

MATANUSKA-SUSITNA-BELUGA COOPERATIVE PLANNING PROGRAM

LAND USE ISSUES AND PRELIMINARY RESOURCE INVENTORY

VOLUME I OF 2
Planning Background Report

MAY 1982

prepared by: Alaska Department of Natural Resources
in cooperation with: Matanuska-Susitna Borough,
Alaska Departments of Fish and Game, and
Transportation and Public Facilities,
and the Kenai Peninsula Borough

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May 28, 1982

Dear Citizen:

The Matanuska-Susitna Borough and the adjacent Beluga area may be on the threshold of growth that is unprecedented in Alaska in terms of long term expansion of economic base. There are numerous major private and state projects getting underway or on the horizon which can be expected to exert substantial influence on the future growth and character of the area. They include:

- Capital move to Willow
- Knik Arm Crossing
- Public Land Sales
- Large Scale Agricultural Development
- Expanded Development of Mineral Resources including Beluga Coal
- Susitna Hydro Projects
- Point MacKenzie Industrial Development

In reponse to existing growth and change in the Matanuska-Susitna Borough, as well as the needs and potential for future growth, a number of governmental entities recently began independent land use, transportation, public facilities and other planning efforts. Early on in these planning efforts it became clear there was potential for overlap and duplication. Consequently these efforts are now being coordinated under the label of the MATANUSKA-SUSITNA-BELUGA COOPERATIVE PLANNING PROGRAM.

This and an accompanying report are the first published products of this cooperative planning program. The two reports, one prepared by the Matanuska-Susitna Borough and its consultants, the other by the state, present introductory information on resources, issues, general goals and objectives and other information pertinent to the beginning stages of the planning program. Details of the overall cooperative program are explained in Chapter 1 of this report.

These two background reports were prepared in advance of public meetings to be held in June 1982 at communities throughout the study area and also in Anchorage. (Specific times and locations will be announced and publicized). The June meetings are intended to provide the public the opportunity to identify land use, transportation, public facilities and other key issues facing the area and to react to information on similar subjects presented in the two reports. The issues identified through this process will give direction to government decision makers over the duration of the cooperative planning program.

Please review the reports. Determine where you feel they are incomplete or inaccurate. Then attend the June meetings to express your thoughts and opinions. If you are unable to attend the meetings, please send your comments or call the locations noted below.

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MATANUSKA-SUSITNA-BELUGA
COOPERATIVE PLANNING PROGRAM COMMITTEES

STEERING COMMITTEE

Function: Overall direction of project

Membership:

Matanuska-Susitna-Borough (MSB)	Rodney Schulling
DOWL Engineers/HNTB (consultants to the Mat-Su Borough)	Greg Jones
Department of Natural Resources (DNR)	Chris Beck
Dept. of Transportation and Public Facilities (DOT/PF), Tryck, Nyman and Hayes	Vicki Cannard
U.S. Bureau of Land Management	Steve Durkee

TECHNICAL ADVISORY COMMITTEE

Function: This committee assists in the development and review of the various components of the planning program. The committee insures the technical accuracy and validity of the planning process and provides local perspective.

Membership:

MSB Assembly	John Musgrove
MSB Planning Commission	Frank Langil & Vern Ungerecht
MSB-Eng. (Transportation)	Al Linn
MSB-Planning	Rodney Schulling
DNR-R&D (Area Plan)	Chris Beck
DOT/PF	Vicki Cannard
DOWL	Greg Jones Rick Feller
HNTB	Doug Myhre
City of Palmer	Dave Soulak
City of Houston	Linda Graham
City of Wasilla	Erling Nelson

SPECIAL INTEREST GROUPS

Function: Interest group review
Membership: Any special interest group or informal group of citizens who are interested in land use decisions within the Matanuska-Susitna-Beluga Study area.

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U.S. DEPARTMENT OF AGRICULTURE
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CHAPTER I
INTRODUCTION

CHAPTER 1 - INTRODUCTION

PURPOSE AND ORGANIZATION OF THE TWO BACKGROUND REPORTS

Overview

This report, Volume 1, Land Use Issues and Preliminary Resource Inventory, provides background resource information to be used in a number of land use and transportation planning projects currently underway in the Matanuska-Susitna Borough and in the portion of the Kenai Peninsula Borough around the Beluga Coal Fields. These plans will designate appropriate uses for public lands in much of this area and will influence uses on private lands by guiding decisions on transportation, public services and facilities and indicating future needs for use of private land. This report presents a preliminary resource inventory by resource type, e.g., agriculture, forestry, minerals, etc. It also divides the study area into 14 land management units and discusses resource opportunities and issues in each.

A companion report, Volume 2, Goals Statements, Population Projections, Issues and Resources, Regional Settlement Patterns, presents additional background information pertinent to the several land use and transportation studies occuring in the Matanuska-Susitna-Beluga area. The report presents broad goals and objectives (primarily based on public input from previous planning studies in the area), resource issues and inventory information focusing on the road accessed portions of the study area, population projections, and information on regional settlement patterns. The table of contents to Volume Two is presented in Appendix 1.

Public and Agency Comments

This report is intended to show people who live in and use the study area what we -- the members of the planning team who prepared it -- know about resources and issues. The information was specifically prepared to provide the public and interested agencies the opportunity to review this information and let the authors know where it is incomplete or inaccurate. Public and agency review of the goals and objectives, issues and resources in road accessed areas, population projections and other information presented in Volume 2 is likewise very important.

The first opportunity the public will have to respond to the information in these reports is at public meetings to be held in June 1982 at communities throughout the area (schedule to be announced). Those who wish to comment are also encouraged to write or call the locations given in the cover letter. If requested, representatives from the planning team responsible for preparing this report will be available to meet with groups of people interested in expressing opinions on land use issues or land use preferences. People who are interested in the future use of state and borough lands in the region are strongly encouraged to take this opportunity to help guide the planning process.

Organization of This Report

The majority of the information contained in this report deals with resources and land management issues. In order to make this information easy to use it is organized in two ways: first it is presented on an areawide basis by resource (Chapter 3); second, it is presented in greater detail for each of nine geographic areas called management units (Chapter 4). This organization allows readers to focus their attention on the particular resources and regions in which they are most interested. The remainder of this section describes the contents of each of the report's five chapters.

Chapter 1 - Introduction (this chapter). As well as explaining the purpose and organization of the report, this chapter describes the organization and products of the overall Matanuska-Susitna-Beluga Cooperative Planning Program and the purpose and project schedule for the joint State/Borough Area Plan for Public Lands.

Chapter 2 - General Background Information. Chapter 2 has two parts. The first is a map and narrative description of land management units used to organize the presentation of resource values and issues. The second part of the chapter explains existing land ownership in the study area. Part two also describes the present status of land conveyance proceedings in the area.

Chapter 3 - Resource Summaries. This chapter provides an overview of resource values and land management issues in the study area. The chapter is organized by major resource or land use category: agriculture, forestry, fish and wildlife, recreation, settlement, minerals and energy, and transportation. Existing and potential uses are discussed and major land management issues presented for each resource.

Chapter 4 - Management Units. Chapter 4 also presents information on resource values and issues. This information is presented in detail for each of 9 geographic areas called management units. For each mangement unit there is a discussion of access, ownership, existing uses, possible future uses, and land use issues.

Chapter 5 - Land Use Policies for Public Discussion

This chapter presents land use policies from a land use plan recently adopted for state and borough lands in the Willow Sub-basin. These policies, which address issues similar to those requiring resolution over the course of the Matanuska-Susitna-Beluga planning program, are presented here to allow public policy debate to begin early in the planning process.

THE MATANUSKA-SUSITNA-BELUGA COOPERATIVE PLANNING PROGRAM

Both this volume and its companion document are products of the Matanuska-Susitna-Beluga Cooperative Planning Program -- a combined effort of the Matanuska-Susitna Borough; the State Departments of Natural Resources, Fish and Game, and Transportation and Public

Facilities; and the Kenai Peninsula Borough. The planning program coordinates separate planning efforts underway by each of these groups in order to increase efficiency of resource inventories, improve public participation and coordinate land use decisions. The following are brief descriptions of the ongoing agency planning projects in the region. Map 1, at the end of this section, shows the study area for each project.

Plan for Public Lands -- Matanuska-Susitna-Beluga Area Plan

The area plan will guide land uses and establish land management guidelines for state and borough owned lands throughout the Matanuska-Susitna Borough and on state lands in the vicinity of the Beluga coal fields in the Kenai Peninsula Borough (see Map 2). The area plan will primarily focus on land use issues in the non-road accessed portions of the study area, the location of the majority of public lands.

Lead Agencies: Alaska Department of Natural Resources, Division of Research and Development; Matanuska-Susitna Borough

Completion Date: Spring 1983

Matanuska-Susitna Borough Comprehensive Plan

This comprehensive plan will guide decisions regarding land use, transportation and public services and facilities throughout the Matanuska-Susitna Borough. Both public and private lands will be affected. The final comprehensive plan will incorporate land use decisions developed through the area plan described above. The focus of upcoming work on the comprehensive plan will be on the road accessed portions of the borough.

Lead Agency: Matanuska Susitna Borough Planning Department

Completion Date: Winter 1983

Matanuska and Susitna Transportation Study (MASTS)

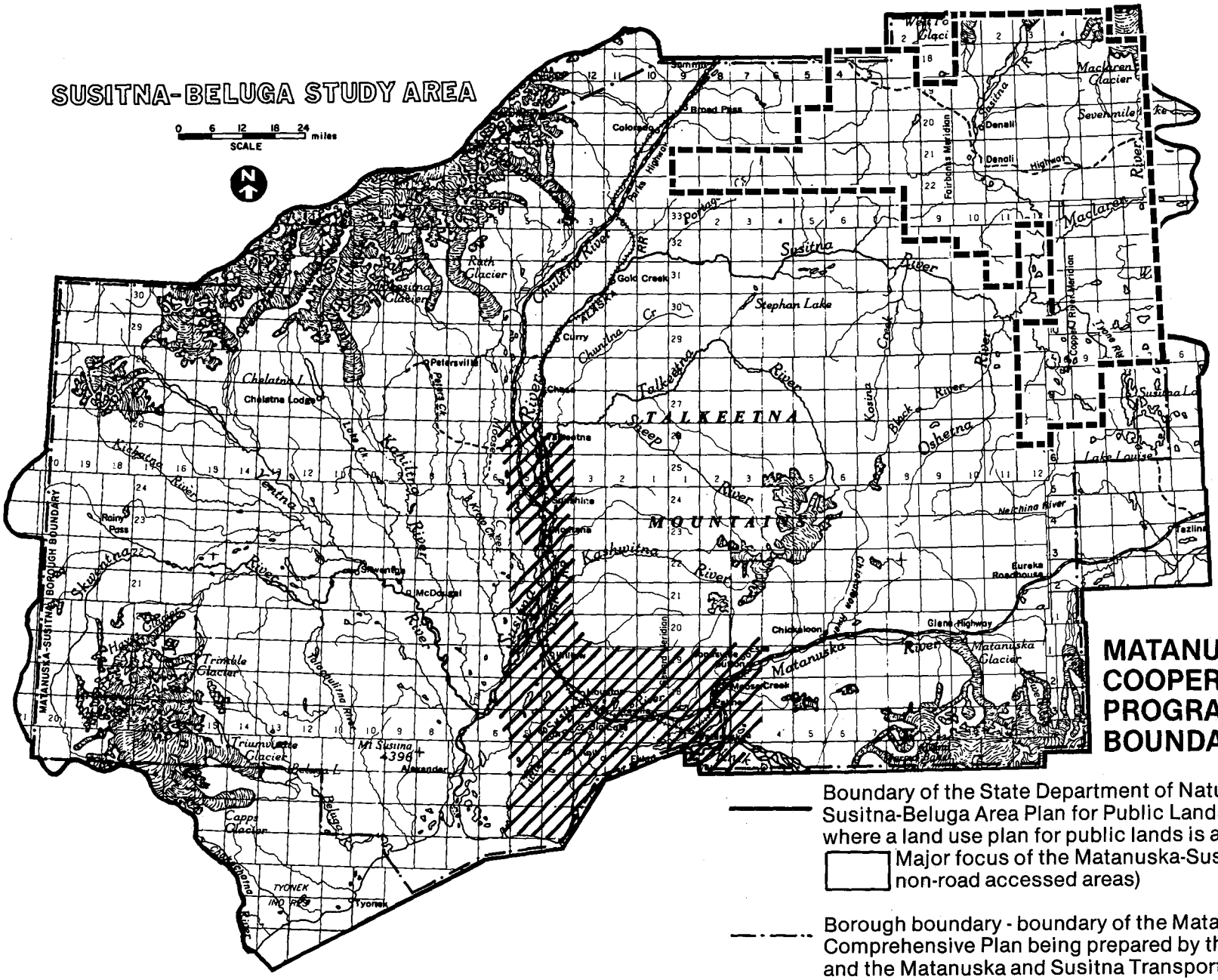
This project is a study of transportation needs throughout the Matanuska-Susitna Borough. The project will recommend improvements and additions to transportation facilities maintained by the state. It will establish an ongoing process to coordinate transportation planning between local, state and federal governments.

