallow
- Cliff Swallow
- Barn Swallow
- Northern Shrike
- Indigo Bunting
- Field Sparrow
- Vesper Sparrow
- Savannah Sparrow
- Grasshopper Sparrow
- Song Sparrow
- Bobolink
- Eastern Meadowlark
- Common Redpoll
- Hoary Redpoll
- Pine Siskin
- Least Shrew
- Eastern Cottontail
- Woodchuck
- Meadow Vole

Shrub Openings

Abandoned agricultural fields reverting to forest and characterized by old-field grasses, shrubs, and small trees, or barrens on shallow or other dry sites persisting in shrubs such as blueberry (*Vaccinium* spp.), or huckleberry (*Gaylussacia* spp.) provide typical preferred habitat for the following wildlife species:

- Black Rat Snake
- Ring-Necked Pheasant
- Willow Flycatcher
- Northern Mockingbird
- Blue-Winged Warbler
- Golden-Winged Warbler
- Fox Sparrow
- Eastern Cottontail
- White-Throated Sparrow
- New England Cottontail
- Snowshoe Hare
- White-Footed Mouse
- Ermine
- Striped Shuck

Forb Openings

Upland openings composed predominantly of broad-leaved herbaceous cover, for example goldenrod (*Solidage* spp.), sensitive fern (*Onoclea* spp.), and various clovers, typically provide preferred habitat for the following wildlife species:

- Henslow's Sparrow
- Hoary Redpoll
- Eastern Cottontail
- Meadow Vole
- Common Redpoll
- Pine Siskin
- Woodchuck

Sedge Meadows

Wetlands are characterized by sedges (*Carex* spp.) and cattails (*Typha* spp.) surface water depths to 6 inches in winter and early spring, and exposed but saturated soil surface in summer, and typically provide habitat for the following wildlife species:

- Northern Leopard Frog
- Spotted Turtle
- Bog Turtle
- Eastern Ribbon Snake
- Northern Snake
- Sedge Wren
- Southern Bog Lemming
- Meadow Jumping Mouse
- Henslow's Sparrow
- Virginia Opossum
- Water Shrew
- Short-Tailed Shrew
- Star-Nosed Mole
- Eastern Cottontail
- Northern Bog Lemming

Pasture

Upland fields or meadows usually too wet or rocky for cultivation and grazed by cattle provide typical preferred habitat for the following wildlife species:

- Spotted Turtle
- Red-Eared Slider
- Eastern Hognose Snake
- Eastern Smooth Green Snake
- Turkey Vulture
- Broad-Winged Hawk
- Red-Tailed Hawk
- Rough-Legged Hawk
- American Kestrel
- Upland Snadpiper
- American Woodchuck
- Brown Thrasher
- Northern Shirk
- Common Yellowthroat
- Yellow-Breasted Chat
- Field Sparrow
- American Goldfinch
- Eastern Mole
- Eastern Cottontail
- Woodchuck
- Meadow Vole

Shallow Marshes

Wetlands characterized by persistent emergent vegetation such as Typha and Pontederia, and water depths to 1.5 feet typically provide preferred habitat for the following wildlife species:

- Northern Spring Peeper
- Northern Leopard Frog
- Spotted Turtle
- Midland Painted Turtle
- Blanading's Turtle
- Northern Ribbon Snake
- Pied-Billed Grebe
- American Bittern
- Least Bittern
- Great Blue Heron
- Green-Backed Heron
- Black Tern
- Eastern Screech Owl
- Tree Swallow
- Red-Winged Blackbird
- American Goldfinch
- Virginia Opossum
- Water Shrew
- Little Brown Myotis
- Keen's Myotis
- Canada Goose
- Green-Winged Teal
- American Black Duck
- Mallard
- Blue-Winged Teal
- Northern Shoveler
- Northern Harrier
- King Rail
- Virginia Rail
- Sora
- Common Morrhen
- Silver-Haired Myotis
- Eastern Pipestrelle
- Big Brown Bat
- Eastern Cottontail
- Muskrat
- Southern Bog Lemming
- Meadow Jumping Mouse
- Raccoon
- Mink

Shrub Swamps

Wetlands dominated by woody shrubs such as button bush (*Cephalanthus occidentalis*), alder (*Alnus* spp.), sulky dogwood (*Cornus ammomum*), and saplings of red maple (*Acer rubrum*) and white ash (*Fraxinus americana*) typically provide preferred habitat for the following wildlife species:

- Spotted Turtle
- Blancing's Turtle
- Black-Crowned Night Heron
- Yellow-Crowned Night Heron
- Glossy Ibis
- Red-Shouldered Hawk
- Alder Flycatcher
- White-Eyed Viero
- Common Yellow Throat
- Hooded Warbler
- Song Sparrow
- Swamp Sparrow
- Common Grackle
- American Goldfinch
- Virginia Opossum
- Little Brown Myotis
- Water Shrew
- Keen's Myotis
- Silver-Haired Bat
- Big Brown Bat
- Eastern Cottontail
- New England Cottontail
- Snowshoe Hare
- Raccoon
- Lynx

Deep Marshes

Wetlands characterized by emergent vegetation such as *Typha* and *Ponterderia*, and floating-leaved plants such as *Nymphaea*, *Nuphar*, and *Brasenia*, and water depths to 6 feet typically provide preferred habitats for the following woldlife species:

- Red-Spotted Newt
- Spotted Turtle
- Red-Eared Slider
- Eastern Painted Turtle
- Pied-Billed Grebe
- Galdwall
- American Coot
- Virginia Opossum
- Water Shrew
- Little Brown Myotis
- Keen's Myotis
- Silver-Haired Bat
- Eastern Pipestrelle
- Big Brown Bat
- Muskrat
- Raccoon
- Mink
- Moose

Red-Maple Cedar Swamp

Wetlands characterized by red maple (*Acer rubrum*), white pine (*Pinus strobus*), white birch (*Betula papyrifera*), tamarack (*Larix laricina*), Northern white cedar (*Thuja occidentalis*) and black ash (*Fraxinus nigra*), as well as a variety of shrubs provide preferred habitats for the following wildlife species:

- Ruffed Grouse
- Eastern Wood-Pewee
- Blue Jay
- Black-Capped Chickadee
- Brown Creeper
- Veery
- American Robin
- Northern Waterthrush
- Deer Mouse
- Short-Tailed Shrew
- Hairy Woodpecker
- Great Crested Flycatcher
- American Crow
- Red-Breasted Nuthatch
- Winter Wren
- Hermit Thrush
- Black-and-White Warbler
- White-Throated Sparrow
- Masked Shrew
- Meadow Vole

Recreation Resources

Alburg Dunes State Park provides excellent recreational opportunities for visitors, primarily associated with the beach. The park is currently used for day use activities associated with beach use, such as picnicking, swimming, and relaxing, and for hunting during the fall. Other activities that occur include walking and bicycling along the beach road and railroad bed. Opportunities exist to provide facilities for bird watching and study, and interpretation of the natural and cultural resources of the dunes and wetlands.

The current recreational facilities at Alburg Dunes State Park are picnic tables and grills, port-o-let toilets, and two main parking areas for use of the beach [one on the beach and one above it]. Three other areas used informally for parking include: 1) an area midway on the western boundary, which provides access to the upland areas for hunting; 2) an area on the northern end of the railroad bed adjacent to the fields, which provides access for hunting; and 3) an area on the southeastern edge of the property, which provides access for hunting and ice fishing in the winter. A dirt road parallels the beach for the entire length of the beach and has been used as a walking and bicycling path as well as for park maintenance. The abandoned railroad bed on the eastern side of the property as also been used as a trail.

