Amisk-Atik
Integrated Forest Land Use Plan

Background Document

Saskatchewan
Environment

Amisk-Atik IFLUP - Background Document

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CHAPTER 1: INTRODUCTION TO THE BACKGROUND DOCUMENT

The Amisk-Atik Integrated Forest Land Use Plan consists of the following three separate documents: (1) the Background Document; (2) the Management Plan; and (3) the Appendices.

1.1 Purpose of the Background Document

The purpose of this Background Document is to provide a basic description of the Amisk-Atik Planning Area and the land use planning process that has taken place. General information is presented to describe the natural, heritage, and recreational resources, as well as the infrastructure and socio-economic characteristics of the Amisk-Atik area. A brief overview also highlights the local, provincial, and federal government organizations, legislation, policies, and by-laws that affect the management of the area's provincial crown land and resources.

The Amisk-Atik Planning Area covers almost 4.4 million hectares of forested land in northern Saskatchewan (See Figure 1-1). The name, "Amisk-Atik", reflects both the geography of the region and the strong traditional ties of Aboriginal peoples to the planning area. "Amisk" is the Cree word for "beaver" and refers to Amisk Lake located in the southern portion of the planning area. "Atik" is the Cree name for "reindeer" and provides a reference to Reindeer Lake situated in the north.

Saskatchewan's northeastern provincial forests are more than just a collection of trees. These forested lands provide environmental, social, and economic benefits to area residents and also the larger populations of Saskatchewan's Northern Administration District and that of the province as a whole. To some individuals, these forests are a place to enjoy nature and participate in recreational activities such as camping, hiking, fishing, and hunting. To others, especially the residents of the planning area, these forest resources are a mainstay to a traditional Aboriginal lifestyle and play a key role in the ongoing existence of northern communities and the development of the regional economy. Increased demands on these resources call for improved ways of managing and protecting northern forests. A more integrated approach for the management of forested lands is required.

Amisk-Atik Planning Area

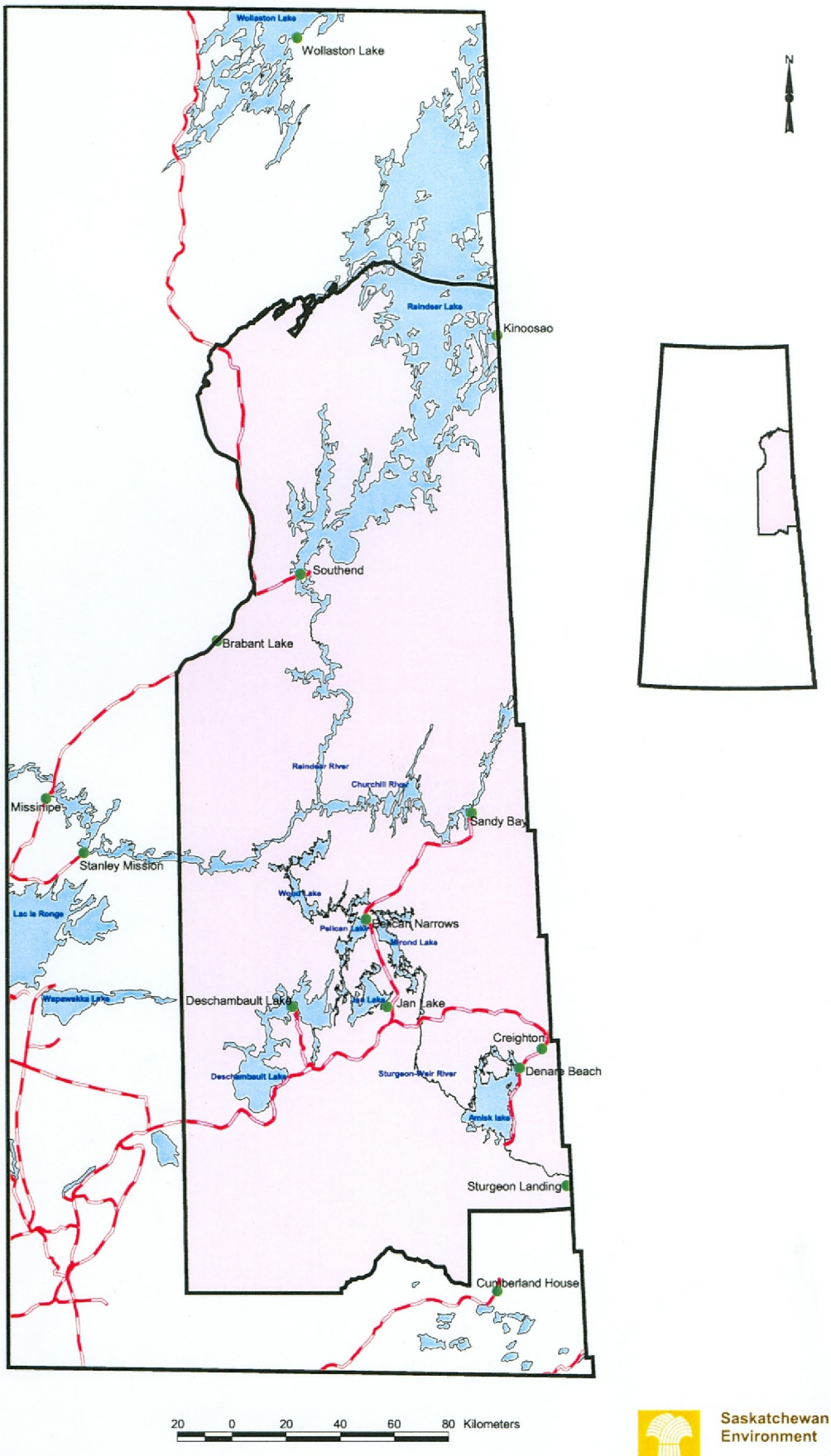

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Figure 1-1

1.2 Background Document Format

This Background Document has been organized according to the following sections:

Chapter 1: As an introductory section, Chapter 1 is intended to provide a general overview of both the Amisk-Atik Integrated Forest Land Use Plan and this Background Document. This chapter also provides a brief discussion of the relationship of integrated land use planning to forest economic development initiatives. An introduction is also provided to the public involvement process used to assist in the development of the land use plan.

Chapter 2: This chapter provides a general description of the land and renewable and nonrenewable resources found in the Amisk-Atik Planning Area. A brief overview is provided of the forest, vegetation, fish and wildlife, geological, water, and archaeological resources that characterize the area. The regional climate and provincial recreation sites and other designated areas in the planning area are also highlighted.

Chapter 3: The values and uses of the various resources of the Amisk-Atik Planning Area are discussed in Chapter 3.

Chapter 4: This chapter presents the population dynamics and natural history of the Amisk-Atik Planning Area.

Chapter 5: An overview of the provincial and federal government departments and agencies responsible for natural resource management and land use in the planning area is presented in Chapter 5.

Chapter 6: This final chapter provides a detailed description of the planning and public involvement processes followed to assist in the development of the Amisk-Atik Integrated Land Use Plan.

1.3 The Purpose of the Amisk-Atik Integrated Forest Land Use Plan

The intent of the Amisk-Atik Integrated Forest Land Use Plan is to provide general direction for the management of the provincial Crown lands and resources found within the boundaries of the planning area. This land use plan does not have any authority to manage the land and resources that are privately owned or that are found in northern municipal communities and First Nations Reserves situated within the Amisk-Atik area.

The integrated land use plan for the Amisk-Atik area is based on the principles of integrated resource management. Accordingly, planning decisions have been made by looking at the health of the whole ecosystem and its various components--soil, water, plants, animals, and humans--to meet a variety of environmental, social, and economic objectives. Integrated resource management allows for a broad range of resource uses, and gives all affected parties the opportunity to be informed and involved in management planning. Economic development opportunities tied to sustainable resource use are key elements of proposed management strategies and recommendations.

As a coordinating document, the Amisk-Atik Integrated Forest Land Use Plan will provide a framework for land and resource management in the planning area. The plan will also provide direction for such management concerns as public involvement, options for resolving conflict among resource users, and the development of strategies for monitoring and evaluating the plan's effectiveness.

1.4 Forest Economic Development

The land use planning process is one of a number of inter-related processes that have been incorporated into Saskatchewan's Forest Economic Development initiative--a cooperative endeavour between the Province and various municipal, Métis, and First Nations communities to facilitate the development of forest harvesting operations in various locations throughout the province. In the Northern Administration District, these forestry activities are being encouraged to assist in the enhancement of the social and economic development of the north.

The other processes that play key roles in the Forest Economic Development activities and that influence the management of land and resources in the Amisk-Atik planning area include the development and implementation of a Forest Management Agreement, Forest Management Plans, and an Environmental Impact Assessment. The strategies presented in the Integrated Forest Land Use Plan must also be developed to allow for cooperative and complementary management between provincial Crown land and resources and the land and resources found within the boundaries of northern municipal and First Nations communities. As such, the land use plan has a strong relationship to municipal and Reserve land use plans and zoning by-laws. While all of these processes are inter-related and are conducted in a coordinated fashion, the integrated forest land use plan provides the umbrella for SE's management of provincial Crown land and natural resources in the planning area. As such, this land use plan is a coordinating document. Figure 1-2 highlights the relationships that exist between the land use planning process and these other processes.

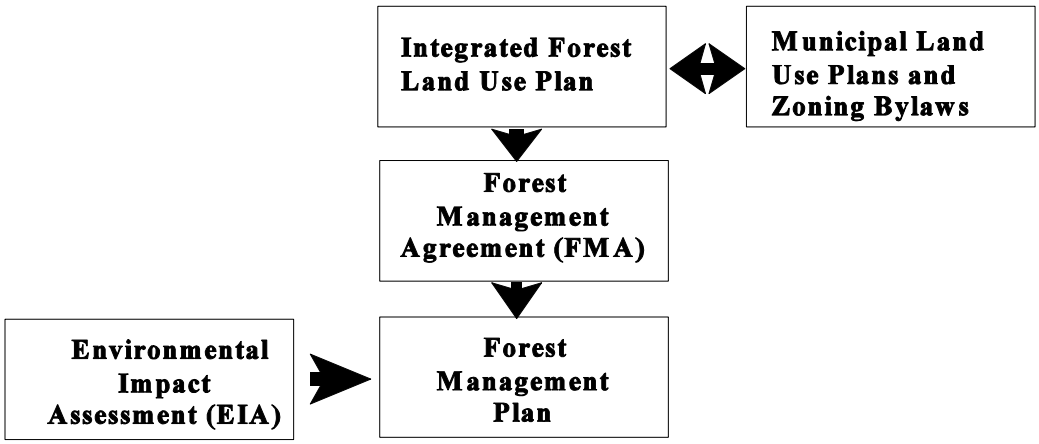

Figure 1-2. Existing and proposed processes for land management and development activities in the Amisk-Atik planning area

The Forest Management Agreement (FMA), which will be negotiated by Saskatchewan Environment (SE) and the future partnership formed by the Peter Ballantyne Cree Nation and a selected forest industry partner (hereinafter called "the Forest Company"), will include terms that will allow the forest company to harvest and manage timber resources in the planning area. The land use management plan will identify those areas where timber harvesting will be allowed and where it will not be allowed. Such land use decisions will assist in determining harvest levels and allocations specified in the FMA.

One of the prerequisites of the FMA will be the development of a twenty-year forest management plan and an Environmental Impact Assessment (EIA) by the forest company. The forest management plan provides long term strategic direction. Annual and five year operating plans will provide harvest and forest renewal plans for the areas the partnership has access to under terms of the FMA. The integrated forest land use management plan will provide direction for development of the twenty year forest plan. For example, the land use management plan will identify actions that industry will have to take as part of the twenty year plan, such as adapting harvesting methods in different areas to accommodate other resource users and ensuring a healthy forest ecosystem.

Sustainable forest management is recognized as a requirement for economic development. Any licensee would be required to coordinate forest management activities within the context of the Saskatchewan Forest Management Policy Framework and the associated land use management plan and manage the forest according to the

concepts of sustainable development.

In order to protect the forest ecosystem, the twenty-year forest management plan will be subject to an EIA that will identify the potential impacts of forestry development on the environment and the area's natural and cultural resources. The Forestry Company will be required to address these impacts.

Due to the time and financial resources required to complete a twenty year plan, SE agreed to consider issuing a five-year Term Supply Licence (TSL) to allow the Forest Company to carry out various harvesting activities and begin developing their operations. In 1999, the PBCN Forest Company prepared operating ground rules and a 5-year harvesting plan for the purpose of acquiring a five year TSL. The Forest Company was also required to do an environmental impact assessment (EIS) on the proposed TSL. A government technical review and a 60-day public review process were completed, however the TSL was not finalized at that time. SE supports PBCN efforts to obtain a Forest Management Agreement for the area.

1.5 Public Involvement

An integral component of the land use planning process was the involvement of the public in the development of the Amisk-Atik Integrated Land Use Plan. SE worked cooperatively with representatives of the northern municipal and PBCN communities found in the planning area to develop the guidelines that form the basis of the Management Plan. The mining and forestry industries and various non-government groups also participated in this process.

CHAPTER 2: THE LAND AND RESOURCES OF THE AMISK-ATIK PLANNING AREA

The purpose of this chapter is to provide a general description of the land and renewable and nonrenewable resources found in the Amisk-Atik Planning Area. A brief overview is provided of the forest, vegetation, fish and wildlife, geological, water, and archaeological resources that characterize the area. The regional climate and provincial recreation sites and other designated areas found in Amisk-Atik are also highlighted.

2.1 Forest Ecology

The Amisk-Atik Planning Area covers approximately 44,000 square kilometres (or 4.4 million hectares), and falls within two ecoregions: (1) the Mid Boreal Lowlands in the Boreal Plain Ecozone; and (2) the Churchill River Uplands in the Boreal Shield Ecozone (See Figure 2-1).

The **Mid Boreal Lowlands Ecoregion** is a relatively flat, low-lying ecoregion dominated by wetlands. Landscape areas in the planning area include Mossy River Plain, Namew Lake Upland, and Saskatchewan Delta. The area is characterized by medium to tall closed stands of trembling aspen and balsam poplar, with white spruce, black spruce, and balsam fir increasing in dominance in older stands. Stands of ostrich fern grow on some wetter marshy spots in these rich forest sites. Poorly drained depressions are dominated by stunted black spruce with peat moss, dwarf birch, Labrador tea, and sedges.

The **Churchill River Upland Ecoregion** has topography typical of the Precambrian Shield, characterized by hundreds of small, clear lakes with broken shorelines. Landscape areas in the planning area include Foster Upland, Reindeer Lake Plain, Macoun Lake Plain, Sisipuk Plain, Flin Flon Plain, and Reed Lake Plain. The area is dominated by black spruce with significant stands of jack pine on dry sand plains, mixed wood forests, peat lands (treed and open bogs, and fens), and wetlands. As fire is the dominant disturbance factor in the region, it is common to see a mosaic of forest types in many successional stages across the landscape.

2.2 Vegetation

The **Mid-Boreal Lowland Ecoregion** has the most diverse flora of any ecoregion in the province. Appendix 11 provides a listing of common vegetation found in the Amisk-Atik Planning Area. The climate favours frost-hardy evergreen species. Black spruce would dominate the vegetation on all sites if all disruptive forces (e.g., fires and floods) were eliminated. Mixedwood forests occur under well and imperfectly drained conditions, where white spruce is mixed with trembling aspen and balsam poplar. There are five major vegetation associations in the eco-region — peat lands, black spruce forest, mixed wood forest, jack pine forest, and boreal wetlands. A large percentage of the region is comprised of cold, wet peat lands, where the peat ranges in depth from 2-4 meters.

On sites dominated by jack pine, the forest canopy is semi-open and may include occasional white birch and black spruce. The understory vegetation is sparse and low growing. Stemless lady slipper, fireweed, harebell, tall lung wort, and pink and yellow corydalis are common flowering herb associations, beneath which grow an abundance of surface lichens, mosses, juniper, bearberry, and ground cranberry. Above grow Labrador tea, blueberry, and thinly scattered alder shrubs.

On sites dominated by black spruce, the forest canopy is semi-open to closed, and may include occasional white birch, black poplar, trembling aspen, jack pine, and tamarack. The understory vegetation is also sparse and low growing. Wintergreen and star flower are common flowering herb associations, beneath which grow feather and sphagnum mosses and dry-ground cranberry. Wetter conditions produce bog cranberry and cloud berry, above and around which grow Labrador tea, horse tail, ground pine, ground cedar, and occasional grasses. Wetter sites produce scattered willows, abundant sedges, and cotton grass.

On sites dominated by white spruce, the forest canopy is semi-closed to closed, and may include scattered trembling aspen at various heights, balsam fir, and black spruce. The understory vegetation is abundant and in several layers. Wood violet, bunchberry, tall lung wort, dewberry, prickly rose, asters, twin flower, baneberry, black currant, and raspberry are common flowering herb associations. Beneath the surface are leaf and needle duff, occasional feather and pin-cushion mosses, while above grow occasional stands of tall Labrador tea, sarsaparilla, and a variety of shrubs including willows, alder, twining honey suckle, red-osier dogwood, and low bush cranberry.

On sites dominated by tamarack, the forest canopy is open, and may include black spruce and occasional stunted white birch. The understory vegetation is sparse and low growing. Bog laurel, leatherleaf, and bog cranberry are common flowering herb associations. Prevalent beneath, grows an abundance of water soaked fen mosses, occasional clumps and floating mats of sphagnum, pitcher plants, and occasionally surface lichens on the moss. Above and around grow buck- bean, cotton-grass, and a variety of emergent sedges. Bog birch and occasional willows are the predominant shrubs.

Natural Ecoregion Boundaries in the Amisk-Atik Planning Area

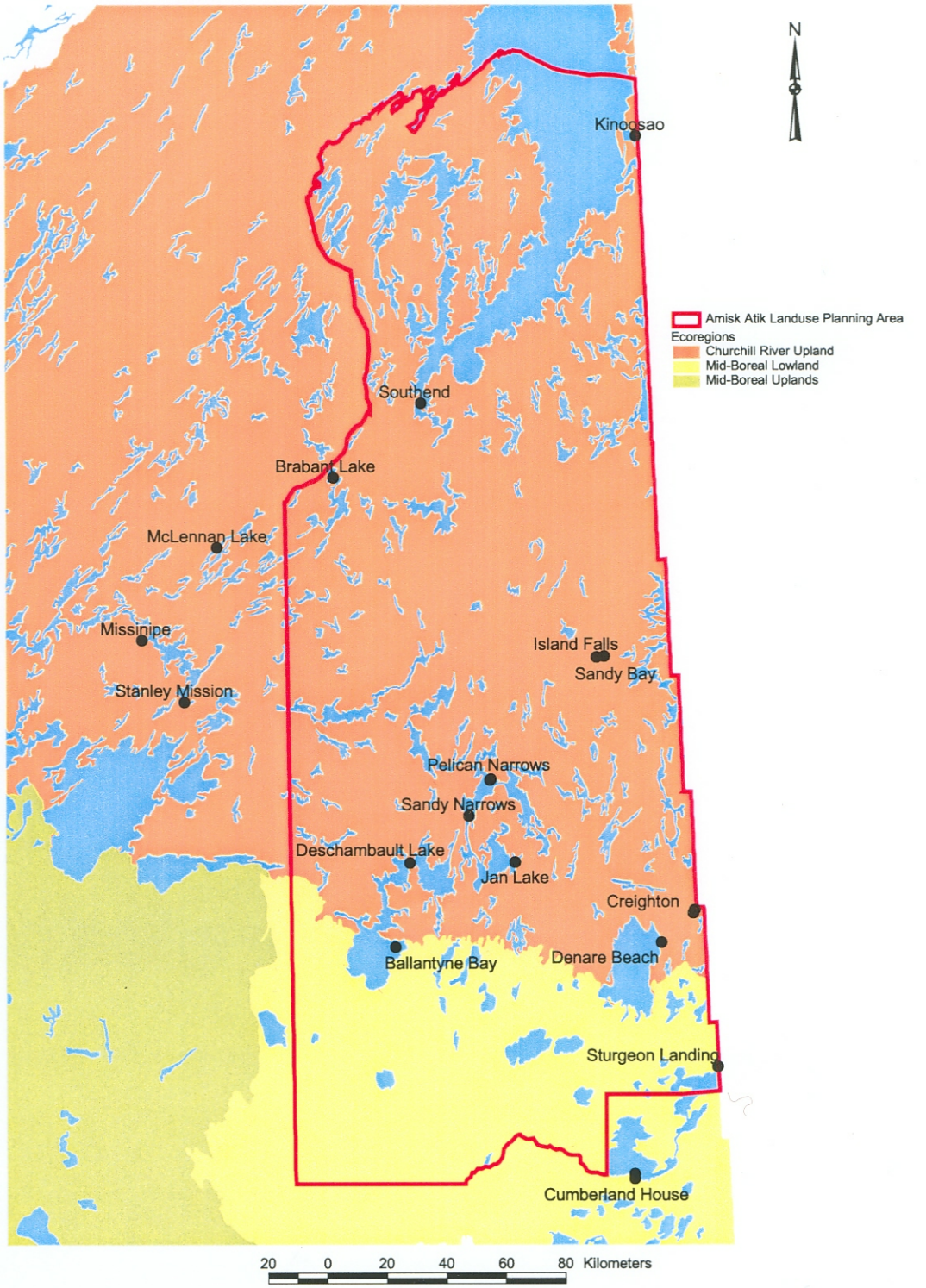

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Figure 2-1

Riparian sites dominated by willow tend to be along water courses in flood plains. Alder is also found associated with willow and sedges which dominate the understory. A variety of plants including wild mint, water parsnip, and several of those described above encroach along the margins of these sites depending on the type of forest stands adjacent to them.

In the **Churchill River Upland Ecoregion** there are six vegetation associations--black spruce forest, jack pine forest, white spruce forest, mixed wood forest, peat lands, and wetlands. The bedrock outcrops commonly have thinly scattered black spruce or jack pine growing in rock crevices. These areas usually have a sparse understory of lichens and club mosses, interspersed with ground juniper and other shrubs, herbs, and various ferns. There are very few areas of unvegetated rock outcrops, although the shady locations typically have fewer species. Maps of forest cover are presented in Figure 2-2a for cover types south of the Churchill River and in Figure 2-2b for cover types north of the Churchill.

2.3 Fish Resources

In the Churchill River Upland Region, fish species include lake trout, lake whitefish, northern pike, walleye, perch, common sucker, burbot, and goldeye. (Appendix 12 provides a listing of common fish species found in the Amisk-Atik Planning Area.)

Northern pike, walleye, and lake whitefish are the economically valuable fish found in the Mid-Boreal Lowland Ecoregion. Other fish species found in this area are common suckers, long nose suckers, burbot, yellow perch, cisco, sauger, and a variety of small minnow species. Historically, there were lake sturgeon in the rivers flowing into the Cumberland Delta and in the lakes of the Churchill River system. Efforts are currently underway by Saskatchewan Environment (SE) to manage and protect these endangered lake sturgeon populations through reductions in angling and commercial limits, habitat enhancement and restoration, and stocking.

Fish populations in the Amisk-Atik Planning Area are primarily lake based and exhibit the reduced growth rates typically found in the clear, cold oligotrophic lakes of the Pre-Cambrian Shield. The Sturgeon-weir, Churchill, Reindeer, and Wathaman Rivers are some of the streams where populations of the larger fish species occur year round. These rivers and numerous smaller streams provide critical spawning habitat and migration channels for northern pike, walleye, and suckers. Angling closures on some streams and portions of lakes during spring spawning season have been established, such as those implemented on Puskwakau River and Deschambault Lake, and are effective protection mechanisms.

Amisk, Deschambault, Jan, Pelican, and Reindeer Lakes provide the basis for the most significant recreational, commercial fishing, and outfitting activities in the Amisk-Atik Planning Area. Other lakes with significant fisheries include Hanson, Namew, Mirond, Wood, Manawan, and a series of lakes which form the Churchill River system such as Iskwatam, Wapumon, Wintego, Pit, Pikoo, and Reeds Lakes. Many of the lakes in this planning area have at least one type of fishery and many have two or more. The fish resources of this area are very important to local residents because they are used for a source of income, traditional purposes (eg. food, ceremonies), and recreation. Non-residents also utilize this area's fish resources for recreational purposes.