Lead Agency: Department of Transportation and Public Facilities

Completion Date: Fall 1983

Denali Land Bank Study -- Federal Lands

This federal environmental assessment project will determine the appropriate use of federally owned land in the northeast corner of the borough (see Map 1). The study will determine which lands should be



MAP 1

MATANUSKA-SUSITNA-BELUGA COOPERATIVE PLANNING PROGRAM - PLANNING AREA BOUNDARIES

Boundary of the State Department of Natural Resources Matanuska-Susitna-Beluga Area Plan for Public Lands (includes the Willow Sub-basin where a land use plan for public lands is already complete)

Major focus of the Matanuska-Susitna-Beluga Area Plan (primarily non-road accessed areas)

Borough boundary - boundary of the Matanuska-Susitna Borough Comprehensive Plan being prepared by the Matanuska-Susitna Borough, and the Matanuska and Susitna Transportation Study (MASTS) being prepared by the State Department of Transportation and Public Facilities

Major focus of the Matanuska-Susitna Borough Comprehensive Plan (primarily the road accessed portions of the borough)

Boundaries of BLM's Denali Planning Block Study

opened to mineral entry, mineral leasing and settlement. The study will also develop a management plan for visual resources along the Denali Highway.

Lead Agency: Bureau of Land Management, U.S. Department of Interior

Completion Dates: Environmental Assessment -- June 1982
Scenic Highway Corridor Study -- March 1983

Coastal Zone Management Plan

The Matanuska-Susitna Borough's coastal zone plan will develop management policies and land use designations to protect coastal resources as mandated under the state and federal coastal resources acts. The final plan, under authority vested in it through state law, will establish a review process for approval of land use and development activities within the coastal zone.

Lead Agency: Matanuska-Susitna Borough Planning Department

Completion Date: Winter 1983

At first inspection, the number of planners, agencies and consultants currently engaged in major planning efforts in the Matanuska-Susitna-Beluga area is a bit frightening. The overall comprehensive planning program has been organized, however, to reduce potential duplication and confusion by clearly separating responsibilities between agencies and by coordinating the timing of publications and contacts with the public. The first examples of this coordination are the joint publication of the two background documents and the shared public meetings in June by the Department of Natural Resources and the Matanuska-Sustina Borough.

The overall comprehensive planning program is directed by a steering committee composed of representatives of each of the major participants in the program (names of individuals and agencies are provided at the beginning of this report). The steering committee meets on a regular basis to resolve whatever coordination issues may arise. The remainder of this section describes the coordination between these five components of the overall planning program.

Three plans are primarily responsible for determining appropriate land uses and land use policy: The Matanuska-Susitna-Beluga Area Plan, the Matanuska-Susitna Borough Comprehensive Plan, and the BLM Denali Land Bank Plan. The Matanuska-Susitna Beluga Area Plan (prepared jointly by the state and borough) is the component of the overall planning program that focuses on state and borough lands -- most of which are presently without road access. The other studies within the cooperative program will largely rely on the area plan to provide natural resource information and analysis of resource development potential.

While the Area Plan will cover state and borough lands in non-road accessed areas, the comprehensive plan prepared by the Matanuska-Susitna Borough will focus on planning for public and private lands in road accessed areas. In these areas planning issues are oriented towards commercial and industrial development, provison of public services and facilities, subdivision controls, and other concerns related to developed land uses. The BLM plan deals exclusively with federally owned lands in the northeast corner of the borough.

Map 1 shows the generalized regions where the area plan and the Matanuska-Susitna Borough Comprehensive Plan will focus their efforts. It is important to note that this geographic division of responsibliities is not rigid -- there are several large areas with reasonably good access where the land is primarily publicly owned and also areas of private land located in non-road accessed areas. In these areas, the two planning efforts will work together to formulate land use policy and to implement management decisions.

Transportation considerations are integral to land use issues throughout the study area. The DNR/Borough Area Plan will investigate access needs and issues on public lands as part of the evaluation of resource development potential. These findings will be incorporated into the local and regional transportation plans being prepared, respectively, by the State Department of Transportation and Public Facilities and by HNTB, a consultant working with the Matanuska-Susitna Borough as part of the borough comprehensive plan.

THE MATANUSKA-SUSITNA BELUGA AREA PLAN FOR PUBLIC LANDS

The information presented in this report (Volume 1) emphasizes background information useful to the area plan for public lands. It was prepared by a team of agency planners that will be responsible for preparing the Matanuska-Susitna-Beluga Area Plan for public lands. (Volume 2, prepared by consultants working for the Matanuska-Susitna Borough, presents information more relevant to the borough's comprehensive plan.) The remainder of this section explains more about the area plan, including the study area, the purposes and products of the plan, and the schedule for its completion.

Study Area Boundaries and Land Ownership

The Matanuska-Susitna-Beluga Area Plan deals only with lands owned by the state and borough. The plan will address all state and borough lands in the Matanuska-Susitna Borough, in the Beluga/Tyonek area of the Kenai Peninsula Borough, and in an area south and east of Lake Louise (see Map 1 for study area boundary). The large majority of public lands within the study area boundary are not presently accessible by road; the Talkeetna Mountains and vast acreages west of the Susitna River account for much of this public land. The size of the study area is 14,484,400 acres, equal to approximately one third the state of Washington. About 60% of this land is owned by the state and borough, and much of the remainder owned by the federal government. The boroughs, native corporations and other private owners together hold approximately 9% of the study area.

Purpose and Products of the Area Plan

The Area Plan will be complete in the spring of 1983. It is being prepared in response to the substantial demands for use of public land within this area -- use for forestry, agriculture, mining and other resource development; for hunting, fishing, boating, skiing, hiking, snowmobiling and other forms of recreation; for subsistence activities; for sale and lease to private owners for settlement and investment; for development of water and power resources; and for numerous other uses. The purpose of the Matanuska-Susitna-Beluga area plan is to guide the timing, location and type of uses to provide the maximum near and long term public benefits from these public lands.

To achieve this goal, the plan will designate appropriate land uses on state and borough land in the Matanuska-Susitna Borough and on state lands in the Kenai Peninsula Borough. A very important part of the land use designations will be the determination of areas to be sold for private use and areas to be retained in public ownership. The plan will also establish policies and guidelines which will direct day-to-day and long term management of public lands. Since more than one use will be permitted on most public lands, these policies and guidelines will allow various uses to occur while minimizing serious conflict.

Schedule For Remaining Steps in the Area Planning Process

The area planning process, of which this report and the June meetings make up the first step, will continue until a final land use plan is adopted by the borough and the Commissioner of the Department of Natural Resources in the spring of 1983. The remainder of this section describes the major steps in this process and the opportunities for public involvement.

Issues are Identified. Information is gathered and published (this report) and public meetings are held in communities throughout the basin to identify problems, interests and concerns that should be considered in the plan.

Data is Collected and Analyzed. Information about natural resources, land use and ownership, and economic and social characteristics is gathered, mapped and analyzed. Information from the public is an important contribution to this step.

Alternatives are Prepared. Several land use alternatives are developed and analyzed by the planning team. Alternatives are based on social, cultural and economic needs identified by local and state residents, as well as capabilities of the land. The alternatives and accompanying analysis are published and distributed for public and agency review.

Alternatives are Evaluated by the Public. Public meetings are held to review the alternatives and identify those that best meet both local needs and land capability.

Draft Plan is Prepared. Using the public and agency comments, the planning team prepares a draft plan.

Public Reviews the Draft Plan. Public meetings are held to review and comment on the draft plan.

Final Plan is Prepared. The planning team revises the plan, using public and agency review comments.

Plan is Adopted and Implemented. The Commissioner of the Department of Natural Resources and the borough assemblies sign the final plan which guides land management decisions for public lands within the Matanuska-Susitna-Beluga area.

RESOURCE DATA USED IN THIS REPORT

A major purpose of this report is to provide the public and government agencies with a general overview of the study area's physical and cultural resources early in the planning process. The resource information used to assemble this "preliminary resource inventory" was derived from several sources.

The primary source was interviews with soil scientists, foresters, geologists, fish and wildlife biologists and other individuals familiar with the area and its resources. The other main source was a preliminary investigation of literature and mapped resource information, including limited use of data from the U.S. Department of Agriculture, Soil Conservation Service, Susitna River Basin Study.

More detailed resource information will be used to help formulate land use designations and land use policies over the remainder of the planning process. This detailed resource information, which will be primarily generated through the above mentioned Susitna River Basin Study, is described in detail in Appendix 2 of this report.

CHAPTER II
BACKGROUND INFORMATION

CHAPTER 2

BACKGROUND INFORMATION

This chapter is divided into two parts. The first is a description and map of management units within the study area; the second is an overview of land ownership.

I. MANAGEMENT UNITS

The study area was divided into thirteen land management units in order to focus analysis and discussion on smaller, more manageable geographic areas. These management units are shown on Map 2. Management unit boundaries were drawn to capture areas that are somewhat homogenous with respect to ownership, access characteristics, environmental qualities, and existing and possible use. The boundaries that were developed for this background report are not sacred; they primarily reflect the simple fact that it is much easier to discuss and understand land use concerns in pieces smaller than the study area's 14,484,400 acres.

The best information on the qualities that helped define management unit boundaries is included in the discussions of each unit in Chapter 4. For most of the mangement units, a look at the names of the units and at Map 2 will provide sufficient introduction to the logic behind these borders.

