

**COUNTY OF BARRHEAD NO. 11**  
**PROVINCE OF ALBERTA**  
**BY-LAW NO. 2-98**  
**THUNDER LAKE AREA STRUCTURE PLAN**

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**A BY-LAW OF THE COUNTY OF BARRHEAD NO. 11**, in the Province of Alberta, to be known as the County of Barrhead No. 11 Thunder Lake Area Structure Plan.

**WHEREAS** Section 633 of the Municipal Government Act, Chapter M-26.1, R.S.A. 1994 and amendments thereto authorizes the Council of a municipality to enact an Area Structure Plan.

**NOW THEREFORE** the Council of the County of Barrhead No. 11, in the Province of Alberta, duly assembled, enacts as follows:

1. That this Bylaw may be cited as the "Thunder Lake Area Structure Plan".
2. That the text and accompanying maps and charts become the Thunder Lake Area Structure Plan.
3. This Bylaw shall come into force and have effect from and after the date of third reading thereof.

FIRST READING GIVEN THIS 3RD DAY OF MARCH, 1998.

  
REEVE

  
COUNTY MANAGER

SECOND READING GIVEN THIS 7TH DAY OF APRIL, 1998.

  
REEVE

  
COUNTY MANAGER

THIRD AND FINAL READING GIVEN THIS 5TH DAY OF MAY, 1998.

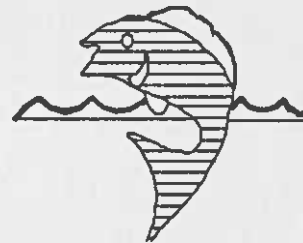
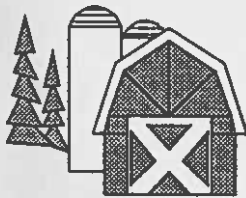
  
REEVE

 SEAL  
COUNTY MANAGER

*The County of Barrhead*

THUNDER  
LAKE

*Area Structure Plan*



New Era Municipal Services  
April 1998

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## **PART I - INTRODUCTION**

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### **1.1 PURPOSE**

This Area Structure Plan represents the stated preferences of the County of Barrhead as represented in part by a Committee for the Area Structure Plan of Thunder Lake. The policies in this document are to be used as a basis for the review of all future subdivision and development applications within the Plan area. The Plan is not intended to represent all the policies of all levels of government, however, it is hoped they will acknowledge and abide by this document wherever possible.

### **1.2 PLAN PROCESS**

The Council of the County of Barrhead requested New Era Municipal Services to undertake the preparation of an Area Structure Plan for Thunder Lake in 1996. New Era Municipal Services worked with a steering committee for Thunder Lake and the County of Barrhead and New Era initiated a survey of landowners in the Thunder Lake drainage basin to collect opinions and information regarding the land and people. Meetings were held in the autumn of 1996 in order to gather information from the residents about the direction they would like to see the Area Structure Plan take. Governmental agencies were contacted such as Statistics Canada, Alberta Environment, and Alberta Agriculture, Food and Rural Development in order to get a firm understanding of what the basic physical structure of the land, water, and wildlife are like.

Using the input received from the various sources, a Draft Plan was compiled and presented to the steering committee and the County of Barrhead for review and circulation. A subsequent meeting delineated problems with and additions to the Draft Plan. The final plan was then drafted and forwarded to Council to consider adoption of it as an Area Structure Plan as provided under Section 633 of the Municipal Government Act.

The Area Structure Plan's boundaries have been incorporated into the County of Barrhead's Land Use Bylaw No. 04-98, and as such, are certain to be used in the subdivision and development processes of the County of Barrhead's day-to-day operations.

Any amendments to the Area Structure Plan should be formally introduced to Council with any necessary supporting documents and maps. Council may consider the amendment as a bylaw amendment with the same procedures and readings as any other bylaw amendment.

It is hoped that this Area Structure Plan is effective in reaching its objectives and meets with the approval of the residents of the County of Barrhead.

### 1.3 PLAN AREA

The Plan area includes the watershed area of Thunder Lake (as determined in *The Atlas of Alberta Lakes*), including, in their entirety, all quarters which are in this watershed. See Maps 1 and 2 to determine the extent of the plan area. The reason for composing the plan area in this manner is to ensure that all, lands which could potentially affect the health of the lake, are included in the Plan

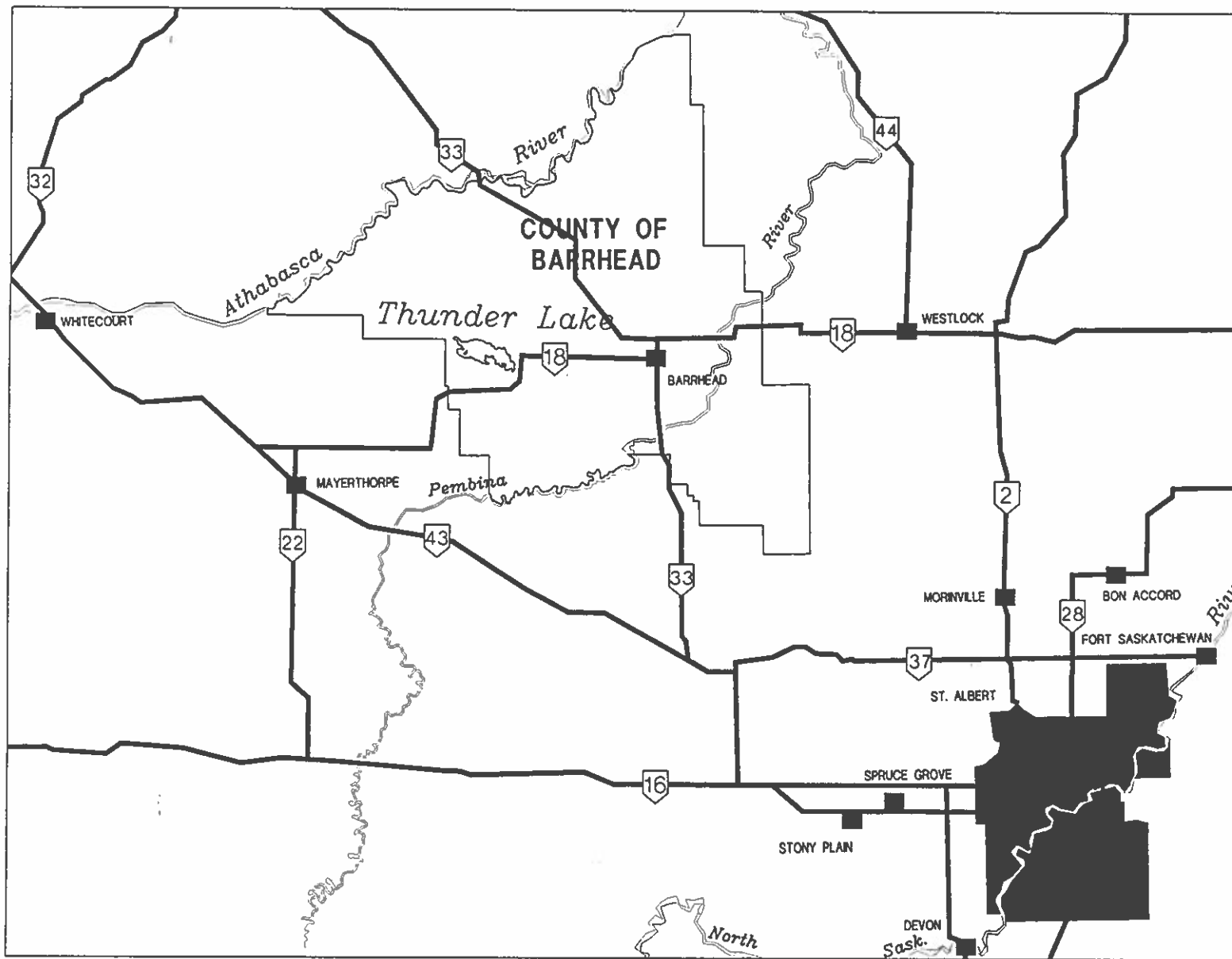
### 1.4 DEFINITIONS

All definitions for this document shall be in accordance with those previously defined in the Municipal Government Act, the County of Barrhead Municipal Development Plan, and the County of Barrhead Land Use Bylaw.

### 1.5 ACKNOWLEDGEMENTS

The Council of the County of Barrhead wishes to thank the volunteer committee, administration and referral agencies for their hard work and diligence in completing this project. Some of these individuals are listed below.

<i>Thunder Lake ASP Steering Committee</i>	<i>County Administration</i>
Joyce Venables Peter and Kay McAnally Kristina White Lorrie and Debbie Jespersen Dennis Schmiedge Bruce and Sandy Russell Arnold Sveen Fred Buck and Rosemary Ralph Jack Kinnaird	Manager Dave Dmytryshyn Development Officer Rick Neumann Former Managers Dale Erbach and Doug Tymchyshyn  <i>Others</i> George Joseph, Alberta Environmental Protection Pat Mitchell, Alberta Environmental Protection Ken Kroetsch, Thunder Lake Provincial Park Brian Bonik, Alberta Public Lands Bob Buchanan, Alberta Transportation