Walleye and northern pike are the primary sport fish species targeted by anglers and outfitting clientele, although some do fish for lake trout that occur naturally in a few lakes in this area. There are also several waters within the Amisk-Atik Planning Area which are stocked to enhance angling opportunities. Rainbow trout fingerlings are stocked in McRobbie, Mid, Moise, Negan and Nistum Lakes every 2 years. Negan Lake is also stocked with brook trout. Smallmouth bass were also introduced into Konuto Lake in 1998 in an effort to establish a viable bass fishery that would further diversify angling opportunities in the area. SE has planned a second stocking of smallmouth bass in 2000, pending availability of fingerlings from North Dakota. Due to the experimental nature of this stocking, Konuto Lake will remain closed to all types of fishing for 5 years.

2.4 Wildlife Resources

2.4.1 Mammals

Various mammal species inhabit both the upland and lowland areas found within the Amisk-Atik boundaries (See Appendix 13). During the summer months, moose are found in and close to water, while in the winter, these mammals' habitat requirements (e.g., a food supply of woody browse) are met by inhabiting riparian areas and upland mixed forest. Woodland caribou, snowshoe hare, weasel, fisher, wolverine, black bear, wolf, coyote, fox, lynx, and pygmy shrew also can be found in both upland and lowland habitats. Various species in this group are sensitive to habitat disturbance. Woodland caribou, which rely on the lichen growth in upland jack pine and black spruce forests as a critical source of winter food, can have their seasonal movement easily disrupted by such manmade disturbances as the construction of barriers. Habitat disturbance can also impact wolves that require remote and undisturbed den and pup-rearing sites allowing easy digging in early spring when most of the ground is still frozen. Other species sensitive to disturbance include wolverine due to naturally low population densities and, also, lynx, due to the requirement of seclusion for rearing of young and a local population level that has been depressed for several years.

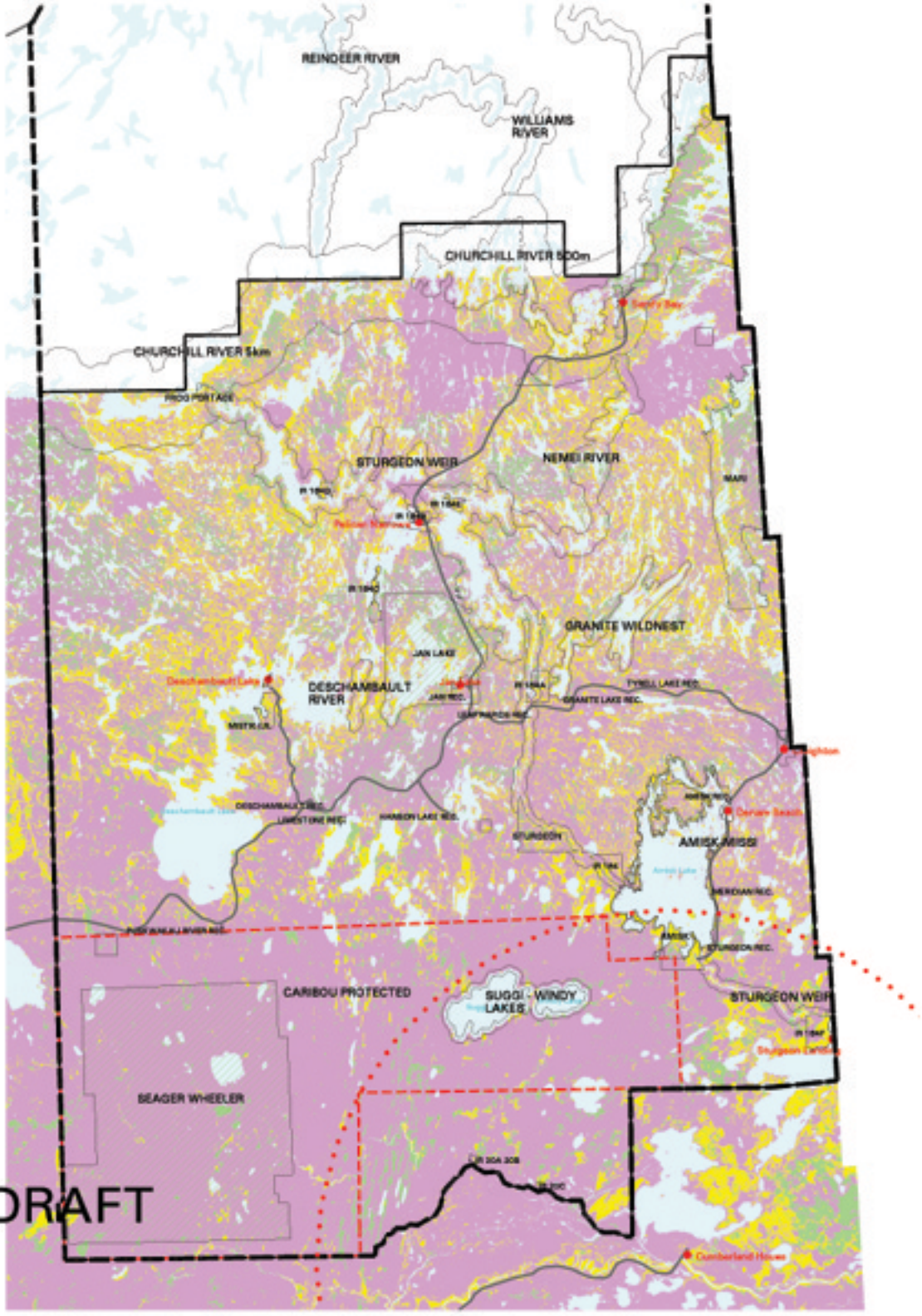


Figure 2-2a

AMISK - ATIK FOREST COVER SOUTH OF THE CHURCHILL

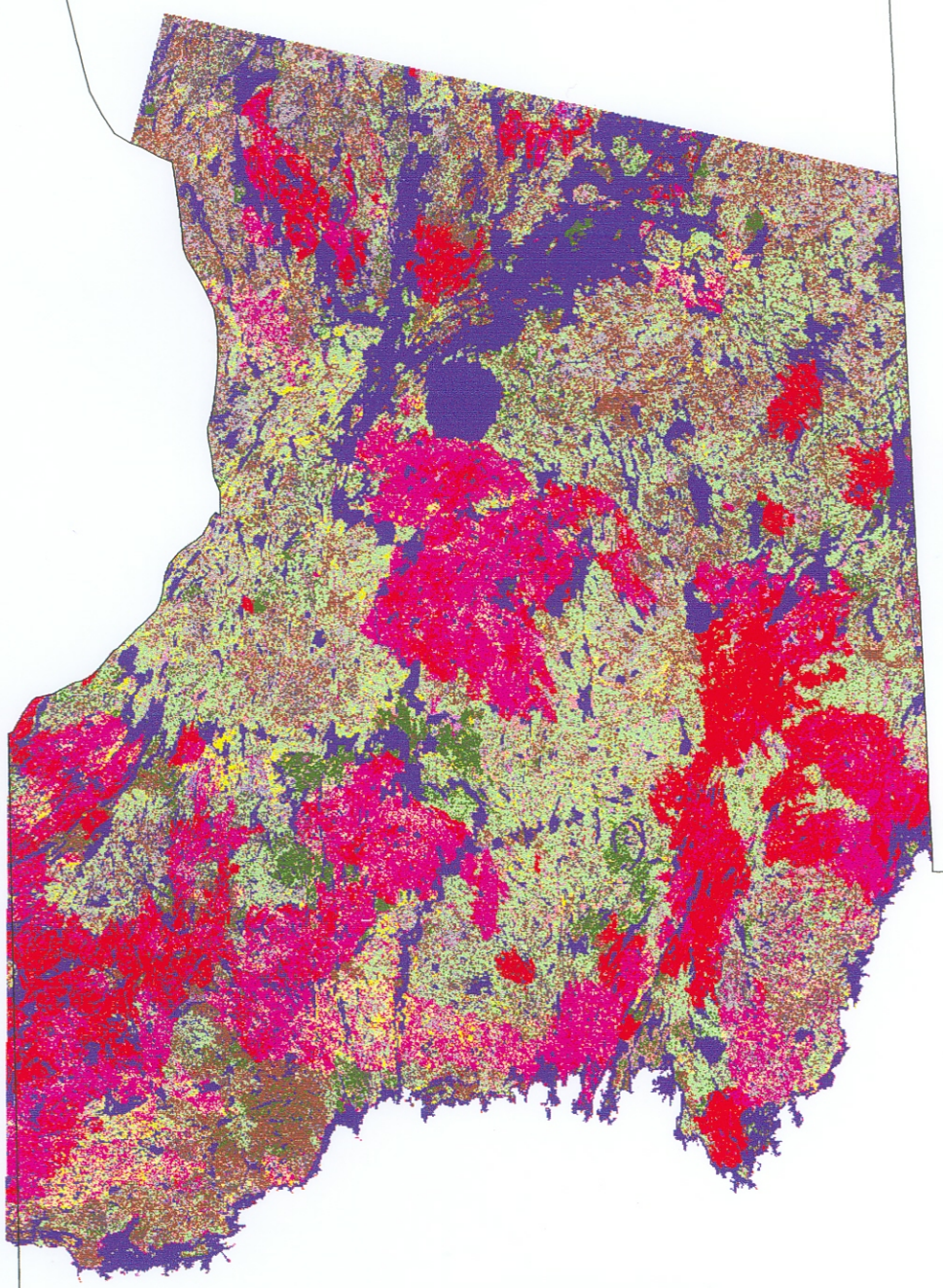
Scale 1 : 750,000

LEGEND

- NON-MERCHANTABLE (Under 30 FEET)
- MERCHANTABLE (Over 30 FEET)
- OTHER
- WATER
- PROTECTED ZONES
- SENSITIVE MANAGEMENT ZONES
- CARIBOU PROTECTED AREA
- CUMBERLAND HOUSE COMMUNITY DEVELOPMENT CIRCLE

Prepared by:
SERM
Forest Ecosystems
GIS 14 Aug 01

Amisk Atik Forest Cover North of the Churchill



Legend

- Hardwood Open Canapy
- Hardwood Closed Canapy
- Hardwood-Softwood Mixed
- Jack Pine Open Canapy
- Jack Pine Closed Canapy
- Spruce-Pine Mixed
- Spruce Open Canapy
- Spruce Closed Canapy
- Recent Burn
- ReVegetation Burn
- Treed Rock
- Treed Bog
- Open Bog
- Wetland
- Roads and Opening
- Water

N
W E
S

1:1,000,000

20 0 20 40 Kilometers

Imagery T36_r21 from Sept. 1999 LandSat 5

Classified by SRC

Mapped by FEB, SERM May 30, 2000

Figure 2-2b

Mammals in the planning area that are generally considered to be upland species include white-tailed deer, black bear, porcupine, marten, woodchuck, red squirrel, northern flying squirrel, chipmunk, red-backed vole, deer mice, and a variety of bat species. A number of these species are sensitive to disturbance. For example, the marten population has been severely depressed over the past fifty years. In addition, several species of bats, most of which roost in colonies of 3 or more, and that may be dependent on hollows in trees of specific size and height, are also sensitive to disturbance. Keen myotis and big brown bat hibernate in the north, in colonies located in rock crevices and hollows in large trees. Disturbance of a site can affect or impact many animals at once.

Mammals in the planning area that are generally considered to be lowland species include woodland caribou, mink, and arctic shrew. Aquatic species include beaver, muskrat, otter, and northern water shrew. Species in this group sensitive to disturbance include the woodland caribou that occurs at naturally low population densities and low productivity levels. The woodland caribou's main adaptation to disturbance is to emigrate from a disturbed area. Such habitat that is suddenly and dramatically disturbed may become unsuitable for woodland caribou for very long periods of time.

2.4.2 Birds

Upland habitats in the planning area are occupied by a variety of cavity nesting birds that use dead tree snags for hollowing out nest sites. Suitable nesting snags are uncommon and are usually found in mature and over-mature mixed forest stands. Accordingly, the availability of such nesting sites can be affected by logging. Species requiring these nesting sites in mature forests are therefore sensitive to disturbance and include such year round residents as black capped and boreal chickadees, northern three-toed woodpeckers, pileated woodpeckers, boreal owls, barred owls, northern
hawk owls, and such seasonal breeding residents as red-breasted nuthatches, northern
flickers, yellow-bellied sapsuckers, hairy and downy woodpeckers, tree swallows, purple martens, belted king fishers, common goldeneye, bufflehead, and common and hooded mergansers.

Ground nesting species that are found in upland habitats and that are sensitive to surface disturbance include spruce and ruffed grouse, nighthawks, bank swallows, hermit thrushes, yellow bellied flycatchers, Tennessee, orange-crowned, Nashville, and black and white warblers, oven birds, vesper and white throated sparrows, and dark-eyed juncos.

A number of bird species require tall conifers and/or conifer dominant stands for critical nesting habitat and, as such, are sensitive to disturbances created by logging activities. These species include three-toed and black-backed woodpeckers, boreal chickadees, red-breasted nuthatches, ruby-crowned and golden crowned kinglets, bohemian waxwings, magnolia/cape may/bay breasted and black-pole warblers, western tanagers, pine grosbeaks, purple finches, red and white-winged crossbills, and pine siskins.

Wetlands within the planning area form important breeding habitat for a number of species including sedge and marsh wrens, Connecticut and palm warblers, and Savannah/Le Conte's and Lincoln sparrows. Wetland species most sensitive to drainage, water level manipulation, and surface disturbance include such ground nesting species as sand hill cranes, short-billed dowitchers, ring-necked duck, palm and Connecticut warblers, Savannah/Le Contes and Lincoln sparrows.

A number of species select riparian zones for breeding habitat. The limited extent and distribution of such habitat renders a variety of species sensitive to disturbance of riparian zones. Such species include bald eagles, ospreys, great blue herons, solitary sandpipers, yellow/Wilsons and Canada warblers, northern water thrushes, common yellowthroats, rose-breasted grosbeaks, swamp sparrow, and red-winged, yellow headed, and rusty blackbirds.

The planning area includes bird species whose provincial range is a narrow band or corridor. The impact of a disturbances such as loss of habitat can very quickly become critical. Breeding populations across Canada can become fragmented by loss of habitat in these areas. Affected species barred owls, Caspian terns, Cape May and black-throated green warblers, pine grosbeaks, purple finches, and red and white winged crossbills.

Golden eagles are sensitive to disturbance because their nesting requirements and prey availability within the planning area are so restrictive that they exist at very low numbers. See Appendix 14 for a list of common bird species.

2.4.3 Amphibians and Reptiles

Species of amphibians and reptiles found in the Amisk-Atik planning area include wood, boreal chorus, and leopard frogs, and red-sided garter snakes. All frog species are considered sensitive to disturbance, especially when water chemistry deteriorates. The leopard frog is classed as a vulnerable species due to habitat loss and alteration across North America. No known snake hibernacula (i.e., winter dens) can be identified at this time. Local knowledge could provide valuable information about the location of these hibernation sites. Hillsides exposed to the sun with ease of burrowing would be possible locations.

2.4.4 Other Animal Life

The planning area is also inhabited by a variety of invertebrates that are too numerous to mention, some of which may be sensitive to disturbance. A naturally occurring bacteria that is being sprayed to control spruce budworm larvae in the planning area, also kills the larvae of many other moths and butterflies. The emerging use of herbicides to control unwanted vegetation along corridors and in agriculture plots may also kill important soil invertebrates. The significance of this is unknown at this time and untested on the fragile surface humus found in the planning area.

Greater interest in the salvage logging of recent burns has implications for a variety of invertebrates as well as bird and mammal species that prey upon them. For example, bark beetles and carpenter ants are the target of experimental control programs. Their larvae form important food sources for other insect, birds and mammals.

2.5 Fire

Fire has been a natural part of forest ecosystems for thousand of years and was the major agent of change influencing vegetation distribution, composition and structure. Fires were allowed to burn freely before large scale settlement occurred on the northern reaches of the prairies and along the forest fringe. Jack pine, black spruce and aspen are prime examples of species dependent upon fire for renewal.

Fire regimes are the occurrence of fires over time and space. They are characterized by fire intensity, fire sizes, number of fires and how fast they return in a given area over a given time period. The fire regime in the boreal forest can be described as very large, high intensity stand replacing crown fires that occur every 50 -100 years.

Fire is important for forest health and biodiversity. Boreal forests are not static and efforts to maintain the forest in a given state without fire is not realistic. Both large and small fires increase diversity of vegetation structure and composition. Maintaining this natural vegetation mosaic through fire will assist in maintaining the diversity of wildlife habitats. Even with re-occurrent large fires, the boreal forest in a broader sense is very stable. It is very resilient and recovers from these major fires through natural successional pathways.

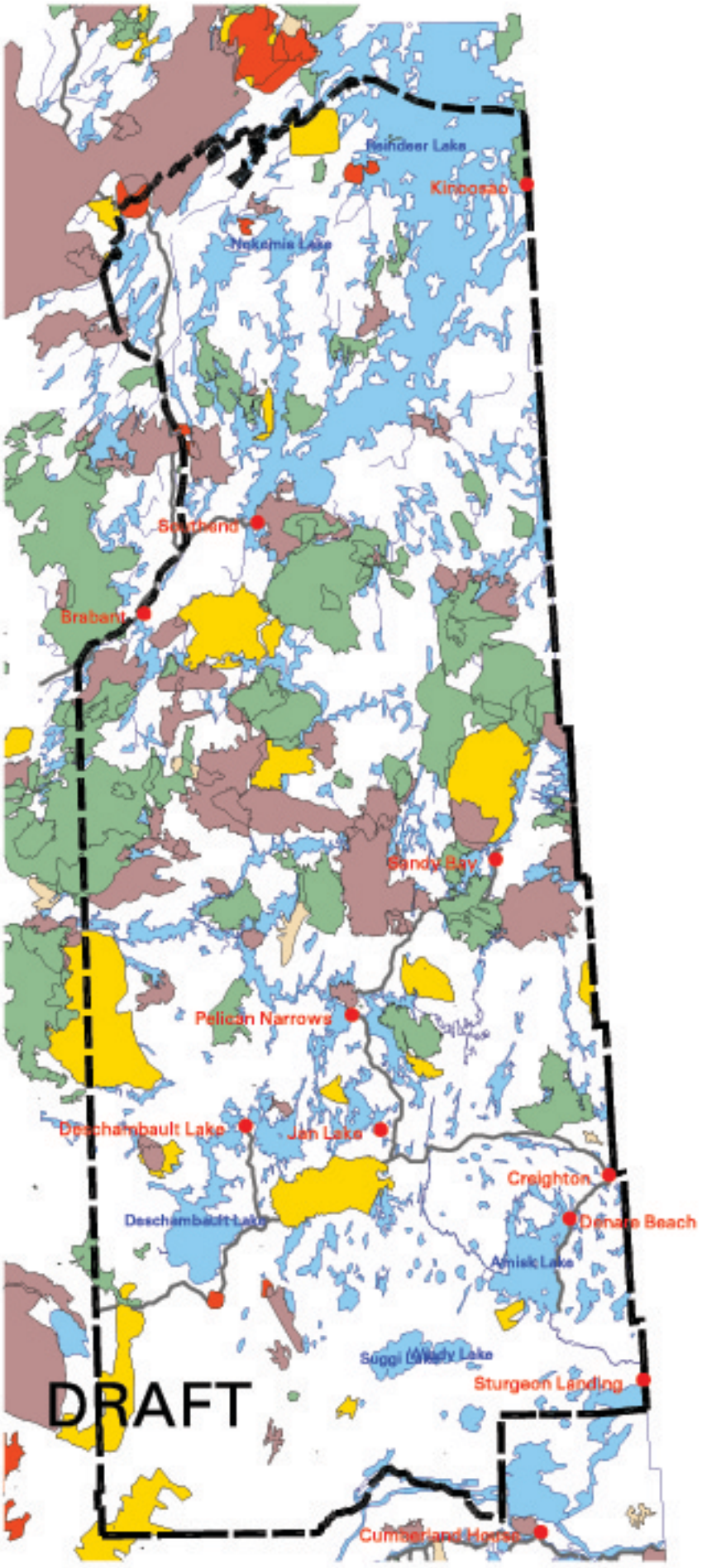
It is difficult to determine how much fire should be allowed to help maintain healthy ecosystems. One of the questions that needs to be addressed is how much fire has there been in natural regimes. This is the basis of fire history studies. Since fire will be present on forested landscapes regardless of levels of forest protection, a better understanding of its role in forest ecosystem development will help minimize negative impacts caused by interruption of fire regimes.

The use of our forest and northern development has prompted early fire suppression to protect people and natural resources. This has had a major impact on fire regimes in the boreal forest, reducing the area burned. In some regions of the forest, harvesting affects more area than fires.

A well planned assessment of fire patterns and regimes is needed for well planned management of fire in forest ecosystems. This will help determine how suppression, which has caused a decline in area burned, and harvesting, which has increased, can be used together to help maintain healthy and sustainable forests. However, since this information is limited it should not impede progress and investigation of new techniques.

Ecological benefit from fire is often masked since fire in high use areas results in reporting of only the significant negative losses. This reporting tendency coupled with Saskatchewan full suppression history has primed the public to resist acceptance of fire as a tool for beneficial purposes.

Fire impact on forest resources is somewhat predicable. Figure 2-3 illustrates the known extent of fire over the last 50 years in the province. These recorded observations allow us to describe some of the current fire regime characteristics for an area and provide information on impacts to the forest resource.



AMISK - ATIK FIRE HISTORY

LEGEND

- 1945 - 1949
- 1950 - 1959
- 1960 - 1969
- 1970 - 1979
- 1980 - 1989
- 1990 - 1999

Digital Fire Boundary Sources

Fish & Wildlife Branch, SERM
1945-1976
1977-1996
(no large fires in 1997)

Forest Ecosystems Branch, SERM
1972-1976
1995 - present

Only fires greater than 1,000 hectares are depicted.

Linework with fires depict repeat burns, with the most recent fires plotted last.

Figure 2-3

Prepared by:
SE
Forest Ecosystems
GIS 26 Mar 03

Risk and uncertainty of fire losses and impacts in forest planning contribute to the desire to suppress fire. Forest management plans and decisions made at any given time assume a forest commodity or value will be realized several decades into the future. Large fluctuations in fire occurrences from year to year clearly illustrate the potential for fire to drastically change the structure of the forest in any year during a long term planning horizon. Forest and land managers desire to diminish uncertainty has promoted full fire exclusion.

The response from these factors over the last several decades in Saskatchewan has been to exclude fire as much as possible. Part of this full fire suppression response was also driven by attitudes shared by the public, forest stakeholders and some resource managers that fire is inherently negative and should be suppressed and eliminated as much as possible. This later message was also promoted in part by Smokey Bear and similar fire prevention campaigns.

Resource managers must also recognize that fire is an inseparable part of boreal ecosystems and understand how various fire management strategies can influence land planning outcomes. Just as important forest and land use managers will have an opportunity to influence fire management strategies for that land base. The key for promoting fire in resource and ecosystem management is that it should be driven by resource and landscape management objectives.

2.6 Geology

Most of the bedrock in the Amisk-Atik plan area consists of Precambrian-aged intrusive, sedimentary, and volcanic rocks of the Canadian Shield that have been metamorphosed and deformed. The southern margin of the area is directly underlain by limestone, dolomite, and sandstone of the younger, Phanerozoic-aged Western Canada Sedimentary Basin, that rests on the Precambrian basement rocks. The Phanerozoic/Precambrian margin trends irregularly through Amisk and Deschambault lakes.

Glacial deposits consisting of till, sand, and gravel commonly cover the bedrock in the area with a thickness ranging from less than a meter to several tens of meters.

The Snow Lake-Flin Flon-Hanson Lake volcanic belt, which trends approximately east to west through the southern part of the area, is important economically in the region. It hosts a large number of base metal deposits, six that have been mined in Saskatchewan. Significant gold deposits are also present.

2.7 Water

Water resources cover approximately between 10 and 20% of the Amisk-Atik Planning Area (See Figure 2-4). Numerous lakes and rivers are found throughout the planning area.

Lakes of the area are typically long and narrow and aligned to parallel the bedrock structure and the direction of glacial ice flow. Reindeer Lake in the northern end of the planning area is one of Saskatchewan's largest lakes. The south shore of Reindeer Lake forms much of the northern boundary of the planning area. Among the larger lakes in the area north of the Churchill River are Brabant, Kamuchawie, Pagato, Guilloux, Harriott, Laird, Wapus and Laurie. Major lakes south of the Churchill include Amisk, Suggi, Mirond and Jan. The three largest rivers in the planning area are the Sturgeon-weir, Reindeer, and Churchill Rivers. The Churchill River can be described as a series of lakes connected by rapids or fast flowing river reaches.