II. LAND OWNERSHIP

INTRODUCTION

The Matanuska-Susitna-Beluga Study Area encompasses approximately 14,484,400 acres. As shown on Map 3 and summarized in Table 1 at the end of this section, the major land owners are the state and federal governments, whose combined ownership amounts to approximately 92% (13,311,000 acres) of the study area. An estimated 3% (434,050 acres) is privately owned (other than by native corporations) and upwards of 5% (729,500 acres) may ultimately be owned by native corporations. (Map 3 shows only lands owned by native corporations and villages; selected lands are not shown.) Borough lands total approximately 2.3% of the study area, 327,736 acres of which belong to the Matanuska-Susitna Borough. The Kenai Peninsula Borough owns 8,500 acres in the study area.

Precise determination of the amount and location of land owned by various public and private entities is difficult, as land ownership in Alaska is very dynamic. Changing land ownership patterns can be attributed primarily to the Alaska Native Claims Settlement Act, but

also stem from the Municipal Entitlement Act, state land selections and numerous state and borough land sales to private individuals.

The rest of this section describes native corporation, borough, state, private, and federal lands within the study area. The section begins with a description of conveyance procedures for transferring lands from the state to native regional and village corporations, and to the boroughs, as well as procedures for transferring federal lands to the state. The section concludes with a map and chart showing current ownership for all categories of land.

NATIVE CORPORATION LANDS

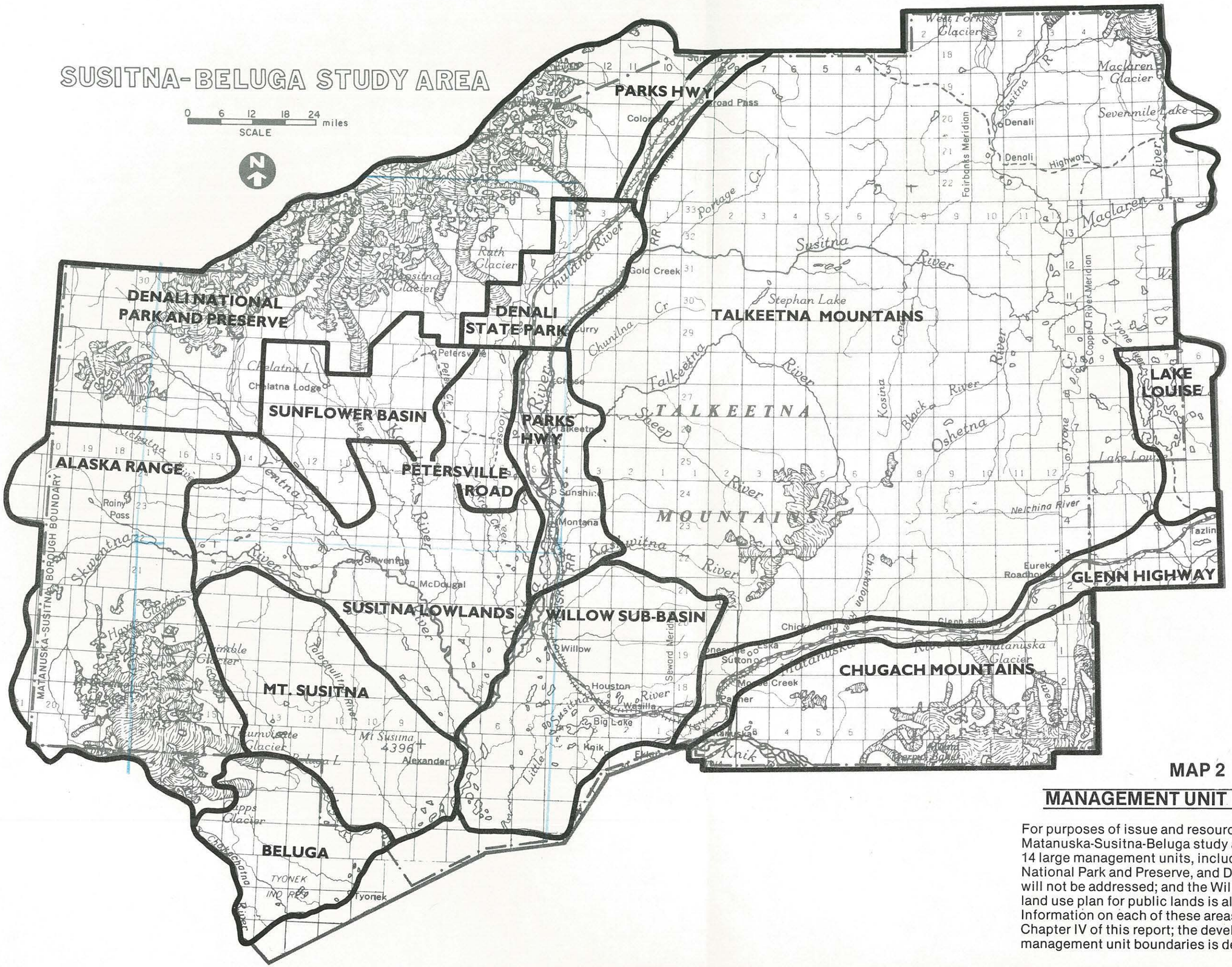
The Alaska Native Claims Settlement Act (ANCSA) created the native regional corporation, Cook Inlet Region, Inc. (CIRI), as well as native village corporations within the region. Eligible native villages each received the right to select a certain number of acres of land tentatively approved for state patent. This land, where possible, was to be selected in the vicinity of the village. Villages selecting all or part of their entitlement from the Matanuska-Susitna-Beluga Study Area include Chickaloon (69,000 acres), Tyonek (115,200 acres), and Eklutna (92,000 acres). The regional corporation was also given a land entitlement. It soon became apparent that, unlike other regions in Alaska, much of the desirable land in the Cook Inlet region was already committed to a variety of uses which made it ineligible for native selection. For the most part, available land was of lesser value and would not fulfill the intent of ANCSA. This situation was resolved through a settlement, known as the Cook Inlet Land Trade, which allowed CIRI to select lands outside of its regional boundaries.

Today, CIRI's land entitlement is almost complete. CIRI owns approximately 362,400 acres of land (both surface and subsurface) within the study area. However, many native village corporation entitlements are still pending. Chickaloon has 73,990 acres of pending selections along the Glenn Highway, and King and Chickaloon Rivers. To date, they have received title to approximately 6140 acres. Tyonek is in the process of receiving title to approximately 34,560 acres but 10,240 acres of selections are pending. Eklutna has selected several thousand acres of land along the Knik River.

Lack of available and desirable state land in the vicinities of Chickaloon, Tyonek and Eklutna has lead these villages to select approximately 206,000 acres of additional state land to fulfill their entitlements. These selections are located along the upper Susitna River near Stephen Lake. It is likely the villages will receive title to these lands.

Ownership Patterns

Native Corporation lands (see Map 3) are primarily located in two areas: the Beluga area, and east of the Parks Highway stretching from Talkeetna to the Kashwitna River. In total they comprise about 403,000 acres. These lands were originally selected because of their high



MAP 2

MANAGEMENT UNIT BOUNDARIES

For purposes of issue and resource analysis, the Matanuska-Susitna-Beluga study area was divided into 14 large management units, including a portion of Denali National Park and Preserve, and Denali State Park which will not be addressed; and the Willow Sub-basin where a land use plan for public lands is already complete. Information on each of these areas is presented in Chapter IV of this report; the development of management unit boundaries is described in Chapter I.

SUSITNA-BELUGA STUDY AREA

0 6 12 18 24 miles
SCALE

N

DENALI NAT'L. PARK & PRESERVE
DENALI NATIONAL PARK AND PRESERVE
DENALI STATE PARK
SUNFLOWER BASIN
PETERSVILLE ROAD AREA
ALASKA RANGE
SUSITNA LOWLANDS
WILLOW SUB-BASIN
MT. SUSITNA
BELUGA
TYONEK IND.
TALKEETNA MOUNTAINS
TALKEETNA MOUNTAINS
CHUGACH MOUNTAINS
PARKS HWY.
GLENN HIGHWAY
LAKE LOUISE
FEDERAL
FEDERAL
Denali Highway
Fairbanks Meridian
Copper River Meridian
Susitna River
Maclaren River
Maclaren Glacier
Sevenmile Lake
Ruth Glacier
Stephan Lake
Talkeetna River
Chulitna River
Talkeetna
Petersville
Chase
Cantwell
Chelatna Lake
Chelatna Lodge
Curry
Gold Creek
Broad Pass
Colorado
Jamestown
Rainy Pass
Mt. Susitna 4396'
Tyonek
Sunshine
McDougal
Willow
Big Lake
Wasilla
Palmer
Meadow Creek
Sutton
Chickaloon
Matanuska Glacier
Eureka Roadhouse
Eureka
Valdez Creek
Denali
Susitna
Oshetna
Black River
Lake Louise
Tyone River
Tyone
Valdez Creek
Clearwater Mountains
Alaska Range
Matanuska-Susitna Borough & Unorganized
Denali Highway
Parks Highway
Glenn Highway

NOTE: This information has been generalized to show ownership in blocks of approximately 1/8 township (3000 acres) or greater.

MAP 3
LAND OWNERSHIP

- STATE OWNED (Patented and Tentatively Approved)
- STATE SELECTED (Federal land that is likely to be conveyed to state ownership)
- BOROUGH (Matanuska-Susitna and Kenai Peninsula)
- NATIVE
- PRIVATE (other than native) AND FEDERAL (Federal lands are labeled)
- MIXED (land ownership is too complex to depict at this scale; ownership is at least 60% private with remainder state, borough and native)

value and development potential. If current native selections are approved, additional native corporation ownership will be concentrated along the Glenn Highway, the King and Chickaloon Rivers, and in the Susitna River-Stephan Lake area. When ownership questions are resolved, native corporation ownership may total 729,500 acres (5%) in the study area.

BOROUGH LANDS

In 1978, the Alaska State Legislature enacted a revised Municipal Land Entitlement Act (AS 29.18). This act clarified and revised the land entitlements of municipalities first set forth in the Mandatory Borough Act of 1963. The act allows municipalities an entitlement of a set number of acres of state tentatively approved land, and further states that land selected by a municipality shall be within its boundaries. It specifies that the land is for community expansion uses. That is, it should meet residential, commercial, and industrial needs, or other responsibilities of local government such as municipal services, local transportation, private recreation, and any other responsiblities delegated to the municipalities by the state. In more recent legislation, the Matanuska-Susitna Borough land entitlement was set at 355,210 acres; the Kenai Peninsula Borough entitlement was set at 155,780 acres (only a portion of the Kenai Peninsula Borough is in the study area). The Matanuska-Susitna Borough has received title to approximately 327,700 acres of land, leaving a remaining entitlement of approximately 27,500 acres. The Kenai Peninsula Borough has received title to 8,500 acres of land within the study area; borough-wide, 55,377 acres of entitlement remain -- some of which may come from lands within the study area.

Ownership Patterns

The entire Matanuska-Susitna Borough and a portion of the Kenai Peninsula Borough (the Beluga area) lie within the study area. Most of the land presently owned by the Matanuska-Susitna Borough lies west of the Susitna River or between the Little Susitna and Big Susitna Rivers, removed from the larger concentrations of privately owned lands. Many borough lands are around attractive lakes such as Bulchitna, Larson and Amber Lakes, or along popular streams such as Alexander Creek. In many cases these lands are accessible by plane or boat.

The Kenai Peninsula Borough presently owns approximately 8,500 acres of land within the study area (Beluga Management Unit). This land is located near Congahbuna Lake and Threemile Creek and is considered a potential community site for Beluga coal development.

Borough lands, like private lands, are for the most part highly capable of supporting resource development. However, the bulk of these lands are currently without road access, except for those Matanuska-Susitna Borough lands which can be reached via Petersville Road, Oilwell Road, and the Parks Highway.