# THUNDER LAKE

AREA  
STRUCTURE  
PLAN

## MAP 1: CONTEXT MAP

## LEGEND

- City or Town
- Highway
- ~ River
- ⬡ Lakeshore

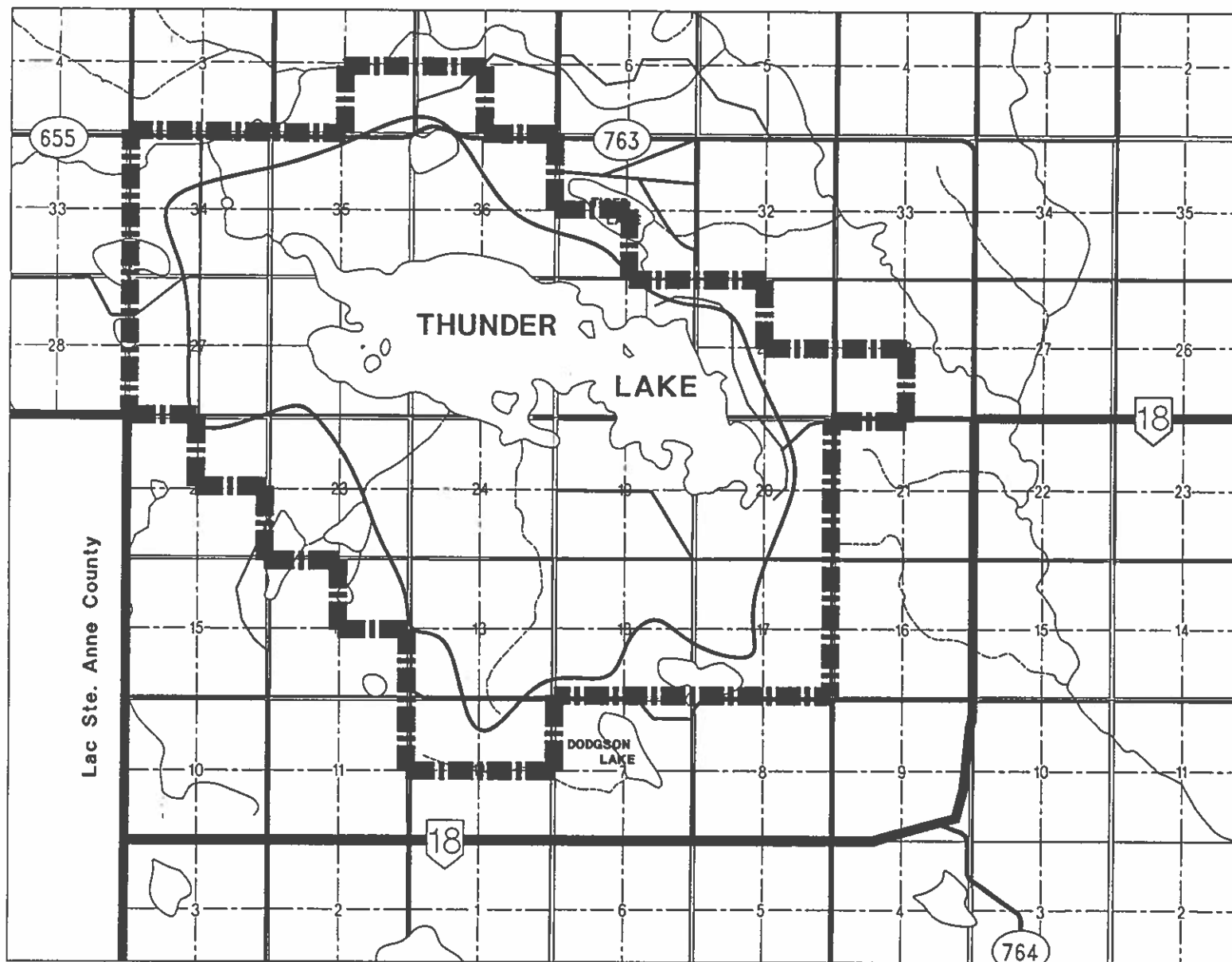
SOURCE: Alberta Environmental Protection

DATE: Feb. 12, 1998

SCALE: 1:700,000



**New Era**  
Municipal Services



# THUNDER LAKE

AREA  
STRUCTURE  
PLAN

## MAP 2: PLAN AREA

### LEGEND

- County Border
- Primary Highway
- ASP Boundary
- River
- Lake

SOURCE: Alberta Environmental Protection  
DATE: June 24, 1997  
SCALE: 1:750





## **PART 2 - AREA STRUCTURE PLAN GOALS & OBJECTIVES**

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### **2.1 OBJECTIVES**

Development of this Plan was undertaken as a response to, and preparation for, possible overuse of the land and water of the Thunder Lake drainage basin. The demand for use of the lake surface as a recreational resource, the demand for use of the land for multi-parcel accommodation, and the existence of currently heavy use of the land and resources by existing residents, wildlife, and vegetation have created pressures on the environment. These pressures are to be investigated and analysed by this Plan in order to create satisfactory development policies.

Many factors are at play in the health of this lake. Thunder Lake is "eutrophic"<sup>1</sup>, which means that the amount of mineral and organic nutrients has reduced the dissolved oxygen, producing an environment that favours plant over animal life. Due to the land use practices in the lake's drainage basin, Thunder Lake could be susceptible to higher levels of nutrients (such as nitrogen and phosphorus) which could potentially accelerate the eutrophication process. One possible danger for Thunder Lake is that higher than normal levels of nutrients could further damage the lake, which suggests that the lake could be more susceptible than usual to effects such as weed growth, algal blooms and winterkills, activities which can consume valuable dissolved oxygen. Livestock manures and overdevelopment of the shoreline can both be harmful to the lake's overall health, as well as speedboats (which churn up the bottom of shallow lakes). Water diversions from the Little Paddle River begun in the 1950's may also have increased phosphate levels in the lake.<sup>1</sup>

The health of the lake also goes beyond these considerations to second-hand effects such as the destruction of fish and wildlife habitats, the devaluation of property, and reduced tourism. The lake also provides a sanctuary for many people who wish to enjoy the lake simply to get away from Barrhead, Edmonton, and other urban centres.

#### ***FIRST OBJECTIVE- ENVIRONMENTAL HEALTH***

*These things considered, it is therefore paramount that the health of the lake and the drainage basin which serves it be the primary objective in the creation of this Area Structure Plan.*

#### **SECOND OBJECTIVE – APPROPRIATE DISTRICTING**

But this is not the only matter we must consider. Issues of social, economic and legal concern must be included in our planning. The residents of the area and their rights are a

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<sup>1</sup> See also "1996 Alberta State of the Environment Report: Aquatic Ecosystems" Alberta Environmental Protection. Page 27 of that report lists Thunder lake as just within "hyper-eutrophic" status Pat Mitchell, limnologist with Alberta Environmental Protection, indicated that Thunder Lake has varied from year-to-year, season-to-season, and depending on criteria used. It is reasonable to assume that Thunder Lake is on the cusp of the eutrophic to hyper-eutrophic status.

primary concern. The plan is of no use if it removes the rights of landowners to work with, enjoy, and profit from their respective properties. A second objective of this Plan is to provide healthy alternatives to those persons whose lands are in particular districts. By identifying problems and outlining the options available to the consumer as solutions, the plan can safely accommodate both interests.

#### **THIRD OBJECTIVE – APPROPRIATE LAND USES**

The County of Barrhead also encourages development of its lands insofar as the plan for the lands is in the best interests of all County residents and the County of Barrhead's place in the environment. Thus, a third objective of the Plan is to suggest what areas are most suitable for development and district those lands accordingly. The safest option is always the most profitable option, because the lake, as a public resource, is the prime factor in the value of most of the plan's properties.

#### **FOURTH OBJECTIVE – REFERRALS AND CONSULTATION**

There is also the matter of balancing the public good against private interests. The legal aspect of such a Plan is to ensure that all development is done in a setting of public awareness, and that no public territory is infringed upon by the unauthorized actions of a single individual. The legal means of permitting and assessing proposals is a fourth objective of this Area Structure Plan.

## **2.2 PLAN GOALS**

In examining this, we can summarize the goals of the plan as follows:

- To preserve and enhance the natural environment, and control any activities which contribute to environmental degradation of the watershed and lake;
- To maintain and improve the quality of the recreation experience for all lake users;
- To promote the safe responsible recreational use of the lake's natural resources;
- To ensure Thunder Lake remains a public resource that is accessible to the public;
- To develop an efficient land use strategy which minimizes social, environmental and infrastructure costs;
- To recognize and promote the important interrelationships between lake users, residents, the County of Barrhead and other government bodies.

## PART III - EXISTING CONDITIONS REPORT

### 3.1 THE LAKE

Thunder Lake is an attractive recreational lake located in the County of Barrhead. It is situated approximately 22 km west of the Town of Barrhead and 130 km northwest of the City of Edmonton. Thunder Lake Provincial Park, on the northeast side of the lake, can be reached by Highway 18 from Barrhead (Map 1).

The lake's name is a translation of an Indian word that described the loud thundering sound made by the lake's ice cracking in winter.<sup>ii</sup> The area between Thunder Lake and Barrhead was settled between 1900 and 1910. The railroad brought a new wave of settlers to the area surrounding Thunder Lake, but rugged topography and poor farmland discouraged much development near the lake. The first cottage development at the lake was started in 1958, and at present, Lightning Bay, Thunder Lake and Summerlea communities are situated on or near the southeast shore.

Algae turns the water in Thunder Lake green during summer and aquatic vegetation grows around much of the shoreline. During winter, levels of dissolved oxygen frequently become critical for the fish population, and winterkills have occurred several times since the late 1960s. The lake has been stocked with northern pike and yellow perch, and these species provide a popular sport fishery.

**TABLE 1: COMPARISON WITH OTHER LOCAL LAKES**

Lake	Area (sq.km)	max.depth(m)	basin area (km)	River basin	trophic status
THUNDER	7.03	6.1	20.7	Athabasca	Eutrophic
LA NONNE	11.80	19.8	277.0	Athabasca	Hyper-eutro.
SANDY	11.40	4.4	48.4	North Sask.	Hyper-eutro.
ISLE	23.00	7.5	246.0	North Sask.	Hyper-eutro.
NAKAMUN	3.54	8.0	44.9	Athabasca	Hyper-eutro.
LESSARD	3.21	6.0	9.3	Athabasca	Eutrophic
STE. ANNE	54.50	9.0	619.0	North Sask.	Eutrophic

Source: Atlas of Alberta Lakes

As seen in Table 1, Thunder Lake is a relatively small and shallow lake. It also has a relatively small drainage basin compared to other lakes in the area. The lake has a perimeter of 24 km not including islands. Its surface area is approximately 703 hectares.

Most of the inflow to the lake enters via a diversion ditch that connects the northwestern corner of the lake with what is locally known as Little Paddle Creek, a tributary of the Paddle River. The diversion and associated control structure with stop-log bays, which is situated on Little Paddle Creek, was constructed in 1950 by Ducks Unlimited and the provincial government to divert floodwater into Thunder Lake. The purposes of the diversion were to prevent flooding along the Paddle River, raise the water level of the lake and increase waterfowl production areas. In 1986, Alberta Environment built a second control structure. It is situated on the diversion ditch near the ditch's diversion

point from Little Paddle Creek. This structure allows control of the amount of water flowing into Thunder Lake. Water diversion is controlled by Alberta Environmental Protection, which is also responsible for maintenance of the two structures.<sup>iii</sup>

## **3.2 THE LAND**

Thunder Lake's drainage basin covers an area of about 21 square km and is only three times the size of the lake. The land in the watershed is primarily gently rolling (6 to 9% slopes). According to the Atlas of Alberta Lakes, there is a large area of organic soil to the south of the lake, but this fact is only partially supported by the Canada Land Inventory for Agriculture which describes this area as having a 10% mix of organic (O) soils. The land, nonetheless, is not highly rated for agriculture. Large areas east and southwest of the lake are rated as pasture and woodland, and the land to the south is rated as mainly poor to fair for agriculture. In some areas to the north, however, the agricultural rating is fair to good.