The planning area contains three watersheds: (1) the Churchill River above the junction of the Reindeer River; (2) the Churchill River below the junction of the Reindeer River; and (3) the Saskatchewan River below the forks (see Figure 2-5). The Churchill River drains water to the north and east from about 75% of the planning area. The Reindeer River drains Reindeer Lake south to the Churchill River. The Churchill, which has headwaters lying far to the west in eastern Alberta, flows east through the middle of the planning area to Manitoba. The water from the remaining 25% of the planning area drains south to the Saskatchewan River via the Sturgeon-weir River. When flow in the Churchill River is sufficiently high, water at Frog Portage on Trade Lake spills over into the Sturgeon-weir River system and flows southeast through Amisk Lake to the Saskatchewan River at Cumberland House.

The streams and lakes in the Amisk-Atik Area derive their water from the runoff originating in the interior of the area. As a result, rivers generally rise in the period of April to July from snow melt and recede to more or less a constant value from January to April. Even though peak flows tend to be less than in rivers fed from the mountains, floods still occur. Communities such as Southend and Sandy Bay have experienced flooding. Also, the lack of snowfall or rainfall can result in lower lake levels and stream flows to a point where community water supplies are adversely affected. This has been a problem at Creighton in recent years.

The Churchill River is dammed for power production at Island Falls on the eastern side of the planning area. The Reindeer River is controlled at the outlet of Reindeer Lake by the Whitesand Dam, which regulates flow in the river and storage in the lake to improve the efficiency of the Island Falls plant operation. Dams on Chicken Lake and Kipahigan Lake stabilize water levels and provide for better local transportation.

Water Resources in the Amisk-Atik Planning Area

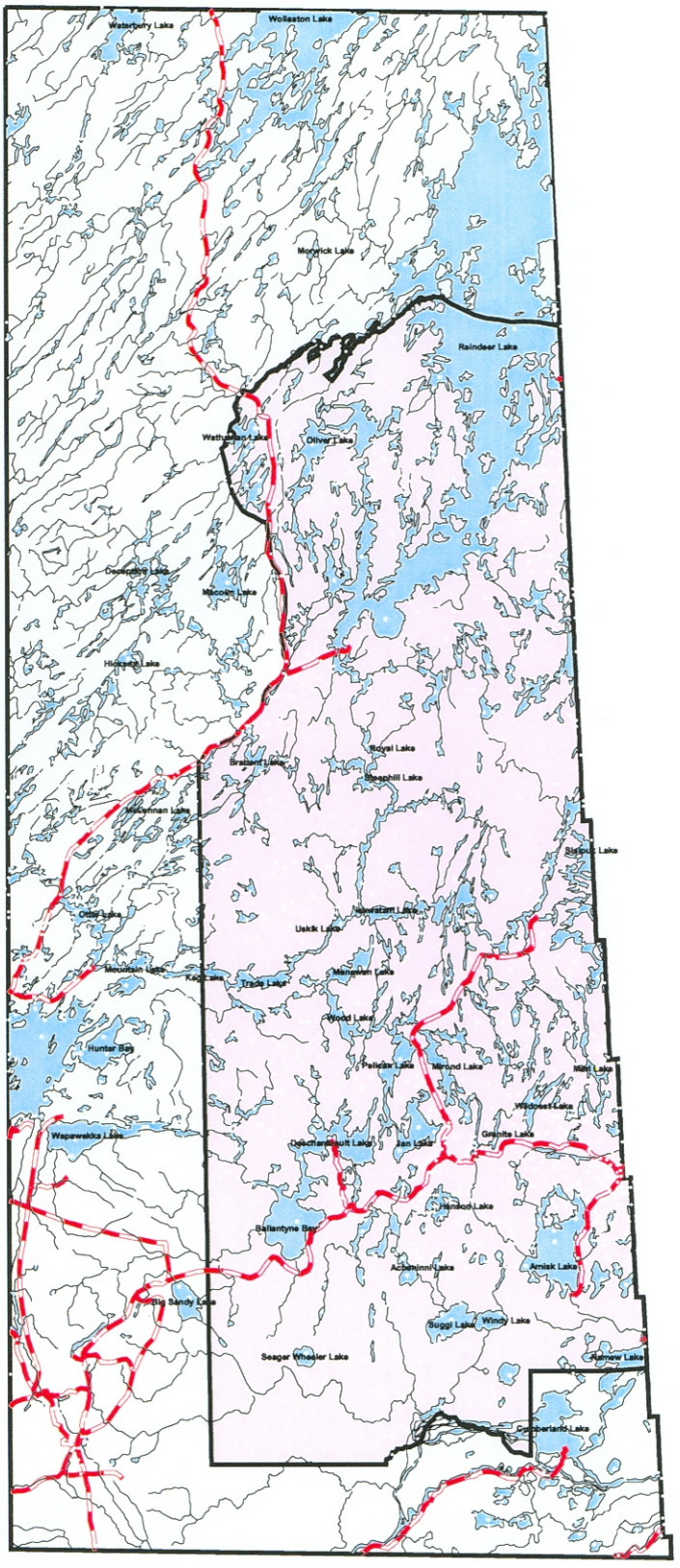
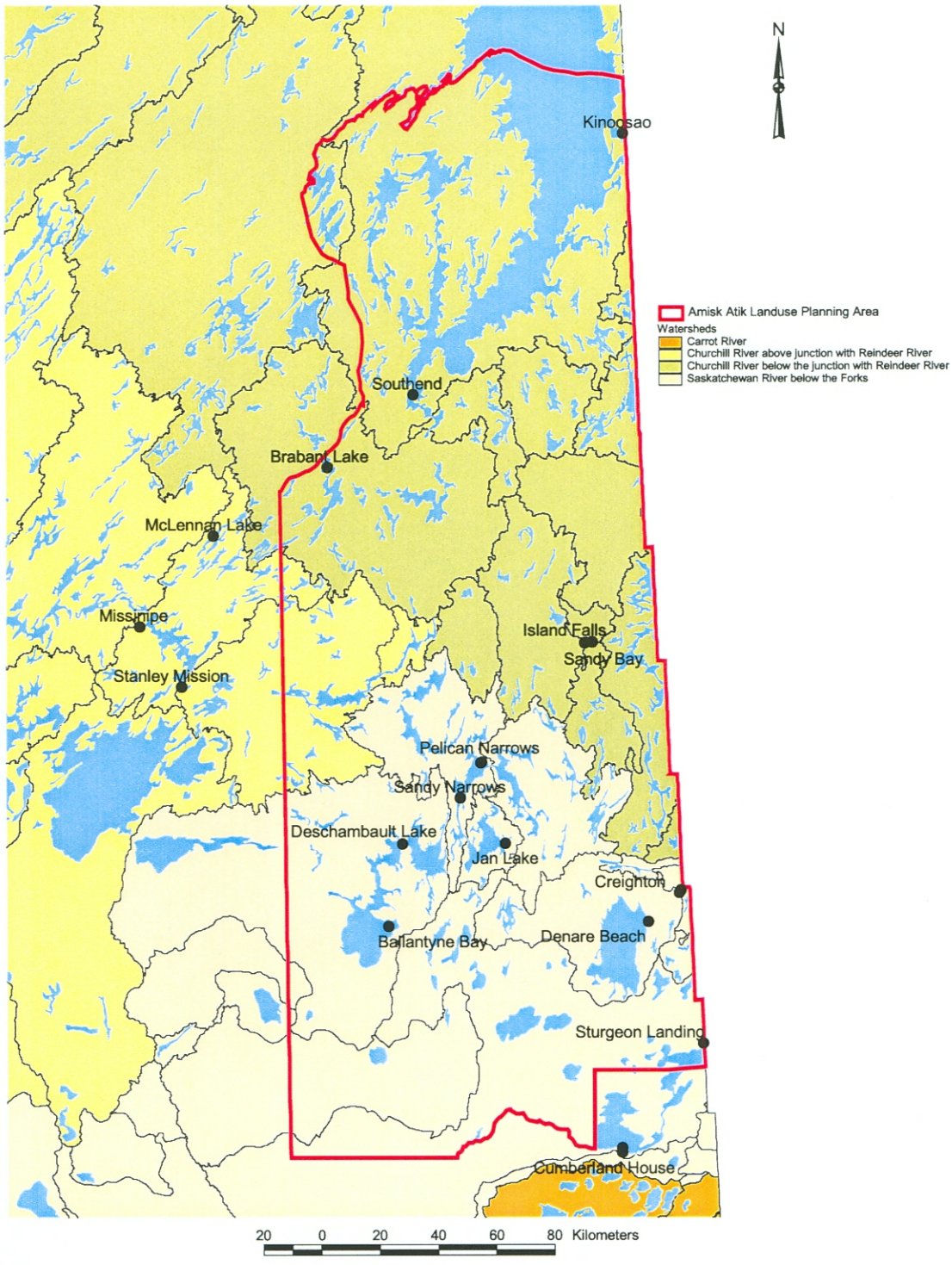


Figure 2-4

Gross Watershed Boundaries in the Amisk-Atik Planning Area



Saskatchewan Environment

Figure 2-5

The large number of lakes in the area reduce the annual and seasonal variations in stream flows. This effect is particularly evident along the Churchill River. Mineral-rich water, numerous rapids, high flushing rates, and lack of lake stratification have created an aesthetically pleasing and complex aquatic environment that is conducive to hunting, fishing, trapping, water transportation, and tourism. The natural, recreational, and
historical significance of the Churchill River has led to its candidacy as a Canadian Heritage River.

Seepage areas, fens, and bogs are common features of the Boreal Shield Ecozone. Marshes are generally absent in the region except along the Churchill River system, where deposited sediments have promoted the development of marshes in protected bays and backwater eddies. Away from the Churchill River, the most dense and varied wetland vegetation occurs in small, shallow lakes and along narrow streams. Flooded forest can sometimes be found along the shores of these lakes and is usually caused by beaver dams, which are a common occurrence at the head of tiny outlet streams.

The climate, geology, and physiography of the boreal shield normally produce an annual surface runoff that is from 4 - 20 times greater than that of the prairie ecoregions of the province. The amount of water in the region and its significance is underscored by the fact that the Churchill River is the largest river in the province, with a mean annual flow of nearly 22 million dam^3 (1 dam^3 = 1,000 m^3) at the Saskatchewan/Manitoba boundary. A source of surface water is available for domestic and industrial use within a reasonable distance of each community.

The lakes and rivers within the planning area provide the people who have settled along their shores with dependable water supplies, important transportation links, and valuable resources for recreation. They are also vital components of an ecosystem that provides habitat to support the fishing, hunting and trapping upon which many area residents have traditionally depended for their livelihoods. The water resources of the area remain sensitive to contamination from mining and smelting operations, the impacts of water control structure operations, improper sewage disposal, and inappropriate forest harvesting practices. The ground water resources of the area are unmapped and ground water use is likely limited to isolated domestic wells in minor surficial deposits.

2.8 Climate

The Amisk-Atik Area has a subarctic climate with long, very cold winters and short, cool summers. The winters last about seven months. Compared with other areas in the south, the long summer days, of up to 18.5 hours of daylight, somewhat offset the shorter growing season (less than 100 frost-free days) and the less intensive solar

radiation. Agriculture is severely limited, as grain and most other food crops need at least 100 frost-free days to grow.

Temperature decreases from southwest to northeast across the Amisk-Atik Planning area. Mean winter temperature in January is about -24°C, and mean summer temperature is around 16°C. Total precipitation is variable, low and tends to decrease from south to north. About two-thirds of annual precipitation occurs as rain from July through September. Mean annual precipitation ranges from 451 - 528 mm.

Climate change is gaining wide acceptance in the scientific community. A recent Environment Canada report (Herrington et al. 1997) indicates that the mean annual temperature for the forested portion of the prairie provinces has risen about 1EC since 1895. This is approximately double the global average temperature rise of 0.5 EC reported by the Intergovernmental Panel on Climate Change (IPCC 1996).

Climate change is particularly important to high latitude forests because these areas are expected to experience greater warming than other regions and because the disruptions to ecological processes may be particularly severe. In addition, high latitude forests support human communities dependent on natural resources which may be threatened by climate change. Even modes of transportation such as ice roads may suffer from climate change.

Climate models suggest a general decrease in moisture availability during the growing season, resulting in increased levels of moisture stress on the forest. This, in turn, would make the trees more vulnerable to attack from a range of insect and disease pests. In addition, a warmer dryer climate will cause increases in insect and disease populations, making infestations more common.

Another potential impact of climate change is an increase in the frequency of forest fires and a longer fire season. This, in association with increased mortality due to insects and disease, will probably lead to a much more severe fire disturbance regime.

This combination of moisture stress and increases in insects/diseases and fires will probably result in an overall loss of biomass, at least until vegetation reaches equilibrium with the new climate. In addition, the boundary of the forest may contract at the southern edges as the supply of moisture becomes insufficient to support tree growth. Other impacts of climate change could include changes in water quantity and timing of peak flows associated with spring snow melt.

2.9 Archaeological Heritage

Archaeological heritage sites are locations on the land that contain physical remains

and other material evidence of past human activity. Whether an ancient aboriginal campsite, a European trading post, a trapper's cabin, or an historic mining town, archaeological sites typically contain artifacts like tools and other occupational debris made of stone, bone, clay, wood, or metal. The artifacts are often associated with the remains of dwellings and other structures, or with buried hearths, cooking pits, food caches, or other features. As physical and often inconspicuous components of the land, archaeological sites are highly vulnerable to disturbance or destruction from land development. They are also measurably finite in quantity, non-renewable, and unique. Figure 2-6 highlights the general location of various archaeological sites in the Amisk-Atik Planning area.

The archaeological heritage landscape of Saskatchewan's boreal forest is a reflection of human adaptation, social interaction, and cultural change over a period of at least 8,000 years (For a more detailed account of the regional cultural history through the contact period, see Ramsay and Ramsay, Amisk Lake Heritage Study, 1996:10-18). It is a collection of mostly ancient aboriginal and early historic period sites that represent the full range of human settlement, subsistence, technology, ideology, and resource use. Although the Amisk-Atik Planning Area has not been extensively surveyed for archaeological heritage, already 500 sites are known. They include mainly pre-contact period campsites, hunting and gathering sites, ceremonial sites, burial sites, and other sacred places (including ancient rock paintings or "pictographs"). Typically, areas close to larger water bodies (especially along sheltered bays and inlets) were the most favoured for habitation and so tend to exhibit the highest site densities. Usually these areas also contain the largest encampments, including those that were often repeatedly used over long periods of time. These sites, in particular, often have the greatest potential to enhance our understanding and appreciation of aboriginal culture and history. Other areas of high site potential include the banks of prominent streams and rivers that were used for transportation, portage routes, stream intersections, and upland ridges along some of the larger bogs and marshes. The 10 or so confirmed or possible burial sites, the 37 known pictographs, and several other recorded sacred sites are afforded special recognition and protection under s.64 of *The Heritage Property Act*.

Other archaeological heritage sites in the planning area include several historic fur trade posts (like Frobisher-Henry Fort and Blondeau's Post on Amisk Lake), historic settlements and trails (like Beaver City), and various trapper's cabins.

Not all aboriginal heritage sites in the planning area are necessarily archaeological. Various cultural heritage locations, such as traditional hunting areas, or where First Nations people traditionally gathered wild foods and medicines, or places where religious practitioners went historically, and continue to go, to perform ceremonial activities in accordance with traditional practices, are immeasurably significant to contemporary First Nations communities. Traditional cultural locations such as these

are often vital to maintaining the cultural and historical identity of communities. Unfortunately, these sites often leave little if any physical trace on the land, and have not been systematically documented.

Nevertheless, many heritage sites contain a unique body of data that bears directly on our understanding and appreciation of human behaviour and society in this region. If properly recovered and studied, these data (combined with traditional knowledge) can be used to reconstruct past lifeways, understand people's relationship to the land, and throw light on the many complex processes that underlie cultural and environmental change. But besides this scientific importance, many sites also have ethnic, social, religious, or other special symbolic or cultural value. From a humanistic perspective, these sites need to be preserved for the public good, and to be recognized, admired, understood, and appreciated. The continued protection and stewardship of these sites is an important responsibility of the Government of Saskatchewan, and a primary concern of northern Aboriginal peoples.

2.10 Provincial Recreation Sites and Other Designated Areas

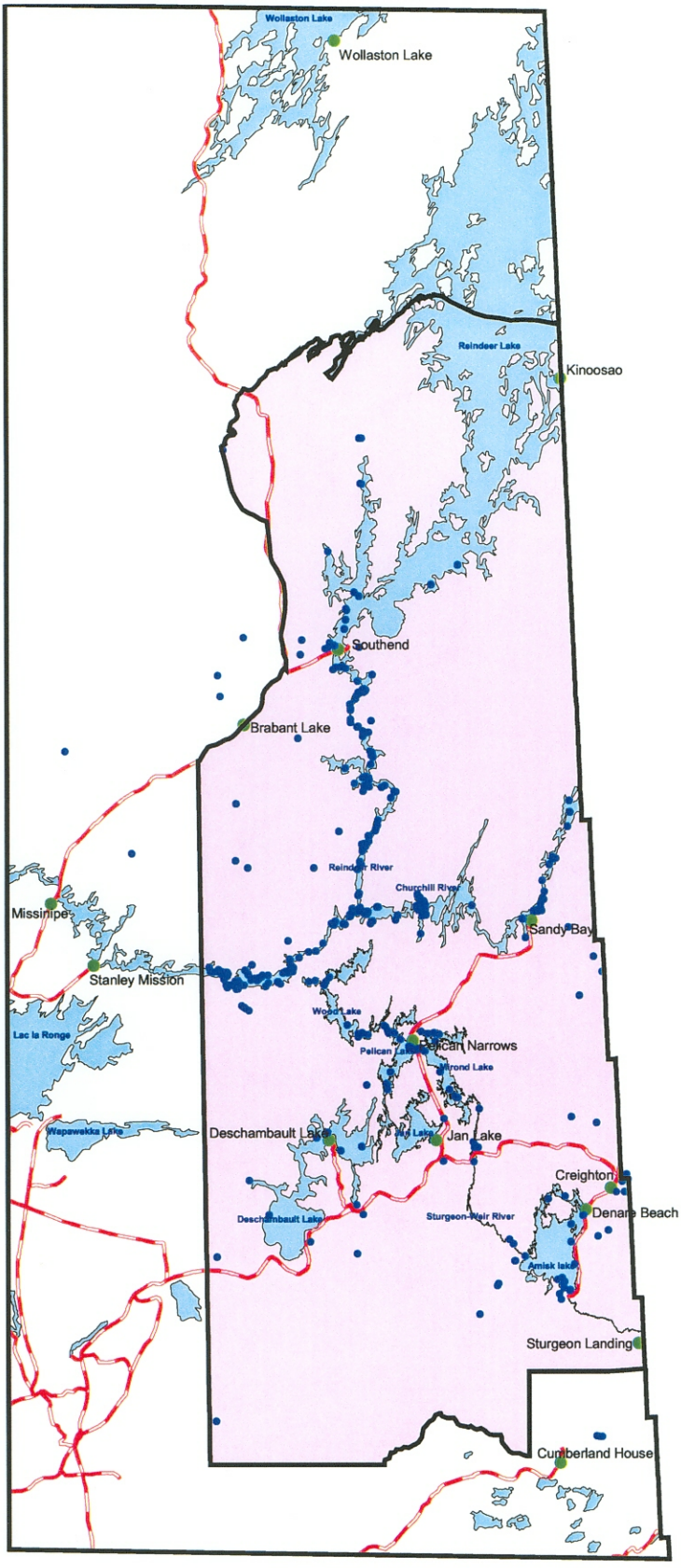
A number of areas within the Amisk-Atik Planning Area have been designated for the purposes of setting aside land and resources that will assist in providing a variety of benefits for area residents and visitors. These benefits include those that are of a recreational, heritage, scientific, protection, and/or educational nature. These areas include provincial recreation sites and the Representative Areas Network Sites. See Figure 2-7.

2.10.1 Provincial Recreation Sites

Provincial recreation sites, which tend to be relatively small areas, allow for access to a variety of outdoor recreation opportunities. Facilities such as campsites, picnic tables and barbeques, and lake access points are often provided at these sites. Eleven provincial recreation sites that have been designated under *The Parks Act* are found in the Amisk-Atik Planning Area. Table 2-1 describes these recreation sites in terms of general location and size, year of designation, and number of campsites.

Provincial recreation sites are one of the different types of park land found throughout the province of Saskatchewan. Appendix 15 provides a brief overview of Saskatchewan's Provincial Park Land System.

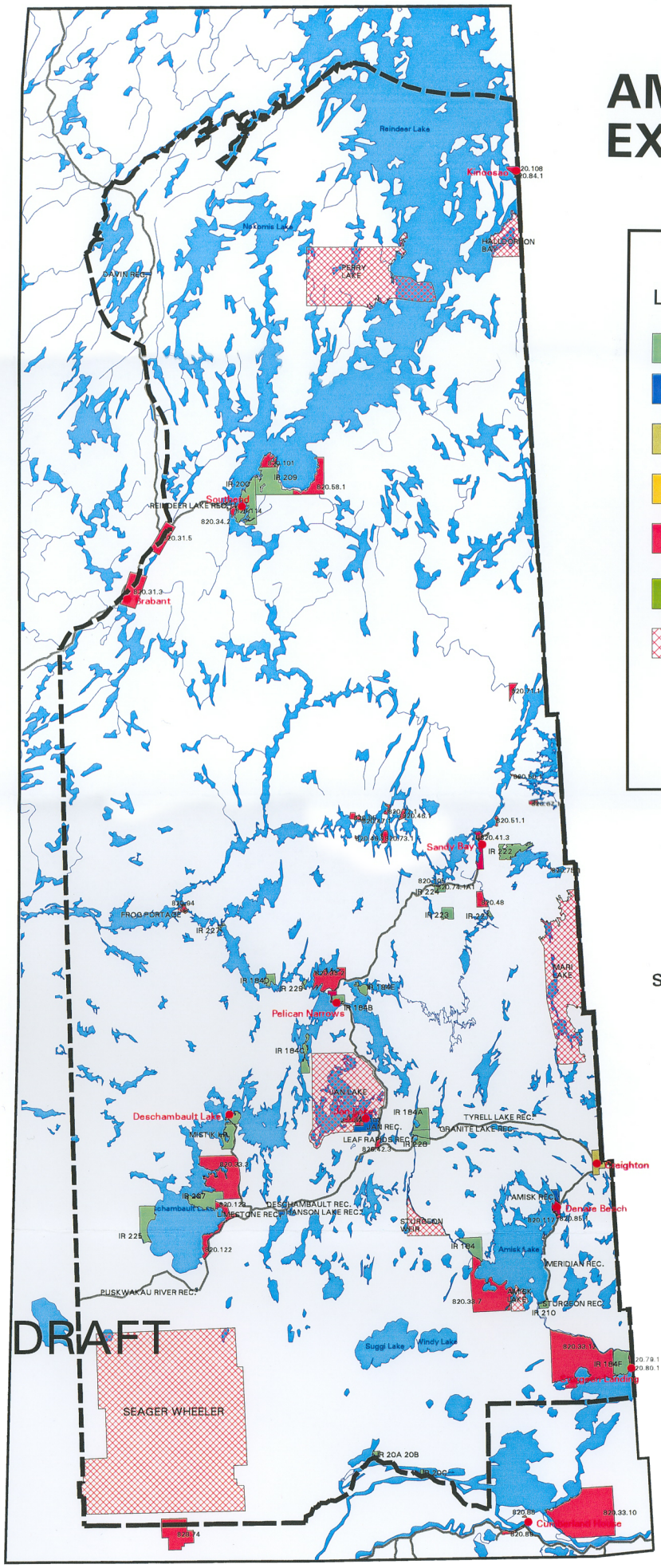
Archeological Sites in the Amisk-Atik Planning Area



Saskatchewan Environment

Figure 2-6

AMISK - ATIK EXCLUSIONS



LEGEND

- INDIAN RESERVES
- REC SITES
- NORTHERN COMMUNITIES
- VILLAGES
- TREATY LAND ENTITLEMENTS
- PATENT LANDS
- PROTECTED ZONES

Scale 1 : 1,000,000

Figure 2-7

N

Prepared by:
SE
Forest Ecosystems
GIS 26 Mar 03

Table 2.1 Recreation Sites Designated Under *The Parks Act*

AREA	SIZE (HA)	#CAMPSITES	GENERAL LOCATION	YEAR DESIGNATED
Amisk Lake	500	39 4 group sites	Two areas: -Sawmill Bay (leased; and north end of Amisk Lake) -Sturgeon-weir/Sand Bay (south end of Amisk Lake)	1986
Davin Lake	25	0	-km 75, Highway 905	1986
Deschambault Lake (land lease only)	10	10	-along Highway #106 -South East Arm, Deschambault Lake	1986
Granite Lake	10	6	-south end Granite Lake; off Highway #106	1986
Hanson Lake	65	12	-along west shore of Hanson Lake; access via Highway #106	1986
Jan Lake (lease)	2,070	57	-along Highway #135 and southeast shore of Jan Lake	1976
Leaf Rapids	0.8	8	-Highway #106 and north end of Maligne Lake	1986
Limestone Lake	20	0 (no services)	-north end Limestone Lake; access via Highway #106	1991
Meridian Creek	30	0	-east of Highway #167 along eastern section of Amisk Lake	1986
Puskwakau River	25	0 (no services)	-along Highway #106	1986
Reindeer Lake (Norvil Olson)	320	20 (3 not maintained)	-intersection of north end of Highway #102 and south-westerly bank of Numabin Bay on Reindeer Lake	1986
Tyrrell Lake	24	6	-south end Tyrrell Lake; off Highway #106	1986

2.10.2 Representative Areas Network Program

The Representative Areas Network (RAN) is composed of lands and waters that are designated and managed to represent and conserve our ecological resources for current and future generations. RAN sites act both as reservoirs of biological diversity and as benchmarks for comparison with the more heavily utilized landscapes. RAN sites will also provide for the following: (1) protection of areas known to contain species at risk; (2) areas of high scenic value and unique features; and (3) appropriate recreational, education, and research opportunities. (A more detailed description of the RAN Program is presented in Appendix 5.)