STATE LANDS

When Congress passed the Alaska Statehood Act in 1958, more than 99% of Alaska was owned by the federal government. With statehood, however, the State of Alaska was given the right to select and receive title to approximately 104 million acres of federal land in Alaska. The selections must be completed by 1994. About 5,244,700 acres in the study area have been transferred from federal ownership to the state; state patented lands, to which the state holds title, and tentatively approved lands, to which the state is in the process of acquiring title, are shown on Map 3. An additional 3,605,500 acres are shown as state selected; the state is likely to receive title to these lands, but until selections are approved by the federal government, the state has no jurisdiction over these lands.

Ownership Patterns

State lands, like borough lands, are generally remote, with the exception of lands accessible by Petersville and Oilwell Roads, Lake Louise Road and the eastern Glenn Highway, and the northern Parks Highway. Of the 8,850,200 acres of state owned and selected land, over half are wetlands or mountainous areas with limited resource potential (other than mining). An additional 815,900 acres are legislatively designated state park and game refuge areas, and 63,000 acres have been set aside for the proposed state capital site.

PRIVATE LANDS

Generally, private land holdings (other than native corporation) are concentrated along the road system; the vast, more remote portions of the study area are largely publicly owned (state, federal, borough). More specifically, 434,000 acres of private lands are distributed primarily along the Parks and Glenn Highways and the road network of the Palmer-Wasilla area. Numerous small private landholdings are, however, scattered throughout the remote portions of the study area as a result of state and borough land sales and patented, federal mining claims. Map 3 is of an inadequate scale to reflect this detailed ownership information. Private lands are often waterfront holdings (adjacent to lakes and streams) or near airstrips which allow for access. The majority of private lands in the study area are high value, well-drained developable lands capable of supporting settlement, forestry, and to some extent, agriculture.

FEDERAL LANDS

Federal lands comprising 4,460,800 acres cover the northern third of the study area, and are bisected by the Parks Highway. One of these two resulting tracts, totaling 1,880,300 acres, is included in Denali National Park and Preserve; the remaining portion, 2,580,500 acres, called the Denali Block, is accessible by the Denali Highway.

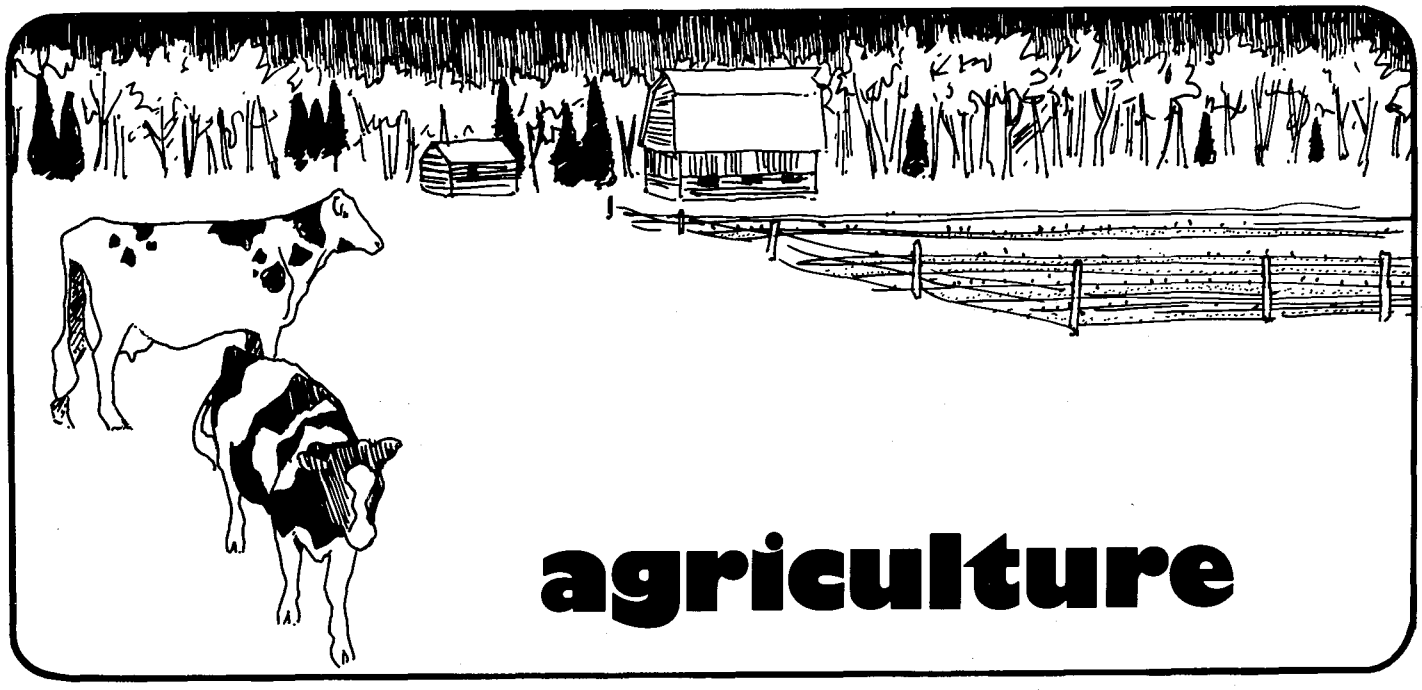
GENERALIZED SURFACE LAND OWNERSHIP

STATE	Patented, TA'd	5,226,900	
	Legislatively Designated Areas - 878,897 acres		
	Remaining State Lands - 4,339,012		
	University (existing lands)	17,804	
	Selected (Federal Lands)	3,605,500	
	TOTAL	8,850,204	(61%)
FEDERAL	Denali National Park & Preserve	1,880,300	
	Other (excludes state selected lands)	2,580,500	
	TOTAL	4,460,800	(30.8%)
BOROUGH	Matanuska-Susitna	327,736	
	Approved, Patented Lands - 327,736 acres		
	Remaining Selections - 27,474 acres		
	Total Entitlement - 355,210 acres		
	Kenai Peninsula (only a portion is within the study area)	8,500	
	Approved, Patented Lands within Study Area - 8,500 acres		
	Remaining Selections Borough Wide - 55,377 acres		
	TOTAL	336,237	(2.3%)
PRIVATE	Native Corporation (includes regional and village corporation lands)	403,100	
	Patented, TA'd - 403,100 acres		
	Selected - 326,390		
	Other Than Native Corporation (does not include lands by the state)	434,050	(3%)
	TOTAL	837,150	(5.8%)

TOTAL LAND IN STUDY AREA 14,484,400

(this figure includes lakes and lands in miscellaneous ownership categories)

CHAPTER III
AREA WIDE RESOURCE SUMMARIES AND ISSUES



agriculture

INTRODUCTION

The U.S. Department of Agriculture has estimated that there are 910,000 acres of cultivable* soils within the Matanuska-Susitna-Beluga Study Area.** Of this total only about 10,400 acres were utilized in crop production in 1980.

Although the bulk of cultivable soils lie between the drainages of the Yentna and Susitna Rivers, the majority of farming activity has generally been centered in the Matanuska Valley because of its accessibility and proximity to both markets and infrastructure, e.g., equipment dealers, feed and seed suppliers, etc. Valley production however, provides only a very small portion of regional and state agricultural needs. As a result most agricultural products are imported from the lower 48.

The state is currently pursuing a policy of renewable resource development which includes an increase in agricultural production to achieve Alaska's self-sufficiency. Agricultural production in Alaska has historically been confronted by a number of difficult obstacles. Before Alaskan agriculture can become self-sufficient, the following problems need to be addressed and resolved: competition for land suitable for other uses -- especially residential and commercial development; impacts of high labor and production costs on the ability of Alaskan farmers to compete with outside suppliers; and the development of a necessary production and distribution infrastructure, including roads, processing plants and marketing facilities.

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* Cultivable soils as defined here are those in SCS Soil Capability classes II, III, IV.

** There are approximately 210,000 acres of Class II, III and IV soils within the Willow Sub-basin area where a land use plan was recently completed.

The following topics are discussed in the remaining sections:

1. Historical and existing agricultural activity -- including use of state and Matanuska-Susitna Borough agricultural lands within the Matanuska-Susitna-Beluga area;

2. An overview of the regions's potential for supporting both crop production and livestock grazing; and

3. Agricultural related needs and issues to be addressed through the forthcoming planning process.

AGRICULTURAL USE

Historical Activity

Commercial or "organized" agriculture emerged in the Susitna Basin in 1915. At this time, 134 160-acre plots in the Matanuska Valley were designated for agricultural use; simultaneous growth of mining communities both locally and northward along the railbelt created favorable markets for the farm produce. In 1935, the federal government initiated the Matanuska Colony settlement in which 200 families from the lower 48 relocated in the Matanuska Valley. The colony settlement was characterized by small farms (40-acre tracts) and a range of farming types such as potatoes, vegetables and dairying. Although this type of farming was relatively small scale, it created the impetus for developing what was to become the state's bread basket. Commercial agricultural production in the Matanuska Valley has since grown, peaking in the early 1960's with 47 dairy farms, 22 vegetable farms, and 12,000 acres in crop land.1/

Existing Activity & Infrastructure

Since the early 1960's, high costs of production, outside competition, increased land values, and poor infrastructure have caused many farmers to sell their farms, primarily into residential uses. By 1980 there were 10 dairies, 17 vegetable-potato farms, 4 agricultural leases for grain production, 7 state grazing leases, 15 or more greenhouses and nurseries, and numerous casual and susistence producers in the Matanuska-Susitna Borough. About 10,400 acres were planted in the Matanuska Valley, yielding a production value of $3,467,000. The value of livestock and poultry production to area farmers accounted for an additional $2,973.000.*

1/ Matanuska-Susitna Borough, Planning Department, Comprehensive Development Plan Background Report, April 1978, p. 105.

* Production value represents the total value of all crops produced -- including those crops for which there are no cash receipts, but which are utilized on the farm.

SUSITNA-BELUGA STUDY AREA

0 6 12 18 24 miles
SCALE

N

PARKS HWY
Broad Pass
Colorado
Summit
Parks Highway
West Fork Glacier
Maclaren Glacier
Susitna R.
Denali
Denali Highway
Fairbanks Meridian
Sevenmile Lake
Maclaren River
Susitna River
Portage Cr.
Rath Glacier
Gold Creek
Susitna River
DENALI PROTECTIVE PARK AND RESERVE
DENALI STATE PARK
Stephan Lake
TALKEETNA MOUNTAINS
Curry
Chunilna Cr.
Peters Creek
Chase
Chelatna L.
Chelatna Lodge
Talkeetna River
Sheep Creek
TALKEETNA
Kosina Creek
Black River
Oshetna River
Coppet River Meridian
Tyone River
LAKE LOUISE
Susitna La
Lake Louise
SUNFLOWER BASIN
Kashwitna River
Kashwitna Lake
ALASKA RANGE
Ventna River
Rainy Pass
Skwentna River
Skwentna
McGrath
Hayes Glacier
Trimble Glacier
MATANUSKA-SUSITNA BOROUGH BOUNDARY
MT. SUSITNA
Truuvisitle Glacier
Mt Susitna
Beluga L.
KENAI PENINSULA BOROUGH BOUNDARY
BELUGA
Beluga River
TYONEK IND. RES.
Tyonek
Sheep Mountains
Nelchina River
Tazlina
Eureka Roadhouse
GLENN HIGHWAY
WILLOW SUB-BASIN
Willow
Houston
Big Lake
Knik
Knik River
Chickaloon
Chickaloon River
Glenn Highway
Eska
Matanuska River
Matanuska Glacier
CHUGACH MOUNTAINS
Wasilla
Palmer
Matanuska River

MAP 4
AGRICULTURE

AGRICULTURAL POTENTIAL*

- MODERATE TO HIGH VALUE (Class II, III, and IV cultivable soils)
- GRAZING LANDS (Areas containing herbaceous species suitable for livestock grazing)
- AREAS WITH LOW OR NO VALUE FOR AGRICULTURE

AGRICULTURAL USE

- ▲ Past State and Matanuska-Susitna Borough agricultural land sales.
- ◊ Proposed State and Matanuska-Susitna Borough agricultural land sales.
- ★ Existing grazing leases (adjacent leases are shown by a single star).