Much of the land south of the lake is forested, but most of the native vegetation to the north of the lake has been destroyed by land clearing and fires. The main tree species are varieties of poplar. Jack pine, black spruce, willows and other trees also grow in the area.

## **THUNDER LAKE PROVINCIAL PARK**

Local residents used Thunder Lake for recreational purposes for many years, and in 1951, they petitioned the provincial government for a park. That same year, the Barrhead Kinsmen cleared a beach at the lake, and in 1958, the province established Thunder Lake Provincial Park, partially in response to demands for subdivision. (Atlas of Alberta Lakes)

The Park houses 127 campsites, a group use area, beach, horseshoe pits, boat launch, walking trails, showers and other amenities. The Park is well used and very popular. The Park also serves as a popular destination for birdwatchers looking for the various eagles, herons, grebes and cormorants that nest or feed at the lake.

## **3.3 THE PEOPLE**

The community around Thunder Lake consists of the small communities of Thunder Lake, Lightning Bay Resort and Summerlea. Beyond these areas there are a number of farms around the lake, many of which are inhabited, and many of which support livestock.

Most of the current residents have lived in the area for a long time. This is particularly true of the farm residents and the residents of Thunder Lake. Most of the residents in the subdivided areas use their property as a summer home rather than as a permanent residence. The people who have moved to the area appreciate the tranquil beauty of the lake and enjoy the proximity to nature but also appreciate the fact that Thunder Lake is

close to both the Town of Barrhead and the City of Edmonton. The residents also seem to be very satisfied with commercial services available in nearby Campsie.

Including all lots and condominiums in the 3 subdivisions, 268 country residential units are present in the Plan area. This can be added to the 127 camping sites at the park to get a sense of the number of "recreation units". The overcrowding of the lake is beginning to be felt among the people. Most residents report that the lake and beaches are very busy or too busy on a holiday weekend.

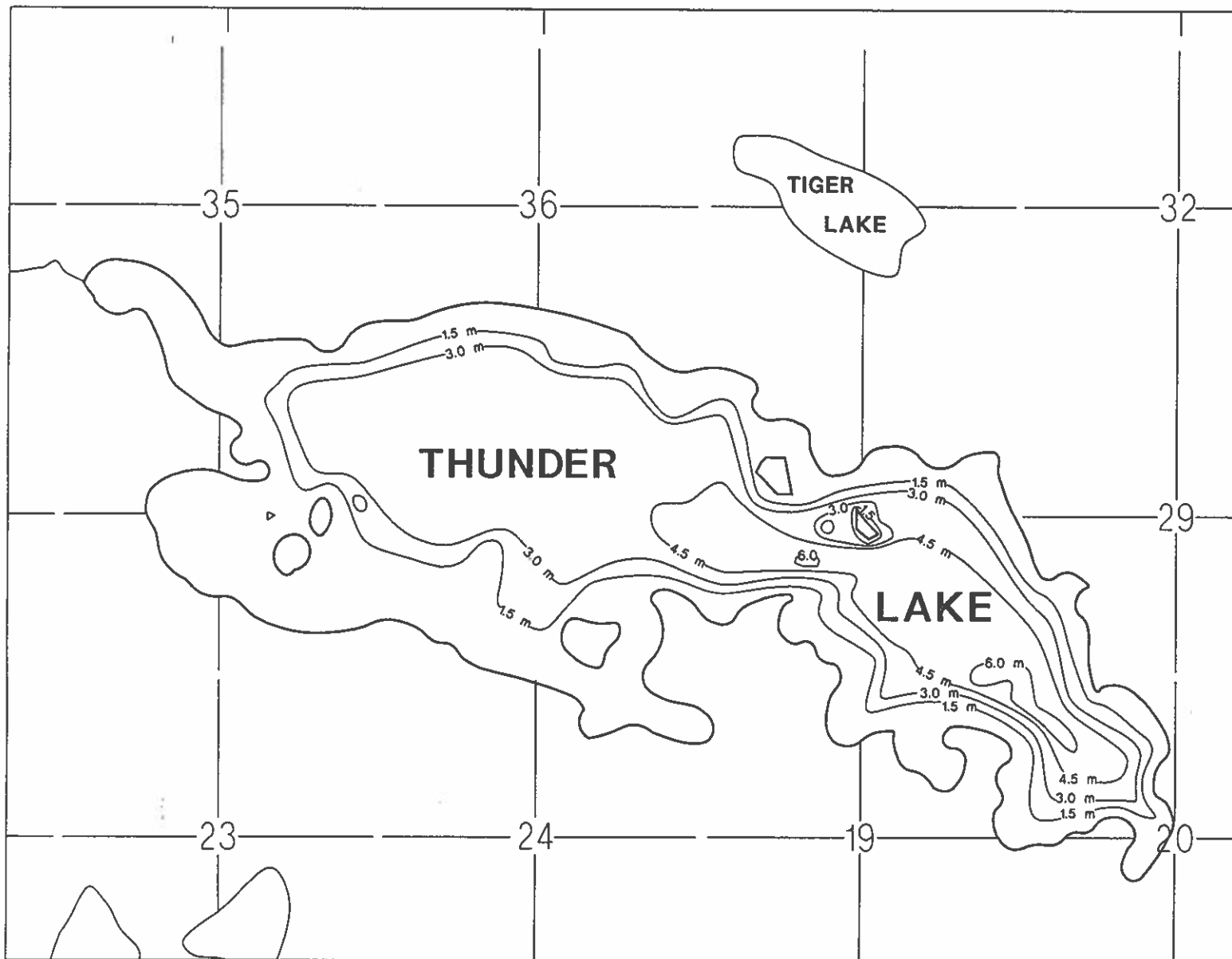
It is difficult to pinpoint the population of the Plan Area due to the fact that many residents are not permanent and due to the census enumeration procedures. Needless to say, it is not unlikely that as many as 1000 people could be at the lake on a busy weekend.

Differences tend to exist between the different communities of people. The agricultural producers of the area do not tend to be prominent lake users or boat owners. Those people who live just off the lake, such as those at Summerlea, tend not to be quite as active at the lake as those who are living directly adjacent to a shoreline. Indeed, many lakefront residents tend to own more than one watercraft.

Most of the properties are quiet during the winter, except for the holiday season, when some residents re-visit their properties briefly. During this period, winter activities are as equally abundant as summer watersports, with snowmobiling and cross-country skiing being the main activities. Some concerns have been registered by landowners resulting from the increased number of snowmobiles who use the area and due to irresponsible behaviour on the part of some landowners, such as speeding and trespassing.

Currently, walking trail systems exist in both the Provincial Park and Lightning Bay. Should any proposals be submitted to construct or improve further trails, careful consideration should be given to potential problems that might arise from conflicting recreational uses. For example, with the continued increase in the numbers of snowmobilers using the area, conflicts may occur with cross-country skiers and hikers who use the trails in the winter.

The differences in opinion and lifestyle are evident in the responses to the surveys distributed by New Era. These surveys demonstrated that the different communities display different areas of concern in many regards, and this is part of what must be balanced in this Plan.







# THUNDER LAKE

AREA  
STRUCTURE  
PLAN

## MAP 3: BATHYMETRY

### LEGEND

-  Contour line
-  Quarter Section
-  River
-  Lakeshore

**SOURCE:** Atlas of Alberta Lakes  
**DATE:** Feb. 17, 1998  
**SCALE:** 1:1500





## **PART IV - MANAGEMENT PLAN CONSIDERATIONS**

### **4.1 BIOPHYSICAL ANALYSIS**

#### **4.1.1 WATER QUALITY**

Thunder lake is eutrophic and because it is shallow, it frequently mixes to the bottom during summer. Therefore, temperatures throughout the water column are either uniform or, during calm periods, slightly warmer at the top than on the bottom. Levels of dissolved oxygen are generally uniform from top to bottom as well. Thunder Lake often has a high algae content, thus, sediment oxygen demand from decomposing algae is high and concentrations of dissolved oxygen frequently fall to levels dangerous to fish health. In March 1985, a partial winterkill was reported." Many other years of partial winterkills are known to local residents.

#### **4.1.2 WATER LEVELS**

Since the early 1970s the water level at Thunder Lake has been relatively constant. The lake has fluctuated from approximately 653.8 metres to 654.5 metres (mean level) in this time. Thus, the mean water level has varied less than 2 feet over the past 25 years. This is not to say that at different times during a single year the water level has not varied significantly. Prior to 1970, water levels had been as low as 653.5 metres, more than 3 feet below levels recorded for 1996.

#### **4.1.3 VEGETATION**

Much of the land around Thunder Lake contains agricultural parcels. Many of the parcels have partial tree coverage. The non-cultivated land is covered predominantly by deciduous varieties of trees such as poplar and birch. Crown owned lands tend to be well covered by trees and vegetation, while farmland on the north shore tends to be cleared of vegetation right to the lakeshore. Some of the organic areas in the south tend to have a muskeg pattern of vegetation rather than full tree cover.

#### **4.1.4 FISHERIES**

Fish species in Thunder Lake includes northern pike, yellow perch, suckers, and brook stickleback. The lake is managed as a recreational fishery. Yellow perch were introduced in 1959 and subsequently stocked. Northern pike were stocked in the 1960s and 1970s. As mentioned above, a partial winterkill was recorded in 1985. Other partial winterkills were recorded in 1967/68 and 1988/89.

Sport fishing is quite popular at Thunder Lake. A creel survey in 1983 recorded a very high catch rate for perch (3.8 perch/angler-hour) and a low catch-rate for pike (0.05 pike/angler hour).<sup>\*</sup> As noted by the source, since the anglers were fishing for perch, and pike are seldom caught on perch lures and bait, the small catch of pike is not unexpected.