CHAPTER 3: VALUE AND USE OF THE LAND AND RESOURCES OF THE AMISK-ATIK AREA

The land and resources of the Amisk-Atik Planning Area generate a variety of economic, environmental, and social benefits. A number of different uses and values are generated for residents of the planning area, as well as for visitors to the area and residents of the province of Saskatchewan. The purpose of this chapter is to provide a brief overview of these uses and values and create an appreciation of the competing, and sometimes complementary, nature of these different uses and values. Decisions must be made about the allocation of scarce resources to various uses as a means to optimize economic, environmental, and social benefits. The management guidelines presented in the Amisk-Atik Integrated Forest Land Use Plan play a key role in making these allocation decisions.

The uses of the land and resources of the Amisk-Atik Planning Area consist of those that are both traditional and contemporary in nature. For example, subsistence hunting, fishing, and trapping activities are still practiced by the Aboriginal residents of the area. In addition, more contemporary activities such as major resource extraction industries (i.e., mining and forestry), wild rice production, and various recreational and tourism activities (e.g., outfitting, sport fishing, sport hunting, and snowmobiling) are also common.

These different uses of the planning area's land and resources provide different values for different people. These values can be of a scientific, ecological, aesthetic, cultural, or economic nature and can be generally described as the following:

3.1 Ecological Values

Forests are ecosystems - systems made up of air, water, soil, plants, animals and microbes, bound together by a web of complex interactions. Key processes in ecosystems are production of organic matter and cycling of elements among soil, water, air, and organisms. These processes provide what are known as ecosystem services - the flow of materials, energy and information from natural resources which contribute to human welfare and maintenance of biodiversity. These services include atmospheric gas regulation, climate regulation, water regulation, erosion control and nutrient recycling.

Our forests are part of larger global ecosystems. Management practices such as harvesting timber or other resources affect other parts of the ecosystem, and systems

in other parts of the world. Maintaining healthy functioning ecosystems, from local to global scales, is essential for maintenance of conditions for life on earth, as well as sustained production of renewable resources. The area has high levels of bio-diversity, with biologically diverse communities of plants and animals, influenced by climate and the physiography of the area.

3.2 Scientific Values

Forests are an integral part of our natural environment, a living laboratory for scientists learning about ecosystem functions. The requirement and ability to maintain ecological biodiversity and natural resource sustainability will benefit from values established by an assimilation of scientific and local knowledge.

3.3 Aesthetic and Spiritual Values

For many people, the forest has values which may be thought of as aesthetic (i.e., related to appreciation of its beauty) or as spiritual. Northern people resident to the planning area and many visitors involved in recreational pursuits have special feelings about the forests. Forests represent a refuge of unspoiled nature for those from more settled areas. Resource utilization is often perceived as a destructive force on what is wild and natural. Although these emotional responses are difficult to measure, they still must be provided for in land and resource management. Aesthetic values are hard to quantify, but they are an important part of our quality of life. Various research tools in the area of social-psychology and economics provide a means of addressing these non-market commodities when resource allocation decisions are made.

3.4 Cultural Values

Forests are an important part of our identity as a nation and province. For many Aboriginal people, the forests have been their home for thousands of years, shaping their culture and traditions. The Peter Ballantyne Cree Nation has traditionally inhabited the area that runs from Namew Lake in the south to Reindeer Lake in the north, and from the Manitoba border to about the 104th parallel of longitude. The PBCN is Saskatchewan's second largest First Nation, with 6,510 people as of 1998. The planning area contains numerous traditional cultural areas, including areas for hunting, trapping, fishing, gathering, ceremonial grounds, and burial sites.

3.5 Economic Values

The economic value of the uses of land and resources are those values that can be described in dollar terms. These dollar values help to account for the net dollar benefits (or additional monies) that are generated due to a particular activity and that are added to the economy of a particular region. These dollar values are also an indicator as to how dollar benefits are distributed throughout an economy in terms of employment, income, and levels of output. The economic value of the uses of the land and resources of the Amisk-Atik area is one factor that can be used to provide an understanding how an individual or group of activities can assist in enhancing the economic development of a particular region.

Various uses and values of the planning area's land and resources are described below. In most instances, these uses and values are described in economic or dollar terms. Often the information that is the most available and the easiest to interpret is that of an economic nature. However, this should not be interpreted to mean that economic information is the most important to consider when making allocation decisions. Economic value is only one important perspective, among many that should be taken into consideration.

3.5.1 Mineral Exploration and Development

The mining industry is one of the major contributors to the Saskatchewan economy. (Appendix 6 provides a very general overview of Saskatchewan's mining industry and its relationship to the land use planning process.) Saskatchewan is the world leader in the production of potash and uranium. In 1997 the mining industry provided for 5,960 direct jobs, 10-12,000 indirect jobs, and $245 million in royalties to the province, from an annual production valued at $2.326 billion.

Mining is the dominant industry in the Amisk-Atik planning area. Figure 3-1 provides an overview of the regional geology and principal mineral deposits of the Amisk-Atik Planning Area. To date, 22 base metal deposits from the Snow Lake-Flin Flon-Hanson Lake volcanic belt have been put into production, six within Saskatchewan. The value of metal (copper, zinc, lead, silver, and gold) produced from the six Saskatchewan mines is in excess of $6 billion. This includes the Konuto Lake Mine that has recently begun production. A number of base metal discoveries within the planning area have not yet been developed, including the large McIlvenna Bay deposit, which is currently undergoing a major exploration program. The Seabee Mine, the largest gold mine in the province, lies north of the Churchill River. The planning area also contains several past-producing gold mines in the Amisk Lake area and west of Southend. The Laural Lake gold deposit is at an advanced stage of exploration.

The recent past-producing Namew Lake nickel-copper mine, located four kilometres east of the Saskatchewan/Manitoba border, demonstrates a potential for nickel deposits in the region. Industrial mineral potential in the Precambrian Shield rocks in the region includes the Deep Bay graphite deposit and building stone potential associated with granitoid rocks and gneisses. Table 3.1 lists mines and advanced development projects that have been developed in the Amisk-Atik Land Use Planning area.

Improved exploration methods, particularly airborne geophysics, have enabled mineral exploration for base metal deposits hosted by Shield rocks to extend south where they are covered by younger sedimentary rocks of the Western Canada Basin. Exploration opportunities exist in the Basin for diamonds, base metals, and industrial minerals such as silica sand and building stone. The extensive silica sand deposits at Hanson Lake are currently being assessed for potential economic development. There may be some as yet unassessed potential for these sedimentary rocks to host petroleum deposits. Many of the formations are major hosts of oil and natural gas in the southern and western parts of the province.

The vast majority of the land in the Amisk-Atik Area is owned by the provincial Crown. The majority of the area has associated mineral exploration. Activities typically associated with mineral exploration include prospecting, line-cutting, trenching, drilling and geophysical surveys (ground and airborne).

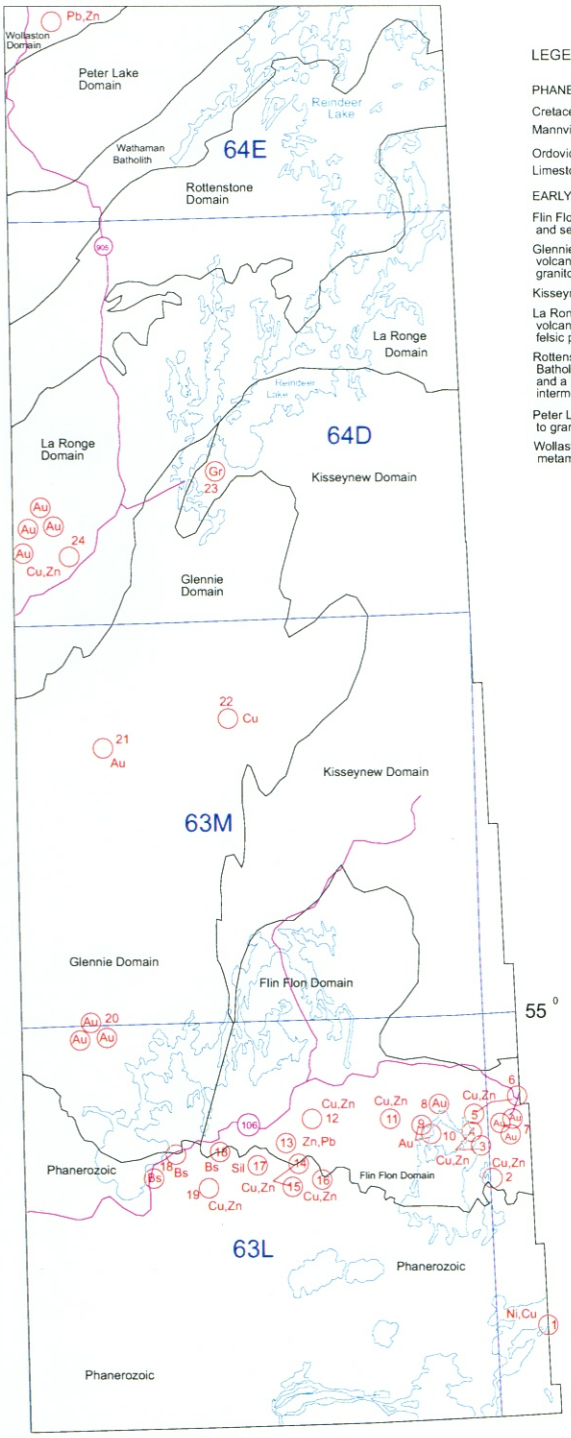
Mineral exploration in the region began in the late 1800s. The first significant gold discovery was made in 1913 by prospectors Thomas Creighton, Jack Mosher and Leon Dion on the northwest shore of Amisk Lake. In 1915, a massive copper-zinc deposit was discovered along the Saskatchewan-Manitoba border, which became the Flin Flon Mine. Production commenced in 1930 and ceased in 1991 after more than 60 years of operation. Extensive mine workings and tailings disposal areas are maintained in Saskatchewan for mining operations in other mines in the Flin Flon area.

Base metal production (primarily copper, lead, zinc, cadmium and nickel) in the province has been dominated by the Hudson Bay Mining and Smelting Co. Ltd. (HBMS) operation straddling the Saskatchewan-Manitoba border near Flin Flon. In 1997, the company mined ore from the Saskatchewan and Manitoba portions of the Callinan deposit, using underground mining techniques. The deposit is near the original Flin Flon operation, with employees living in nearby communities such as Flin Flon, Creighton, and Denare Beach. In 1999, the Konuto Lake Mine of HBMS, near the village of Denare Beach, began production. Saskatchewan metal production in 1999 from these two mines included copper, zinc, gold, and silver.

Other potential mineral resources in the Amisk-Atik Area include silica sand and building stone. The highest potential for these minerals occurs near Hanson Lake.

Copper-zinc-lead (base metals), gold, dolomite building stone, and silica sand have been produced in the region. Deposits of nickel-copper, molybdenum, tungsten, graphite, beryllium-rare earth, asbestos, talc, magnesite, chromite, iron, manganese, uranium, thorium, tourmaline, allanite, corundum, and Precambrian building stone have been identified in the plan area. Some potential also exists for petroleum, base metals, and diamonds to be hosted within the Phanerozoic sedimentary basin.

Regional Geology and the Principal Mineral Deposits in the Amisk-Atik Planning Area



LEGEND

PHANEROZOIC

Cretaceous

Mannville Group: sandstone and shale

Ordovician and Silurian

Limestone and dolomite

EARLY PROTEROZOIC

Flin Flon Domain: varied, moderately metamorphosed volcanic and sedimentary rocks with related internal plutons

Glennie Domain: deformed belts of moderatedly metamorphosed volcanic and sedimentary rocks within a predominantly granitoid terrain

Kisseynew Domain: high metamorphic grade sedimentary rocks

La Ronge Domain: belts of relatively low metamorphic grade volcanic and minor sedimentary rocks and intermediate to felsic plutons

Rottenstone Domain: comprised of two components; Wathaman Batholith, an extremely large pluton of intermediate composition; and a migmatite belt of highly metamorphosed and deformed intermediate intrusive rocks and subordinate sedimentary rocks

Peter Lake Domain: a plutonic complex ranging from ultramafic to granitic in composition

Wollaston Domain: tightly folded and moderately to highly metamorphosed sedimentary rocks with remobilized Archean granites

Principal Mineral Deposits

1 Namew Lake Mine (Ni,Cu)
2 Coronation Mine (Cu,Zn)
3 Konuto Lake Mine (Cu,Zn,Au,Ag)
4 Birch Lake Mine (Cu,Zn,Ag)
5 Flexar Mine (Cu,Zn,Au,Ag)
6 Flin Flon - Callinan Mines (Cu,Zn,Au,Ag)
7 Newcor, Bootleg, Henning-Maloney, Phantom Lake, and McMillan Mines (Au)
8 Graham Mine (Au)
9 Prince Albert (Monarch) Mine (Au)
10 Laurel Lake deposit (Au)
11 FON Zone deposit (Zn,Cu)
12 Ramsay deposit (Cu,Zn,Au,Ag)
13 Western Nuclear Mine (Zn,Pb,Ag,Au)
14 McIlvenna Bay deposit (Cu,Zn,Au,Ag)
15 Miskat Lake deposit (Cu,Zn)
16 McDermott Lake (Balsam) deposit (Cu,Zn,Au,Ag)
17 Hanson Lake deposit (Sil)
18 Deschambault Lake deposits (Bs)
19 Bigstone Lake deposit (Cu,Zn,Au,Ag)
20 Brownell Lake deposits (Au)
21 Seabee Mine (Au)
22 Knife Lake deposit (Cu)
23 Deep Bay deposit (Gr)
24 Brabant Lake deposit (Cu,Zn)

Commodity Abbreviations

Ag	Silver
Au	Gold
Bs	Building stone
Cu	Copper
Gr	Graphite
Ni	Nickel
Pb	Lead
Sil	Silica sand
Zn	Zinc

Saskatchewan Environment

Figure 3-1

Table 3.1 Mines and Advanced Projects in the Amisk-Atik Planning Area

Mine Name	Type	Location	Status
Seabee Mine	Au	Laonil Lake	Active mine
Newcor Mine	Au	Creighton	Abandoned - cleaned up in 1989
* Prince Albert Mine	Au	Amisk Lake	Abandoned - cleaned up in 1990
Callinan/Flin Flon Mine	Cu, Zn Au, Ag	Creighton	Operating, extensive tailings in Saskatchewan associated with the original Flin Flon deposit
Konuto Lake Mine	Cu, Zn, Au, Ag	Denare Beach	Operating
Flexar Mine	Cu, Zn, Au	Creighton	Abandoned - shaft sealed
Birch Lake Mine	Cu,	Creighton	Abandoned - shafts sealed
Coronation Mine	Cu, Au	Creighton	Abandoned - cleaned up in 1990
*Western Nuclear Mine	Pb, Zn, Au, Ag	Hanson Lake	Abandoned - condition unknown
Bootleg Lake Mine	Au	Creighton	Abandoned - clean-up being managed by SE, using financial assurance money
Laurel Lake	Au	Amisk Lake	Exploration project
Knife Lake	Cu	Sandy Bay	Exploration project
Bigstone	Cu, Zn	Limestone lake	Exploration project
McIlvenna Bay	Zn, Cu, Au, Ag	Hanson Lake	Exploration project
Deschambault Marble Quarry	Dolomite	Deschambault Lake	Operating
Hanson Lake	Silica sand	Hanson Lake	Pilot project

Footnote: Au - gold; Ag - silver; Cu - copper, Ni - nickel; Pb - lead; Zn-zinc
* Abandoned mines with tailings
Source: Saskatchewan Environment (SE)
Saskatchewan Energy & Mines (SEM)

(i) Base Metals

Six volcanic-hosted base metal mines in the Flin-Flon – Hanson Lake area of Saskatchewan have produced in excess of $6 billion of copper, zinc, lead, gold, and silver. These include the Flin Flon (Sask. portion), Birch Lake, Coronation, Western Nuclear, and Flexar mines, and the Konuto Lake Mine that recently began production. Production has also begun on the Saskatchewan side of the Callinan Mine. A number of base metal deposits with large metal inventories have recently been explored. These include the McIlvenna Bay, Bigstone, and Knife Lake deposits. The past-producing Namew Lake nickel-copper mine, located four kilometers east of the Saskatchewan/Manitoba border, demonstrates a potential for nickel deposits in the region.

(ii) Gold

The Seabee Mine, the largest gold mine in the Province, lies north of the Churchill River in the Laonil Lake area. Several past-producing gold mines occur in the Flin Flon – Amisk Lake area, and on the western margin of the plan area, to the southwest of Southend. The Laural Lake deposit at Amisk Lake is at an advanced stage of exploration. Other areas of extensive gold mineralization include Irving Lake, Brownell Lake, along the Tabbernor Fault from Prongua Lake to Uskik Lake, and Mari Lake.

(iii) Dolomite Building Stone

Dolomite of the Ordovician Red River Formation has been quarried for building stone in the Limestone Lake area. The dolomite has been traced from Limestone Lake to the east shore of Deschambault Lake. Ordovician dolomite also outcrops in several locations along the shore of Namew Lake.

(iv) Silica Sand

Extensive deposits of high-purity silica sand of the Ordovician Winnipeg Formation have been quarried in the Hanson Lake area and are locally exposed elsewhere near the Phanerozoic margin. The Hanson Lake deposits are currently being evaluated for potential large-scale production. There is also the potential for silica sand deposits to occur in the southwest corner of the map area hosted by the Cretaceous Mannville Group.

(v) Other Deposit Types

Other deposits of particular note in the region include: (1) the Deep Bay graphite deposit near Southend; (2) the Jan Lake area beryllium-rare earth deposits; and (3) potential building stone sites of Precambrian gabbroic, granitic, and gneissic rocks, particularly the Sahli Granite. Sand and gravel aggregate also occurs in many localities in the region. Good potential for fuel and moss peat exists, particularly to the south of the Phanerozoic margin.

Significant past producing mines within the Amisk-Atik Area are identified in Table 3.2.

The only “abandoned” or “orphaned” mine from an environmental perspective is the Western Nuclear Mine. Its tailing pond does not meet present environmental standards. All of the others have been rehabilitated or in the case of the Flin Flon Mine has tailing ponds that are still being used. A mine site is considered orphaned when an owner no longer exists for the property and the site does not meet current environmental standards.

Table 3.2 Past Producing Mines in the Amisk-Atik Land Use Planning Area

MINE NAME	COMMODITIES	LOCATION - UTMS: N;E
Birch Lake	Cu	6060908; 691348
Flexar	Cu, Zn, Au	6062650; 691561
Western Nuclear	Zn, Pb, Cu, Ag, Au	6060535; 638672
Coronation	Cu, Zn, Au, Ag	6052493; 306391
Flin Flon	Cu, Zn, Au, Ag	6071331; 314767
Prince Albert	Au	6066933; 675864
Newcor	Au	6068000, 312248
Blue Quartz	Au	6070570; 677871
Rio	Au	6067020; 312727
Henning-Maloney	Au	6065768, 312335
Phantom Lake	Au	6063058; 314248

Footnote: Au - gold; Ag - silver; Cu - copper; Pb - lead, Zn - zinc
Source: Sask Environment (SE) and
Saskatchewan Industry and Resources(SIR)

3.5.2 Forestry

3.5.2.1 Timber Products of the Forest

The Harvest Volume Schedule (HVS) is the maximum sustainable timber volume that can be harvested each year, as determined or approved by the Minister. Harvest volume schedules set the estimated amount of wood fibre that can be harvested annually from the replacement forest produced from current and proposed forest management practices. It assumes a balancing of depletion and renewal; thus cutovers and burned areas are assumed to be adequately stocked with new forest. If

renewal falls short of depletion, harvest volume schedules may not be sustainable.

Based on the current forest inventory data, the core area of the Amisk-Atik Forest Management Area supports an annual HVS of 262,000 cubic meters for softwood, and 85,000 cubic meters for hardwood. Preliminary estimates for the Reserve Area, based on limited inventory information from the early 1970s, with no age data included, are approximately 238,000 m3 of softwood and 102,000 m3 of hardwood. Estimates for the former Suggi Reserve Timber Supply Area is about 287,000 cubic meters of softwood and 69,000 cubic meters of hardwood, based on 1986 data. Therefore, the estimated total annual HVS for the planning areas 787,000 cubic meters of softwood and 256,000 cubic meters of hardwood.

These estimates were calculated for those forest lands which are considered timber-productive, are currently supporting a forest, and are not within designated protected areas or Indian Reserves. Actual harvestable volumes likely will be less, when operational constraints, merchantability constraints, environmental constraints, and the needs of other users and values are considered.

The timber industry has been an important part of the economics of the planning area, with most of the wood transported to Hudson Bay for processing. From 1990 to 1999, Sask For MacMillan Limited Partnership harvested approximately 75,000 cubic meters of softwood and 8,000 cubic meters of hardwood annually. When approved, the PBCN Forest Company operations will be the largest timber harvesting operation in the planning area, with an annual harvest of approximately 300,000 cubic meters of softwood.

Independent operators harvest about 17,000 cubic meters of softwoods annually, for products such as fence posts, fuel wood, saw timber and pulpwood. About 1,600 cubic meters of hardwood is harvested for commercial purposes each year, mostly for saw timber and fuel wood. There are five small sawmills in the area, which use a portion of the softwoods and hardwoods harvested by independent operators.

Domestic use of softwood totals about 3,200 cubic meters annually, mostly for fuel wood. Domestic harvest of hardwoods totals 940 cubic meters used for fuel wood.

3.5.2.2 Non-timber Products of the Forest

The special forest products industry is based on the harvest, processing, and marketing of plants commonly found growing in the understory of the boreal forest. The products used are very diverse. Many plants are used for traditional medicines. Mosses, twigs, bark, lichens and cones are gathered for the floral and greenery industry. Wild berries, mushrooms, birch syrup, and wild plants are used by the specialty foods industry.

Essential oils are extracted for cosmetics, fragrances and flavorings, from various plant parts, including boughs and needles of spruce, pine, fir and tamarack. Other craft products include diamond willow, conks and burls. The list is almost endless.

In the past few years there have been a limited number of permits issued for over forty species in the Amisk-Atik Planning Area. Interest is increasing in development of new industries using forest products such as mushrooms, berries, decorative floral products, fireweed, and others. These resources are also important for domestic, traditional, and ceremonial uses of area residents. The amount of these products being removed from the forest annually is unknown, however, the demand is increasing and the potential for expansion is even greater.