*NOTE: This maps presents generalized information based on soil surveys, vegetation maps and field notes. Consequently, there are pockets of land within any given area that may have higher or lower values than indicated by the map.

Most existing agricultural activity in the study area occurs within the Matanuska Valley. The Mat Valley accounts for 75% of the farm products produced in Alaska. Agricultural development is more advanced in this area because it is supported by a better farm infrastructure, a more extensive transportation system, and closer proximity to local markets than other areas in the basin and state. The farm infrastructure supporting current agricultural production includes a milk processing plant (in Anchorage), slaughter plant (Palmer), seed processing plant (Palmer), private potato-vegetable storage, numerous retail vegetable and greenhouse outlets, and farm equipment and feed dealers. Veterinarian and laboratory services are also available.

About 20,000 acres of state and borough lands were recently sold for agricultural use. Most of the sales have taken place in the Parks Highway Management Unit and in the Willow Sub-basin Management Unit (see Map 4). Many of these farms are not yet in production, but are expected to be once they have access and are cleared.

There are currently about 82,000 acres of state owned grasslands leased out to private individuals in the study area for domestic livestock grazing. (See "Grazing Leases" on Map 4). In addition to existing leases, the Willow Sub-basin Land Use Plan has designated a total of 120,640 acres for future grazing in the Talkeetna foothills and between Willow Creek and Kashwitna River drainages.

Proposed State and Matanuska-Susitna Borough Agricultural Land Sales

A recent study commissioned by ADNR entitled Assessment of Market Demand for State Land* indicated strong interest by the public in agricultural land -- particularly land which is sold without the requirement of an agricultural development plan. Authors of the study estimated an effective market demand for approximately 30,000 acres state agricultural lands in the Matanuska-Susitna Borough in fiscal year 1983 (July 1982-June 1983). About 45,000 acres of state and borough agricultural lands are tentatively proposed for sale in fiscal years 1983 and 1984.** Five proposed agricultural land sales totaling about 37,000 acres are located in the Willow Sub-basin; three sales totaling 9,840 acres are in the Parks Highway Management Unit; and one 760 acre sale is in the Petersville Road Management Unit. (See Map 4.) Most of the land in the proposed sales does not have road access.

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*Real Estate Services Company, Assessment of Market Demand for State Land, January 11, 1982.

**This figure includes Point MacKenzie and Fish Creek agricultural projects (32,500 acres).

AGRICULTURAL RESOURCE BASE

Areas with Potential for Cultivation

The Matanuska-Susitna-Beluga area includes about 14.5 million acres, of which approximately 910,000 acres (or 6%) contain cultivable soils.* (see Map 4). These relatively fertile soils are generally well drained silt loams underlain by sand and gravel.

The Willow Sub-basin and Glenn Highway Management Units, located east of the Susitna River, contain approximately 210,000 acres of soils suited for agricultural production. About 35% of these soils -- including those lying in the Mantanuska Valley agricultural area -- are privately owned. The cultivable soils in the Willow Sub-basin and Glenn Highway Management Units consist primarily of contiguous blocks of well drained, moderately fertile silt loams. However, like the soils in the remaining study area, they are acidic and require extensive liming. An additional 180,000 acres of cultivable soils occur immediately east and west of the Susitna River and along the Parks Highway between mile 81 and 147. This area, referred to as the Parks Highway Management Unit, is almost all privately owned.

Less is known about the agricultural soils further west of the Susitna River. Generally, the cultivable soils are silt loams of varying depths which largely occupy areas of low moraine hills. Most of the potential agricultural lands appear to lie in small discontinuous pieces cut by wetlands, streams, lakes, and irregular or rough terrain, interspersed with soils of different classes and qualities. Those areas which do lie in large continuous blocks are in the northern Susitna Lowlands, Petersville Road, Mt. Susitna and Beluga Management Units.

The bulk of cultivable soils in the study area -- about 385,000 acres -- stretch from the west bank of the Susitna River to the Yentna River. This remote area, also referred to as the Susitna Lowlands Management Unit, is primarily owned by the State and Matanuska-Susitna Borough.

The remaining 135,000 acres of agricultural soils west of the Susitna River lie in the Petersville Road Management Unit and in the southern portions of the study area in the Mt. Susitna and Beluga Management Units. There is year-round road and trail access into the Petersville Road Management Unit but not into the Mt. Susitna and Beluga Management Units. However, there is a road and trail system confined within the Beluga Management Unit. Almost all of the cultivable land in the Petersville Road and Mt. Susitna Management Units is owned by the state and the Matanuska-Susitna Borough; cultivable areas in the Beluga Management Unit are owned by CIRI, the state, and the Kenai Peninsula Borough.

* Note: There are small scattered areas suitable for cultivation and livestock grazing that are not shown on the map. These smaller areas have been omitted due to map scale. The acreage figures sited reflect only the areas mapped, and do not include the smaller areas.

Areas with Potential for Grazing

Map 4 shows an estimated 430,000 acres of land which currently supports vegetation suitable for livestock grazing. The areas mapped show where existing grasses and forbs suitable for livestock grazing occur on soils only marginally suited for cultivation. Soils shown on Map 4 as cultivable soils would also support grazing but would generally provide higher economic returns if used for crop production rather than grazing.

The most extensive area with grazing potential shown on Map 4 lies in the west, southwest and southern foothills of Talkeetna Mountains. The area located west of the Parks Highway contains about 62,000 acres of grasslands, and the areas on the southwestern and southern foothills contain approximately 198,000 acres of grasslands and forbs. The second large area shown on Map 4 is in the vicinity of Mt. Susitna. About 100,000 acreas suitable for grazing are believed to lie on the foothills of Little Mt. Susitna, Mt. Susitna, and Beluga Mountain. Additional lands containing suitable forage occurin the vicinity of Yenlo Hills, Peters Hills, and the Tokosha foothills.

In the areas described above, large meadows consist mainly of the grassy aftermath of fires on well drained forest lands, and grassy tundra above treeline. Calamagrostis (bluepoint) is the dominant species on all well drained sites, usually accompanied by a mixture of forbs.

Of all areas suitable for grazing, those easily accessed from farmlands will be of greatest significance since they will be most convenient and enable farmers to transport livestock shorter distances.

Climatic Conditions

In addition to physical soil characteristics, climatic conditions play an essential role in successful agricultural production and development. Wind, temperature and precipition directly influence agriculture by way of soil loss, growing degree days, length of growing seasons, frosts during growing season and water availability. Such climatic conditions vary significantly throughout the study area. For example, parts of the Willow Sub-basin and the Matanuska Valley have the longest growing seasons in the basin (100-120 days), but average annual precipitation is greatest west of the Susitna River and north of Willow. Precipitation in the Matanuska Valley and eastern portions of the Willow Sub-basin is light and uneven. Thus, moderate to severe moisture deficiencies may occur in June and July. However, heavy winter snow pack north of Willow and west of the Susitna River helps prevent winter kill of perennial crops by insulating the soils. All of these factors should be considered in determining the physical capabilities of various areas to support agricultural development.

AGRICULTURE

Needs/Issues

The following needs and issues related to agriculture in the study area have emerged from previous public meetings and staff analysis. They are concerns which must be addressed through the planning process. It is important that we receive any advice and comments you may have regarding the needs and issues identified below. In addition, we request that you assist in identifying land management issues which we have overlooked. (Please see the cover letter for appropriate persons to contact with your comments.)

Needs

1. Lack of an Adequate Land Base

   - The amount of land currently in agricultural production is insufficient to justify processing plants, storage facilities, slaughter houses, roads, and other infrastructure necessary to make farming more efficient.

   - Most private lands suitable for agricultural use in the study area are subdivided or held for residential land speculation. Because of the high cost of this land, those interested in purchasing land for farming have turned to the state or borough for reasonably priced land.

Issues

1. Potential for Economic Development

   - There are tens of thousands of acres of potential acricultural lands in the study area. Most of this land has no access and is not under cultivation. The economic benefits and costs of putting land into agricultural production should be examined.

     An assessment of supply of potential land, productivity, market conditions, development costs and constraints is essential.

   - If land has high physical capability for agricultural use, but low existing economic feasibility for development, management guidelines must indicate how the land can be managed to protect the agricultural potential.

2. Conflicts with Other Resource Values

   - Land with soil, slope, and drainage conditions suitable for agriculture is often suitable for commercial timber management, settlement, or other developed uses. These conflicting demands will be a major issue in the planning process.

- o Cropland development will affect habitat and recreation and other public use values presently supported on undeveloped potential agricultural lands.

- o There is a potential conflict between meeting the demand for land for small farms (40-80 acres) and providing adequate land for more commercial-size operations.

- o The method of securing public access into land sold for agricultural use must be addressed through the planning process.

- o Lands allocated for agricultural use often contain quality timber stands. The method of salvaging timber when the land is cleared for farming must be addressed.

- o Manipulation of vegetation for rangeland improvement will affect recreation and habitat values and other uses occurring on rangelands. The conflicts between human and wildlife activities should be identified and minimized through the planning process.

3. Socioeconomic Impacts

- o Major agricultural development projects may have significant impacts on regional employment, population, income, community lifestyle, access, and general development pattern. It is important to assess these impacts and make clear the likely distribution of costs and benefits.

4. Environmental Impacts

Potential environmental impacts may require land management guidelines or special attention through farm development plans.