#### 4.1.5 WILDLIFE

Birdwatching at Thunder Lake is a popular hobby. Reading from the Atlas of Alberta Lakes, in 1982, a survey of the lake by Ducks Unlimited staff noticed a variety of birds. The more abundant ducks were Mallards, American Widgeons, Lesser Scaup, Blue-winged teal, Ruddy Ducks, Common Goldeneye and Ring-necked Ducks. Other birds sighted were Common Loons, Belted Kingfishers, Red-necked and Western grebes, Black Terns, Great Blue Herons, Double-crested Cormorants and California, Ring-billed and Bonaparte's gulls. In 1983, Alberta Fish and Wildlife Division staff counted 18 Great Blue Heron nests at the lake.<sup>v</sup> Records from Alberta Environmental Protection and comments from local residents have suggested that the Herons have been transient in their nesting locations, and that the Bald Eagles have been similarly sighted.

The population of mammals near the lake is small. Muskrats, and red squirrels have been known to inhabit the shoreline and bog areas around the lake. Coyotes and Black bears have been known to pass through the park. Beavers, moose and deer are also found in the Plan area.

#### 4.1.6 RECREATIONAL CAPABILITY

The Canada Land Inventory for Recreation suggests that most of the land in the Thunder lake drainage basin has moderately low capability for outdoor recreation. This classification suggests that some low total use could be comfortably sustained. However, the land directly adjacent to the east side of the lake has moderate to high capability for recreation uses and the "3" rating is among the highest shown by the map for the larger Barrhead/Whitecourt area. The "3" rating is described as "lands which have a moderately high capability for recreation" with regard to intensity of use, proximity to water, vantage points and suitability for camping, among other indicators.<sup>vi</sup> The Provincial Park and settlement areas are both contained within these lands. A small area to the far west of the lake has a low capability for recreation pursuits.

### 4.2 DEVELOPMENT CONSTRAINTS

#### 4.2.1 PHYSICAL

There are few physical constraints around Thunder Lake. The area has few steeper slopes and drains without a history of flooding. Additionally, there are only isolated patches of organic soil, which would indicate that many areas are suitable for construction. Relatively few water channels run into the lake though the Plan area and those that do exist are largely intermittent.

#### 4.2.2 ENVIRONMENTAL

Nesting birds in and around the lake create a development constraint as certain habitats should be maintained for the benefit of the rarer species such as bald eagles and great blue herons, both of which are sensitive to human disturbance during the nesting season. The lake front has also been both cleared and developed to an extreme in certain areas of the lake, raising the importance of preserving as much of the lake frontage as possible.



#### **4.2.2 ACCESSIBILITY**

The community is physically isolated and only one road serves as the path to a large number of properties. The community is often appreciative of this fact, though, as it tends to keep the amount of traffic and the speed of that traffic to a minimum. Primary highways running north and west from Edmonton via Barrhead and similarly south from Highway 43 quite comfortably service the access to the Plan area itself.

#### **4.2.3 ECONOMIC**

The continued insecurity of Summerlea residents over their investment in the bare land condominium is a paramount concern in developing this quarter. The high degree to which Lightning Bay and Thunder Lake are developed are a constraint insofar as the potential to develop is constrained by a higher demand for lots than supply.

### **4.3 EXISTING DEVELOPMENT**

#### **4.3.1 THUNDER LAKE**

Thunder Lake is approaching full development. Most of the preferred lots are developed to some degree. The community has some opportunity to expand or re-invent itself with particular roadway networks. Thunder Lake subdivision has approximately 119 small parcels of which approximately one-third are lakefront.

#### **4.3.2 LIGHTNING BAY**

Lightning Bay is almost completely developed. This subdivision is largely full and very little opportunity exists to expand it with a consolidated road network. There are 73 lots in Lightning Bay, approximately half of which are lakefront lots. Lightning Bay has larger residential parcels than does Thunder Lake. Lightning Bay is separated from Summerlea and Thunder Lake by Crown land on the south shore of the lake.

#### **4.3.3 SUMMERLEA**

The community of Summerlea is an 86 unit condominium development which is in early stages of development. Summerlea is the only community of the three not located directly adjacent to the lake. The residents of Summerlea have not developed their respective properties to their full extent. There is some concern in the community over the security that the residents have in their investment. The condominium appears to give the investors a false sense of ownership of land. For this reason, primarily, development on this quarter will likely proceed very slowly. It should be noted that less than half of the Summerlea properties are within the drainage basin, although all are in the Plan area.

The clearing of a proposed golf course still exists on the east side of Summerlea's quarter section. Any development of this golf course will be largely from scratch, as it becomes more and more overgrown each year. Any development of a golf course should be considered a new development and the ownership of such should be carefully considered in the context of the condominium association. The need for maintenance of a public or private access would be paramount in ensuring its viability.

#### **4.3.4 ROADWAYS**

Thunder Lake is serviced primarily by Highway 18, which runs to County roads which in turn lead to the lake. Secondary Highway 763 also runs north of the lake and is another common access route to Thunder Lake Provincial Park. Alberta Transportation has indicated that no new roadway development is scheduled for the Plan area, although maintenance and minor improvements are ongoing.

Many of the local roads are in very good condition. This is particularly true of the local road accessing Highway 18, which has an excellent all-weather surface. Some of the interior roads at Summerlea should be maintained as common property but, according to administration, end up being maintained by the County due to some apparent apathy from condominium owners.

#### **4.3.5 THUNDER LAKE PROVINCIAL PARK**

The park includes the three islands closest to the north shore of the lake. It is open year-round for day use, and from early May to mid-October for camping. There are three camping loops with a total of 127 sites, a group camping area, a sewage disposal facility, tap water, playgrounds, a change house, showers, a concession, picnic shelters, two swimming areas and beaches, two boat moorings and in areas such as designated swimming areas, all boats are prohibited. Hiking trails are groomed throughout the park.

### **4.4 FUTURE TRENDS AND PRESSURES**

#### **4.4.1 RECREATION AND TOURISM**

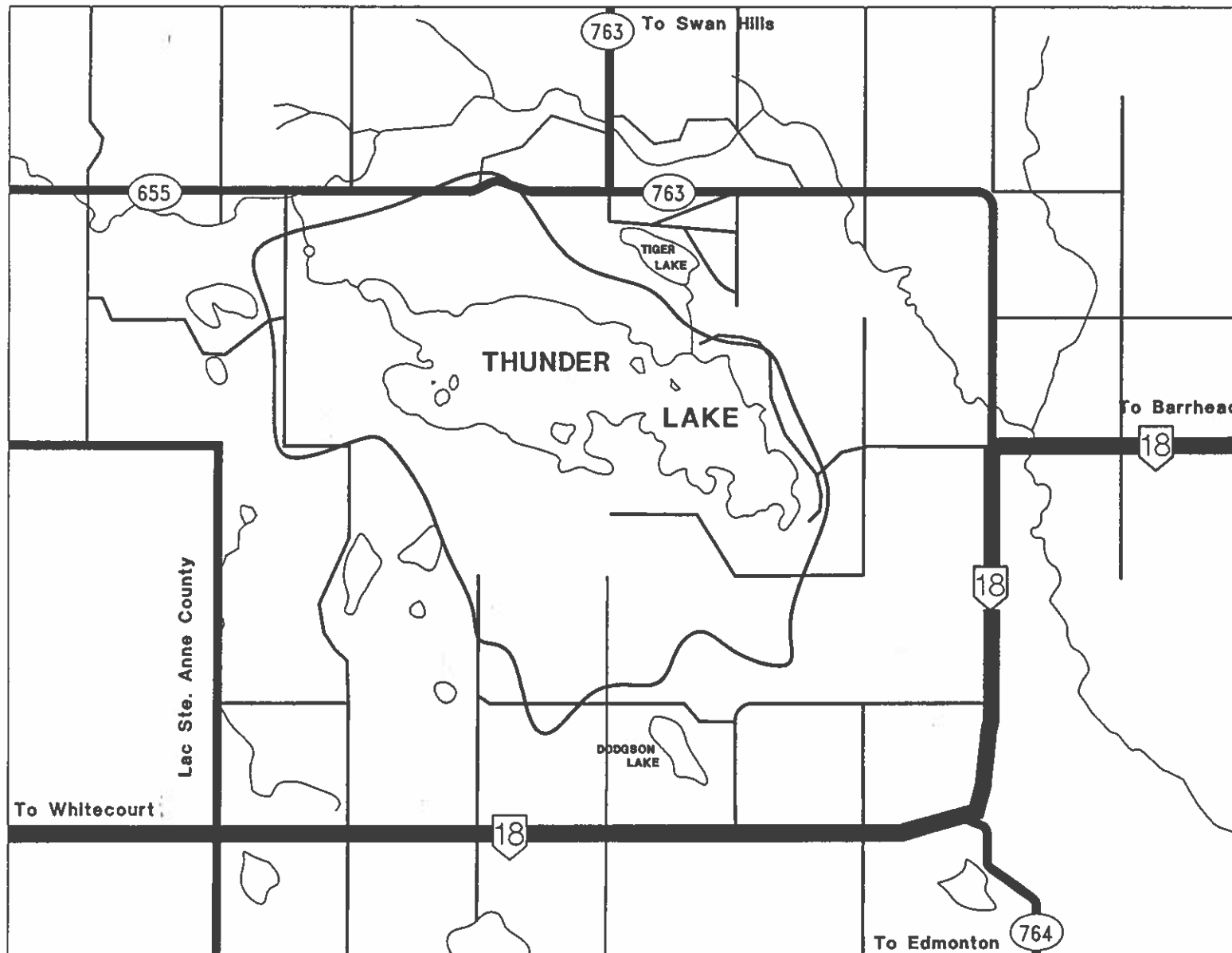
The beauty and tranquillity of Thunder Lake and its proximity to both Barrhead and Edmonton give it obvious tourist potential. The Provincial Park is the best outlet for this type of activity. The park is large and well serviced and also provides the community with a degree of security in terms of minimizing environmental hazards. The summer communities do not have much lake access or public land, which would make them tourist attractions. The residents do share their properties a good deal with friends and relatives which provides a certain tourism in itself, but there is no commercial development within the plan area to profit from this resource, regardless.

#### **4.4.2 ARCHAEOLOGICAL RESOURCES**

Alberta Community Development has outlined a number of sites of historic importance including prehistoric chipping stations and campsites. The community may also wish to outline a number of sites of local historic importance. Any development proposed for these sites should be carefully considered as damage to these sites may be an impediment to future tourism and community-building efforts. See Appendix "E" of this document for the specific locations and concerns of these community resources.

#### **4.4.3 SUBDIVISION AND DEVELOPMENT**

The potential for subdivision and development is the most obvious pressure and the primary focus for this plan. The concern is that overdevelopment will ruin the environment for everyone who lives in the Thunder Lake area, but that prohibiting development will underuse and unnecessarily devalue property.