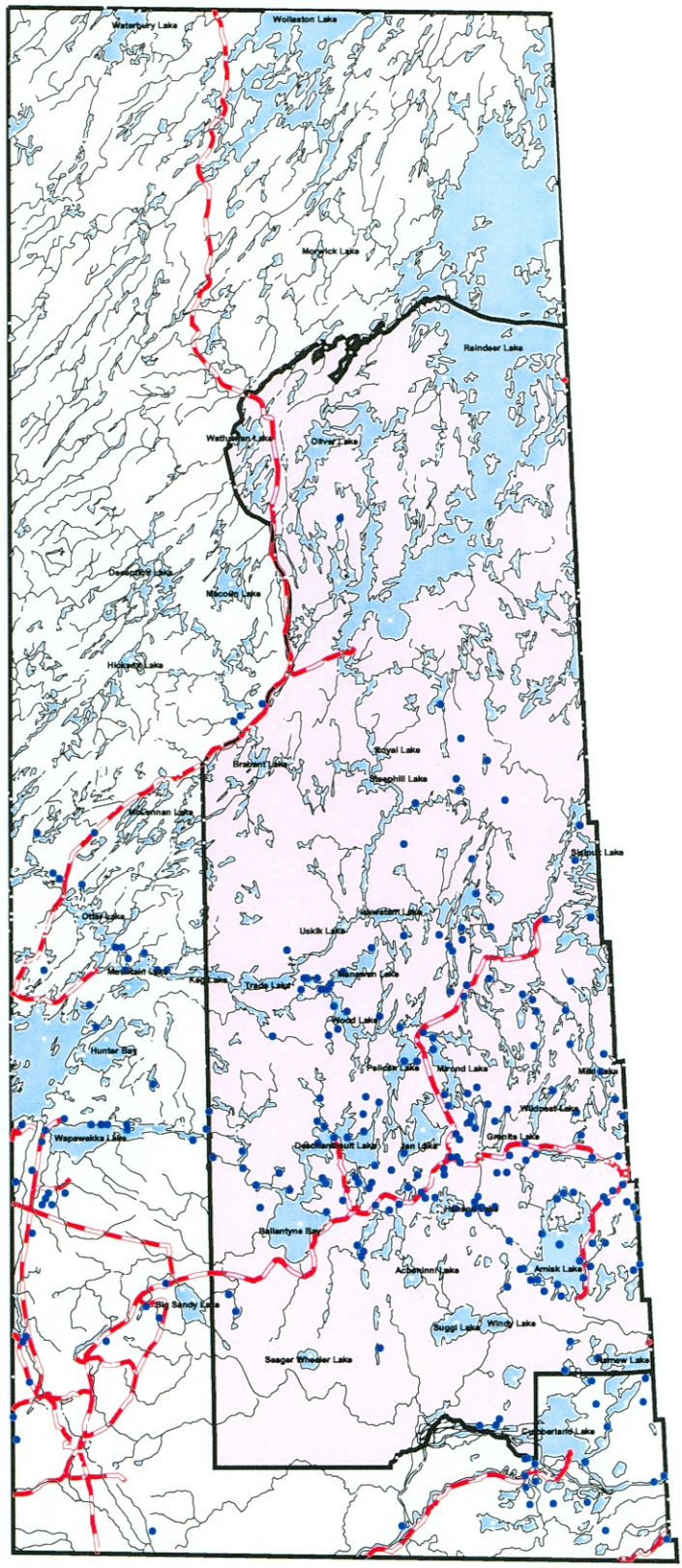
3.5.3 Wild Rice Production

The harvest and sale of wild rice produced in the Amisk-Atik planning area provides substantial economic benefits to the local and Provincial economy. The plan area, or east side growers, produced 17 percent of the Saskatchewan rice crop in 1999. For east side growers, the average harvest was 11,197 pounds with an average gross income of $8,397.75 (based on a green price of 75 cents per pound). The average production per acre in the region is 200 to 250 pounds per acre. (Reference: Opportunity North Vol 7 No. 2 Spring 2000).

The Amisk-Atik plan area had 66 active producers in 1999. Locations of permitted lakes with wild rice production are illustrated in Figure 3-2.

Table 3.3 provides wild rice production in pounds for the years 1995 to 1999 and annual dollar values based on sales at 75 cents for a pound of green wild rice.

Permitted Lakes with Wild Rice Production in the Amisk-Atik Planning Area



Saskatchewan Environment

Figure 3-2

Table 3.3 Wild Rice Production (Pounds of Green Wild Rice) - East Side

Area	1995	1996	1997	1998	1999
Creighton	218,989	142,490	82,454	243,961	242,903
Cumberland House	40,050	6,791	24,915	55,000	15,223
Deschambault Lake	54,900	73,833	30,231	110,940	93,173
Hudson Bay Nipawin	86,331	90,000	70,000	210,000	168,000
Pelican Narrows	56,000	68,604	67,264	56,137	113,718
Sandy Bay	14,500	84,267	22,129	16,840	105,487
Total pounds	**470,770**	**465,985**	**296,993**	**692,878**	**738,504**
Dollar Value	**$353,077.50**	**$349,488.75**	**$222,744.75**	**$519,658.50**	**$553,878.00**
Number of Producers East Region	**33**	**57**	**42**	**60**	**66**

3.5.4 Consumption and Use of Water Resources

3.5.4.1 Domestic and Commercial Water Use

In the Amisk-Atik area, water use is primarily limited to municipal, hydroelectric, industrial (mining) and recreational uses. Although a firm supply of surface water is normally available near any location, unlike southern Saskatchewan, shallow bedrock and long winters combine to drastically increase the cost of water treatment and distribution. Surface water provides the majority of water for communities.

For northern residents who live outside communities, and for northern outfitters, surface water is also the sole means of supply. In these instances water treatment depends on the needs of the individual or business.

The surface waters of the Amisk-Atik Planning Area are used extensively for recreational purposes such as boating, fishing, swimming, or water skiing. Recreational water quality is generally very good.

Mining operations also use surface water. Although mining operations collectively consume relatively small quantities, they affect the surface and groundwater resources

on which they are located on a much larger scale. Proper design, development, management and decommissioning of these facilities are carried out to minimize the impact to the water resources of the local and surrounding areas.

3.5.4.2 Hydroelectric Developments

Two major reservoirs in the Amisk-Atik Planning Area are operated by SaskPower to supply water to the Island Falls Hydroelectric Station. This station is a run-of-the-river facility that created Sokatisewin Lake in 1929.

Hydroelectric developments often utilize water impoundments to create head and / or regulate flow to provide for the efficient production of electrical energy. While hydroelectric generation provides sustainable energy production it also alters the natural hydrological regime, and reduces the stability of aquatic and riparian habitats. These resultant environmental changes or impacts are exchanged for much needed energy and the benefits that electrical energy supports.

Some of the initial environmental impacts of impoundments, such as the inundation of forested shorelines, are mitigated largely by natural processes which occur over time. Submerged trees and logs decompose or are eroded, and the former shoreline areas convert to more stable aquatic habitats. Changes in the operation of existing facilities or new design criteria for new developments are often required to reduce or prevent other long-term or large-scale ecological impacts. Such mitigative changes in operation have been undertaken with respect to the Island Falls Hydroelectric Station and associated reservoirs in the Reindeer-Churchill River system.

In 1943, the White Sand Dam was constructed on the Reindeer River to provide multi-year storage in Reindeer Lake in order to augment flows during low water years in the Churchill River. SaskPower began to operate the Whitesand Dam in the 1980's to also provide seasonal storage by storing summer flows for release in the winter thereby creating a more constant year round flow in the Churchill River. These changes in operating practice have helped to alleviate some of the impacts of the projects by reducing erosion and extremes of water level change, and ice breakage due to draw down of water for generation of electricity.

3.5.5 Consumption and Traditional Use of Fish and Wildlife Resources

Many residents of the Amisk-Atik Planning Area consume fish and wildlife resources for a variety of purposes-- subsistence hunting, fishing, and trapping, commercial and sport-fishing, outfitting, and commercial trapping. Resource use in the PBCN traditional territories covers all the activities that a self-sufficient population required to survive in a harsh environment. Trapping for furs must have begun in the earliest times to produce domestic articles for the home, clothing, decoration, and trade with other

First Nations.

Later, this fur trade continued and expanded with the companies which exported the furs in exchange for a wide variety of goods. Trapping remains an important part of life for many families and members of PBCN and a link for all to the traditions of days gone by.

Hunting has been a way of life for First Nations people. Fishing ranks with hunting as a prime means of sustenance, and a traditional activity carried on by all generations. Fishing for families and communities continues to be an important source of food, as well as a local economic activity through commercial fishing enterprises. Tourist outfitting for sport fishing and hunting provides economic benefits to many northerners. Recreational pursuits by tourists based on sustainable fish and wildlife populations provide economic opportunity to many businesses in the plan area.

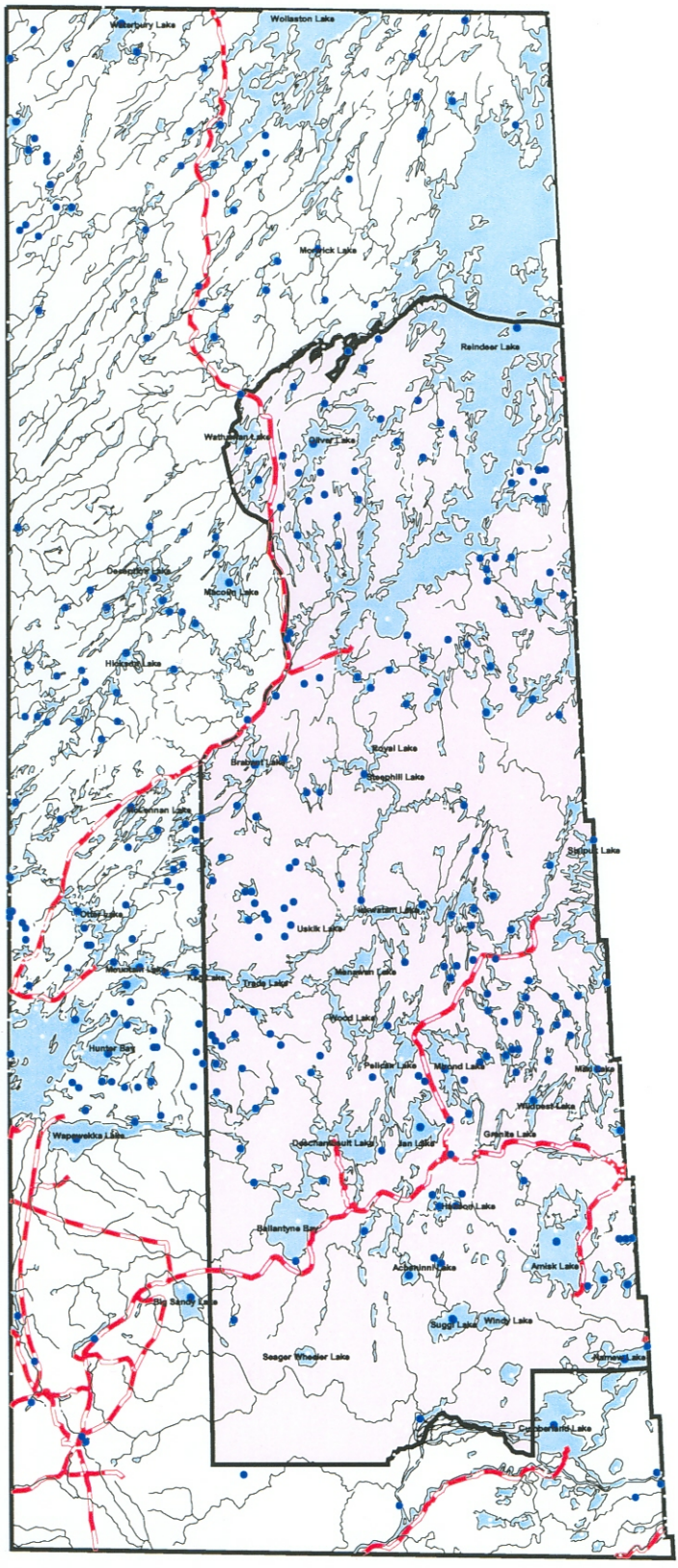
Accurate records do not exist for the amounts of resources used for traditional purposes. The utilization of natural resources is a significant benefit to all northerners in the planning area, and is in fact a lifestyle for many people in northern communities. People engaged in traditional lifestyles continue to hunt moose, deer, woodland caribou, and occasionally black bear, making use of many parts of the animals for food and clothing.

3.5.5.1 Fish Resources

Amisk, Deschambault, Jan, Pelican, and Reindeer Lakes provide the basis for the most significant recreational, commercial fishing, and outfitting activities in the Amisk-Atik Planning Area. Other lakes with significant fisheries include Hanson, Namew, Mirond, Wood, Manawan, and a series of lakes which form the Churchill River system such as Iskwatam, Wapumon, Wintego, Pit, Pikoo, and Reeds Lakes. Many of the lakes in this planning area have at least one type of fishery and many have two or more. The fish resources of this area are very important to local residents because they are used for a source of income, traditional purposes (eg. food, ceremonies), and recreation. Non-residents also utilize this area's fish resources for recreational purposes.

There are 40 licensed sport fish outfitters in the Amisk-Atik Planning Area (See Figure 3-3). An additional 10 outfitters have facilities near the planning area and utilize resources within the plan boundary. Walleye and northern pike are the primary sport fish species targeted by anglers and outfitting clientele, although some do fish for lake trout that occur naturally in a few lakes in this area. Yellow perch are usually not large enough to be of importance to anglers, commercial fishermen or Treaty/aboriginal subsistence fishermen.

Sportfishing Lakes Allocated to Outfitters in the Amisk-Atik Planning Area



Saskatchewan Environment

Figure 3-3

Commercially Fished Lakes in the Amisk-Atik Planning Area

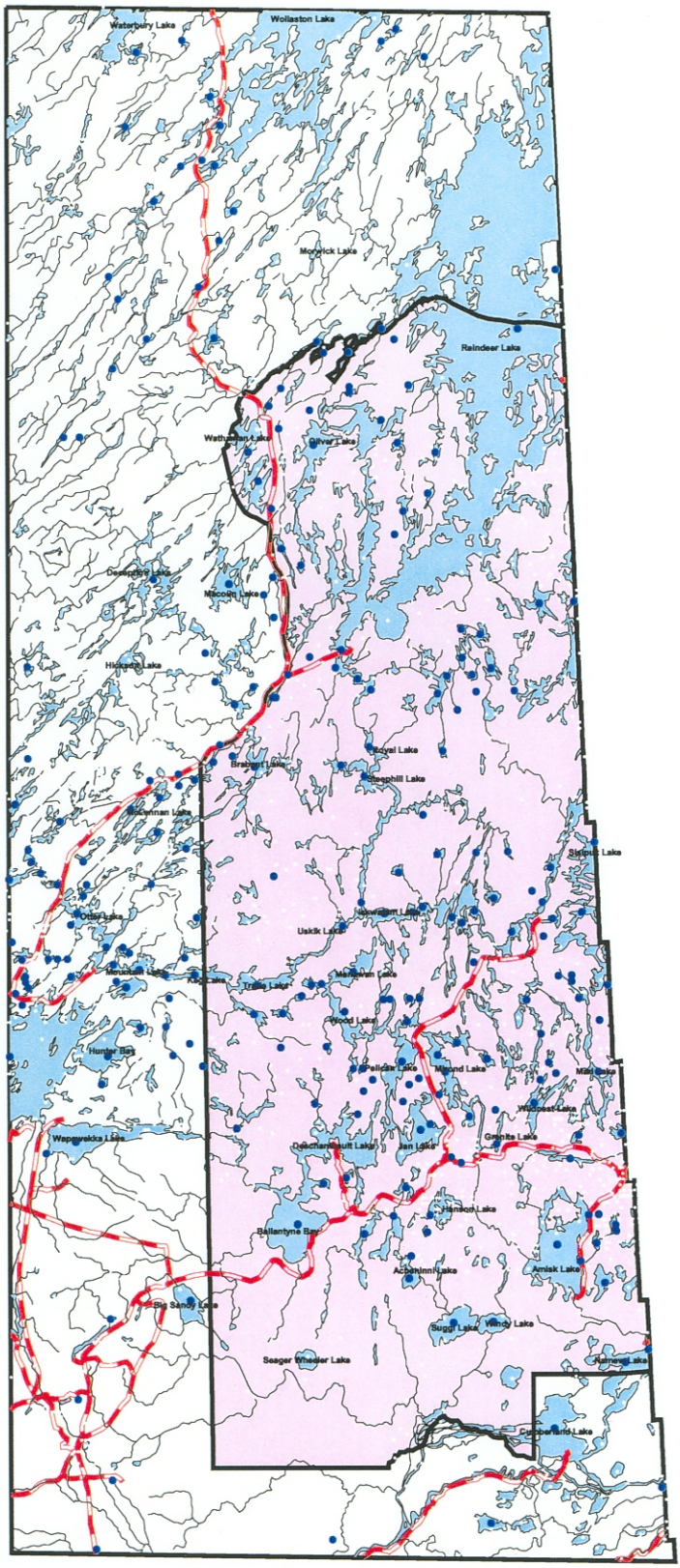


Figure 3-4

There are six Commercial Fishermen's Co-operatives in the Amisk-Atik Planning Area. They are located in Southend, Kinoosao, Denare Beach, Sandy Bay, Pelican Narrows, and Deschambault Lake. A map of the commercially fished lakes is found in Figure 3-4. The commercial fishing sector employed approximately 200 - 250 fishermen and generated 1.03 million dollars in deliveries to the Freshwater Fish Marketing Corporation in 1997/98. Primary commercial target species are walleye, lake trout, northern pike and lake whitefish. There was also an estimated total of $12,000 in peddled fish sales that year. The commercial fisheries co-operatives have also diversified their products to include whitefish roe.

Table 3.4 provides a summary of the number and dollar value of sport licences that vendors in the planning area sold for the 1997 and 1998 seasons.

3.5.5.2 Wildlife Resources — Commercial Trapping

The wild fur industry, the oldest commercial use of natural resources in Saskatchewan, is declining. While annual harvests have always been affected by species distribution, human access, weather conditions (particulary fall and winter), traditions and customs, and incentives to trap, more contemporary factors such market boycotts and lifestyle changes are causing an overall downward trend in this industry.

Until European settlement, North American Indians were not economically interested in the pelts of many of the furbearers. Traditional lifestyles meant that larger animals, such as ungulates, were more valuable than smaller furbearers, except possibly beaver and snowshoe hare. European trade items provided incentive to trap furbearers, with beaver most in demand.

In 1946/47, the Fur Conservation Program was initiated in Saskatchewan, dividing the province into a series of fur conservation areas and trapping blocks. The fur conservation areas and trapping blocks found in the Amisk-Atik Planning Area are presented in Figure 3-5. The intent of the Fur Conservation Program was to bring about the recovery of beaver, and to structure an orderly trap line management system to reduce conflicts and maintain forest trap lines as a commercial entity. Original provincial membership was about 3,000 (1,400 Treaty Indians, 1,400 Métis individuals, and 300 non-aboriginal individuals). In 1998, trapper numbers, provincially, were between 2,000 and 3,000.

Table 3.4 Fish and Wildlife Licence Sales — 1997 and 1998
Amisk-Atik Planning Area

TYPE OF LICENCE	1997 # of LICENCES	1997 LICENCE REVENUE	1998 # of LICENCES	1998 LICENCE REVENUE
Saskatchewan & Canadian Resident Angling Licence	5,723	$ 91,854.15	5,586	$ 89,655.30
Saskatchewan Seniors Angling Licence	270	2,889.00	275	2,942.50
Saskatchewan & Canadian Resident 3-day Angling License	5	40.15	2	16.06
Non-Resident 3-day Angling Licence	0	0	0	0
Non-Resident Angling Licence	4,363	140,052.30	4,346	139,506.60
Total Angling	**10,361**	**$ 234,835.60**	**10,209**	**$ 232,120.46**
Saskatchewan Resident Game Bird	143	$ 1,573.00	172	$ 1,892.00
Canadian Resident Game Bird	13	754.00	14	812.00
Non-Resident Game Bird	6	696.00	4	464.00
Total Game Bird	**162**	**$ 3,023.00**	**190**	**$ 3,168.00**
Wildlife Habitat Certificates	**861**	**$ 9,471.00**	**657**	**$ 7,227.00**
Saskatchewan Resident Bear	41	$ 697.00	7	$ 119.00
Canadian Resident Bear	3	165.00	1	55.00
Non-Resident Bear	24	2,640.00	35	3,850.00
Total Bear	**68**	**$ 3,502.00**	**43**	**$ 4,024.00**
Saskatchewan Resident 1st White-tailed Deer	147	$ 4,851.00	162	$ 5,346.00
Canadian Resident 1st White-tailed Deer	20	2,800.00	22	3,080.00
Saskatchewan & Canadian Resident 1st Non-trophy White-tail	100	2,000.00	103	2,060.00
Saskatchewan & Canadian Resident 1st Non-trophy White-tail	1	20.00	0	0
Total White-tailed Deer	**268**	**$ 7,151.00**	**287**	**$ 10,486.00**
Saskatchewan Resident Elk	25	$ 825.00	26	$ 858.00
Saskatchewan Resident Archery Mule Deer	0	0	0	$ 0
Saskatchewan Resident Moose	175	$ 5,775.00	184	$ 6,072.00
Saskatchewan Resident Youth Game	13	$ 117.00	14	$ 126.00

Northern Fur Conservation Area.....	517	$ 5,170.00	241	$ 2,410.00
TOTALS.....	**730**	**$11,887.00**	**465**	**$ 9,466.00**

Fur Conservation Trapping Blocks in the Amisk-Atik Planning Area

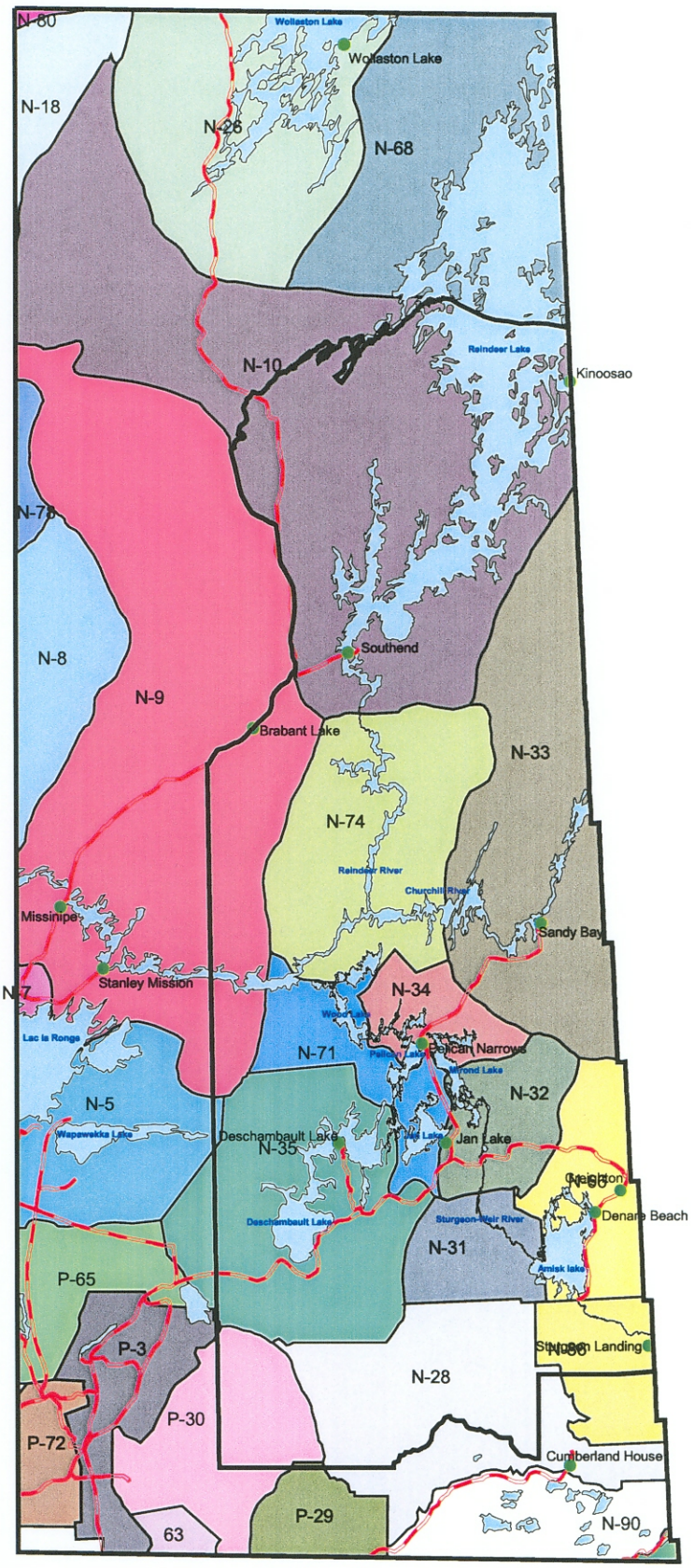


Figure 3-5

By 1960 major changes to the trapping lifestyle began. Government agencies funded community projects, which moved people off the land. The snowmobile, which allowed more frequent returns to the community, was a significant cost that meant trapping had to be more profitable. Until 1963 harvest levels of beaver had been consistent. Since 1964, harvest levels have been associated with fur prices.