Visual Resources and Scenic Quality

Alburt Dunes State Park, with its unique sand dunes, wetlands, and forests, offers opportunities to observe this interesting environment at close range, as well as scenic panoramic views of Lake Champlain and the New York Adirondack Mountains.

The wetlands provide the primary positive visual experience. From a distance the patterns of marsh vegetation and the flat, open expanse of the wetland are an important focal feature from the beach road. The wetlands provide opportunities at relatively close proximity to see and hear wildlife and bird species using the wetlands from the beach road.

The beach, dunes, and shoreline of the park is another area of scenic importance. The beach provides an opportunity to get close to the waters of Lake Champlain, with an expansive view to the south, surrounding shorelines, and, in the distance, the Adirondack Mountains of New York. The dunes provide a backdrop to the beach and, for the most part, block the view of the wetlands located behind the beach.

The upland areas, especially those in agricultural use, provide an opportunity to see wild turkeys and whitetail deer as well as viewing the attractive fall coloration. The fields provide the foreground to the forested areas of the uplands and wetlands.

There are presently a number of negative impacts on the scenic quality of the park. On Coon Point Road towards the park entrance, the road passes by a number of abandoned and rundown houses and camps. Also, adjacent to the western edge of the beach where most of the use occurs, are a number of buildings and residences found on private property that impact to varying degrees the character of the park. Also, overhead poles for electricity to the existing bathroom located halfway down the beach road are unsightly (once the restroom building is no longer needed, these overhead lines and poles will be removed). Also, there are a number of tree stumps scattered along the beach. Most of these stumps will be removed as long as they are not providing a means to catch and hold sand to rejuvenate the dunes.

Cultural Resources

The location and type of resources at Alburg Dunes State Park makes it an ideal location for prehistoric archeological sites. The abandoned railroad bed and some of the surrounding land use history provides opportunities for education and interpretation of more recent times. As yet, a cultural resources inventory has not been conducted in the park.

Current Resource Management Practices

Soils

Some of the soils at Alburg Dunes State Park are cited by the Soil Conservation Service as poorly suited to development of recreational facilities, structures, and septic systems.

Beach and Dune Management

The beach, dune, and wetland system is complex and dynamic. Restoration and changes affecting the system will need to be continually monitored. A series of surveyed benchmarks have been established across the dunes the length of the beach to monitor changes in the dunes. Unfortunately, the geologist at the University of Vermont who was instrumental in establishing these benchmarks has left the state. Also, the Master's thesis research study of the wetlands has been completed, and the researcher has since graduated and left Vermont as well.

Natural beach development and sand movement are dependent upon the sandy cliffs on the western edge of the Pointe of Tongue continually eroding. If this source of sand is eliminated or decreased appreciably, the beach building process would be altered. Currently, the majority of the bluffs are in private ownership, and the threat is always present that a landowner may attempt to prevent erosion and, thus alter the natural beach development and dynamics.

Natural Communities and Vegetation Types

The beach/dune/wetlands complex is unique in Vermont. The opportunity exists to restore and protect very important wetlands and the rare and threatened plant species on the dunes, in addition to providing limited compatible recreational opportunities. Restoration of both the wetlands and dunes would enhance research and educational opportunities, as well. Previous management activities were detrimental to the dune communities: the dunes were bulldozed to move the sand back to the beach, reducing and, in some places, eliminating the habitat for the Champlain beachgrass and beach pea. The bulldozing also filled in the wetland areas immediately behind the dunes between the dunes and beach road.

Unique Species

Several species of rare and endangered plants occur in the park. These species require special management considerations and protection. No thorough plant survey has been conducted at the park. There is also the possibility of tiger beetles repopulating the beach and dune areas in the future.

Exotic Species

Exotic species have become established at Alburg Dunes State Park in the wetlands (purple loosestrife and common reed) and in the waters of Lake Champlain (zebra mussels). The previous landowner was required to dredge the fill between the dunes and the beach road. It is in these disturbed areas that purple loosestrife and common reed have become established. Exotic species can detract from the natural appearance of the wetlands, result in a lower habitat value for native wildlife, disrupt native vegetation, and spoil the natural character of the park.

Wildlife Management

Animals are important to natural ecosystems, and add interest and variety to visitor experiences. The wetlands at Alburg Dunes State Park are extremely important as wildlife habitat and are part of the largest white tail deer wintering yard in Grand Isle County. Protection and perpetuation of natural wildlife populations within and adjacent

to the wetlands is an important management objective here. The agricultural fields and forested uplands also provide important habitat for wildlife.

Visual Resources and Scenic Quality

Alburg Dunes State Park is a popular destination point because it provides a special outdoor environment in its natural state and offers panoramic views of Lake Champlain and the New York Adirondack Mountains. This character and natural beauty of the landscape, wetlands, and beach and dunes needs to be maintained. There also are some negative influences on the scenic quality of the park that could be eliminated, screened, or softened by various techniques.

Cultural Resources

The cultural resources at Alburg Dunes State Park are unknown at this point, as no inventories or studies have occurred to document archeological and historical evidence.

Appendix F: Vermont's Natural Areas Law and Terminology

Vermont's Natural Areas Law (10V.S.A., Chapter 83, section 2607) stipulates:

- (a) The commissioner, with the approval of the governor, may designate and set aside areas in the state forests and state park as natural areas.
- (b) "Natural Areas" means limited areas of land which have retained their wilderness character, although not necessarily completely natural and undisturbed, may have rare or vanishing species of plant or animal life or similar features of interest which are worthy of preservation for the use of present and future residents of the State and may include unique ecological, geological, scenic and contemplative recreation areas on state lands.
- (c) Land uses and practice in natural areas shall be subject to regulations of the department to carry out the purposes of this chapter or to manage or maintain the areas for the preservation of their natural condition. Areas so designated may be removed from such designation only by approval of the governor following public notice and hearing.

Vermont's Natural Areas Law Terminology

There are some important definitions and interpretations of terms in the Natural Areas Law (10 V.S.A., section 2607):

"Limited Areas of Land:" Size shall be such as to provide protection for the feature(s) that warrant an area's designation as a Natural Area (including buffer zones, if needed). Determination of the feature(s) shall be based on scientific documentation.

"Wilderness Character:" This refers to areas that have the appearance of being unaffected by, and/or impart a feeling of remoteness from, past or present human activities. "Wilderness character" and size are considerations in designating Natural Areas, but not the only factors. This quality is not to be equated with that of the US Forest Service's Wilderness Areas, nor shall USFS criteria be applied to Department-owned Natural Areas.

"Similar Features:" These are biologically, ecologically or geologically significant entities, as recognized by the Agency of Natural Resources (Nongame and Natural Heritage Program, State Geologist, State Naturalist, etc.).

"For the Use of...:" Appropriate and/or prohibited use shall be prescribed in the long-range management plans for each area.

"Scenic and Contemplative Recreational Areas:" An area shall not be designated as a Natural Area solely on the basis of scenic and/or contemplative recreational qualities, since both require subjective judgements and most undeveloped areas in Vermont possess some of these qualities. These qualities are considered supporting evidence for "wilderness character."