# THUNDER LAKE

AREA  
STRUCTURE  
PLAN

## MAP 4: ROADWAYS

### LEGEND

- Primary Hwy
- Secondary
- Local Road
- Drainage Basin

SOURCE: Alberta Environmental Protection

DATE: Feb. 17, 1998

SCALE: 1:7500



**New Era**  
Municipal Services

## **SECTION V - LAND USE CLASSIFICATIONS**

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The Thunder Lake Area Structure Plan shall be divided into districts in preparation for subdivision and development. These districts and policies shall work in combination with the policies of the County of Barrhead Land Use Bylaw. Where a conflict between these policies and the Land Use Bylaw exists, this Area Structure Plan shall take precedence.

### **5.1 CR - COUNTRY RESIDENTIAL & RECREATION DISTRICT**

The purpose of this district is to identify areas which would be preferred sites for developing subdivisions for summer recreational dwelling and/or public or private recreational purposes. The subdivisions would be subject to further strictures of the County, but the concept of country residential dwelling is implicitly supported. The district does not forbid farming or similar activities, nor does it forbid the possibility of recreational facilities (i.e., campgrounds). Further, this district is to provide for land and activities in a setting appropriate to the needs of the residents. Any expansion of existing stocks of Country Residential & Recreation lands should be made by application for amendment to the Land Use Bylaw.

#### Permitted Uses:

- Single detached dwellings
- Accessory building/use
- Public utility and building

#### Discretionary Uses:

- Home Occupation
- Place of worship/cemetery
- Bed and Breakfast operation
- Garden Suite
- Home day care
- Private recreation facility
- R.V. parks and related development
- Community Recreation Service
- Other similar uses as approved by the Development Authority

#### Density Provisions

- See Appendix "B" of this Area Structure Plan

#### Lot Size Provisions

- Subdivision of CRR lands shall contain sites a minimum of 0.4 hectares (1 acres) in area and a maximum of 1.2 hectares (3 acres) in area, except where other sizes are appropriate to permit a parcel boundary adjustment.

#### Site Dimensions

- The minimum site width on any subdivided parcel shall be 46.0 m (150 feet).

#### Transportation Policies

- All subdivided parcels shall be serviced by local roads and shall be developed to the satisfaction of the County of Barrhead. Any roadways abutting the lakebed shall have an abutting row of trees on the lakeside planted to the satisfaction of the County of Barrhead.
- Roads shall be convenient, but individual subdivisions shall be physically isolated.
- The County of Barrhead may pursue dust abatement measures where necessary.

#### Sewage Policies

- All properties in this district shall adhere to the County of Barrhead's Sewage Bylaw. The County shall develop and enforce a Sewage Bylaw regarding the need for holding tanks as the only approved sewage system. This Sewage Bylaw shall be in accordance with all applicable Provincial legislation.

## 5.2 AG/C - AGRICULTURAL CONSERVATION DISTRICT

The agricultural zone identifies farmland and pastureland and suggests that such activities should be continued on these lands largely unhindered. The plan does state some limitations and alternatives for the farmer/rancher on such lands. Such limitations would be proximate to those found in the remainder of the County for similar activities. Farmers, recognizing that they reside in a lake's drainage basin are encouraged to pursue innovative farming techniques to ensure that the safe management of land and the water run-off thereof is maintained.

The district is intended to identify and conserve farmland and areas of agricultural production, to minimize conflicts between agricultural and non-agricultural uses, and to use agricultural land as a benefit to the overall health of Thunder Lake and the Plan Area.

### Permitted Uses:

- extensive agricultural development
- farmsteads
- mobile or modular homes
- public utility and associated buildings
- single detached dwelling
- accessory buildings for established primary uses
- miscellaneous uses associated with agriculture

### Discretionary Uses:

- agricultural support services
- home occupation
- bed and breakfast operation
- garden suite
- home day care
- place of worship/cemetery
- small farm development
- caretaker's residence
- public uses
- small animal breeding and boarding
- expansion of existing intensive agricultural operations
- other similar uses as approved by the Development Authority
- extensive livestock development

### Lot Size Provisions:

- Parcels in AG/C lands shall be a minimum of 32.4 hectares (80.0 acres) in area.
- Smaller parcels may be considered by the subdivision authority where necessitated for another approved use in this district.
- Smaller parcels may be considered by the subdivision authority where fragmented by a natural or physical barrier.
- Smaller parcels may be considered where an entire quarter section in this district is less than 160 acres in area due to the presence of a lake and/or lakebed.
- On no quarter section shall the County of Barrhead approve more than three (3) parcels in total.
- The County of Barrhead shall consider farmstead separations where the farmstead is the first parcel out of a quarter section, but shall look with discretion at farmstead separations where a parcel has already been separated. Farmstead separations shall be

a maximum of 1.2 hectares (3 acres) or enough to encompass existing development and shelterbelts.

#### Transportation Policies

- All subdivided parcels shall be serviced by approved roadways and shall be developed to the satisfaction of the County of Barrhead. Any roadways abutting the lakebed shall have an abutting row of trees on the lakeside planted to the satisfaction of the County of Barrhead.

#### Sewage Policies

- All residences shall be serviced by private sewage systems and shall maintain setbacks as required by the subdivision or development authority or any Provincial Regulation (e.g., Plumbing Code Regulation).

#### Intensive Livestock Policies

- While no intensive livestock operations are to be permitted, existing operations may continue subject to the Land Use Bylaw, Municipal Government Act, Code of Practice, and any other applicable document.

### 5.3 RUR/C - RURAL CONSERVATION DISTRICT

To identify lands of marginal productivity for agricultural, recreational or other purposes and of unsuitable subdivision and/or development potential; to further identify lands of environmental or ecological significance; to classify those lands as conservation areas and make effort to preserve them as such.

#### Permitted Uses:

- farmsteads
- single detached dwelling
- public utility and associated buildings
- mobile or modular homes
- accessory buildings for established primary uses
- small farm development
- extensive agricultural

#### Discretionary Uses:

- extensive livestock development
- agricultural support services
- small animal breeding and boarding
- home occupation
- bed and breakfast operation
- garden suite
- caretaker's residence
- place of worship/cemetery
- public use
- other similar uses as approved by the Development Authority

#### Lot Size Provisions

- Parcels in RUR/C lands shall be a minimum of 16.2 hectares (40.0 acres) in area.
- Smaller parcels may be considered by the subdivision authority where necessitated for another approved use in this district.
- Smaller parcels may be considered by the subdivision authority where fragmented by a natural or physical barrier.
- On no quarter section shall the County of Barrhead approve more than six (6) parcels in total.

#### Transportation Policies

- All subdivided parcels shall be serviced by approved roadways and shall be developed to the satisfaction of the County of Barrhead. Any roadways abutting the lakebed shall have an abutting row of trees on the lakeside planted to the satisfaction of the County of Barrhead.

#### Sewage Policies

- All residences shall be serviced by private sewage systems and shall maintain setbacks as required by the subdivision or development authority or any Provincial Regulation (e.g., Plumbing Code Regulation).



## 5.4 CL/C - CROWN LAND CONSERVATION

The purpose of this district is to provide guidelines as to what various Crown lands in the plan area are to be used for. The County of Barrhead's role in determining this is very limited.

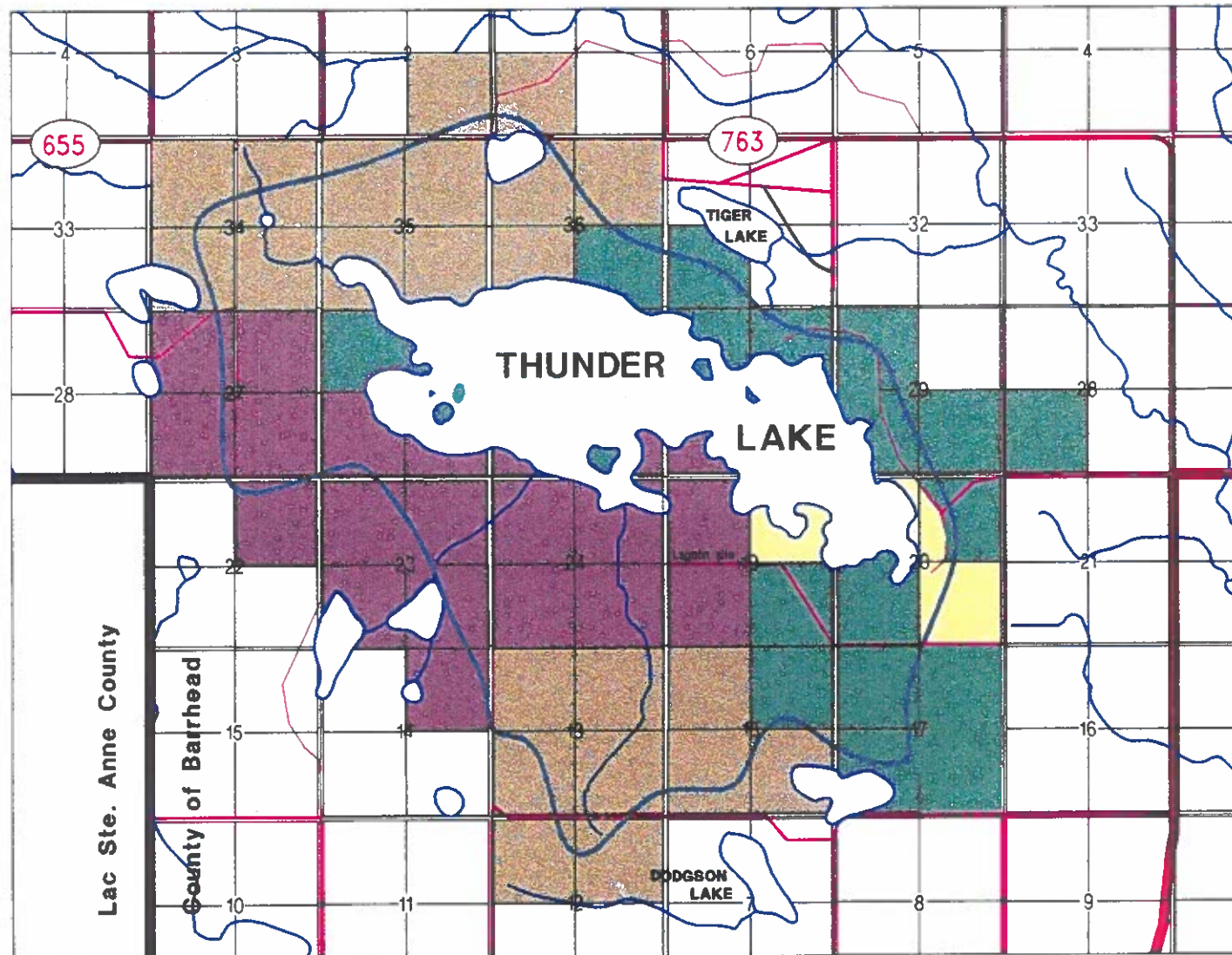
- The preferred uses of such areas shall be for low-density agricultural uses, passive recreation areas such as walking trails, cross-country skiing trails, and scenic observation areas.
- Subject to the concurrence of AEUB, uses associated with subsurface resource extraction may also be permitted.
- All land use and development shall conform to any standards or guidelines as established by Province of Alberta boards and ministries (departments).
- The County of Barrhead shall rely on the Province of Alberta for the maintenance of forests, management of wildlife and control of environmental alterations on Crown Land.