In the 1970's, fur prices were high, which led to a surge in trapping activity, with average income to trappers of $1,570 annually. For five years, total production value exceeded $4 million. After the boom years of the 1970's, the 1980's were a decade of transition, when European boycotts made fur a low value product. From a peak in number of trappers provincially of 22,500 in 1980-81, the number in 1992-93 was 3,000.

Table 3.5 provides a summary of the dollar value of the fur harvests in the Amisk-Atik area during 1994/95, 1995/96, 1996/97, and 1997/98 fiscal years. The dollar values are not all inclusive. The dollar values are based on reported sales to the North American Fur Auction and only reflect information received from fur dealers. The dollar value of licences sold in the Amisk-Atik Northern Fur Conservation Area for the 1997 and 1998 trapping seasons is presented in Table 3.4.

The value of trapping can not be truly assessed in dollars alone. Trapping is a very important component of a desired lifestyle for northern and aboriginal people. Elders of the Peter Ballantyne Cree Nation are promoting and preserving trapping through education of youth in their communities.

Table 3.5 Fur Values in the Amisk-Atik Land Use Planning Area

Fur Conservation Area	1994-95	1995-96	1996-97	1997-98
N005	$ 14,852.60	$ 12,532.97	$ 16,423.26	$ 13,035.67
N009	$ 59,764.30	$ 37,723.60	$ 41,734.53	$ 57,981.75
N010	$ 19,627.00	$ 27,622.05	$ 50,152.99	$ 13,125.25
N028	$ 25,886.60	$ 31,348.17	$ 37,878.45	$ 35,727.33
N031	$ 2,456.00	$ 5,048.00	$ 1,512.00	$ 4,236.35
N032	$ 8,655.50	$ 3,938.00	$ 12,736.00	$ 11,212.50
N033	$ 3,221.00	$ 1,461.00	$ 7,645.00	$ 7,663.00
N034	$ 4,745.00	$ 1,710.75	$ 6,733.00	$ 3,508.00
N035	$ 13,948.15	$ 12,913.22	$ 21,737.21	$ 12,595.65
N066	$ 8,915.70	$ 10,625.69	$ 15,561.45	$ 13,869.24
N086	(Figures not available)			
N071	$ 8,009.00	$ 7,727.45	$ 8,878.50	$ 15,570.58
N074	$ 12,627.00	$ 743.00	$ 9,214.00	$ 4,599.00
P030	$ 9,676.15	$ 23,179.25	$ 21,639.04	$ 10,920.06
Totals	**$ 192,384.00**	**$ 176,573.15**	**$ 251,845.43**	**$ 204,044.38**

3.5.5.3 Outfitting

Forty active fishing outfitters are located within the planning area. Another ten outfitters close to the planning area conduct limited operations in the area. Of the forty fishing outfitters, twenty four also offer bear hunts, and twenty two offer guided moose hunts. An average of 55 guided moose licences are purchased each year by outfitted clients, with an estimated eighty percent success rate.

An accurate estimate of outfitted bear harvest is not available at this time. Bear hunting outfitters have traditionally not been very active and a reasonable estimation of bears harvested annually would be fewer than fifty. However, it should be noted outfitting for bear provides significant economic benefits to active operators with established client lists.

There is an administration fee of three hundred dollars for a first-time approved Outfitter Licence. An annual fee of two hundred dollars is charged for an Outfitter Licence having one endorsement and a one hundred dollar fee is charged for each additional endorsement. The annual fee for each out camp or day-use lake associated with an outfitting service is fifty dollars.

Annual fees to Government for outfitting licences in the 2000/2001 fiscal year totaled $14,650.00.

Outfitting provides substantial and ever increasing benefits to the local and Provincial economy. A 1996 study estimated the economic contribution of outfitting in Saskatchewan to be $45-50 million in direct revenues to licensed outfitters, and $90-100 million in gross economic impact for primarily the rural and small community economy. Spending an estimated $32 million annually the outfitting industry provides about 1,000 full time equivalent of direct employment each year, and significant amount of indirect employment in support service industries such as motels, restaurants, food processing and taxidermy. The promotion of recreation and tourism facilities and services supplied by their operations draw people to the planning area. Spin off economic benefits to other businesses in and outside the plan area are significant. Licence sales attributable to outfitter clients are included in Table 3.4.

3.5.5.4 Sport Hunting

Sport hunting activity is limited compared to Aboriginal subsistence hunting because:
1) First Nation priority of access to the resource is generally recognized by residents;
2) there is little influx of sport hunters from other parts of the province; and
3) game populations are naturally low, except in the extreme southeastern corner of the planning area. Hunting success is low and challenging for the recreational hunter.

Most sport hunting is for moose and occurs in the logged over more accessible parts of the planning area east of Amisk Lake and south of the Precambrian Shield. Annually twenty to thirty moose are harvested by recreational hunters. A handful of hunters also hunt black bear with small numbers harvested.

Licence sales for sport hunting activity are included in Table 3.4.

3.5.5.5 Sport Fishing

Sport fishing provides value to all tourism and recreation activities that occur within the Amisk-Atik plan area. The activity of sport fishing requires services and facilities that support travel, accommodation, supply and purchase of equipment, and the special services such as guiding that only trained people employed in the tourism industry can provide. The health and sustainability of the fish resource must ensure quality fisher experiences for all resource users, if not, the economy of the planning area and peoples quality of life will be severely impacted.

Angling licence sales by vendors in the planning area are included in Table 3.4.

3.5.5.6 Recreation and Tourism

Tourism is a primary industry in the plan area due to the natural beauty of the area, supported by its abundant natural resources. It provides important employment opportunity and economic benefits to residents. Recreation Sites and Representative Area Network (RAN) sites provide excellent opportunities for outdoor recreation experiences, ranging from wilderness canoeing, camping and hiking to facility based fish cleaning facilities, boat launches, car access camping, and fixed roof accommodation. These opportunities are enjoyed by both residents and visitors alike. (See Appendix 15 for additional information on Saskatchewan's Provincial Park Land System)

Recreation Sites and RAN sites provide locations and opportunities for educational and interpretive programing. Interpretation of the natural and cultural features of an area can be in the form of displays, print or staffed programs. These programs, as well as outdoor recreation education serve to enhance people's understanding, appreciation, enjoyment and stewardship for their natural and cultural heritage.

Association with the Canadian Heritage Rivers System (CHRS) can bring additional focus for education, information and interpretation, because of the sensitivity around heritage rivers.

The mere appearance of an area designated as provincial park land can act as an additional factor influencing visitors planning a trip to choose a given area. Visitors to

parks support Saskatchewan's tourism and growing eco-tourism industry. This influence is felt by nearby towns through employment provided by some types of park land and through purchases at local businesses made by tourists. Consideration of this growing segment of our economy and the role park land can play should be part of the equation along with intangible benefits of parks and wilderness areas when considering future land uses and allocations.

3.5.6 Canoeing

The numerous and varied canoe routes in the region provide a significant draw for tourists. There are 3,802 km of canoe routes which includes 23 different canoe trips in the Amisk-Atik planning area (see Figure 3-6). Some of the canoe trip routes overlap. The trips range in length from 2-14 days, with 0-14 portages depending on the route. Descriptive *Canoe Trip* booklets are available in SE offices**.**

3.5.7 Snowmobiling

Snowmobiling is used as a form of transportation and recreation in the Amisk-Atik area. Existing snowmobile trails in the planning area are outlined on Figure 3-4 of the Management Plan. The Border Explorers Snowmobile Club operates out of Flin Flon, Manitoba, and they groom approximately 400 km of trails between Creighton and Denare Beach, SK, and Flin Flon and The Pas, MB. Although the club grooms trails in Saskatchewan, the club is not permitted to charge fees for any portion of the trails on Saskatchewan Crown Lands. Recreational snowmobiling provides significant economic development in the area, and as the number of groomed trails increase the potential economic benefits expand.

3.5.8 Land Dispositions

There were 1,127 dispositions in the Amisk-Atik planning area in 2000. These dispositions are in the form of leases, licences and permits administered by Sustainable Land Management Branch of Saskatchewan Environment. Each disposition entitles the holder to occupy Crown Resource Lands. The terms of the disposition entitle the holder to land use privileges that are directly related to the type of agreement.

Leases provide the tenant with the most secure tenure. Terms vary from one to twenty-one years. Licences apply to wild rice operations and are issued on ten year terms. Permits are associated with land uses that are non-permanent in nature. The associated development is intended to exist for a short term. Wild rice for example is set for the first four years of operation.

Canoe Routes in the Amisk-Atik Planning Area

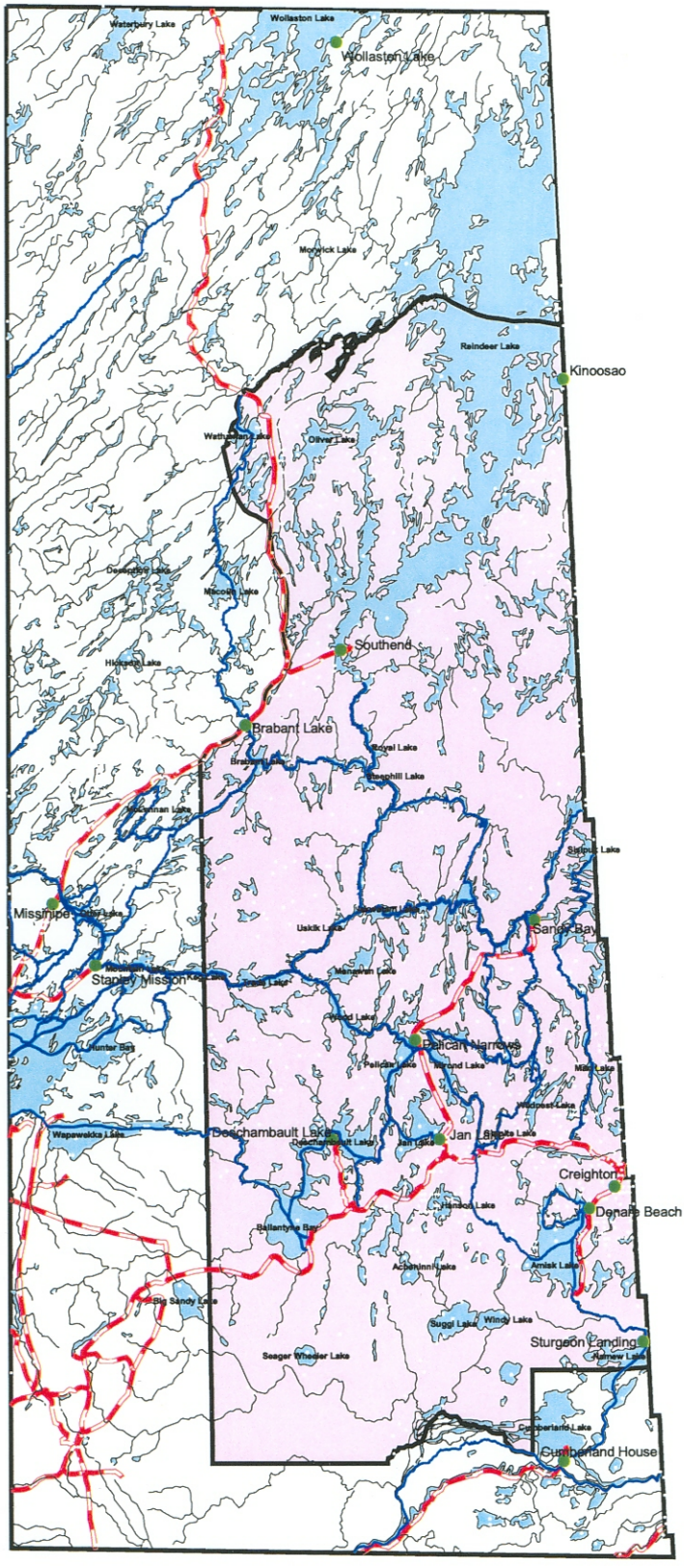


Figure 3-6

Disposition holders have a right to use the land base assigned to their respective disposition and must operate within the terms and conditions of their agreement. The Government is obligated to ensure that these entitlements are respected.

A description of the types of dispositions and their purposes follows:

Agriculture
Agriculture dispositions provide residents of the North with an opportunity to pursue agricultural activities. Examples are cultivation and production of crops, dairying, raising poultry or livestock, and includes the erection of buildings or structures required to enhance the operation.

Airstrip
Provides landing area capability for air service.

Commercial
Exclusively covers land use that provides services or products to the public for the purpose of economic or material gain, and includes an enterprise for which a resource allocation is made (see Figure 3-7).

Easement
Provides a right of way on crown lands.

Foreshore/Miscellaneous
Miscellaneous use permits provide legal authority for land uses associated with any activity covered under a lease. Tenure is issued on an annual basis. They provide the opportunity for the legitimate use of Crown Resource Land including the foreshore. Examples include docks, boat lifts, boat houses and fish filleting facilities.

Institutional
Examples are education and correction facilities on Crown Resource Lands.

Provincial/Municipal Government
To provide required services to the planning area various government departments and agencies require land on which to base their operations and facilities. Examples are boat launches, landfill sites, and communication towers.

Quarry/Sand & Gravel
Provide access to sand and gravel resources (see Figure 3-8).

Recreational and Residential
The desire of people to live in remote areas or to have the opportunity to recreate on

remote portions of Crown Resource Lands has lead to and required the development of recreational and residential dispositions. These dispositions provide the tenant the authority to erect a cabin or residence based on the conditions of the lease agreement. Present SE policy limits new residential development to developed subdivisions or Municipal boundaries.

Rights of Way
These dispositions provide authority to maintain access roads to another disposition.

Traditional Resource Use
These dispositions provide the tenant authority to use Crown resource land to erect buildings or structures to be used exclusively for residence in conjunction with trapping or commercial fishing activities. Dispositions can be in the form of a 10 year lease or annual permit.

Table 3.6 provides information indicating the total number of dispositions in each category for the year 2000, and revenues to Government generated from land dispositions in 1999. Annually approximately $800,000.00 in fees to Government are generated within the Amisk-Atik plan area.

Table 3.6 Land Dispositions and Revenue in the Amisk-Atik Planning Area

Type of Disposition	Number of Dispositions 2000	1999 Dispositions Annual Rent
Recreational Lease	233	$162,282.02
TRU- Permit/Lease	195	$3,705.90
Foreshore Permit	138	$8,279.80
Commercial Lease	110	$324,113.82
Sand/Gravel Surface Lease	81	$64,414.00
Miscellaneous Permit/Lease	32	$14,984.10
Provincial/Municipal Government	27	0.00
Residential Lease	15	$40,708.78
Agricultural Lease	10	$1,210.11
Institutional Lease	8	$824.80
Easement	7	0.00
Garden Permit	7	$320.00
Quarrying Surface Lease	6	$32,923.75
Wild Rice (Land) Permit	6	$812.44
Wild Rice (Water) Permit	233	$22,765.76
Mineral Surface Lease	5	$78,953.75
Airstrip Lease/Permit	6	$5,877.00
Right of Way Lease/Permit	4	$288.25
Industrial	4	$13,053.75
Totals	**1127**	**$775,518.03**

Industrial and Commercial Dispositions in the Amisk-Atik Planning Area

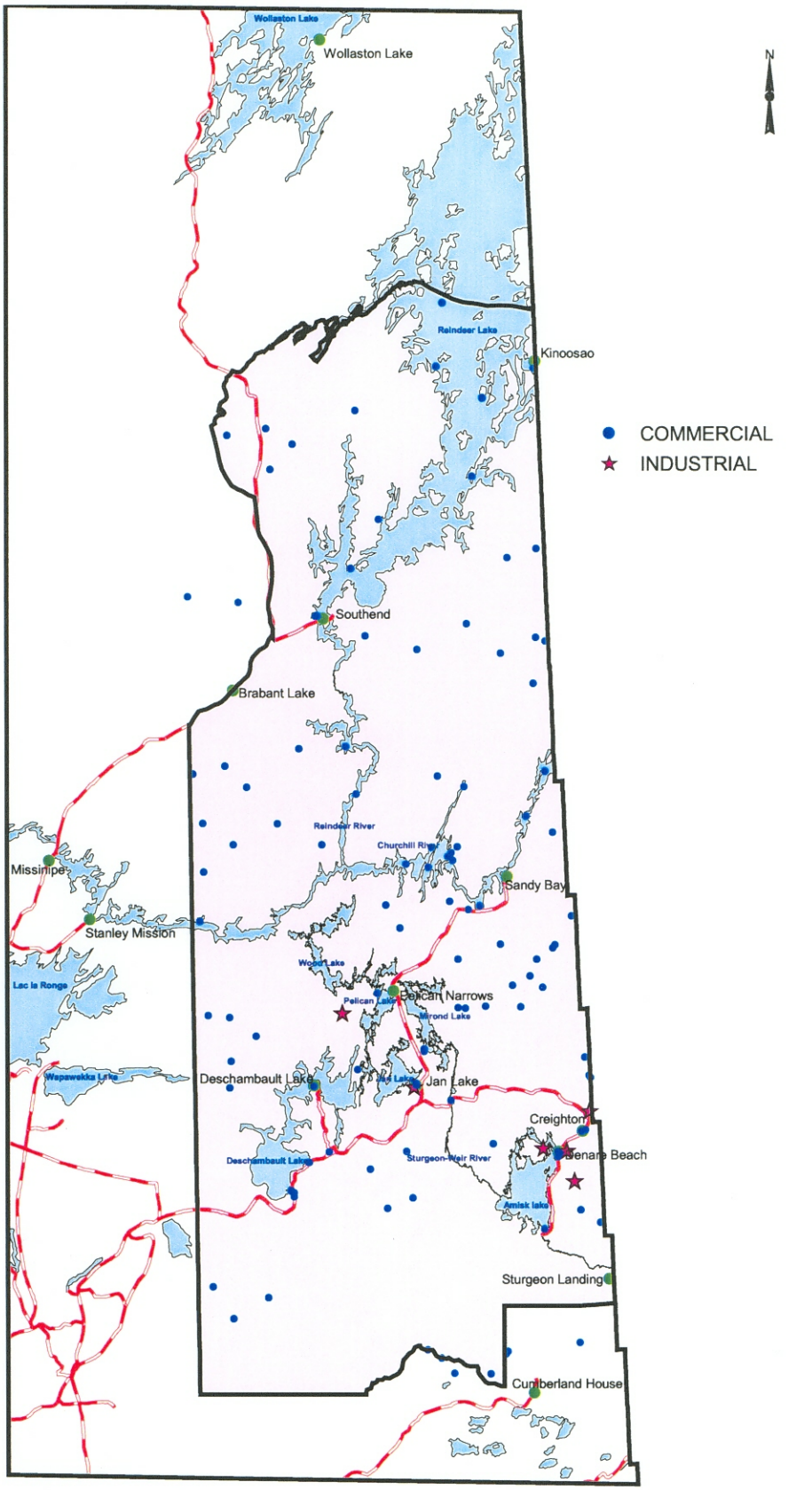


Figure 3-7

Sand and Gravel Dispositions in the Amisk-Atik Planning Area

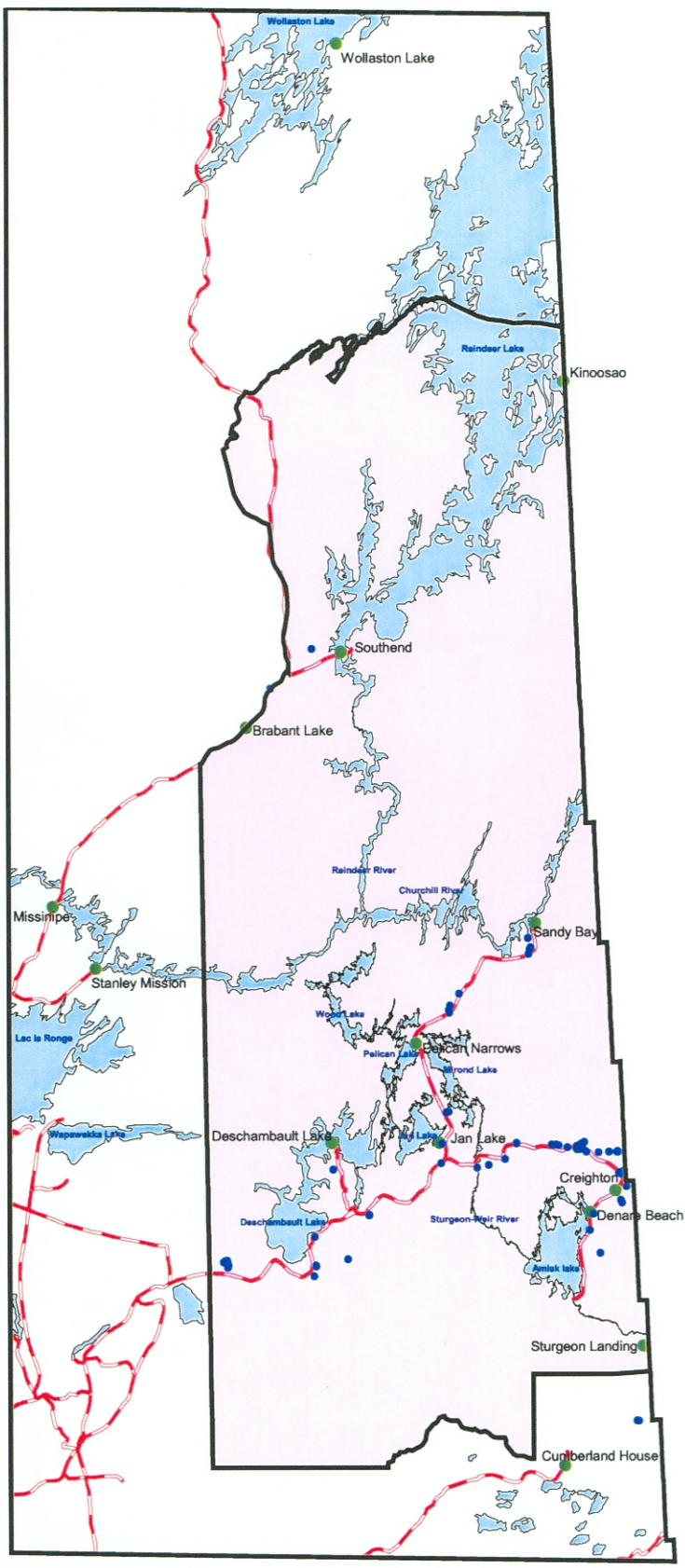


Figure 3-8

Recreationl / Residential Dispositions in the Amisk-Atik Planning Area

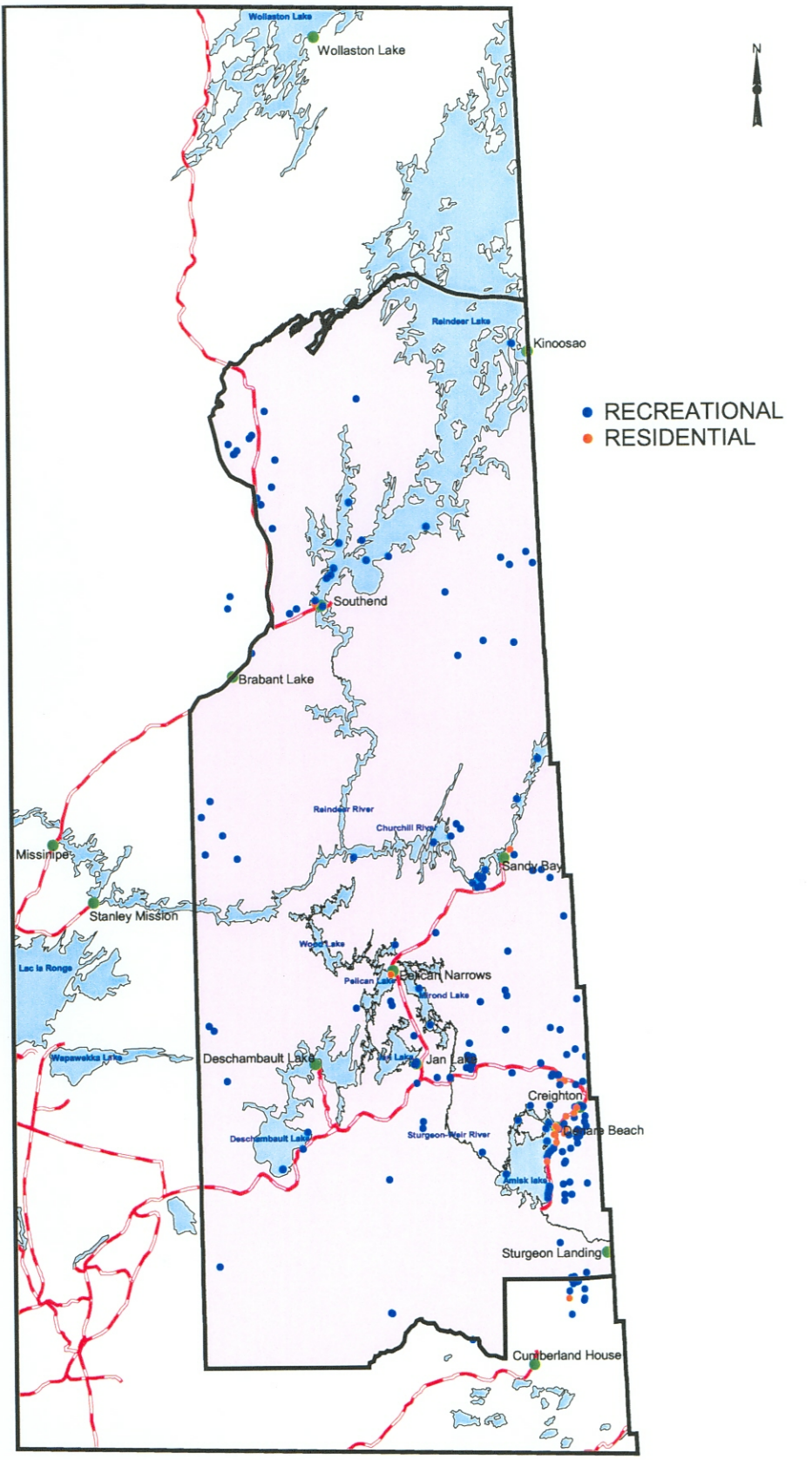


Figure 3-9

CHAPTER 4: POPULATION DYNAMICS & NATURAL HISTORY OF THE AMISK-ATIK PLANNING AREA

4.1 People and Communities: A Long Association with the Land

4.1.1 Historical Background

People have lived in the Amisk-Atik area of northern Saskatchewan since the retreat of the glaciers after the last ice age, over 8,500 years. The land within the Amisk-Atik Land Use Plan area would have been well known and well used by its original aboriginal inhabitants due to its abundant natural resources and relative ease of movement.