Appendix G: Permitted Activities in Natural Area

The proposed types of activities to be permitted within the designated natural area are:

- 1) The beach service road will be continued and maintained as a right of way for park service vehicles and as a trail for park visitors. Bicycle use will be permitted along its length. In the eventuality that any park facility development occurs on the high ground between the east end of the beach and Poor Farm Road, it may be a need for some limited vehicle use of the beach service road by park visitors. Additionally, if a municipal water supply and distribution system ever reaches Alburg's Point-of-Tongue via Poor Farm Road, and/or Coon Point via Coon Point Road, a waterline may be buried under, or beside, the service road to link Coon Point and Point-of-Tongue water users. There is an existing utility easement along the beach service road as well. Maintenance of the beach service road will at least include removal of fallen or overhanging trees, and periodic mowing of an edge strip along both sides of its length. Existing culverts will be maintained, and the road may periodically be graded and/or graveled as necessary.

- 2) The three pedestrian access ways between the beach service road and the beach may be maintained by mowing for use by park visitors, and for limited ATV and equipment access by park staff. The first access way departs the beach service road approximately 375 - 400 feet east of the gate at the end of the lower parking area, and leads to the beach between the two section of dune complex which have been fenced off for the past three summers. The second access way leaves the beach service road another 300 - 400 feet east, from the area around the toilet building, and accesses the beach on the east side of the fenced dune area. The third access way departs the beach service road some 500 - 600 feet east of the second, and accesses the beach along a filled strip between two patches of wetland forest.

- 3) Hazard tree removal may occur within the Natural Area only to the extent that the "target zone" of any trees identified as hazardous includes a park facility or public use area. Hazard tree removal may occur along and adjacent to the service road, access ways, and beach. It may not occur if the tree identified as "hazardous" is not likely to hit any park facility or visitor use area upon impact if and when it falls.
- 4) Trail and boardwalk construction may occur within the Natural Area only upon consultation with and approval by the Technical Steering Committee (or their successors). All trail proposals, layout, and construction methods require pre-approval.
- 5) Vegetative management and manipulation may occur within the Natural Area, with advance approval by the Technical Steering Committee. Management and manipulation techniques to eradicate and/or control nuisance exotics such as purple loosestrife and *Fragmites* might include manual, mechanical, chemical, or biological measures, within strictly defined and limited area. Management techniques might also be authorized to permit or encourage propagation of, for example, beachgrass, into areas where it doesn't exist at present.
- 6) Hunting and fishing, within prescribed seasons and in accord with State and Federal regulations, may occur within the Natural Area. Permanent tree stands are not permitted.
- 7) Habitat management within designated alder stands located within the Natural Area as defined may occur with advance approval of the Technical Steering Committee.
- 8) Scientific research and study projects may occur within the Natural Area, with advance approval by the Technical Steering Committee and in accordance with Department policy for licenses and special use permits.

- 9) Due to space limitations under the present property configuration, there is currently no place near the beach/picnic area to store park tools, equipment, or supplies other than in the immediate area on high ground around the toilet building midway along the beach service road. Neither is there a convenient or suitable location to store park facilities and equipment (such as picnic tables or rolls of fencing) during the off season, or to complete certain maintenance projects (such as picnic table assembly, etc.) other than at this location. Even after the toilet building has been removed, there will still be a need to continue to utilize this specific area for park maintenance and operation purposes. If this area is included within the designated Natural Area as proposed, it must be understood that these uses need to continue at this location. This permitted use may be re-evaluated if future acquisition and/or facility construction provides an alternate location at which to accomplish these tasks and store this equipment.

- 10) Seaweed, driftwood, etc. that is picked up from the groomed western end of the beach has been dumped to rot at an unobtrusive, out-of-the-way location within the fenced dune complex. It was suggested that this organic material be dumped here rather than at some other location to keep any sand trapped within the debris in the sand dune system. If the debris dump area ends up within the Natural Area, this practice will need to be continued.

- 11) Large quantities of driftwood and brush that accumulate along the beach service road, beach, picnic area, and other in-park locations particularly during a very-high water year such as was 1996, will need to continue to be picked up and disposed of somewhere. In 1996 the staff built up a big brush pile on the side of the beach service road by the east end of the beach, and burned the pile in a very convenient and out-of-the way location. This area is probably the best spot in the whole park to burn a brush pile. It is also inside what may become the Natural Area. If so, this use would need to be permissible within the Natural Area.

Appendix H: Interpretative Themes For Alburg Dunes State Park

Interpretative Themes. Interpretation at Alburg Dunes State Park will address mainly the natural systems of the park with the potential to also address prehistoric, historic, and current. The following themes and subthemes are proposed for the Park.

Primary Theme A: Geologic forces have shaped the nature of Alburg Dunes State Park. Help visitors appreciate the complexity, scarcity, and intrinsic value of the beach and sand dune community, how it was formed, its dynamic processes, and its interaction with the wetlands.

Possible Subthemes:

- A. The wetlands, and beach and dune communities have been long established communities here.
- B. The dunes provide habitat for very rare plant species - Champlain beachgrass and beach pea.
- C. The beach and dunes are ever changing, fragile ecosystems, especially vulnerable to human interference.

Primary Theme B: Wetlands are rare, valuable, and complex natural systems. Help visitors appreciate the complexity, scarcity, and intrinsic value of wetlands in general, and this unique wetland complex in particular.

Possible Subthemes

- A. The physical condition of the open water, marsh, and bog determine what species live in these habitats. Focus on rarity of black spruce-tamarack bog in this area of state.
- B. Wetlands are home to rare plant and animal species, and also provide winter cover for white tail deer.
- C. Exotic species infiltration could be identified as a need to protect native wetland species.

Secondary Theme: The Pointe Of Alburg played an important role in the history of the area. Help visitors appreciate the local history of the area.

Possible Subthemes:

- A. Abenaki presence and influences.
- B. Settlement and influences by the French and English.
- C. The history of the railroad and its role in Town development.
- D. Transportation influences - ferries and roads.
- E. The poor farm located on the Pointe.

Additional in-depth and site-specific research at Alburg Dunes State Park would be useful in the development of any interpretative materials.

Appendix I: Specific Beach Maintenance Strategies

Specifically:

a. Public use of the beach will be concentrated on the far western edge of the beach (first 600 - 700 feet) away from the main sand dune area. Picnic tables and grills will be concentrated in this area. A designated swimming area with buoys should be located at this side of the beach. This is also where the greatest level of beach maintenance will occur. Litter and trash will be picked up and removed, as well as driftwood and lakeborne seaweed. The lake-borne organic debris (with the possible exception of large quantities of driftwood) will be disposed of in acceptable location(s) within the dune and beach complex (most likely in the area where there will be no maintenance). Some mechanical raking and/or smoothing of the westerly several hundred feet of beach will occur, particularly if lake action exposes stumps, etc., or as visitors dig holes, build sand castles, etc. which could present a tripping hazard to beach visitors. It may also be desirable to occasionally import supplemental sand onto this section of beach, to make up for that lost to visitors tracking it off, lost in beach cleaning, etc. Such sand, if imported, will be of similar particle size and composition to the sand already on-site. It must also be rhizome-free. Sand will not be used from the dunes on-site to supplement the beach.

b. In the western end of the beach, the stone beachwall was removed from the property line east, and the weeds and grass that had become established along the beach adjacent to the stone beachwall were similarly removed. It was anticipated that natural lake action, once the wall was gone, would restore this section leaving a more natural slope, more sand, and a more desirable condition from a park user's perspective. Moving easterly, but still in the western area, the spit or groin of rocks were also be removed. It is hoped that the removal of the rocks in these two locations will result in a more continuous and wider beach and will restore the

beach to its normal elevation. These actions occurred in the Fall of 1997, and it's too early to tell how soon natural recovery will restore the sand beach in this section. It may be desirable to import supplemental sand to assist and speed the beach recovery process.