### Permitted Uses

- The permitted uses for this zone shall be those which accord with the intentions of the Provincial Department responsible for administering the lands. Where development permits are requested for this zone, the Development Authority of the County of Barrhead shall have full discretion in issuing permits.

### Disposal Policies

- The provincial government is encouraged to notify the County of Barrhead of the disposal of any Crown land.
- The County of Barrhead will require an amendment to this Area Structure Plan prior to any development occurring on disposed Crown Land.



# THUNDER LAKE AREA STRUCTURE PLAN

## MAP 5: LAND USES

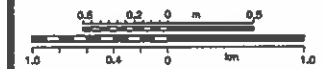
### LEGEND

- Drainage Basin
- Residential/ Recreation
- Agricultural Conservation
- Rural Conservation
- Crown Land
- River
- Lake

SOURCE: Barrhead City

DATE: Feb. 12, 1998

SCALE: 1:60,000



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Municipal Services



## **SECTION VI - GENERAL PROVISIONS**

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In addition to the districts created by this Area Structure Plan, the plan shall also set out general guidelines and referral processes. These guidelines are designed to work in combination with the Land Use Bylaw of the County of Barrhead. With any inconsistency between this Plan and the Land Use Bylaw, this Area Structure Plan shall take precedence.

### **6.1 ADMINISTRATIVE POLICIES**

#### **6.1.1 *RESERVE POLICIES***

- (a) All subdivision proposals on lands adjacent to Thunder Lake and other water bodies shall be required to include an adequate strip of reserve land between the proposal and the lakeshore. This reserve will be taken as environmental reserve in accordance with referral to Alberta Environmental Protection and additional land in this strip may be taken as municipal reserve to provide access, define property boundaries, preserve aesthetic character, or serve as a buffer between vital environmental reserve and developed areas. This reserve strip shall in no case be less than 10m (32.8 feet). In new Country Residential subdivisions, a minimum 30m (98.4 feet) environmental reserve strip shall be required along the lakefront.
- (b) Areas with extremely severe limitations to development, such as sloughs or bogs, shall be taken as environmental reserve at the time of subdivision.
- (c) Subdivision applications should make allowance for public access to the lakebed through reserves. Properly developed trails may be requested by the County of Barrhead where access is inadequate or hazardous to the general public.
- (d) Upon subdivision approval, the County of Barrhead should take municipal reserve land owing (as opposed to cash-in-lieu) wherever possible due to the need to protect areas of land for aesthetics and public use.
- (e) A mixture of natural and developed parks should be available to the residents of the higher density communities on reserve lands. Some effort should be made toward developing some parks within the CRR district for the use of families and persons of all ages.

### **6.1.2 RESUBDIVISION**

- (a) If an existing subdivision is to be resubdivided in a comprehensive manner, the applicant may be required to provide an Area Structure Plan or Area Redevelopment Plan at the request of the subdivision authority. This Plan shall be completed in accordance with and in respect to the Municipal Government Act and this Area Structure Plan.
- (b) Resubdivision will be subject to all present subdivision strictures and guidelines, though accounting for existing development where possible. Resubdivision shall further be subject to the municipal reserve policies of this Area Structure Plan. Where reserve has been taken prior to the formal designations of "environmental," "municipal," "school," and/or "municipal and school" reserve, the reserve totals shall be determined by the functional characteristics of existing reserve land.

### **6.1.3 ISLAND POLICIES**

- (a) The County of Barrhead shall make effort to establish all islands within Thunder Lake (and not currently under the control of the provincial government) as environmental reserves. No development shall be permitted on any island in Thunder Lake.

### **6.1.4 MUNICIPAL COOPERATION**

- (a) All applications for subdivision or development within SW 27-59-6-W5M shall be referred to Lac Ste. Anne County for comment.
- (b) Any amendment to this plan in any manner whatsoever should be referred to Lac Ste. Anne County for comment.
- (c) The County of Barrhead should monitor developments in other municipalities' Lake Area Structure Plans to periodically update and refine this Area Structure Plan.

### **6.1.5 ADMINISTRATIVE CLAUSES**

- (a) In case of conflict between this Area Structure Plan and the Land Use Bylaw, the Area Structure Plan shall take precedence. This Plan does not, however, supersede the County of Barrhead Municipal Development Plan.
- (b) The Council of the County of Barrhead shall amend the Land Use Bylaw to include this Plan in its Statutory Plan District.

- (c) Definitions for terms used in this Area Structure Plan shall be in accordance with the Land Use Bylaw of the County of Barrhead or other associated Act.

## **6.2 DEVELOPMENT POLICIES**

### **6.2.1 *WHARF, DOCK OR MOORING DEVELOPMENT***

- (a) The construction and/or placement of permanent piers, boat launches, boathouses, and other similar structures; permanent waterline installations into or beneath the lake, and other permanent structures that restrict public access to the bed and shore shall require authorization from Alberta Environmental Protection: Land Administration Division.
- (b) Any application received for any of the above shall be referred to Alberta Environmental Protection and Alberta Public Lands. The County of Barrhead shall strictly prohibit physical shoreline alterations except where approved by the aforementioned department.

### **6.2.2 *WATERFRONT DEVELOPMENT/SHORELINE MODIFICATIONS POLICIES***

- (a) Appropriate shoreline management practices shall be encouraged where modifications are undertaken, in order to maintain the natural integrity of the shoreline and avoid conflict with the Federal Fisheries Act.
- (b) Any application for Subdivision or Development on the waterfront of Thunder Lake which, in the opinion of the Subdivision or Development Authority, could potentially impact the water, bed and/or shore of the lake, shall be referred for specific comment regarding the same to Alberta Agriculture, Food and Rural Development and Alberta Environmental Protection

### **6.2.3 *AGRICULTURAL/LIVESTOCK POLICIES***

- (a) Livestock operators are encouraged to look for means of watering their stock that would minimize direct access of stock to the lake, lakeshore or watercourses which enter the lake.
- (b) Livestock operators should make effort to ensure that animal wastes do not enter the lake or watercourses which enter the lake.



- (c) Any application for development regarding the development or expansion of an intensive livestock operation shall be referred to Alberta Agriculture, Food and Rural Development.

#### **6.2.4 PROTECTED WILDLIFE POLICIES**

- (a) Any application for Subdivision or Development regarding lands which are suspected by the development authority to house the nesting grounds of any endangered species, either currently or periodically, shall be referred for specific comment regarding the same to Alberta Environmental Protection.

#### **6.2.5 HISTORICAL/ARCHAEOLOGICAL RESOURCES**

- (a) The County of Barrhead should take all precautions as necessary to ensure that sites of archaeological or historical significance remain undisturbed or are removed in a manner sufficient to the provincial government. The responsibility for removal of such sites shall be on the owner/developer.
- (b) The provision of historical markers for archaeological or historical sites shall be considered by the County of Barrhead at such time as deemed necessary by Council.
- (c) Any application for subdivision or development made for the lands shown on Map 7 shall be referred to Alberta Community Development for comment.

#### **6.2.6 ARCHITECTURAL POLICIES**

- (a) The design, siting, external finish and architectural appearance of all land and buildings in any district, including any accessory building or structure shall be to the satisfaction of the Development Authority. The design should protect or enhance the amenities of adjacent properties including views, vistas, and natural landscape features.
- (b) Lakefront properties should have an attractive appearance as per Section 6.2.6(a) from both adjacent roadways and the lake.

#### **6.2.7 PUBLIC ACCESS**

- (a) No further public access points shall be developed on Thunder Lake without amendment to this Area Structure Plan explicitly stating the location and design of, and need for, such accesses.

#### **6.2.8 RECREATION DEVELOPMENT**

- (a) In accordance with Section 5 of the Provincial *Land Use Policies*, a study may be requested by the respective authority in regard to any application for subdivision or development of a recreational development. Such study should address drainage, wildlife habitats, vegetation, and any other matters as required by the authority. The study shall make reference to applicable existing studies recognized by the County of Barrhead.
- (b) Intensive recreation development should not be permitted on land adjacent to the shoreline. Intensive recreation development are those which include facility development and/or generate significant, concentrated usership (e.g., golf courses).
- (c) Recreation Area developments should be designed in accordance with those guidelines set out in Appendix B.