The major lake and river systems, including the Churchill, Reindeer and Sturgeon Weir Rivers in particular, provided means to move about in search of food, raw materials for tools, and trade with neighbors. By the time the written history of the area began, with the arrival of European explorers and traders, there was a well established social and cultural mosaic of First Nations people, who lived entirely off the resources and environment of the area, in a completely sustainable manner.

Contact with European civilization started a long process of social and environmental change that continues today. New patterns of trade were established, and new technologies and goods introduced. These new goods and technologies themselves likely had a hand in changes to the territorial areas of various groups, as well as the first substantive changes to the environment. The fur trade, including the building of trading posts, and subsequent church missions, altered both patterns of use and travel, and the areas in which populations congregated.

In the years following the founding of Canada, the land within the Amisk-Atik Land Use Plan area, once part of the Hudson Bay Company land grant, became federal Crown land. Treaties were signed with the First Nations guaranteeing them continued access to their traditional resources and pursuits, and reserving specific lands for them, while opening the land to other forms of economic development.

In the Amisk-Atik area, mining and hydroelectric development were two of the major new uses to be established, even before the province attained ownership of the land, and control of the natural resources. While Saskatchewan became a province in 1905, the land and resources of the area were not transferred to provincial administration until 1930, with the Natural Resources Transfer Agreement (NRTA) with Canada. This began another period of development that continues to the present day, with the latest proposals for development originating with the people of the area themselves.

4.1.2 Communities of the Planning Area

There are nine distinct communities within the Amisk-Atik Land Use Plan area. These communities range in size from hamlets with 50 or so people, to large towns with well over a thousand inhabitants. These communities are generally well established permanent settlements, but also include centres like Jan Lake, which contains a large number of seasonal residents associated with cottage and outfitting recreational and business pursuits.

Most of the people who live in the area are of aboriginal background, and several of the communities lie partly or wholly on Indian Reserves. The details of population are outlined in Table 4-1. This table shows the population of the area and gives a perspective on recent population growth, average age, and the cultural ties of the inhabitants as expressed in census data.

Table 4.1 Population of Communities in the Amisk-Atik Land Use Planning Area

Community	1991 Population	1996 Population	1996 % Aboriginal	Average Age 1996
Creighton	1,668	1,713	7.0	31.8
Denare Beach (all)	822	776	25.7	33.2
Deschambault Lake	607	695	99.3	19.9
Other (Jan Lake, Sturgeon Landing, Kinoosao, etc.) [1]	155	175	90.0	31.4
Pelican Narrows Reserve	1,130	1,404	98.7	20.3
Pelican Narrows Village	252	445	91.0	19.1
Sandy Bay (all)	770	959	94.9	21.6
Southend Reindeer Village	142	168	92.3	18.6
Southend Reindeer Reserve	415	647	97.4	20.9
TOTALS	**7952**	**8978**	**60**	

(Source: Statistics Canada)
Note 1: This is an estimate based on a census unit that includes all of northern Saskatchewan

What this table shows is the preponderance of aboriginal peoples in most of the

communities, and in the planning area as a whole. It is also evident that the population is young, with average ages well below provincial averages. This speaks to both the growth of population occurring in the area, and the influx of young people from outside the area looking for jobs in resource or tourism industries.

The table also shows that a lot of people in this area live in less formal communities, which may consist of rural acreages, cottage subdivisions, isolated Indian Reserves, and other locations. Small communities like Sturgeon Landing may be included in such wider census results.

One cannot gain a true perspective on the communities of the Amisk-Atik area without considering Flin Flon, Manitoba, which lies adjacent to Creighton, and right on the Saskatchewan - Manitoba border. Flin Flon had a population in 1996 of 6,572, down significantly from the 7,112 recorded in the 1991 census. The average age of Flin Flonians is also greater than that in the planning area, at 34.6.

Flin Flon is a large community in comparison to the communities just across the border in Saskatchewan. The population and services of Flin Flon have an ongoing impact on the Amisk-Atik planning area in terms of the services provided, such as hospitals, retail and commercial business, and schools, as well as in the use of the planning area for recreational activities like fishing, hunting and snowmobiling.

4.1.3 First Nations of the Planning Area

The majority of the population in the Amisk-Atik Land Use Plan area are members of First Nations long established in this environment. The predominant group is the Peter Ballantyne Cree Nation (PBCN), which is Saskatchewan's second largest First Nation, with a population in 1998 of 6,510. This population also makes PBCN one of the largest First Nations in Canada. The traditional land base of PBCN overlaps very closely with the planning area.

Other First Nations have traditionally used parts of the planning area, although they do not have permanent communities or Reserves within the boundaries of the plan. To the west, Lac La Ronge Indian Band members, specifically from Stanley Mission on the Churchill River, and later Brabant Lake on the Waddy River, have traditional lands that extend into the Amisk-Atik planning area. To the south, members of the Cumberland House Band have traditionally used parts of the planning area for hunting, fishing, trapping and other traditional activities, most of which continue today.

As well, there are strong associations with neighbouring First Nations in Manitoba, including the Mathias Colomb Band, which has its main community at Pukatawagan on the Churchill River in Manitoba, and members living in Sandy Bay. Likewise, there are overlaps with the Opaskwayak First Nation centred in The Pas, Manitoba.

All of these First Nations are Cree heritage, split between Swampy Cree in the south (Cumberland House and Opaskwayak) and Woodland Cree to the north (Peter Ballantyne, Lac La Ronge, and Mathias Colomb). Differences occur in the dialect of Cree spoken, and in cultural affiliations both socially and environmentally.

4.1.4 Peter Ballantyne Cree Nation

The people of PBCN inhabit a traditional territory which runs approximately from Namew Lake in the south to Kinoosao on Reindeer Lake in the north, and from the Manitoba border to the 104th parallel of longitude. The traditional lands of PBCN are in large part contained within the planning area.

There are seven northern communities that make up the core of PBCN community life: Denare Beach, Deschambault Lake, Kinoosao, Pelican Narrows, Sandy Bay, Southend and Sturgeon Landing. All of these communities, as well as several outlying Reserves, lie within the planning area. In addition, about 500 PBCN members live in Prince Albert, where the Opawikoscikan Reserve in the city serves as a cultural and administrative centre.

The following table 4.2 outlines the current Indian Reserves of PBCN in the planning area, as well as the Prince Albert location which serves as administrative headquarters for the band.

Table 4.2 Indian Reserves of Peter Ballantyne Cree Nation in the Amisk-Atik Planning Area

Reserve Number	Reserve Name	Reserve Size (ha)
184	Amisk Lake	2072.7
184A	Birch Portage	1844.3
184B	Pelican Narrows	527.9
184C	Sandy Narrows	1077.6
184D	Woody Lake	677.0
184E	Mirond Lake	601.8
184F	Sturgeon Landing	2329.7
200	Southend	4219.1
201	Opawikoscikan (Prince Albert)	41.0
202	Wapaskokimow (Sandy Bay)	60.0

203	Kimosom Pwatinahk (Deschambault Lake)	100.0

During the Churchill River study in 1973-74, archaeological evidence was uncovered which dated occupation of these lands by the ancestors of the present Cree Nation to 5000-6000 years before present. That fact is more significant in that the glaciers from the last ice age only left these northern lands some 8500 years ago.

The first contact with European culture happened in the late 1600's. By the latter part of the 18th century, most of the early white explorers and fur traders had been through Peter Ballantyne country, including David Thompson, Alexander Mackenzie, Peter Pond, Henry Kelsey and the Frobisher Brothers. The Hudson Bay Company established its first post in the area by 1818, and the Revillon Freres, or French Company as it was known locally, was there in the 1820's.

Members of the PBCN entered Treaty by an adhesion to Treaty Six signed on February 11,1889 at Molanosa, where the Montreal River leaves Montreal Lake. That adhesion was signed by the James Roberts (now Lac La Ronge) and William Charles (now Montreal Lake) Bands, and included members of the present PBCN.

In 1893, Peter Ballantyne made a case to enter Treaty on behalf of himself, several brothers and some other families, and in 1894, these members entered Treaty as members of the James Roberts Band. In 1898, an Indian agent made the trip to Pelican Narrows at the request of Peter Ballantyne. In 1900, the Treaty commissioner allowed for the formation of a separate band with its centre at Pelican Narrows. Peter Ballantyne became the first Chief under Treaty, and the namesake of the band.

The establishment of church missions, and eventually schools and government offices lead to several community centres being created, including Pelican Narrows, Sandy Bay, Deschambault Lake, Namew Lake, and Southend Reindeer. Other communities grew with the establishment of new industrial development, specifically Flin Flon/ Creighton in the 1920's following mineral exploration, and Jan Lake and Denare Beach in the 1960's following the establishment of widespread tourism opportunities with the founding of the Hanson Lake Road. These communities also attracted PBCN members, as well as non-aboriginal people who developed and worked in these industries along with local residents.

4.1.5 First Nation Treaties

The process by which First Nations ceded rights, and reserved rights to the land and resources occurred with the signing of Treaties in the late nineteenth century. Five treaties were signed by the federal government and the First Nations in western Canada, and three of these Treaty Areas overlap the Amisk-Atik Land Use Plan area,Treaties 5, 6 and 10 (See Figure 4-1). Treaties with First Nations were

undertaken on behalf of the Crown and Bands as ongoing legal frameworks for cooperation, and the articles of treaty continue to be valid in the highest courts in the country.

These treaties provided for the continuation of traditional lifestyles, the right to unimpeded traditional pursuits such as hunting, fishing, trapping and gathering, and included promises of a land base on which to live. First Nations were given land shortly after treaty signing and reserves were established. Most First Nations, however, were not given the full entitlement of land (52 ha per person) originally promised by Treaty.

When Crown land was turned over to the province in 1930, Saskatchewan agreed to share responsibility with Canada in addressing situations where an insufficient amount of land was set aside for reserves purposes. In Saskatchewan, the land commitment to the entitled First Nations (Treaty Land Entitlement or TLE) now totals almost one million hectares, with a purchase value exceeding $516 million. This program has the potential to double the amount of reserve land in the province, increasing the proportion from 1 - 2% of the provincial land base.

As of March 2, 2000, there is only one First Nation (Peter Ballantyne Cree Nation) that has a TLE within the planning area. This involves a total of 73 TLE selections in which 56 of these are active and 17 have gained reserve status. The amount of land involved is 63,648.26 ha. Approximately 9,574.13 ha of land (surface and subsurface) have attained reserve status for two bands under TLE agreements (See Appendix 16).

Court decisions based on Treaty provisions also provide definition of Aboriginal rights to hunt, fish and trap for food as well as the lands accessible for the purpose, for example:

< the “Horseman” decision which concluded paragraph 12 of the NRTA extinguished the commercial rights to hunt but broadened the definition of where Indians could hunt and the time and methods of hunting;
< the “Sparrow” decision which directs government to consult with Aboriginal people on issues which may infringe upon their rights under the treaties or the constitution;
< the “Badger” decision which concluded private land that is visibly in use cannot be hunted on without the consent of the owner, while private lands that cannot be distinguished from other forested Crown lands could be hunted;
< the “Morin-Daigneault” decision which confirms some Métis rights in northwest Saskatchewan; and
< the “Sundown” decision which allows First Nations to build traditional resource use structures on provincial park lands.

As time goes on, continuing evolution of the relationship between First Nations under

Treaty and the federal and provincial government with respect to land and resource use will be shaped by new programs, agreements, interpretation of Treaties, and the decisions of the Court.

4.1.6 Other Land and Resource Use Agreements

The Community and Band at Cumberland House signed an agreement with the province in 1990 that dealt with compensation for impacts caused by the construction of the E.B. Campbell dam on the Saskatchewan River which created Tobin Lake.

Treaty Boundaries in the Amisk-Atik Planning Area

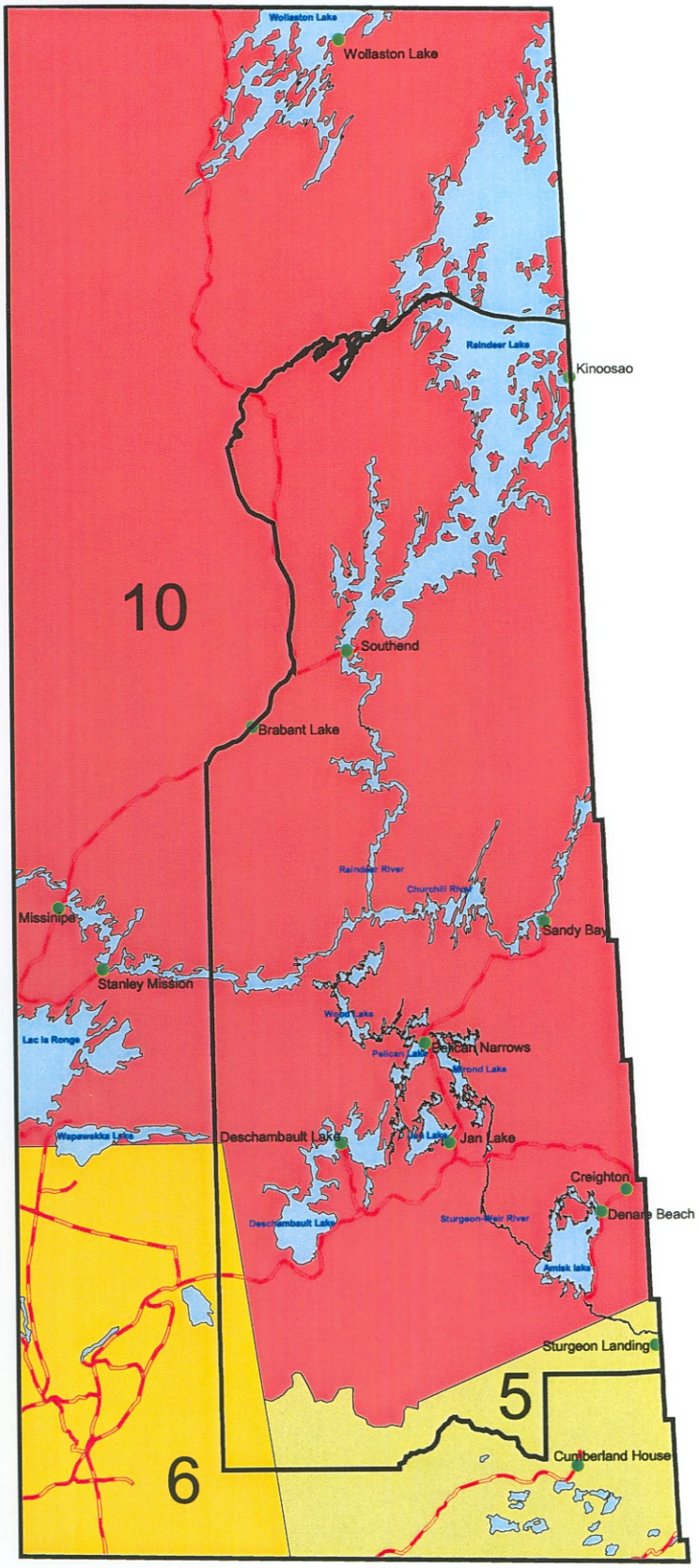


Figure 4-1

This dam significantly altered the flow regimes of the river and had severe impacts on traditional resource use, recreation, outfitting businesses, and even access to the community. The agreement is effective within a radius of 65 km from the community of Cumberland House, and provides among other things, for selection of lands for community use to a total of 50,000 acres. A small portion of this agreement area extends inside the Amisk-Atik Land Use Plan area.

In September, 1994, Peter Ballantyne Cree Nation signed a Partnership Agreement with the Province of Saskatchewan (Minister of Environment and Resource Management). This agreement covers the whole traditional territory of PBCN, including all of the Amisk-Atik Land Use Plan area, and provides for three main priorities:

1. Enhanced liaison and communication on all matters of resource use and allocation;

2. The negotiation of a Forest Management Agreement (FMA) with significant commercial forestry development potential; and

3. The development of a co-management system for improved resource allocation and management.

During the time this partnership agreement has been in effect, PBCN has developed the FMA proposal which triggered the Amisk-Atik Land Use Plan process. This process embodies the principles of the partnership agreement. While the partnership agreement is not a legal transfer of rights, it sets in motion processes that can lead to enhanced understanding and cooperation, improved public consultation and participation, and better resource management.

4.1.7 Traditional Use and Occupation of the Land

The land in the Amisk-Atik Land Use Plan area has always had a strong social, spiritual and cultural significance for its human residents, because the majority Aboriginal cultures have evolved over a long time in this area. The location and structure of communities, the uses of land and resources, and the ways in which people regard their surroundings is all tied, in a variety of ways, to the culture of the people of the area.

The current community structure of the Amisk-Atik Land Use Plan area is a relatively recent feature of the region. One hundred years ago, while the existing communities of the area all existed to one degree or another, the people of the region were much more spread out on the land. In addition, people moved about more in harmony with traditional seasonal needs and opportunities.

A study of traditional use has shown that the Reindeer River, from Reindeer Lake to the junction with the Churchill River was relatively well populated in recent times, although today the only permanent community is at Southend Reindeer where the river leaves the lake. In the years immediately after World War II, approximately 500 people lived in seven locations along the approximate 100 km length of Reindeer River. These communities were largely family groups: Morins and McCallums at Fafard Lake, Highways At Royal Lake and Steephill Lake, Dorions between Steephill Lake and The Two Rivers, Michels at the Two Rivers, and Ballantynes and Custers at the junction with the Churchill River at Iskwatam Lake.

These locations all have Cree names that endure from these times. The family groups all had traditional lands in those areas defined by the lakes they fished and the traplines they tended in the winter. As well, they travelled extensively up and down the river seasonally to partake in other social and resource harvesting activities. The structure of this society is preserved today in the ownership of traplines, cabins, and ongoing seasonal camp locations.

Resource use in the PBCN traditional territories covered all of the activities that a self-sufficient population required to survive in this northern environment. Trapping for furs must have began in the earliest times to produce domestic articles for the home, clothing, decoration, and trade with other First Nations. Later, this fur trade continued and expanded with the white companies who exported the furs in exchange for a wide variety of trade goods. Trapping remains an important part of life for many members of PBCN, and a link for all to the traditions of days gone by.

Hunting has been a way of life for First Nations people that has continued since time immemorial. The protection of this way of life was guaranteed by the Treaties, and the Treaties are protected by the Constitution. Hunting and the food and other products it produces are still important to PBCN members in the area as it has always been.

Fishing ranks with hunting as a prime means of sustenance, and a traditional activity carried on by all generations. Like hunting, fishing rights are protected by Treaty, and the Constitution. Fishing for families and communities continues to be an important source of food, as well as a local economic activity through commercial fishing enterprises, and lately through tourist outfitting for sports fishing.

Gathering is a generic term for a wide variety of activities in the forest which have traditionally supported the continuance of life and culture. Gathering produced many of the needs that agriculture could not in a rough northern environment. Berries, roots, herbs, and other necessities were all found in the forest and served a wide variety of purposes from food, to medicine, to sacred and ceremonial uses. Gathering of many products of the forest is still important in the culture and community of PBCN.

While forestry was not apparently practised in ways comparable to today's industries, use of the trees was essential to the life of Cree people in the forest. Shelter (cabins and tent frames), transportation (sleds, snowshoes and canoes), tools (arrows and spears), implements (baskets, handles), and many other necessities of life came from the trees of the forest, as well as fuel to cook food and heat dwellings.

The connection between PBCN members and the forest of their home lands runs deep. As a culture that developed in these forests, using and depending on the various products and expert knowledge of how to use them has allowed life to continue and flourish. First Nations have always lived in harmony with nature, and learned to respect the land and resources on which their lives depended.

All of these traditional activities survive today in modern form, and are practised to varying degrees by all the people of the area, regardless of their place of origin before moving to the Amisk-Atik area. Hunting, fishing and trapping, plus the gathering of berries and other plant products all continue today, using modern forms of motorized access and processing. As well, local people of all communities enjoy the natural landscape for its own beauty and challenges in terms of boating, snowmobiling and other popular recreational activities.

4.1.8 Subsistence Hunting/Fishing/Trapping/Gathering

Subsistence use of the natural environment can provide all, or a substantial portion of a person's daily intake of food. Hunting, fishing, trapping and gathering for food is a significant economic offset for Aboriginal residents. Unemployment in most northern communities is still very high. Transportation costs mean that even basic foods are much more expensive than in larger communities or those farther south. Everyone relies, to some extent, on subsistence directly from the resources of the area.

Economic studies have attempted to record the annual subsistence harvest of a northern community (Tobias, 1988). In Tobias' study of the subsistence harvest by the residents of Pinehouse, he found that the 700 village residents harvested 84,455 kg of wild meat during 1983-84. One way to estimate the economic impact of this harvest is to calculate the store cost of purchasing meat of similar quality. This is a significant value in terms of both nutrition and economic savings.

The subsistence harvest of wild meat and other foods (berries, mushrooms, etc.) is substantial and has a value to many residents of the Amisk-Atik Planning area. The traditional use of country foods has a positive economic impact on northern residents, and if access or supply was reduced, there would be negative economic repercussions. Even more, food from the land is an important element of personal and community health, both in terms of nutrition and continuing cultural traditions. The culture and traditions of PBCN peoples are founded in the forest, and bound to the forest. People

from other cultures and homelands have also adopted this land as their own for its beauty and wealth of natural resources. Together they will continue to be stewards of the land, and wise users of its bounty in the future, as they have always done.

CHAPTER 5: PROVINCIAL AND FEDERAL DEPARTMENTS INVOLVED WITH THE AMISK-ATIK LAND USE PLAN

There are several levels of government involved with various aspects of a land use plan. Following are the provincial and federal government departments that are involved with resource management and land use for the Amisk-Atik Land Use Plan. Appendix 9 lists the provincial and federal legislation that effects the land use plan and Appendix 10 lists the provincial and federal related policies and guidelines.