c. Moving further east, but still west of the dunes, there is an area that has been used as a path to access the beach. Currently, sand is blowing through this linear area and across the beach road into the wetlands. This sand is being lost to the system and to the continually developing sand dunes. Discontinuous fencing should be erected immediately in this area to trap the sand and to allow the dunes to develop.

d. The main dunes will be fenced primarily to protect degradation of the dunes and plants from humans, and secondarily to assist in trapping sand. The fencing around the main dune complex will be extended both east and west, and out towards the water (south) to create a larger buffer around the dunes. This will protect the vegetation that is trying to spread as the dunes continually change and grow. The fencing will be removed in the fall of each year after the park closes to day use to allow the natural movement of sand into the dunes. Removal of the fencing during the fall will also prevent ice damage over the winter and spring when water levels rise.

e. Beach maintenance in front of the dunes will primarily consist of removing glass, litter, and picking up algae and driftwood. Algae and driftwood will be deposited in the system at acceptable locations.

f. Mid-point of the dunes is an area where wetland grasses have invaded where they naturally would not be found. Staff have speculated that they moved into this area because the disturbance of the dunes has raised the ground water level. The grasses are limiting the expansion of the Champlain beach grass in this area by blocking the movement of sand back into the dunes. If funding is obtained, a test research plot

(fenced off area) will be identified, the wetland grasses removed, and the dunes rehabilitated to see if the beachgrass will expand and come back to this area. An interpretative program will also be designed to inform the park user of the project.

g. The easternmost half to two-thirds of the beach will not be maintained or managed in any way, except that litter and lake-borne refuse (other than driftwood, seaweed, etc.) will be picked up and removed. At the far east side of the beach is a drainage ditch from the wetlands to Lake Champlain. The culvert under the beach road (service road) will be kept clear so that the integrity of the road is maintained, but nature will be allowed to take its course with the drainage ditch from the road to the lake at the east end of the beach. The ditch will not be cleaned out or dredged, especially on the beach where the ditch enters the lake.

h. The use of vehicles (Parks trucks or ATVs) on the beach will be limited to times of emergency, or to when maintenance activities require the use of a vehicle. Appropriate times and situations will be deemed by staff, but routine use of vehicles on the beach will be discouraged.

Appendix J:

Land Use Limitations

Providing for human activity at Alburg Dunes State Park in a manner that maintains resource values and the integrity of ecosystems involves setting limits on: 1) how humans use the land; and 2) how many people can use an area.

Park planners and managers often use the concept of “carrying capacity” to refer to the number of people or the intensity of activities that an area of land can support without losing its ability to renew itself or compromising its integrity. Managers of park lands have come to realize that park lands and their associated resources also have inherent limitations on the type and amount of public use they can endure.

How many people and what uses can be allowed at Alburg Dunes State Park without compromising the integrity of the resources and the quality of visitor experiences? This was one of the most difficult questions addressed by the Public Planning Group (PPG) and the Technical Steering Committee (TSC) during discussions for the development of this General Plan.

One dilemma facing the PPG and the TSC was that the best sand and beach area for picnickers and swimmers is at the western end of the beach. This is also the location of the sand dunes, endangered Champlain beachgrass, and beach pea - areas that need protection from human trampling. Another was that Alburg residents and surrounding landowners did not want Poor Farm Road used as an access to the park because of the number of camps and residences along the road, its condition, and the number of children that play on the road and cross it to the Lake. While the railroad bed (south) could provide access, it is not presently possible since the State does not own the entire length of the railroad bed. The two planning groups also felt that the beach road should only be a service road and not a means to gain access to the beach (east to west). The two planning groups determined that the most desirable area of the beach for park use was the western end, only if the amount and type of use was limited.

The impact of park users on the beach and sand dune community, as well as the type of park character that was to be available to users, were also considered by the PPG and the TSC. It was determined that protection of the sand dunes and the special plant species found on them were the resources that needed the most critical protection from the public. Also recognizing that there is limited sand to the system to naturally replenish and build the sand dunes, and that beach and park users would remove sand from the system on their towels, shoes, etc., the two planning groups also felt that use should be limited and the type of beach maintenance restricted.

The amount of parking and the type of facilities provided at the park were viewed as the main ways to control the amount of use of the beach in any one day. Through various discussions, it was determined that the parking capacity would be limited to 150 vehicles. This was determined in part by the amount of land available to develop a parking lot away from the beach itself, the amount of visitation necessary to generate adequate revenue, and an acceptable level of the number of beach users at any one point given the size of the beach and picnic area. Active monitoring of the effects of humans on the resources must be an active part of management of the park in order to reassess the levels of acceptable use that were determined at this time.

Appendix K: Appropriate Future Additions and Areas of Needed Protection

The lands mentioned in this discussion and shown on the Appropriate Future Additions and Areas of Needed Protection Map are currently outside state ownership, and represent “ideal” additions to Alburg Dunes State Park. Most of these parcels are currently being used for open space, a compatible adjacent use. If conditions change to seriously threaten the park’s values, and property in these areas becomes available for purchase and/or management by the state, the state should actively try to acquire them. Options other than fee simple could also be used on certain parcels of land, if the owner(s) were agreeable.

Further investigation and/or studies may be required to examine all site constraints.

Appropriate Future Additions

These recommendations were prepared for long-range planning purposes only, and do not imply a land acquisition commitment. Priorities include:

1. **The western edge of the park near the extreme southwestern corner along the shoreline (the flat area adjacent to the beach including the bathhouse – Lot #20).** This would expand beach area to include the entire beach, making operations and day use facility development easier and less intrusive. There also would be less confusion by park users as to where the State Park beach area actually ends.

2. **The adjacent privately-owned campground and wetlands west of Coon Point Road.** This addition would expand recreational opportunities to include an overnight facility while protecting the remainder of the wetland complex. It

Alburg Dunes State Park

Appropriate Future Additions and Areas For Protection

Legend:

-  Park Boundary
-  Public Road
-  Private Road
-  Park Road
-  Old Railroad

Appropriate Future Additions South of VT 129

-  Lot 20 (Acquisition completed 3/00).
-  Inholdings
-  Wetland
-  Campground Area & Beach