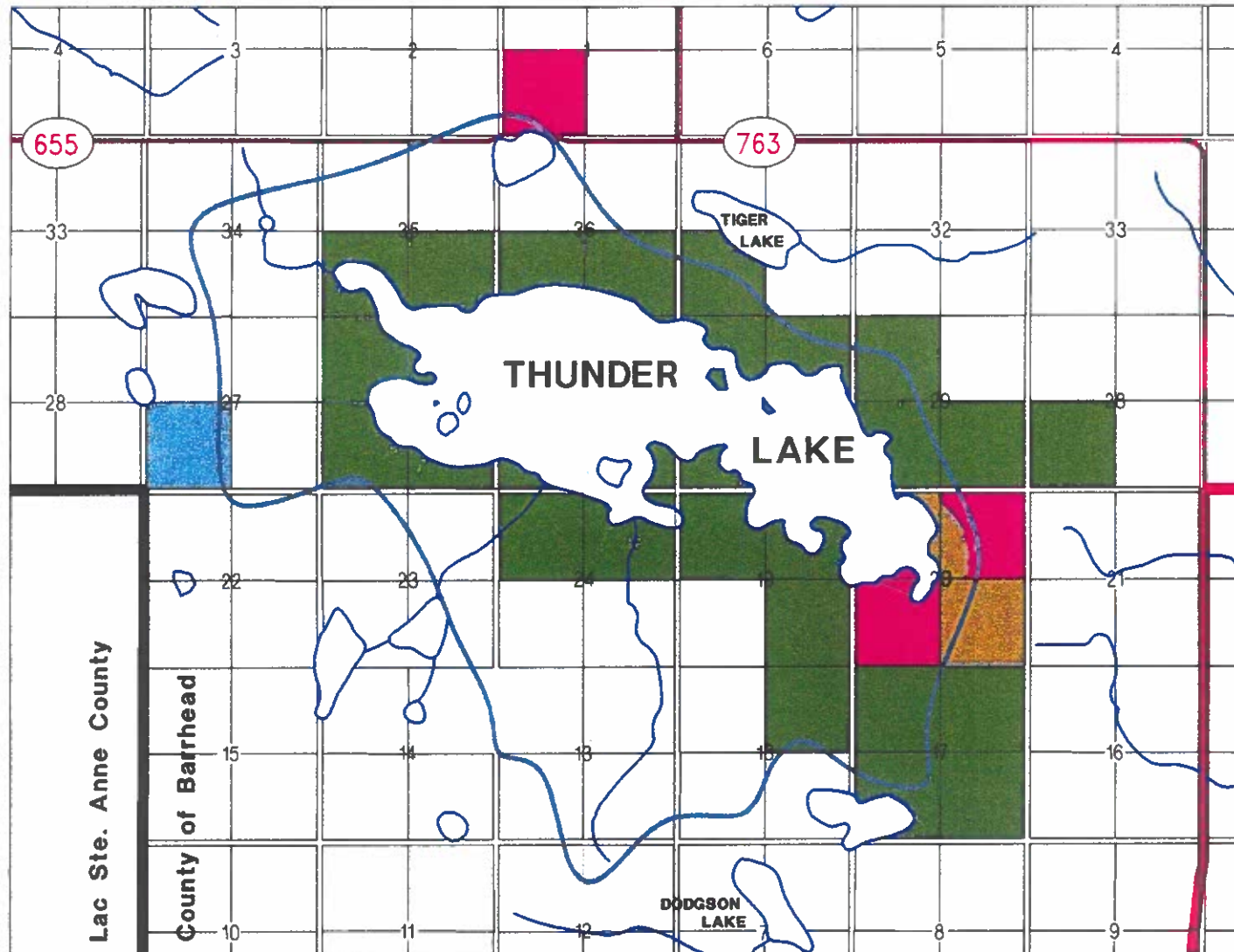
#### **6.2.9 CONDOMINIUM POLICIES**

- (a) Individual condominiums in the Plan Area shall be treated the same as conventional lots for the purposes of this Plan.
- (b) The subdivision authority may permit the subdivision of condominiums into conventional lot/block/plan (fee simple) ownership patterns.
- (c) Development Permits for condominiums in Summerlea are to be issued using borders as established in a condominium plan or as otherwise determined by the Development Authority.

#### **6.2.10 COMMERCIAL POLICIES**

- (a) Home Occupations shall be the only commercial use in the Plan Area (see Permitted and Discretionary Uses)
- (b) Commercial development proposals where not otherwise permitted shall require the introduction of an amendment to this Plan creating a new Land Use District prior to approval.





# THUNDER LAKE AREA STRUCTURE PLAN

## MAP 7: REFERRALS

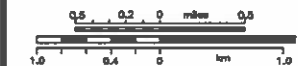
### LEGEND

- Drainage Basin
- Lac Ste. Anne County
- AB Community Development
- AB Public Lands (AB AF&RD)
- Both Above
- River
- Lake

SOURCE: Alberta Environmental Protection

DATE: Feb. 12, 1998

SCALE: 1:50,000



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Municipal Services

## **PART VII - APPENDICES**

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### **APPENDIX A - DESIGN REQUIREMENTS FOR RECREATION DEVELOPMENTS**

The purpose of these standards is to establish criteria for evaluating future campground and resort development proposals.

The minimum allowable size for a resort cabin or campground stall shall be 111.5 sq.m. (1200 sq.ft.)

1. Site considerations
  - 1.1. The development of roads, facilities and campgrounds should occupy no more than two-thirds of the proposed site, thereby leaving one-third in its natural state.
  - 1.2. The site should be designed and landscaped in order to minimize disturbance to the natural environment and to protect heavy use areas from damage.
  - 1.3. The site should be well drained and located in areas free of standing water.
2. Recommended Facilities
  - 2.1. Day Use and Overnight Campgrounds
    - 2.1.1. The minimum facilities include a central sanitary and water station, toilets, refuse containers, fire pits, and picnic tables.
    - 2.1.2. Other suggested facilities include individual electrical outlets and showers.
  - 2.2. Recreational Resort Facilities
    - 2.2.1. The minimum facilities include individual electrical outlets and water supplies, toilets, showers, refuse containers, picnic tables, boat trailer parking, group recreation facilities and cooking facilities.
    - 2.2.2. Other suggested facilities include individual water and/or sewer connections and laundry.
  - 2.3. Adequate lighting should be provided at the entrance to the campground and in public areas such as washrooms, etc.

- 2.4. An active play area should be provided.
- 3. Lakefront Campground/Resort Development
  - 3.1. All improvements made to the bed and shore of a lake including beach access, boat launches, swimming areas and vegetation removal shall be referred in detailed description with site planning to the Development Authority of the County of Barrhead and the applicable provincial departments as outlined in this document.
- 4. Waste Management
  - 4.1. The site shall be maintained in good repair and clean sanitary conditions.
  - 4.2. Sealed pump-out tanks shall be provided for sewage disposal.
- 5. Roads and Parking Facilities
  - 5.1. Roads shall have a good driving surface under all weather conditions.
  - 5.2. Parking is not encouraged on roadways but rather on individual camping sites or visitor parking areas. Storage for boat trailers and recreational vehicles shall also be provided. Some campsites should provide parking for two vehicles.
  - 5.3. Areas for tenting only shall be designated with appropriate signage as such and safely distanced from roadways.
    - 5.3.1. Minimum carriageway widths for internal roads should be in accordance with County standards.
    - 5.3.2. The use of cul-de-sacs should be limited and the provision for an adequate turning radius shall be provided. Where approved, cul-de-sac lengths should be kept to a minimum.

## **APPENDIX B - MAXIMUM DENSITY PROVISIONS AND CONTROLS**

While no upper limit of recreation units will be suggested by this Plan, the Plan recommends that no redistricting be permitted without careful consideration for density calculations and environmental information presented by the applicant in accompaniment of an application for either redistricting or Area Structure Plan.

No established rules exist as to what an appropriate density for lakefront and drainage basin development should be. Various plans use different means for determining this maximum degree of development. Some these are summarized below.

### **STURGEON LAKE AREA STRUCTURE PLAN**

In calculating the maximum number of recreation units allowed on parcels of land the following formula was used:

Number of Acres / Density Factor (13 recreation units) = Total Number of Units\*  
\* rounded to the closest whole number

A recreation unit was determined as follows: 1 county residence, 1 resort cabin, or 2 campground sites.

A maximum density was also calculated based on existing districting.

### **PIGEON LAKE MANAGEMENT PLAN**

Maximum number of cottages determined by miles of shoreline.

150 cottages per mile x total number of miles (11.25 miles) = 1.688 cottages

### **SANDY LAKE AREA STRUCTURE PLAN**

Maximum number of units determined by "developable land" x 24 units/quarter-section

### **MURIEL LAKE MANAGEMENT STUDY**

Maximum number of units determined by: lake surface area / peak # of lake users

### **NORTH BUCK LAKE / CHUMP LAKES ASP**

10 acres of lake surface / recreation unit (including camping and day use stalls)

### **PLAN OF MUSKOKA LAKES, ONTARIO**

Minimum of 60.0 m of lakefront per recreation unit.

As demonstrated above, various determinants are used to calculate "carrying capacity" including shoreline perimeter, lake surface area, developable land and/or number of peak time lake surface users among others. Thus far, the maximum size of parcel is the only index for calculating capacity used in this Area Structure Plan.

Thunder Lake has a relatively large amount of developable land and a relatively irregular perimeter due to the number of bays, islands and peninsulas. The bulk of the lake is also particularly shallow and this should also be considered in determining density. Additionally, due to the large number of users of the Provincial Park and the diversity shown in the surveys as to how many individuals use the recreational properties, it is almost impossible to determine how many peak time lake users exist.

All of this considered, it would seem that the most appropriate means of determining the maximum allowable density for Thunder Lake would be to use the lake surface area versus the total number of campsites, condominiums and recreation residential lots.

At present, there are 127 campsites at the Provincial Park, 86 units at Summerlea, 73 units at Lightning Bay, and 119 units at Thunder Lake subdivision. Counting the campsites as 0.5 recreation units, the total of these amounts to 341.5 units over a lake surface area of 703 hectares. This calculation suggests a current capacity of 2.06 hectares of lake surface area per unit. Using *any* of the interpretations suggested in the aforementioned plans, it may be suggested that Thunder Lake is already very near its carrying capacity. This notwithstanding, Summerlea and some of the campsites are located in the drainage basin and not alongside the lake itself. Furthermore, some of Summerlea's condominium units are not located in the drainage basin whatsoever (although they are included in the Plan area). Additionally, some development of prime recreation sites may be favourable to Council.

## APPENDIX C - AREA STRUCTURE PLAN COMMITTEE GOALS

Sept. 17, 1996

The following has been adapted from notes taken at a meeting of the Area Structure Plan steering committee. The notes were presented at a meeting in preparation for the writing of the Area Structure Plan.