5.1 Government Organizations and Interests

5.1.1 Provincial Government Departmental Organizations

Several departments and agencies are involved with resource management and land use. Table 5.1 lists the department or agency, and its main area of impact.

Table 5.1 Provincial Agencies Involved with Resource Management and Land Use

Department/Agency	Branch	Responsibility
Environment and Resource Management	Environmental Assessment	Coordinates provincial review and evaluations of environmental impacts of proposed developments.
	Environmental Protection	Develops provincial policies and programs related to protection of air, water and soils.
	Fish and Wildlife	Develops and manages provincial fish and wildlife policies and programs.
	Forest Ecosystems	Develops and manages provincial integrated forest resource management programs and policies.
	Fire Management And Forest Protection	Provides and coordinates provincial forest fire management activities.
	Information Management	Provides resource data management services.
	Parks and Facilities	Develops and manages programs and policies

Department/Agency	Branch	Responsibility
	Regional Operations Sustainable Land Management	for provincial and regional parks. Delivers and manages all SE policies and programs. Develops provincial land management policies and programs.
Agriculture and Food	N/A	Promotes sustainable use of lands and resources used for agricultural production.
Industry and Resources	Mines Branch	Management of the Crown mineral, oil and gas resources through legislation and related policies. Issuance of mineral and oil and gas dispositions for exploration and development. Collection of fees and royalties for the province. Research, collection, organization, and distribution of information on the geoscience, non-renewable resources, and exploration and production activity for the province. Promote full and responsible development of Saskatchewan's energy and mineral resources.
Highways and Transportation	N/A	Develops roads and infrastructure. Manages aggregate resources for transportation purposes.
Municipal Government	Municipal Development Heritage	Provides technical and advisory support to municipalities for community planning and governance. Administers the subdivision approval process and use of dedicated lands. Administers *The Heritage Property Act*, which facilitates heritage resource management and development. Through the Archaeological Resource Management Program, developments are routinely reviewed for possible heritage concerns.

Department/Agency	Branch	Responsibility
Northern Affairs	Policy, Planning, and Research Division	Undertakes research, planning, and policy development that better enable northerners to identify and participate in northern development.
	Resource and Industrial Development Division	Addresses northern interests related to the development of northern resources and industries. This Division administers programs such as the following: *Northern Mines Monitoring Secretariat* and *Environmental Quality Committees:* Provide information to communities on uranium mine site developments and activities; also, provide a forum to ensure the considerations of northerners in the way in which uranium mine development occurs in northern Saskatchewan. *Mineral Surface Lease Agreements*: Negotiate, monitor and administer Mine Surface Lease Agreements in northern Saskatchewan on behalf of provincial government departments. Surface leases contain Human Resource Development Agreements.
	Economic and Community Development	Provides financial and business support services to northern entrepreneurs, businesses, co-operatives and other organizations. These services include the identification and evaluation of business opportunities, business plan development, financing through the Northern Development Fund and other sources, organizational development, management counselling, business skills training, and other advisory services. Programs administered by this Division include the *Northern Development Fund, the Commercial Fishing Freight Subsidy and Price Support Program*, and the annual *Northern Saskatchewan Business Opportunity Forum.*
Sask Power	N/A	Operates power generation facilities and power lines.
Tourism Saskatchewan	Product Development	Plans and develops tourism destination areas.
Saskatchewan Wetland Conservation Corporation	N/A	Manages wetlands and waterfowl habitat.

5.1.2 Relevant Federal Government Department and Agency Interests and Responsibilities

Table 5.2 lists the federal government departments and agencies that are involved in resource management.

Table 5.2 Federal Agencies Involved in Resource Management

Department/Agency	Responsibility/Goals
Environment Canada	Preserve and enhance quality of the natural environment and renewable resources, including migratory birds, other non-domestic flora and fauna, and water; carry out meteorology; and coordinate federal environmental policies and programs.
Canadian Environmental Assessment Agency	Through administration of the Canadian Environmental Assessment Act, provide effective means of integrating environmental factors into federal planning and decision-making while taking into account public values and the goal of sustainable development.
Agriculture and Agrifood Canada	To promote and support a growing, competitive, market-oriented agriculture and agrifood industry, which achieves farm financial security, environmental sustainability, and a safe, high quality food supply.
Fisheries and Oceans	Develop and administer policies and programs in support of Canada's economic, ecological and scientific interests in oceans and freshwater fish habitat, for conservation and sustained utilization of Canada's fisheries resources in marine and inland waters, and for safe, effective and environmentally sound marine services responsive to the needs of Canadians.
Indian and Northern Affairs Canada	Meet the federal government's constitutional, political and legal responsibilities to First Nations and the North, including sustainable development of natural resources (e.g. mining, oil and gas, forestry and water).
National Round Table on the Environment and Economy	Identify, explain and promote, in all sectors of Canadian society and in all regions of Canada, principles and practices of sustainable development.
Natural Resources Canada	Provide expert scientific and economic knowledge to Canadians, and promote sustainable development and use of Canada's natural resources and competitiveness of the energy, forest, mining, geomatic and geoscience sectors.
Transport Canada	Ensure high standards for a safe transportation system, contribute to Canada's prosperity, and protect the physical environment by evaluating the impacts of policy and regulatory decisions on the environment and promoting and meeting environmental standards.

CHAPTER 6: THE LAND USE PLANNING PROCESS AND PUBLIC INVOLVEMENT

6.1 The Planning Process

There are basic steps common to any land use planning process. These steps are outlined in Appendix 1. This basic planning process has been adapted for use in the development of this land use plan. This specific planning process has entailed the following steps.

- Plan Initiation
- Information and Issue Gathering
- Meetings
- Draft Plan Preparation
- Draft Plan Review
- Plan Revision and Approval
- Plan Implementation.

- **Step One - Plan Initiation:** In September 1994, Saskatchewan Environment (SE) and the Peter Ballantyne Cree Nation (PBCN) signed a Partnership Agreement for the purposes of developing a cooperative approach to the management of land and resources in the Amisk-Atik area. The area encompassed in this agreement consists of those lands traditionally used in northeastern Saskatchewan by the PBCN. Subsequent discussion between these two parties identified an opportunity to enhance economic development in this area. As such, a development plan was submitted to the provincial government identifying the utilization of forest resources as a means to generate significant benefits not only for the provincial economy, but also for the residents of the Amisk-Atik area.

  The first efforts taken towards the development of an integrated forest land use plan for the Amisk-Atik area occurred in September 1995. A team of provincial government and Peter Ballantyne representatives initiated a process of public consultation with local PBCN and municipal communities situated within the plan area. These consultations resulted in the creation of an organizational structure that allowed for ongoing public consultation at both the local and regional level. Local advisory boards were established in Creighton, Denare Beach, Pelican Narrows, Jan Lake, Deschambault Lake, and Southend-Reindeer Lake. In some of these communities, the existing co-management board formed the local advisory board. In Sandy Bay, Sturgeon Landing, Brabant Lake, Kinoosao, and Cumberland House, local boards were not established. However, the leaders of these communities were kept informed as to the ongoing progress of the development of the land use plan, and public meetings about the planning process were held as needed and when requested by the communities.

In addition to the local boards, a regional advisory board was also created. Membership of this regional body consisted of representatives of the local boards and communities, various provincial government agencies, the mining and forestry industries, and other non-government groups like the Métis Nation of Saskatchewan and the Aboriginal Women's Council. The Amisk-Atik Regional Advisory Board membership is presented in more detail in Appendix 2.

- **Step 2 - Information and Issue Gathering**

  A multi-disciplinary technical planning team was established, with representatives from SE's Sustainable Lands Management Branch and Shield EcoRegion, Saskatchewan Government Relations and Aboriginal Affairs, Culture, and Housing, Saskatchewan Industry and Resources, Saskatchewan Northern Affairs, and the Peter Ballantyne Cree Nation. The membership of the Technical Planning Team is outlined in Appendix 2. A draft concept plan that included descriptive information about the planning area's resources and their use was prepared in 1995. The concept plan was distributed at the first round of public meetings in 1997.

  Information collected at initial community meetings outlined the key land and resource management issues and concerns in the Amisk-Atik area. Subsequently, local issues were separated from those of a more regional nature. The local issues were addressed at the local advisory board levels, while the regional issues were used to create a Master Issue List that was used as the basis for the discussion and decision-making efforts of the Regional Advisory Board.

  Throughout the planning process, resource people from within and outside of the provincial government provided their expertise to assist with the planning process. Advice and information was provided for such areas of concern as forestry, mining, fish and wildlife, traditional resource use, medicinal plants, Treaty Rights, Treaty Land Entitlement process and selections, archaeology, outfitting, wild rice, trapping, recreation, tourism, and hydro development.

- **Step 3 - Meetings**

  During 1997, public meetings were conducted in the communities of the Amisk-Atik area for the purpose of introducing the land use planning process to local residents. Local and regional advisory board meetings were held on a monthly basis. The first regional advisory board meeting was held on February 2 and 3, 1998. These regional meetings were usually 2-3 days in duration. Prior to the initial regional meeting, numerous local advisory board meetings had been conducted. A process was established to ensure that there was ongoing, two-way communication between the local and regional boards. Issues discussed at the local tables were brought to the regional board and, conversely, the items

discussed and the recommendations made at the regional table were brought back to the local level.

All local and regional advisory board meetings were open to the public. Meetings, especially those at the local level, were scheduled to accommodate the traditional lifestyle and the seasonal nature of local businesses (e.g., outfitting, commercial fishing).

Decisions made by the regional advisory board were made on the basis of group consensus (i.e., mutual agreement, all members being able to live with the decision). These decisions are reflected in the management guidelines presented in the Amisk-Atik Integrated Forest Land Use Management Plan. Appendix 3 contains the Terms of Reference used by the Regional Advisory Board.

- **Step 4 - Draft Plan Preparation**
  The draft land use plan was prepared by the Technical Planning Team. The background information and management directives presented have been compiled using both scientific data and the input provided by the local and regional advisory boards.

- **Step 5 - Draft Plan Review**
  The draft plan was presented to the Regional Advisory Board, government agencies, Local Advisory Boards, and the general public for review, and to receive recommendations for revisions. See Appendix 18 for a list of the public meetings held for plan review and a summary of public comments.

- **Step 6 - Plan Revision and Approval**
  Based on the comments received during the review process, amendments were made to the draft plan. The revised plan required submission to the Government of Saskatchewan for final approval. An independent review of the plan will be done to advise the Minister how effectively the plan meets the requirements of Section 15 of the Forest Resources Management Act.

- **Step 7 - Plan Implementation, Monitoring and Review**
  Implementation of the plan is the final step in the planning process. During implementation, revisions, and amendments based on experience may be made regularly. The plan is required to be reviewed every five years.

6.2 Public Involvement in the Land Use Planning Process

The Technical Planning Team recognized that the public have perspectives, knowledge, and values that can contribute significantly to the land use planning process. Every reasonable effort was made to involve the public as early as possible and throughout the planning process. Various approaches were used to involve the public.

6.3 Opportunities for Public Input

Public meetings were held at different times during the land use planning process. Initially, in 1997, meetings were held to introduce the land use planning process to residents of the area. During the summer and fall of 1999, public meetings were conducted to provide the public with an update of the land use planning process. I Information was also provided on the Five Year Term Supply Licence application being prepared by the Mee-Toos Forest Products Limited Partnership.
The 2000 public meetings presented the draft plan to the public for their review and comments, prior to finalization of the plan.

Newsletters, newspapers, and community television and radio advertisements were used to invite the general public to attend the public meetings and to ensure that all interested parties were aware of the intent to develop and implement an integrated land use plan. A brochure was developed and distributed to all communities in the planning area and SE offices located throughout the Province. (A copy of this brochure is presented in Appendix 17).

A full page ad was placed in the Peter Ballantyne Cree Nation newspaper “Acimowin”, Monday, December 21, 1998, Volume 5, Number 1, Page 7, to ensure First Nations people in the plan area were aware of the plan development and encouraged to participate. The December 1999 issue of “Acimowin” had extensive coverage of the land use planning process and the forestry development plans from many perspectives.

Contact names were listed providing access for additional information if required. Information was provided and requested on a monthly basis, utilizing the local representatives on the Regional Advisory Board as direct links to the people in the area they represent. Government personnel and representatives of PBCN, initiated and assisted local representatives to arrange meetings, and provided information and services whenever possible.

Appendix 4 provides a summary of the public meetings held to gather input from people living in and around the planning area.

6.4 Aboriginal Participation

The Technical Planning Team recognized that lands within the planning area have special significance to Aboriginal peoples, especially the members of the Peter Ballantyne Cree Nation. The Planning Team further recognized that the legal status of Aboriginal peoples is unique, that Aboriginal and Treaty Rights are protected , and that the Aboriginal peoples possess special knowledge and insights concerning sustainable land management derived from traditional practices and experience. Aboriginal forest users and communities thus required particular consideration in the public participation process.

Amisk-Atik Integrated Forest Land Use Plan

LIST OF APPENDICES

GLOSSARY

adaptive management - management practices that are monitored, evaluated, and adjusted (as required), based on current knowledge and understandings.

advisory board - a diverse group of people from the local community who have dedicated time and energy to the completion of this land use plan. The board's function is to bring these people together and, through open discussion of land use issues, help one another understand others' concerns and land use management needs. Consensus-based recommendations have resulted from these discussions.

aesthetics - the natural beauty of the environment.

annual allowable cut (**AAC**) - an expression of the maximum volume of timber that may be harvested each year from an area of land.

annual operating plan (AOP) - a one year forestry plan prepared in conjunction with a licence; usually contains operating requirements.

agriculture - agriculture includes activities such as cultivation and production of crops, dairying, raising poultry, and gardening. Activity is not limited to commercial enterprises and can include raising animals such as horses for personal enjoyment.

base metal - any of the common and more chemically active metals, eg. Copper, zinc, nickel.

benchmark - something that serves as a standard by which others may be measured.

berm - an artificial ridge or embankment, as used in decommissioning roads.

biological diversity (**biodiversity**) - the variety of different forms of life, including the variety of genes, species, and ecosystems.

biota - the animal and plant life of a region.

boreal forest - the forest of northern regions, dominated by spruce, fir, pine, larch, poplar, and birch.

browse - leaves and twigs of trees and shrubs, used as food by plant-eating animals.

B-train - a combination of vehicles composed of a tractor and a semi-trailer towing another semi-trailer, attached to a fifth wheel, mounted on the rear of the first semi-trailer.

clearcutting - harvesting of all merchantable trees from an area of land.

co-management - in Saskatchewan Environment policy, co-management is a way for the Department and stakeholders to work cooperatively to undertake integrated resource management. Inclusiveness, or involvement of all stakeholders, is key to co-management. The department and stakeholders share planning and decision-making as well as ownership of the process. The form co-management takes depends on types and numbers of stakeholders, objectives of the process, resource-specific factors, allocation methods, or changing circumstances.

commercial development - enterprises to be used exclusively for any enterprise directed to and for the purpose of economic or material gain.

conifer - trees that bear cones and have needle-like leaves.

consensus - all those who have a stake in the outcome reach mutual agreement in sentiment or belief on actions and outcomes that resolve or advance issues related to environmental, social, and economic sustainability.

Cretaceous - the geologic period covering the time span of 65 to 135 million years ago.

Crown land - land under the tenure of the provincial or federal government.

cutover - an area of forest land from which some or all of the timber has been recently cut.

deciduous - trees that drop their leaves.

development - the carrying out of any building, engineering, mining, or other operations in, on, or over land or the making of any material change in the use or intensity of use of any building or land.

dolomite - mineral or rock of calcium magnesium carbonate.

ecological integrity - the structure and function of the ecosystem are unimpaired by human-caused stresses, the native species are present at viable population levels.

ecological land classification (**ELC**) - a system by which land units are identified and mapped, based on ecological features such as climate, soil, and vegetation.

ecological region (**ecoregion**) - a relatively large area of land characterized by a distinctive regional climate as expressed by general patterns of vegetation.

ecosystem - an area of land or water, considered in relation to all of its components (soil, water, air, plants, animals, microbes) and the interactions among them. A forest stand is an ecosystem if it is viewed as an interacting system of all of these components, and not just as a group of trees.

ecosystem health - a natural balance of physical, chemical, and biological components that make up the ecosystem.

ecotourism - tourism based on experiencing and learning about natural ecosystems, based on education of and non-consumptive use of natural resources.

ecozone - a broad-scale ecological unit that is based on patterns that include climate, geography, and ecological diversity. The ecozone lies at the top of the ecological hierarchy.

endangered species - a species that faces threats that may lead to its extinction in a short time.

Environmental Impact Assessment (**EIA**) - a procedure outlining a development being proposed, its anticipated effects, alternative steps to be taken, and mitigation of undesirable environmental effects.

even-aged - describes a forest stand in which trees are of approximately the same age.

exotic - describes a species not native to a given area, introduced from elsewhere.

fen - a wetland with a peat substrate (>40 cm) and a very slow internal flow of water at or above the surface; providing some nutrients and oxygen; and supporting mosses, sedges, shrubs, and sometimes a sparse tree cover of mostly tamarack and some black spruce.

fertilization - application of fertilizers to increase productivity.

forbs - a non-grasslike herbaceous plant (lacking a woody stem).

full supply line - is the line depicting the high water level of the reservoir that would be required for the operation of a hydro electric project.

Forest Management Agreement (**FMA**) - agreement between the Province of Saskatchewan and a forest company to give the company long-term access to timber as well as management responsibilities on a specified area of land.

geographic information system (**GIS**) - a computer system used to store and analyze map information.

hardwood - broad-leaved trees; also refers to the wood produced by these trees. Hardwoods belong to the botanical group *Angiospermae* and are the dominant type of tree in a deciduous forest.

Harvest Volume Schedule (**HVS**) - the amount of wood fibre that can be harvested annually from the existing forest without jeopardizing long-run sustainability of the timber supply.

integrated resource management (**IRM**) - management of the whole forest ecosystem, which allows for a broad range of resource uses, and gives all affected parties the opportunity to be involved in management planning.

intensive management - management with relatively high investment of time and money per unit area; intensive silviculture generally implies such things as intensive site preparation, use of genetically improved planting stock, weeding, thinning, or pruning.

landscape - an area of land which includes a variety of interconnected ecosystems. For example, an area with aspen forest on the uplands and sedge meadows in the depression.

loam - a soil containing a mixture of sand, silt, and clay.

mature - describes a tree or stand that is sufficiently developed to be harvestable.

merchantable - describes a tree or stand that has attained sufficient size, quality, and/or volume to make it suitable (in economic terms) for harvesting.

metamorphosed - the process where a rock is changed through heat and pressure into a new, chemically different rock.

mitigation - to reduce the severity of or eliminate negative impacts resulting from a particular activity.

mixedwood - forest stand with both hardwoods and softwoods present in significant amounts.

not satisfactorily restocked (**NSR**) - describes productive forest land on which the forest has been cut or burned and not adequately regenerated.

Ordovician - the geologic period covering the time span of 440 to 500 million years ago.

partnerships - in Saskatchewan Environment policy, partnerships are formed between the department and stakeholders to work toward a common goal. Three kinds of partnerships, or combinations among them, are most often used:

> ***consultative partnerships*** - where there is discussion on an issue, plus shared responsibility for accountability, commitment, integrity, and outcome.
> ***task partnerships*** - where there is shared work in developing a product, program, or process.
> ***sponsorships or contributory partnerships*** - where shared finances result in a shared product or program.

partial cutting - any timber harvest in which only part of the stand is cut.

Phanerozoic - that part of time represented by rocks in which life is abundant. 545 million years ago and younger.

planting - establishing a forest stand by setting out seedlings, transplants, or cuttings.

Precambrian - all geologic time, and its corresponding rocks, before the phanerozoic. 545 million years ago and older.

productive forest land (or **timber-productive land**) - land capable of producing merchantable stands of timber within a “reasonable length of time”.

protected area - in Saskatchewan Environment policy, a geographically defined area or site which is designated in legislation and restricted from general use by the public for a conservation purpose.

pruning - removal of live or dead branches from standing trees.

RAB - The Regional Advisory Board is a group of people designated to represent their communities and the wishes of their local advisory boards.

RAN - Representative Area Network is composed of lands and waters selected and designated to represent the natural and ecological and biological diversity of the province and managed to retain that diversity. RANs act both as reservoirs of biological diversity and benchmarks for comparison with the more heavily utilized landscape.

rare species - a species with a small population, but not necessarily declining or in danger of extinction.

regeneration - renewal of a forest stand (e.g. establishment of new young trees) by natural or artificial means.

resource - generally, any supply of something that can be useful for economic, social, cultural, or aesthetic purposes.

riparian zone - Riparian areas are the interface between terrestrial and aquatic ecosystems which display sharp gradients of plant communities, ecological processes, and environmental factors. The riparian zone not only provides a corridor for the movement and maintenance of animals but largely influences the adjacent aquatic environment by absorbing solar radiation, retaining dissolved nutrients and terrestrial particulate inputs, and subsequently determining aquatic invertebrate and vertebrate populations. Proper delineation of riparian areas incorporates an assessment of vegetative, edaphic, topographic, and hydrologic criteria (Gregory et al 1991).

rotation - the planned number of years between the regeneration of a forest stand and its final harvest.

scarification - loosening the topsoil or breaking up the forest floor in preparation for regeneration by natural or artificial seeding.

sedimentary - any rock composed of sediments, animal remains, or chemicals previously held in solution.

seeding - establishing a forest stand by sowing of seeds.

selection cutting - uneven-aged silvicultural system in which trees are removed individually or in small groups, continuously or at relatively short intervals.

shorelands - the land between high and low water marks that adjoins land to water.

silviculture - the theory and practice of controlling the establishment, composition, growth, and quality of forest stands to achieve management objectives.

site - an area of land characterized by the climatic, soil, and biological factors that determine its suitability and productivity for particular tree species and vegetation types. For example, a dry sand plain which supports jack pine-lichen vegetation with low productivity.

site preparation - treatment (mechanical, chemical, fire, or hand) that modifies the site to provide favourable conditions for natural or artificial regeneration.

softwood - cone-bearing trees with needles or scale-like leaves; also refers to the wood produced by these trees. Softwoods belong to the botanical group *Gymnospermae* and are the predominate tree type in coniferous forests.

stakeholders - in Saskatchewan Environment policy, people or groups with an interest or 'stake' in what the department does. Stakeholders include all people, groups, or organizations that are directly influenced by actions of SE, or whose actions have an influence on the department.

stand - a patch of forest which is fairly uniform in species composition and distribution of tree heights and ages.

subsistence use - use of forest resources (e.g. fish and game, food and medicinal plants, fuelwood and building timber) by local people for personal consumption.

succession - the sequence of stages through which an ecosystem develops, following some disturbance which alters part or all of the previous ecosystem. For example, after a fire burns a mature forest, the ecosystem passes through a series of successional stages leading up to a new mature forest.

sustainable development - a general approach to combining economic development with environmental protection that has been describes as "...use of resources in a way that satisfies the needs of today without compromising the ability of future generations to satisfy their needs".

sustainable management - management to maintain and enhance the long-term ecological integrity of forest ecosystems, while providing economic, social, cultural, and spiritual opportunities for the benefit of present and future generations.

term supply licence (TSL) - is a licence granted by the Minister of Saskatchewan Environment conferring the right to harvest specified forest products, pursuant to section 42 of the Forest Resources Management Act. The term for the licence is two to ten years.

threatened species - species that are declining in numbers, to the point that there is a concern about possible extinction of that species.

till - material deposited by glaciers and ice sheets without modification by any other means of transportation.

tourism - the enhancement of natural features by providing goods and services attracting visitors to the area.

traditional territories - lands that were historically used by particular Aboriginal peoples prior to European settlement.

uneven-aged - describes a forest stand in which intermingling trees differ markedly in age.

water bodies - collections of water such as lakes, sloughs, rivers, or creeks, and do not necessarily have to contain fish.

zero impact mineral exploration - mineral exploration activities that do not significantly disturb the natural landscape. This includes such activities as: geological mapping, prospecting, surveying, flagged reference lines, geochemical sampling by hand (soil, stream sediment, water, lake sediment, rock), and airborne and hand-held ground geophysical surveying. Excluded activities would include: cut reference and grid lines, road or trail construction, trenching or stripping activities, geochemical sampling and geophysical surveying with tracked or wheeled equipment, and diamond drilling.

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