Areas for Protection North of VT 129

-  Wetland
-  Deer Wintering Yard

Additional Areas for Protection

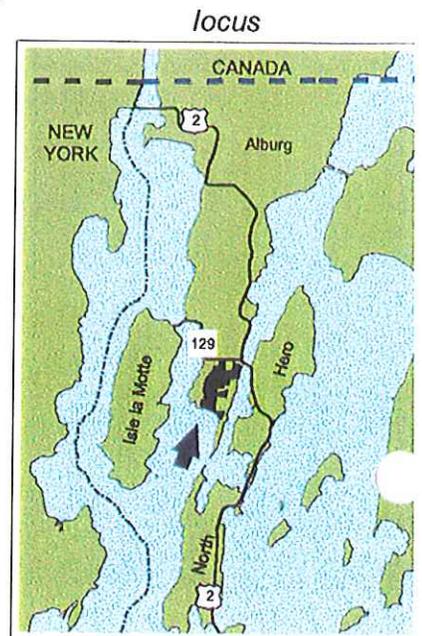
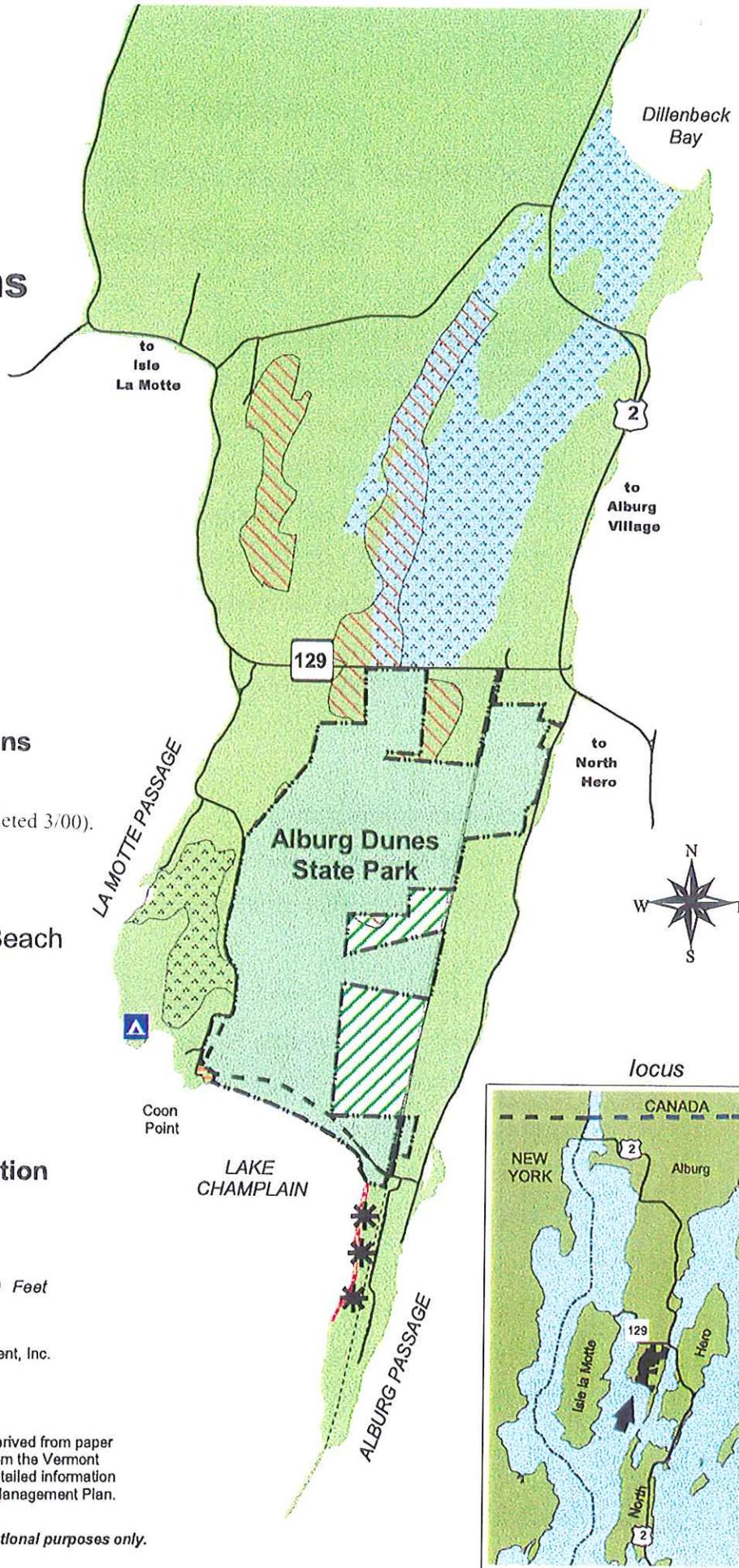
-  Eroding Bluffs



Produced by: Associates in Rural Development, Inc.
 For: Vermont Agency of Natural Resources
 Dept. of Forests, Parks and Recreation
 Date: October 27, 1998

SOURCES: The information on this map was derived from paper and digital orthophotos, and other digital data from the Vermont Center for Geographic Information. For more detailed information on data sources, please see the Alburg Dunes Management Plan.

This map is intended for planning and informational purposes only.



3. would also prevent the possibility of non-compatible adjacent use that may change the values and aesthetics of the park.
3. **The privately-owned parcels west of the railroad bed along the eastern edge of the park.** These parcels, including the railroad bed itself, would protect the remaining wetlands within the park and surrounding uplands, act as a buffer to the park, and consolidate land holdings for an easily-definable border. In addition, the railroad bed would provide trail access to the park.

Areas of Needed Protection

Areas that need protection regardless of state ownership include:

1. **The bluffs east of the property along the western shore of the Pointe of Tongue.** These bluffs are the source of sand for the beach. If erosion of the bluffs were stopped, or slowed, the beach would slowly degrade. This is a very small geologic system with limited sources of sand to replenish the beach.
2. **The wetlands and deer wintering area north of VT Highway 129.** The wetlands within the park belong to a complex system that continues north and eventually connects with Lake Champlain at Dillenbeck Bay. It has been speculated that the hydrology of the entire system is connected, but VT 129 acts as a barrier to the north-south flow of water. The deer wintering yard within the park and on adjacent lands to the north is the largest deer wintering area in Grand Isle County. Deer continuously move throughout this area, especially during the nonwinter months.

The most appropriate protection methods for the bluffs, wetlands, and deer wintering area would be landowner agreements and possibly purchase of easements. Fee acquisitions of these areas are not warranted at this time.

**Appendix L:
Baseline Documentation Report
And
Conservation Easement for Lot 20**

BASELINE DOCUMENTATION REPORT

Lot 20 Alburg, Vermont

Introduction

The purpose of the enclosed information is to describe the physical features and current land uses of Lot 20 which was conveyed to the State of Vermont, Agency of Natural Resources, Department of Forests, Parks and Recreation by Warranty Deed on March 30, 2000 by Robert W. Phillips.

This report is based on the Vermont Housing and Conservation Board Application for project funding, numerous site visit to the property Department of Forests, Parks and Recreation staff, and the draft management plan for Alburg Dunes State Park.

Description and Use

“Lot 20” is a 3.49-acre parcel located adjacent to Alburg Dunes State Park in the Town of Alburg, VT. The parcel includes approximately 490 feet of frontage on Lake Champlain and is located immediately to the west of the state-owned natural sand beach at Alburg Dunes State Park. The natural sand beach extends onto this parcel before transitioning to a shale beach with bluffs overlooking the lake.

Lot 20 has been essentially cleared of most natural vegetation and contains several structures including a seasonal cabin just back from the lake bluff, two associated outbuildings (garage and small shed-like structure), and a restroom facility. These structures do not significantly contribute to the property’s value.

Most of Lot 20 has, to some extent, been altered by development. That section of shoreline that would naturally have been the western end of the natural sand beach has been rip-rapped with the placement of large rocks to form a beach wall. The land behind this beach wall has been back-filled and is now a large, flat, grassy area. The former owner (who has maintained the exclusive right to use Lot 20 through October 1, 2000) has developed several campsites, some with sewer, water, and electric hookups. A few additional campsites are located on the hillside between this area and the toilet building.