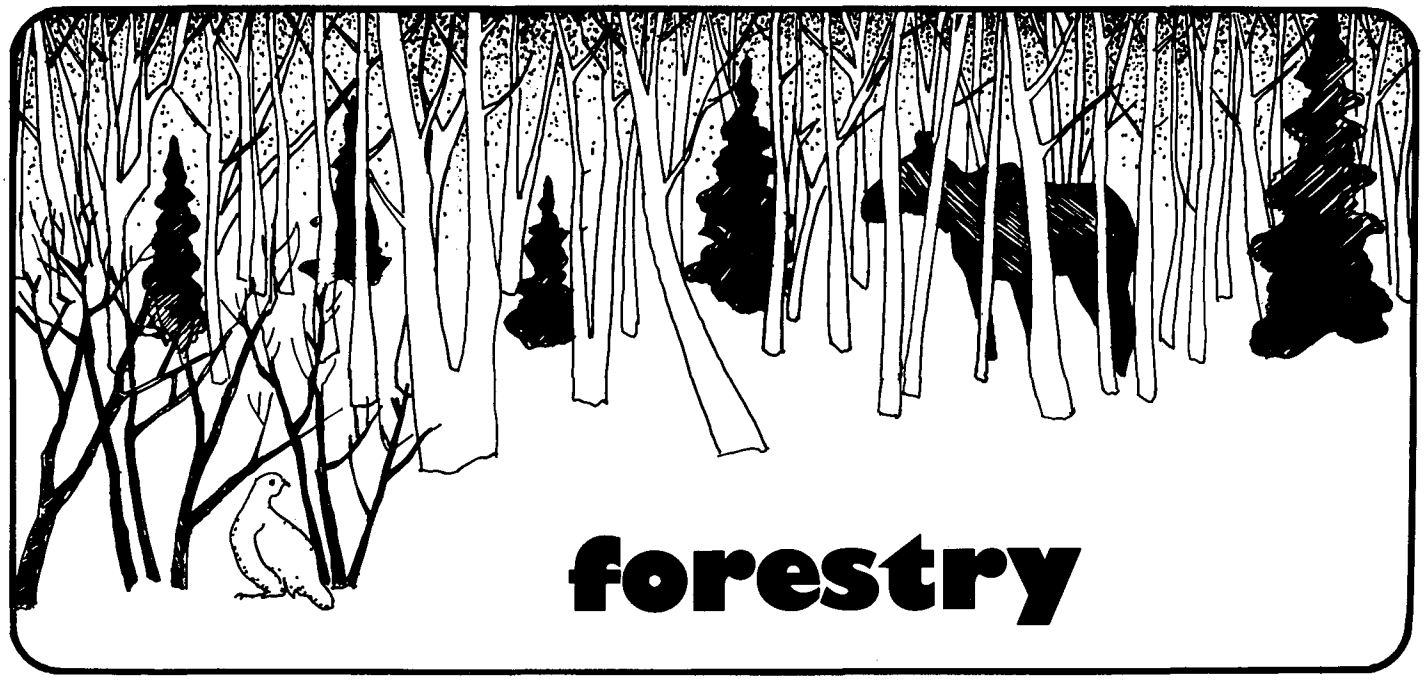
- o Agricultural practices, including the use of fertilizers, pesticides, and herbicides - as well as increased run-off -- may, if not properly managed, be detrimental to the environment, particularly to water quality and habitat.

- o Most of the topsoils in the basin are shallow and many areas are subject to wind erosion. Therefore, soil loss is potentially a severe problem requiring sound conservation measures.

- o Grazing may affect water quality, soil stability, and habitat unless range management guidelines are established to mitigate these effects. Additionally, disease transmission between domestic livestock and wildlife is a concern which requires further investigation.

5. Agricultural Development of Small Farms (40-160 Acres)
DNR has established land disposal quotas for small farms which call for the sale of thousands of acres for this use in the study area. Under existing policy intended to promote agricultural

development, agricultural lands are sold with agricultural rights only, therefore significantly lowering the sales price. If farm development schedules are required for small farms (which are not usually highly successful economically), a hardship may be created. However, if there are no development schedules required, the land may not be used for farming. If many small farms are used as recreational estates, a great deal of farm land could be kept out of production.



forestry

INTRODUCTION

Within the Matanuska-Susitna-Beluga Study Area (excluding the area covered under the Willow Sub-basin Land Use Plan) there are approximately 1,500,000 acres of forest land with potential for commercial production. These stands occur on well-drained soils and generally below 1000' elevation and within 80 miles of tidewater. Even with this vast amount of timber (spruce, birch and cottonwood), the area imports most of its lumber and has historically been unable to meet demands for firewood and houselogs.

Reasons for this situation are discussed further in this writeup. They include some or all of the following: lack of access and other infrastructure, lack of timber sales on public forest lands, the small size of individual private forest ownerships, and competition with timber products from Southeast Alaska and other areas outside the state. Underlying all of these problems is the lack of a committed public land base for forestry management.

The following topics are discussed in the remaining sections:

1. Historical and existing forestry activity -- including existing and planned state and borough timber sales and a proposal to develop a state forest system.

2. An overview of the region's potential for supporting commercial and personal use forestry.

3. Forestry related issues and needs to be addressed through the forthcoming planning process.

FORESTRY ACTIVITY

Historical Activity

Historically, there has been only light and intermittent forestry activity in the Matanuska-Susitna-Beluga Study Area. Probably the first commercial use of the timber resources occurred in the early 1900's in conjunction with mining activities in the region. Heavy utilization of timber resources continued until 1920 as part of the construction and operation of the Alaska Railroad.

Between 1920 and the present, commercial use has been light with forestry activity centered mainly around personal use acquisition of houselogs and firewood. The Alaska Department of Natural Resources (DNR) and Matanuska-Susitna Borough have periodically had timber sales and have also provided small personal use sales for houselogs and firewood. In the past dozen years these sales have been concentrated along the first 10 miles of the Petersville Road; near Talkeetna; along the Glenn Highway; and along the Skwentna, Yentna, and other rivers in the Susitna Lowlands Management Unit.

Over the years there have been up to 16 mills operating within the study area. Most of the existing mills are small, producing little lumber and employing few people. Production has generally been less than capacity due to limited timber sales which in turn has inhibited the development of a stable market. The inability of mills in the region to find local timber for sale has forced them to import lumber from other areas of Alaska and Canada.

Existing Activity

The only large-scale commercial operation in the study area is centered around the chipmill at Tyonek. One eight-year timber sale, the Tyonek #1 Sale (officially called Westside Salvage #1), covering approximately 40,300 acres of state land, is being logged there now. Clearcutting has been the preferred method of logging and has been used in an attempt to control spruce beetles and salvage beetle-killed timber from the area. Timber from this area is currently being chipped and sent to Japan since the local market is not equipped with facilities to handle this amount of timber. The timber in this area is of high enough quality to be used for products besides chips if local processing facilities and markets were able to accommodate it.

Timber needs in the basin appears to be increasing. Houselogs and firewood are continually in demand, especially with the increased popularity of wood stoves and the greater numbers of people living in remote regions. The move to remote regions is due at least in part to state land disposal programs, through which thousands of acres of remote land have been sold for homesites. Agricultural salvage could also provide large amounts of inexpensive timber and thus opportunities for more industrial facilities. In addition, DNR has plans for timber sales in the future. See the following section and Chapter 4 sections on Beluga, Mt. Susitna, Petersville Road, and Susitna Lowlands Management Units for further details on the location and size of planned timber sales.

SUSITNA-BELUGA STUDY AREA

0 6 12 18 24 miles
SCALE

N

MAP 5
FORESTRY

FORESTRY POTENTIAL*

- HIGH VALUE-dense mixed hardwood and white spruce; tall open white spruce
- MODERATE VALUE-short open white spruce; open hardwood; cottonwood
- LOW VALUE-dense black spruce
- MINIMUM VALUE

FORESTRY USE

State Timber Sales; Experimental Forests
1. Tyonek Timber Sale #1-currently being logged
2. Tyonek Timber Sale #2-to be sold in 1983 prior to the completion of sale #1
3. Tyonek Timber Sale #3-proposed for sale within 3 to 5 years
4. Other Proposed Timber Sales
5. Susitna Experimental Forest

*NOTE: The information shown on this map is generalized based on preliminary analysis of vegetation data and personal knowledge of resource managers familiar with the area. Consequently, there are pockets of timber within any given area that may have higher or lower values than indicated by the map.

Timber Sales

Map 5 presents information on forestry capability and use in the Matanuska-Susitna-Beluga area. The map shows existing and proposed timber sales and experimental forests. (Forestry potential, also shown on this map, will be discussed in the following section). Timber sales shown include the Tyonek Sale #1, which is currently being logged; Tyonek Sale #2, which has been cruised and is scheduled to take place in 1983; Tyonek Sale #3, which is proposed for sale within 3 to 5 years; and several other proposed timber sales on which some preliminary work or scheduling has been done. These sales are concentrated in the Beluga, Mt. Susitna, Petersville Road, and northern Susitna Lowlands Management Units. The Division of Forestry estimates some of these areas could be put up for bid in two to five years.

The Tyonek #1 sale in the Beluga Management Unit is discussed in the preceding section. There are two more large timber sales planned for the Beluga area -- one is scheduled for 1983 (before the previously mentioned sale is complete), and the other is still in the preliminary planning stages. Both are comparable in size to the existing Tyonek #1 sale. There are also four sales totalling approximately 57,600 acres proposed in the area south and east of Petersville. In addition, there are seven proposed sales in the eastern Mt. Susitna and southwest Susitna Lowlands Management Units, totalling approximately 267,500 acres. These sales extend west from the Susitna River to the Talachulitna River, and south from the Yentna River to the Beluga River. Only one of these sales (in the southern part of Mt. Susitna Management Unit) is scheduled in the next five years; the remainder are proposed to begin at least 10 years from now. Further details of these planned sales are discussed by individual management unit in Chapter 4.

The Division of Forestry is currently working with the coal companies with leases in the Beluga area to evaluate and discuss the opportunities for timber salvage and reforestation on mined land. In addition, lands being sold by the borough or state for agricultural purposes should provide opportunities for timber salvage.

Proposed State Forests

A bill to establish state forests in several areas of the state was introduced in the legislature in May 1981; action was deferred to the 1982 legislature. At present recommendations for a state forest in the Susitna-Beluga Study Area have not been made, but this area seems a likely candidate for future consideration. The bill calls for the establishment of "...designated state-owned or acquired land and water areas" as state forests, the primary purposes being "... the protection, perpetuation, and preservation of the land and water including recreational and scenic resources and renewable resources through multiple-use management, and to ensure a variety of beneficial uses." The following uses would be permitted in state forests: timber harvest and associated activities, mining and mining claim location, mineral leasing, material extraction, recreation, habitat management under regulations of the Board of Fisheries and the Board of Game, greenbelts not to exceed 200 feet on either side of waterways and primary highways, and trapping and hunting.

FORESTRY POTENTIAL

Map 5 presents information on potential forestry values and use in the Matanuska-Susitna-Beluga Study Area. As the key states, the map shows generalized information based on preliminary analysis of vegetation data (currently available at 1:63,360 for the eastern half of Sunflower Basin, Susitna Lowlands and Mt. Susitna Management Units -- see Appendix 2 of this report for additional information on available data), and on the personal knowledge of forest managers familiar with the area. Consequently, there may be pockets of timber within any given area with higher or lower values than what has been mapped. The map presents an estimate of existing timber stands and capability to support certain forest types. It does not reflect any judgment on the appropriateness of a given area for commercial management. That judgment requires consideration of access, ownership patterns, conflicts with other uses, etc. Areas receiving high ratings contain dense (6,000 to 10,000 board feet/acre) mixed stands of hardwood and white spruce or stands of tall open white spruce, currently capable of supporting a commercial timber operation. Dense stands in blocks of 4,000 acres or more generally receive high ratings. Areas with moderate values generally contain medium-stocked open stands of currently commercial species (short open white spruce, open hardwoods and cottonwood). Areas with low values contain dense stands of black spruce. Land with minimum forestry potential generally contains scattered black spruce or is non-forested.

As depicted on the map, the lowlands west and north of the Susitna River generally have the highest value for commercial timber, with the exception of some good stands along the Parks and Glenn Highways. The Petersville Road and Parks Highway Management Units contain approximately 290,000 acres of high value timber. High value stands along the Glenn Highway total about 43,000 acres. Other areas with commercial grade timber occur in Susitna Lowlands Management Unit (approximately 475,000 acres mostly east of the Yentna River) and in the southeast portions of Mt. Susitna and Beluga Management Units (about 300,000 acres total).