### PUBLIC

- I. Maintain weir to keep a high water level thus providing a better water quality, maintaining a healthy fish population
- II. Allow areas to be developed as walking trails within environmental reserve
  - A. bed and shore 21'
- III. Maintain natural wildlife habitat by
  - A. marking and protecting nesting and breeding areas
    1. herons
    2. eagles
    3. grebes
    4. loons
  - B. Preserving natural areas
    1. suggestion: trading privately owned areas where eagles are nesting with publicly held land
- IV. Maintaining a tree buffer area to separate designated parcels of land that are being developed
- V. Provincial Park - development questioned as to what and where
- VI. Public input when leases renewed, e.g., rifle range
- VII. No random camping
- VIII. Subdividing agriculturally designated land for residential or public use be strictly regulated (re: number, size, type)

### PRIVATE

Future development approval be very definite about:

- I. Setbacks
- II. Buffer zones between development
- III. Environmental preserve of 300 feet from lakeshore
  - A. The provincial rule of 10% of acreage for environmental reserve be applied along shore.
- IV. Allow designated areas to provide suitable access to the lake
- V. Lots no smaller than three acres
- VI. Private areas have reasonable access to lake that meets the criteria required for crossing environmental reserve for a pier, etc.
- VII. Reasonable density - one permanent building and one guest house with approved services and building standard code
- VIII. Environmental Reserve
  - A. maintain natural shoreline
  - B. no cutting of vegetation along shoreline or in the water
  - C. no hauling in sand to build a beach

- D. failure to acquire a proper permit for pier and access be subject to a *steep fine*
- E. no dredging a channel in lake
- IX. Sewage Lagoons
  - A. properly maintained to properly service this area
  - B. checked regularly

#### RECREATIONAL USE

- I. these areas for use of the general public
- II. these areas must not interfere with quality of environment of areas and shall comply with environmental reserves
- III. designate space for activities such as dirt bikes, quads, ski-doo's, sea-doo's
- IV. it should be appropriate so as not to interfere with the quality of the environment and enjoyment of others

#### PLAN RENEW & AMENDMENTS

##### Implementation and Administration

- I. Encourage Provincial and Federal Government to have regard for provisions of this plan in the development of Crown Land, and in formulating of future plans and studies, policies and contracts within the Structure Area.
- II. Strict tests to be made to determine the adequacy of the lagoon
- III. No on site sewage disposal e.g., fields, leeching pools
- IV. No dumping of grey water on ground
- V. Ground water run off controlled with berms and terracing
- VI. The regulation of this plan
  - A. How to enforce and maintain
  - B. How to proceed re: permits, adhering to rules, infractions
- VII. The impact on the environment and services e.g., roads, schools, fire, etc.

#### COMMERCIAL

- I. No signage
- II. Not to attract traffic that causes a parking problem
- III. Away from lakeshore
- IV. Be country residential
- V. No heavy equipment
- VI. No storage sheds
- VII. Bed and Breakfasts

#### WILDLIFE

- I. Designate areas where eagles, herons, grebes, loons are nesting
- II. Maintain these areas as preserves
- III. Special Places 2000 may be a way of establishing the wildlife preserves
- IV. note suggestion on page 1

### AGRICULTURE

- I. Maintain high water level
  - A. cattle will not go into deep water to drink
- II. Types of agriculture be designated for vacant land parcels such as:
  - A. general: field crops, cattle grazing, dairy, hogs
  - B. no clear cutting
  - C. no new agricultural activities on agriculturally designated land to begin until it has been determined that such development will not cause an increase in odour, traffic, noise or pollution to the lake or the lakeshore
  - D. increase buffer zones of vegetation along the lakeshore where none presently exist



## APPENDIX D – HISTORICAL AND ARCHAEOLOGICAL CONCERNS

The following has been adapted from a reference to Alberta Community Development sent June 10, 1996. The Cultural Facilities and Historical Resources: Historic Sites and Archives Service is responsible for the production of the list.

### HISTORIC SITES

St. Joseph's Lutheran Church near Tiger Lily

NE 35-59-6-W5M

### ARCHAEOLOGICAL

Prehistoric Campsite

SW 29-59-5-W5M

Prehistoric Chipping Station

LSD 14-20-59-5-W5M

Prehistoric Campsite

SW 1-60-5-W5M

The Referral response adds:

"A considerable number of archaeological sites have been previously recorded within the planning area. This has been the result of cursory survey work conducted in and around Thunder Lake Provincial Park on the northeast shore of the lake. Other portions of the lakeshore would also possess high potential for additional finds but have not been examined. The presence of a single archaeological site in the raised features well north of the lake, but inside the planning area indicates that other features in the planning area have potential for the discovery of additional archaeological sites. These features would include heights of land and the margins of sloughs. Therefore, it is recommended that future development proposals be referred to this office for review."

\*The County of Barrhead is free to alter or add to the list at their discretion for the purposes of this Area Structure Plan.

## **APPENDIX E – CANADA LAND INVENTORY FOR RECREATION**

The following has been compiled from a the Canada Land Inventory for Recreation Map 83J “Whitecourt”. The Department of Energy, Mines and Resources (1971) prepared the maps which are commonly used by planners to assess appropriate land uses on a large scale.

There are seven general classes (1-7) of land listed in these maps. The Plan Area sees classes 3-7 present.

Class 3    MODERATELY HIGH CAPABILITY FOR OUTDOOR RECREATION

Class 4    MODERATE CAPABILITY FOR OUTDOOR RECREATION

Class 5    MODERATELY LOW CAPABILITY FOR OUTDOOR RECREATION

Class 6    LOW CAPABILITY FOR OUTDOOR RECREATION

Class 7    VERY LOW CAPABILITY FOR OUTDOOR RECREATION

In addition to the seven general classes there are 25 subclasses, seven of which are found in the Plan Area. They are listed as follows:

Subclass A    Land providing access to water affording opportunity for angling or viewing of sport fish.

Subclass E    Land with vegetation possessing recreational value.

Subclass N    Land suited to family or other recreation lodging use.

Subclass O    Land affording opportunity for viewing of upland wildlife.

Subclass P    Areas exhibiting cultural landscape patterns of agricultural, industrial or social interest.

Subclass W    Land affording opportunity for viewing of wetland wildlife.

Subclass Y    Shoreland providing access to water suitable for popular forms of family boating.

The map of the Plan Area’s CLI for Recreation Capability follows on the next page.

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endnotes

<sup>i</sup> Ollerenshaw, John "Dead Lakes?" Town and Country. (November 17, 1997) Page 4b.

<sup>ii</sup> Holmgren, E.J. and Holmgren, P.M. Over 2000 Place Names of Alberta. (Saskatoon: Producer Prairie Books, 1976).

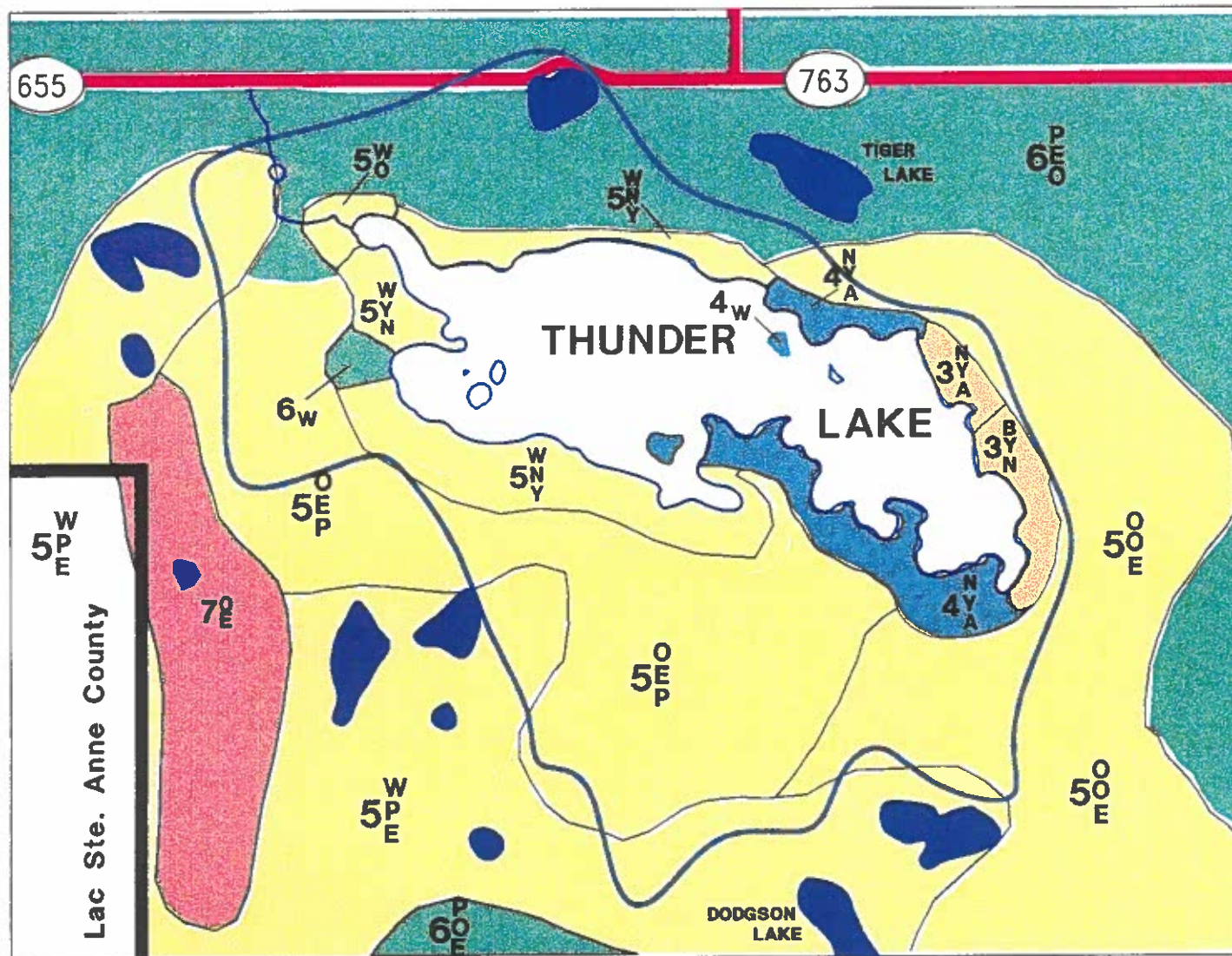
<sup>iii</sup> Crosby, J.M. et al, Atlas of Alberta Lakes. (Edmonton: University of Alberta Press, 1990).

<sup>iv</sup> Ibid., pp 212.

<sup>v</sup> Ibid., pp 214.

<sup>vi</sup> Bradford, M.E. in Atlas of Alberta Lakes, pp. 214.

<sup>vii</sup> Department of Regional Economic Expansion. Land Capability for Recreation: Canada Land Inventory. (Ottawa, 1971)



# THUNDER LAKE

AREA  
STRUCTURE  
PLAN

MAP 8:  
CLI (Recreation)

## LEGEND

- Class 3
- Class 4
- Class 5
- Class 6
- Class 7
- Lake

SOURCE: Canada  
Land Inventory, 1979  
DATE: March 31, 1998  
SCALE: 1:7500



**New Era**  
Municipal Services