The parcel was acquired by the Department of Forests, Parks and Recreation on March 30, 2000 for the sum of \$160,000. The parcel has been added to Alburg Dunes State Park under the management of the Department. The parcel provides an opportunity for the Department to site needed park facilities and infrastructure in an area that is both convenient to the visiting public and located well away from the park’s many sensitive and unique ecological resources. A

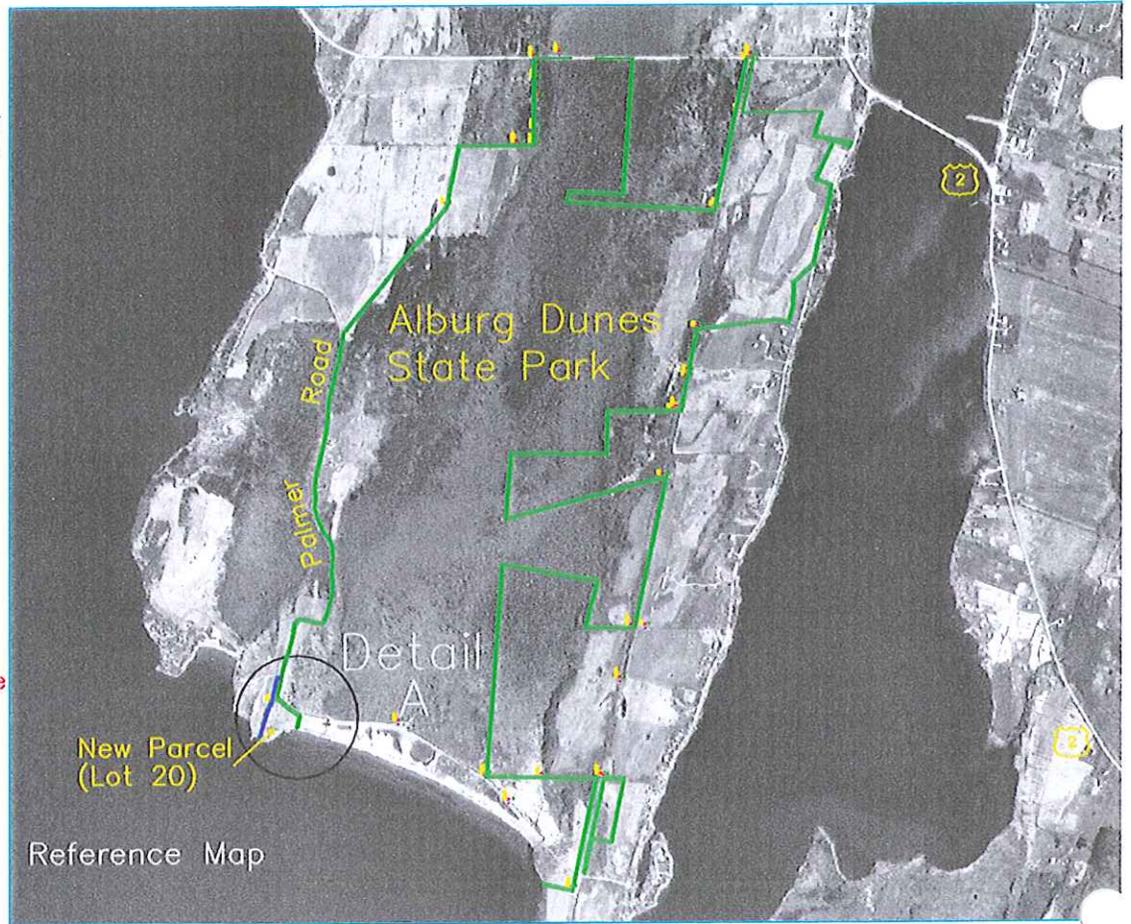
Canada



LOCUS MAP

This Map Does Not Meet Requirements Of 27 V.S.A Chapter 17, And is Not To Be Submitted for Public Record.

N 263500
E 436500 +



Reference Map

Detail A

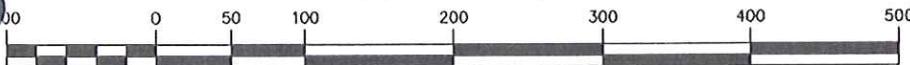


(Lot 20)

N 263000
E 436500 +

GRAPHIC SCALE

(IN METERS)



1 : 5000

State of Vermont
Agency of Natural Resources
Department of Forests, Parks & Recreation

ALBURG DUNES STATE PARK
Alburg, VT

Scale: 1:5000

Drawn by: J.Arms Date: June 2000



Note:

Graphic scale for Detail A only.
Reference and Locus maps are not to scale.

1999 Draft General Management Plan for Alburg Dunes State Park has been prepared which, prior to formal approval, will be revised to reflect the addition of the Lot 20 parcel.

Summary of Legal Restrictions

The property is subject to the terms of both a License Agreement executed between the Department of Forests, Parks and Recreation and Robert W. Phillips (Licensee) and a separate Conservation Agreement between the Department of Forests, Parks, and Recreation and the Vermont Housing and Conservation Board.

License Agreement

The property is subject to License Agreement # 083-00-BU1-00 executed on May 23rd, 2000 between the Department of Forests, Parks and Recreation and Robert W. Phillips (the former owner of the Lot 20 parcel). As a condition of the sale of this property to the State, the License Agreement provides the Licensee with the exclusive use of Lot 20 through October 1, 2000, the exclusive use of the cabin on Lot 20 through March 30, 2002, and the rent-free use of the Park Ranger's House (not located on Lot 20) during the non-operating season through April 30, 2003. **See the License Agreement for more detail and description of Licensee's rights.**

Conservation Agreement

Conservation restrictions are described within the Conservation Agreement executed in July, 2000 between the Department of Forests, Parks and Recreation and the Vermont Housing and Conservation Board. These restrictions allow the property to be used for open space uses and future park development activities compatible with the General Management Plan for Alburg Dunes State. **Note: The following is only a summary of the restricted and permitted uses - - see Conservation Agreement for the more detail and description.**

Restricted Uses of the Protected Property

The following are limitation's on the Department's (i.e., Grantor's) use of the property as summarized from the Conservation Agreement.

- 1. General:** The conserved property may be used for non-motorized public outdoor recreational only. No, industrial, or mining activities are permitted and no buildings are allowed except as may be provided for within the Management Plan
- 2. Rights of Way and Easements:** No rights of way, easements of ingress or egress, driveways, roads or utility lines shall be constructed, developed, or maintained into, on, over, under, or across the Protected Property, except as specifically permitted under the conservation agreement.

3. **Signs:** There shall be no signs, billboards, or outdoor advertising of any kind erected or displayed; provided, however, that the Grantor may erect and maintain reasonable signs indicating the name of the property, organizations providing funding or sponsorship, boundary markers, directional signs, signs informing the public about reasonable use, memorial plaques, historical markers and signs informing the public that agricultural or timber products are for sale or are being grown on the premises.
4. **Trash:** The placement, collection and storage of trash or human waste is prohibited except at locations and in a manner consistent with the agreement and permitted by the Management Plan.
5. **Ground Disturbing Activities:** Except as permitted by the Management Plan or as may reasonably be necessary to carry out the uses permitted by this conservation agreement, there shall be no disturbance of the surface of the Protected Property including, but not limited to, filling, excavation, removal of topsoil, sand, gravel, rocks or minerals, or change of topography of the land in any manner. In no case shall surface mining or subsurface oil, gas or other mineral extraction be permitted.
6. **Transfer of Property:** The Property shall not be conveyed, subdivided, transferred, mortgaged, leased, or otherwise encumbered, **without the prior written approval of Grantee.**
7. **Manipulation of Watercourses:** There shall be no manipulation of natural water courses, marshes, or other water bodies that would be detrimental to water quality or could alter natural water level or flow, except as may be reasonably necessary to carry out the purposes of the agreement.
8. **Consistency Clause:** No use shall be made of the Protected Property, and no activity thereon shall be permitted which, in the reasonable opinion of the Grantee(s), is or is likely to become inconsistent with the purposes of this conservation agreement.