There are a variety of forest types in the basin, each with different values for different uses. White spruce is most valued for saw timber and houselogs; black spruce is a second choice for houselogs. Many birch stands are presently too young to be used for industrial uses other than pulp, although some are currently satisfactory for veneer or furniture. Most birch stands would be fully capable of supplying sawlogs and furniture wood as mature stands and under management. Birch is the most popular firewood type. Cottonwood is often used for rough cut lumber.

Approximately 25% of the forested portions of the study area contains white spruce (often mixed with birch), and over 60% contains birch (both in pure stands and mixed with white spruce, aspen or cottonwood). The best birch stands generally occur below 400' in elevation, while the best white spruce stands are found between 400' and 1200' elevation. Particularly dense birch stands are located primarily in the Susitna Lowlands Management Unit -- between Yenlo Hills and the Kahiltna River, along the southwest slopes of Yenlo Hills and near Hewitt Lake,

along the floodplain at the mouth of the Skwentna River, and west of Talkeetna along Petersville Road. Two species of cottonwood are found in the region -- balsam poplar and black cottonwood. Black cottonwood is common in the lower Susitna drainages and is of a better quality than balsam poplar which is found along the upriver Susitna drainages and further into the uplands. The best cottonwood stands occur on islands and floodplains of the major rivers in the region, although some high quality stands are located on upland sites.

Due to similar climatic factors, growth rates in the Matanuska-Susitna-Beluga Study Area compare relatively well with those found in the Great Lake states and a little by species. Average annual growth rates for the area are approximately 65 board feet/acre. The growth potential, however, is considerably higher but is presently inhibited by overaged trees, cull and low stocking. Even so, growth rates in some areas exceed three times that of commercial plantations in Canadian provinces.

FORESTRY

Needs and Issues

The following needs and issues related to forestry in the study area have emerged from previous public meetings and staff analysis. They are concerns which must be addressed through the planning process. It is important that we receive any advice and comments you may have regarding the needs and issues identified below. In addition, we request that you assist in identifying land management issues which we have overlooked. (Please see the cover letter for appropriate persons to contact with your comments).

Needs

1. Lack of a Committed Land Base

   Currently, there is not a continuous supply of commercial quality raw materials from a committed resource base with which to develop or support the local timber industry. Without a guaranteed supply of the resource, a stable market for products cannot be developed. Timber sales on public lands have been sporadic or non-existent.

2. Short Term Contracts

   Short term contracts offered in the past have inhibited loggers' acquisition of loan financing. Longer contracts (at least 3 to 5 years) are needed to alleviate this problem and to help offset the limited time available for logging in good weather conditions.

3. Timber Salvage on Agriculture Lands

   Forested land that must be cleared prior to road construction or agriculture offers substantial opportunities for salvage of timber products. Procedures need to be developed, however, that coordinate the timing of timber salvage with the schedules for road construction and agricultural production.

4. Firewood Demand

   Demand for firewood cutting on public land is expected to increase in the near future as the borough population grows and private land currently used for cutting is developed.

5. Access

   Lack of access is the factor which most limits the ability of the state and borough to sell timber. However, the costs of providing access are often prohibitive unless roads serve other uses.

Issues

1. Potential for Economic Development

The economic costs and benefits to be achieved from managing public lands for sustained yield timber and related uses must be evaluated. An assessment of resource supply, market potential, development costs, and other considerations which affect the economic feasibility of commercial forestry management is required.

2. Conflicts with Other Resource Values

- Those lands most suitable for sustained yield timber management are often highly suitable for agriculture, settlement or other development uses which eliminate the option of forestry management. The costs and benefits of alternative land uses should be compared.

- There is potential conflict between personal and commercial uses of timber. State land disposals in the study area will increase demand for personal use stocks of firewood and houselogs.

- Although forestry activities can be very compatible with recreation and fish and wildlife uses (forestry operations can actually improve habitat for species such as moose), there are potential conflicts between forestry management operations and recreation/wildlife uses during and after logging activities.

3. Socioeconomic Impacts

Large scale commercial forestry management may have significant impacts on regional employment and income, population, community lifestyle, access, and general development patterns. It is important to assess these impacts prior to major land use allocations.

4. Environmental Impacts

Forestry management can affect habitat, water quality, and other environmental values in an area. Predicting and minimizing adverse impacts should be part of the planning process. Environmental values may be enhanced through forest management practices.

5. Appropriate Roles of Various Land Owners in Meeting the Demand for Timber Products

The state, the Matanuska-Susitna Borough, and private landowners all own land with forestry management potential. For optimum management it is important to assess the type of forest products each owner can best make available to the public based on location and quality of the resource.



fish & wildlife

INTRODUCTION

The fish and wildlife resources within the Matanuska-Susitna-Beluga Study Area are among the most diverse and abundant found in the State of Alaska. Fish and wildlife species present are hunted, trapped, and fished by recreational, commercial, and subsistence users residing in the basin and adjacent areas. The bulk of the users originate in Anchorage, with many additional users coming from Kenai, Fairbanks, and within the study area. More than 220,000 man days are expended each year in the harvest of basin fish and wildlife.

Historically, fish and wildlife resources played a vital role in the settlement of the study area. The first European explorers, natives and early settlers utilized the wide variety of indigenous fish and wildlife. Salmon, furbearers, and moose played the most important roles in providing food, trade, and cash for the users involved.

Fish and wildlife species continue to be a fundamental food and cash resource for the individuals living within and adjacent to the study area in both urban and rural areas. The procurement of fish and wildlife food resources is central to the needs of all communities (e.g., Skwentna) where supermarket and importation prices, and preservation of perishable food items pose problems.

Pressures are increasing to use habitat lands for other resource uses. This, coupled with growing demands for fish and wildlife, point to a major issue in the region: uses of fish and wildlife are increasing while the land base which support these uses is decreasing.

The remainder of this section is divided into the following four categories: big game, small game/furbearers, waterfowl/game birds, and fish. Each category will discuss populations, distribution, habitat, and human use of the fish and wildlife species considered. A more detailed description of issues appears at the end of this section.

BIG GAME

The following eight species of big game are abundant in the study area: moose, caribou, Dall sheep, brown bear, black bear, wolf, and wolverine. Mountain goat are not abundant but occur in the Talkeetna and Chugach Mountains. Moose, caribou, and Dall sheep are extensively hunted and harvested for their food and trophy values. Brown and black bear, wolf and wolverine are hunted extensively for their trophy and pelt values. Each of these will be discussed further below.

Populations

Thorough census to determine total population numbers are costly and seldom done; however, for more than 10 years, modified surveys have been conducted annually to sample various locations of the study area. The results of these surveys, when associated with wildlife habitat types, can provide general estimates of population sizes. This process was used to determine the following current study area population estimates:

Moose	= 49,000	Dall Sheep	= 6,000-8,000
Brown Bear	= 1,500	Mountain Goat	= 300
Black Bear	= 3,000	Wolves	= 800-1,000

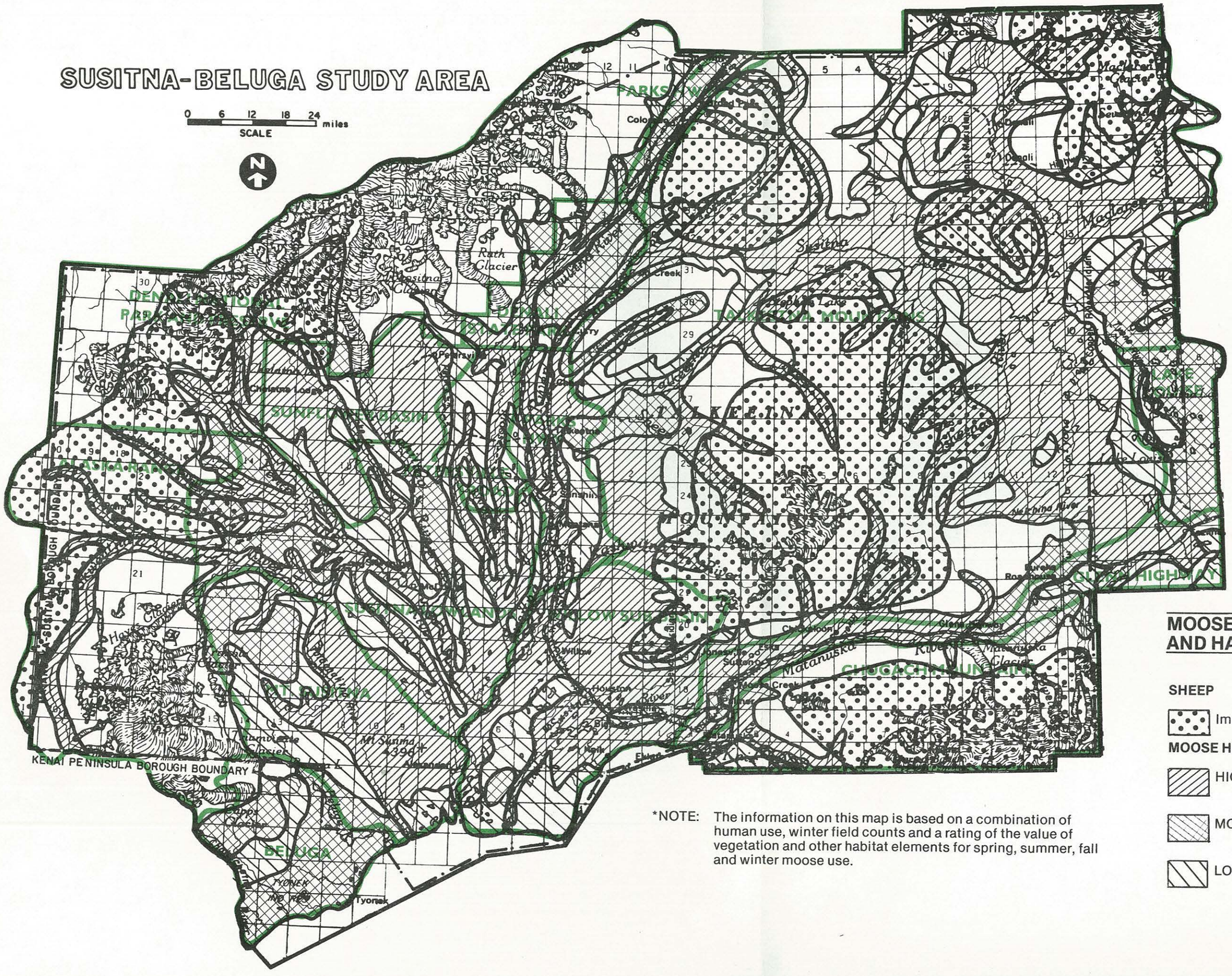
In addition, a specific moose census was conducted in the vicinity of the proposed Susitna Dams. Results indicated 2.57 moose per square mile. Counting individual animals visible on aerial photographs is a technique which has successfully been used in estimating caribou populations. This method indicates that more than 20,000 caribou presently exist within the study area, the vast majority of them associated with the Nelchina herd.

Distribution and Habitat

This section describes locations of big game populations and habitats utilized. The following species are addressed: moose, sheep/goats, caribou, and bear. Two maps are included to illustrate important habitat and harvest areas: Map 6 addresses moose and sheep, and Map 7 pertains to caribou and fish. Each map will be described in the discussion of the appropriate species.