Permitted Uses of the Protected Property

The following are permitted activities on and uses of the conserved property:

1. **Outdoor Recreation Uses:** The right to conduct all activities allowed by the Management Plan, provided they are reasonably necessary to carry out the purposes of the Agreement.
2. **Development and Maintenance:** The right to clear, construct, repair, maintain and replace roads, structures and facilities and associated access drives and utilities

allowed by the Management Plan, provided such activities are reasonably necessary to carry out the purposes of this Agreement.

- 3. Park Operations (Fees):** The right to charge the public reasonable fees for admission to and use of the Protected Property.

The foregoing is not a description of the actual legal rights. For a more complete description of these rights, refer to the complete License Agreement and Conservation Agreement.

Alburg Dunes Conservation Agreement

CONSERVATION AGREEMENT

THIS CONSERVATION AGREEMENT (the "Agreement") is made and entered into on this 26th day of July, 2000, by the State of Vermont, acting through the Department of Forests, Parks and Recreation of the Agency of Natural Resources (the "Department"), and the Vermont Housing and Conservation Board with an address of 149 State Street, Montpelier, Vermont 05602 ("VHCB").

WHEREAS, VHCB is a public instrumentality of the State of Vermont existing by virtue of the Vermont Housing and Conservation Trust Fund Act, 10 V.S.A. §311 (the "Act"), which provides grants and loans to eligible entities for projects which fulfill the dual goals of creating affordable housing for Vermonters and/or conserving and protecting Vermont's agricultural land, historic properties, important natural areas and recreational lands;

WHEREAS, eligible activities under the Act include, but are not limited to, the protection of agricultural land, important wildlife habitat and important natural areas, the preservation of historic properties or resources and the protection of areas suited for outdoor public recreational activity;

WHEREAS, the Department is entrusted with implementing the policies and purposes of 10 V.S.A. Chapter 103, including the policy of the State of Vermont that the conservation of forests, timberlands, woodlands and soil and recreational resources of the State is in the public interest, and the purposes of managing, promoting and protecting the multiple use of publicly owned forest and park lands, and planning, operating and maintaining the system of state parks; and the Department is authorized to acquire land in accordance with the provisions of 10 V.S.A. §2606 to be held and administered as state forests or parks;

WHEREAS, the Department has acquired conservation land known as the Alburg Dunes Lot 20 and consisting of 3.5 acres, more or less, in the Town of Alburg, County of Grand Isle and State of Vermont, as more particularly described as follows and hereinafter referred to as the "Protected Property":

Being a parcel of land, including all structures and improvements located thereon, conveyed to the State of Vermont, Agency of Natural Resources, Department of Forests, Parks and Recreation by Warranty Deed of Robert W. Phillips, dated March 30, 2000 and recorded in Book 85 at Page 381 in the Town of Alburg Land Records.

WHEREAS, the Department signed VHCB Grant Agreement #2000-064 which states, that: (i) VHCB will make a grant in the amount of up to One Hundred Seventy Thousand Dollars (\$170,000) (the "Grant") to the Department for acquisition of the Protected Property; and (ii) the Department will execute this Agreement for the purpose of subjecting the Protected Property to the perpetual restrictions hereinafter set forth.

NOW, THEREFORE, KNOW ALL PERSONS BY THESE PRESENTS, that the Department in consideration of the Grant, which has been paid to its full satisfaction by VHCB, agrees that the perpetual restrictions set forth below shall apply to the Protected Property.

I. Purposes of Agreement; Management Plan.

1. The Department and VHCB acknowledge that the purposes of this Agreement are as follows (the "Purposes of this Agreement"):

- (a) Consistent with the goals set forth in 10 V.S.A. §6301, the primary purpose is to facilitate the conservation and protection of the scenic, wildlife, forestry, open space and natural resources of the property conveyed to the Department by deed of The Nature Conservancy dated April 29, 1996, which is adjacent to the Protected Property. In addition, the primary purpose is to prevent the use or development of the Protected Property for any purpose or in any manner that would adversely affect these resources.
- (b) Secondary purposes are to ensure public access to the Protected Property, provide opportunities for public outdoor recreation and educational activities, and permit the construction and maintenance of public trails and structures incident to appropriate public recreational use.

2. These purposes will be advanced by conserving the Protected Property because it is an important inholding of the Alburg Dunes State Park (the "Park") and furthers the goal of acquisition of the entire beach area for the Park.

3. The Department shall develop a management plan for the Protected Property, or incorporate the Protected Property into the management plan for the Park, which shall be consistent with the Purposes of this Agreement (the "Management Plan"). The Management Plan shall not allow uses of the Protected Property which are inconsistent with this Agreement. The Management Plan shall be developed, and future amendments or updates to the Management Plan shall be made, with appropriate public input. Such input shall be consistent with applicable laws, regulations, policies and procedures governing ownership and management of the Protected Property. Prior to its final adoption, the Department shall provide VHCB with a copy of the Management Plan, including any amendments or updates thereto.

II. Restricted Uses of the Protected Property.

1. The Protected Property shall be used for public outdoor non-motorized recreation only, except as otherwise specifically permitted under this Agreement. No industrial or mining activities shall be permitted. No buildings or structures (including, but not limited, to telecommunication towers) shall be constructed, created, erected or moved onto the Protected Property, except as permitted in Section III below and the Management Plan.

2. No rights-of-way, easements of ingress or egress, driveways, roads, utility lines, other easements or use restrictions shall be constructed, developed, granted or maintained into, on, over, under, or across the Protected Property without the prior written permission of VHCB, which permission shall not be unreasonably withheld or conditioned if the proposed right-of-way, easement of ingress or egress, driveway, road, utility line, other easement or use restriction is consistent with the Purposes of this Agreement.

Alburg Dunes Conservation Agreement

3. There shall be no signs, billboards, or outdoor advertising of any kind erected or displayed on the Protected Property; provided, however, that the Department may erect and maintain reasonable signs including, but not limited to, signs indicating the name of the Protected Property and its ownership by the Department, boundary markers, directional signs, memorial plaques, informational and interpretive signs, and signs limiting access or use. With prior written permission of the Department, VHCB may erect and maintain signs designating the Protected Property as land under the protection of VHCB.

4. The placement, collection or storage of trash, human waste, or any other unsightly or offensive material on the Protected Property shall not be permitted except at locations, if any, and in manner which is consistent with this Agreement and permitted by the Management Plan. The temporary storage of trash in receptacles for periodic off-site disposal shall be permitted.

5. Except as permitted by the Management Plan or as may be reasonably necessary to carry out the uses permitted by the Management Plan, there shall be no disturbance of the surface, including, but not limited to, filling, excavation, removal of topsoil, sand, gravel, rocks or minerals, or change of the topography of the land in any manner, except as may be reasonably necessary to carry out the uses permitted on the Protected Property under the terms of this Agreement. In no case shall surface mining of subsurface oil, gas, or other minerals be permitted.

6. The Department shall not give, grant, sell, convey, subdivide, transfer, mortgage, lease, pledge or otherwise encumber the Protected Property without the prior written approval of VHCB.

7. There shall be no manipulation of natural watercourses, marshes, vernal pools, wetland, or other water bodies, nor shall there be activities conducted on the Protected Property which would be detrimental to water purity, or which could alter natural water level or flow, except as reasonably necessary to carry out the uses permitted on the Protected Property under this Agreement.

8. No use shall be made of the Protected Property, and no activity thereon shall be permitted which, in the reasonable opinion of VHCB, is or is likely to become inconsistent with the Purposes of this Agreement.

III. Permitted Uses of the Protected Property.

Notwithstanding the foregoing, the Department shall have the right to make the following uses of the Protected Property:

1. The right to conduct all activities allowed by the Management Plan, provided that such activities are reasonably necessary to carry out the Purposes of this Agreement. Such activities may include, but are not necessarily limited to, timber and vegetative management, and wildlife and recreational improvement.

2. The right to clear, construct, repair, maintain and replace roads, structures or facilities, together with necessary access drives and utilities, on the Protected Property, provided

that such roads, structures or facilities are used for the purposes allowed by the Management Plan and are reasonably necessary to carry out the Purposes of this Agreement.

3. The right to charge the public reasonable fees for admission to and use of the Protected Property.

IV. Public Access.

The Department covenants and agrees that the Protected Property shall be available to the general public for all types of pedestrian dispersed recreational purposes (including, but not limited to, bird-watching, fishing, hiking, swimming, walking and wildlife observation) consistent with the Purposes of this Agreement. Notwithstanding the foregoing, the Department may limit or restrict public access to the Protected Property to assure compliance with the requirements of this Agreement, to protect natural habitats, or to protect the public health or safety (including, but not limited to, the right to permit, regulate or prohibit hunting or trapping). If VHCB approves a conveyance of the Protected Property, then VHCB may also require that a separate Grant of Public Access Easement also be conveyed to VHCB in a form approved by VHCB.

V. Enforcement of the Restrictions.

VHCB shall make reasonable efforts from time to time to assure compliance by the Department with all of the covenants and restrictions herein. In connection with such efforts, VHCB may make periodic inspection of all or any portion of the Protected Property, and for such inspection and enforcement purposes, VHCB shall have the right of reasonable access to the Protected Property. In the event that VHCB becomes aware of an event or circumstance of non-compliance with the terms and conditions herein set forth, VHCB shall give notice to the Department of such event or circumstance of non-compliance by personal service or via certified mail, return receipt requested, and demand corrective action by the Department sufficient to abate such event or circumstance of non-compliance and restore the Protected Property to its previous condition. In the event there has been an event or circumstance of non-compliance which is corrected through negotiation and voluntary compliance, the Department shall reimburse VHCB all reasonable costs incurred in investigating the non-compliance and in securing its correction.

Failure by the Department to cause discontinuance, abatement, or such other corrective action as may be demanded by VHCB within a reasonable time after receipt of notice and reasonable opportunity to take corrective action shall entitle VHCB to bring an action in a court of competent jurisdiction to enforce the terms of this Agreement and to recover any damages arising from such non-compliance. Such damages, when recovered, may be applied by VHCB to corrective action on the Protected Property, if necessary. If the court determines that the Department has failed to comply with this Agreement, the Department shall reimburse VHCB for any reasonable costs of enforcement, including court costs and reasonable attorneys' fees, in addition to any other payments ordered by such court. In the event that VHCB initiates litigation and the court determines that the Department has not failed to comply with this Agreement and that VHCB has initiated litigation without reasonable cause or in bad faith, then VHCB shall reimburse the Department for any reasonable costs of defending such action, including court costs and reasonable attorneys' fees; provided that this clause shall not apply to any VHCB protected by the doctrine of sovereign immunity. The parties to this Agreement specifically

acknowledge that events and circumstances of non-compliance constitute immediate and irreparable injury, loss, and damage to the Protected Property and accordingly entitle VHCB to such equitable relief, including, but not limited to, ex parte injunctive relief, as the court deems just.

The remedies described herein are in addition to, and not in limitation of, any other remedies available to VHCB at law, in equity, or through administrative proceedings. No delay or omission by VHCB in the exercise of any right or remedy upon any breach of the Department shall impair VHCB's rights or remedies or be construed as a waiver. Nothing in this enforcement section shall be construed as imposing a liability upon a prior owner of the Protected Property, when the event or circumstance of non-compliance occurred after said prior owner's ownership or control of the Protected Property has terminated.

VI. Miscellaneous Provisions.

1. Where the Department is required, as a result of this Agreement, to obtain the prior written approval of VHCB before commencing an activity or act, and where VHCB has designated in writing another organization or entity which shall have the authority to grant such approval, the approval of said designee shall be deemed to be the approval of VHCB, which approval shall not be unreasonably withheld. The Department shall reimburse VHCB or VHCB's designee for all extraordinary costs, including staff time, incurred in reviewing the proposed action requiring VHCB's approval; but not to include those costs which are expected and routine in scope. When VHCB has authorized a proposed action requiring approval under this Agreement, VHCB shall, upon request, provide the Department with a written certification in recordable form memorializing said approval.

2. It is hereby agreed that the construction of any buildings, structures or improvements, or any use of the land otherwise permitted under this Agreement, shall be in accordance with all applicable ordinances, statutes and regulations of the Town of Alburg and the State of Vermont.

3. VHCB shall transfer the conservation agreement and restrictions entered into with the Department herein only to a State agency, municipality, or qualified organization, as defined in Chapter 34 or Chapter 155 Title 10 V.S.A., in accordance with the laws of the State of Vermont and the regulations established by the Internal Revenue Service governing such transfers.

4. In any deed or lease conveying an interest in all or part of the Protected Property, the Department shall make reference to this Agreement and shall indicate that the restrictions are binding upon all successors in interest in the Protected Property in perpetuity. The Department shall also notify VHCB of the name(s) and address(es) of the Department's successor(s) in interest.

5. VHCB shall be entitled to rerecord this Agreement in the Town of Alburg Land Records as may be necessary to satisfy the requirements of the Record Marketable Title Act, 27 V.S.A., Chapter 5, Subchapter 7, including 27 V.S.A. §§603 and 605.

6. Any signs erected on the Protected Property which mention funding sources shall include the Vermont Housing and Conservation Board.

Alburg Dunes Conservation Agreement

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their duly authorized agents.

IN THE PRESENCE OF:

State of Vermont, Agency of Natural Resources, Department of Forests, Parks and Recreation

Ellen Hunman
Witness

[Signature]
Duly Authorized Agent

STATE OF VERMONT
COUNTY OF Washington, SS.

At Waterbury, Vermont on this 26th day of July, 2000, personally appeared Conrad Motyka, duly authorized agent of the State of Vermont, Agency of Natural Resources, Department of Forests, Parks and Recreation, and he acknowledged this instrument, by him sealed and subscribed, to be his free act and deed and the free act and deed of the State of Vermont, Agency of Natural Resources, Department of Forests, Parks and Recreation.

Before me, Ellen R. Hunman
Notary Public
My Commission Expires: February 10, 2003

IN THE PRESENCE OF:

Vermont Housing and Conservation Board

[Signature]
Witness

[Signature]
Duly Authorized Agent

STATE OF VERMONT
COUNTY OF WASHINGTON, SS.

At Montpelier, Vermont on this 24th day of July, 2000, personally appeared Lawrence W. Mires, duly authorized agent of the Vermont Housing and Conservation Board, and he acknowledged this instrument, by him sealed and subscribed, to be his free act and deed and the free act and deed of the Vermont Housing and Conservation Board.

Before me, [Signature]
Notary Public
My Commission Expires: February 10, 2003