Moose

Map 6 illustrates important moose habitat (and harvest) areas within the study area. Ratings are divided into three categories (high, moderate to high, and low) for spring, summer, fall, and winter habitat, and public hunting. Data used include moose composition counts where available (based on annual aerial surveys),



MAP 6

MOOSE AND SHEEP HABITAT AND HARVEST AREAS

SHEEP

Important Habitat & Harvest Areas

MOOSE HABITAT & HARVEST AREAS*

HIGH VALUE

MODERATE TO HIGH VALUE

LOW VALUE

*NOTE: The information on this map is based on a combination of human use, winter field counts and a rating of the value of vegetation and other habitat elements for spring, summer, fall and winter moose use.

population estimates in unsurveyed areas, information gained as part of the Susitna Hydro studies, information on winter and summer range, and knowledge of hunting areas. In chapter IV, ratings given in each management unit are explained.

As the map shows, moose are very abundant in the Matanuska-Susitna-Beluga Study Area; they are generally found in all areas except steep rocky alpine slopes and north-facing, deep snowfall areas. Important moose concentration areas are located along all river and stream valleys from alpine areas to the outlets of the waterways. Most south-facing foothills, lowlands, and mountainous areas at and below treeline are similarly important. Key moose concentration areas within the basin that are also popular public hunting areas are Sunflower basin, Yenlo Hills, Kahiltna Flats, Petersville Road, Moose Creek, Bear and Peters Creeks, Little Peters Hills, Peters-Dutch Hills, Deshka River, Kroto Slough, Talachulitna River basin, the lower Susitna Basin, Beluga-Susitna Mountains, Beluga River, Yentna-Susitna River Delta, Alexander Creek, Susitna River flood plains, Skwentna River flood plains, Bald Mountain, Matanuska Valley, Big Bones Ridge, and the Oshetna-Nelchina watersheds.

Moose utilize a variety of habitat types, all of which are considered necessary in maintaining the basin's large moose population. Moose are largely dependent on vegetation in early successional stages which may occur naturally, in disturbed areas, or at timberline. Plant species used by moose include willow, birch, aspen, poplar, spruce, alder, cottonwood, and a variety of herbaceous plants. These plants may occur in uplands, wetlands, and riparian zones from sea level to and above alpine zones.

Moose lowland summer habitat occurs throughout the basin. Summer feeding habitat is comprised of willow, birch, aspen, spruce, grass and forbs, aquatic plants, and alder; and may occur in broadly scattered, isolated patches or in large concentrated stands. Alpine shrub areas are also important for summer feeding and for breeding habitats. Summer range is considered extremely important for calf production and in satisfying nutritional requirements associated with fall breeding, winter survival, and production of the annual harvestable surplus. The amount of fat and prime meat produced by moose and considered important by hunters is directly related to the amount and quality of moose summer habitat available.

Winter habitats occur mostly within riparian and wetland zones in the lowlands and on south-facing willow alpine slopes and other upland areas. Moose concentrate on winter habitats mainly because these areas provide the only available food during severe winter conditions. Even though winter range is necessary in maintaining moose through the winter, it can do so effectively only if fall moose populations have attained maximum energy reserves through the consumption of browse while on summer range. Winter habitat then provides adequate energy sources for body maintenance during average snowfall winters.

Sheep/Goats

In addition to information on moose, Map 6 also shows important sheep habitat and harvest areas. Information on this map was derived from aerial surveys of sheep populations. Sheep habitat and hunting areas are nearly identical and for this reason are not differentiated on the map. As can be seen on the map, Dall sheep and mountain goats are normally found in mountainous alpine areas of the study area. Important concentrations of sheep are located in the Talkeetna Mountains, Chugach Mountains, Alaska Range, Watana Hills, Clear Water Mountains, and Jack River areas. The study area is at the northern limit of mountain goat range and consequently this species is less abundant. Mountain goat concentrations occur in the Chugach and to a lesser degree in the Talkeetna Mountains.

Caribou

Map 7 presents information on important caribou habitat within the study area and is based primarily on information gathered as part of the Susitna Hydro Studies. The vast majority of the caribou in the study area are part of the Nelchina Caribou herd. This herd ranges through the Talkeetna Mountains, Jack River Mountains, Watana Hills and Upper Susitna and Tyone River Lowlands. Other caribou populations frequent the northern and western edges of the basin. Caribou from the Mulchatna herd range through the Alaska range from Chakachamna Lake to Puntilla Lake and Happy River; portions of the McKinley Park and Nelchina caribou herds are often found in the Broad Pass-Cantwell area.

Caribou habitat is similar to that of Dall sheep, mountain goat, moose, and bear. During the summer months, caribou occupy high mountainous slopes where alpine grasses, sedges and forbs are available. Mountain winds are important to caribou in reducing insect problems. During late fall and winter, caribou occupy and migrate throughout the lake and forested lowland and foothill areas adjacent to the Oshetna, Nelchina, Tyone, Susitna, Maclaren and Gulkana Rivers.

Areas supporting summer and winter concentrations of the Nelchina caribou herd are combined for ease of mapping. Arrows indicate migration routes. Two main breeding/rutting areas are identified on the map, one mostly north of the Susitna River and one in the Lake Louise area. Hunting occurs during August and September; summer/winter areas are thus a fair indication of where hunting activity occurs.

The Nelchina caribou herd calves exclusively on the eastern slopes of the Talkeetna Mountains. Ninety percent of calving activity occurs in the southeasternmost region crossed by the Oshetna and Black Rivers. Six percent occurs in the northernmost region and two percent in each of the remaining small areas.

SUSITNA-BELUGA STUDY AREA

RANGE OF DENALI NAT'L. PARK CARIBOU HERD

RANGE OF NELCHINA CARIBOU HERD

RANGE OF MULCHATNA CARIBOU HERD

SUMMER & FALL HABITAT

0 6 12 18 24 miles
SCALE

N

KENAI PENINSULA BOROUGH BOUNDARY

MAP 7
CARIBOU AND FISH HABITAT

CARIBOU HABITAT

- Range of caribou herds
- Summer & winter concentration areas
- Migration routes from winter concentrations
- Breeding/rutting areas-fall
- Calving areas-spring
  (NOTE: 90% of calving occurs in the southeast area crossed by the Oshetna and Black Rivers.)
- State Game Refuges

FISH HABITAT

- Rivers/streams used by the following species: lake trout, grayling, Dolly Varden, burbot and white-fish.
- Portions of river and stream drainages used by the following species for spawning, rearing and migration: King, silver, chum, red and pink salmon; rainbow trout; grayling; Dolly Varden; white fish; hooligan; and burbot.

Human Use

This section discusses public use of big game species within the study area. In addition to consumptive use of wildlife (i.e., hunting), nonconsumptive use is increasing, including observation, photography, and scientific study. Consumptive and nonconsumptive uses range from recreational activities (from sport hunting to photography) to subsistence. This section deals exclusively with hunting and harvest of big game and addresses the following species: moose, sheep, caribou and bear.

Moose

Big game, especially moose, frequently provide a major portion of a household's annual food requirement. Residents of remote areas or other individuals choosing to utilize wild food sources are dependent upon moose to fulfill a major portion of their annual food requirements. Assessments of these levels of utilization and economic importance have not been conducted for most of the study area previous to this effort.

Annual moose harvests during the last 10 years have ranged from 1,500 to 4,400 animals in the study area. The annual number of moose hunters has ranged from 4,000 to more than 10,000. Nearly 7,800 people hunted moose in the study area during 1980, but only 1,700 moose were harvested in that year. More than 50% of the moose hunters utilized non-road accessed areas where transportation methods such as aircraft, horse, boat, all terrain vehicles (ATV's), trail bikes, and snowmachines were required to reach harvest areas.

There are also several areas where automobiles were the most important means of transportation to specific popular hunting locations. These areas are accessed by the Matanuska Valley roads, Petersville Road, Oil Well Road, the Denali Highway, the Parks Highway between the Matanuska Valley and Chulitna River, and the Glenn Highway from Palmer to the Matanuska Glacier.

Sheep

Annual sheep harvests have ranged from 160 to 240 animals; and the number of sheep hunters has ranged as high as 900. Aircraft accounted for a majority (43%) of the hunters' access to sheep hunting areas. A combination of highway vehicles and foot access accounted for 27.8%, ATV's 6.3%, and horses 4.3% of the hunters' access to hunting or trail head areas.

Caribou

Historical annual caribou harvests in the Matanuska-Susitna-Beluga Study area have ranged as high as 8,200 animals. In recent years due to more restrictive seasons, bag limits, and permits, the harvest has been reduced to approximately 700 caribou annually. The number of caribou hunters applying for hunting permits in 1980 was approximately 7,000. Statistics for 1980 indicate that

aircraft were the most popular means of access, with 40% of the hunters using this transportation method. ATV's were used by 31% of the hunters and highway vehicles by 18%.

Bear

Annual bear harvests for the past 10 years have ranged from 124 to 350 animals for black bear and 58 to 135 animals for brown bear. In 1980, 115 brown bear and more than 300 black bear were harvested in this area. No methods presently exist to determine the number of hunters seeking black or brown bear. However, it is believed that overall bear hunter success is no more than 20%. From this it is assumed that over the past 10 years the number of black bear hunters for this area has ranged from 620 to 1,750 per year. Appoximately 1,500 people hunted black bear in 1980. Similarly the number of brown bear hunters for this area is estimated to have been between 290 to 675 per year with approximately 575 people hunting brown bears in 1980.

Guiding

In addition to recreational and personal use of wildlife by the general public, commercial big game guiding is an important income-producing industry in the Matanuska-Susitna-Beluga area. More than 75 individual registered and master professional big game guides have exclusive guiding districts established within the Matanuska-Susitna-Beluga study area. Essentially every huntable acre of land falls within an exclusive guide district. There are at least 225 assistant guides working for the registered and master guides. All big game species are hunted.

The overall dollar value of the guide industry within the Susitna-Beluga area is substantial. It includes investment by the guides in lodges, field camps, equipment and transportation; guide and hunter license and tag fees; and costs to the clients, including round trip transportation costs, cost of the guided hunt, and taxidermy charges.

SMALL GAME AND FURBEARERS

Populations

Fur bearers are very abundant, and the following 15 species occur throughout the study area: beaver, coyote, red fox, lynx, marmot, marten, mink, weasel, muskrat, land otter, red, and flying squirrels, wolf, and wolverine. Five major species of small game occur throughout the region: spruce grouse; snowshoe hare; rock, white tail, and willow ptarmigan.

Distribution and Habitat

Fur bearers may be found in nearly all habitat types, although most species occur in the riparian, wetland, and forested areas. Small game species occupy a variety of habitat types. Rock and white tailed

ptarmigan are most commonly found at higher elevations in willow, alder, and other alpine shrub communities. Snowshoe hares and willow ptarmigan are most commonly found in willow and mixed shrublands and forested habitats also used by moose. Spruce grouse are nearly always associated with mature spruce forests.

Human Use

Studies are currently being conducted to determine the number of trappers and small game hunters within the Matanuska-Susitna-Beluga study area. In general, however, it is believed that all areas with primary or secondary roads, ATV, dog sled, and snowmobile trails support trapping and small game hunting.

Trapping is considered one of the few economic mainstays for many residents of outlying locations within the Matanuska-Susitna-Beluga area. Many residents of Talkeetna, Skwentna, Petersville, Peters Creek, Willow, Tyonek, Alexander Creek, McDougall, Cantwell, Broad Pass, Hurricane, Sunshine, Eureka, Sheep Mountain, and Sutton use trapping revenues to help support families each winter. Studies are planned for this region to assess the economic importance and degree of utilization and dependence on these resources.

WATERFOWL & GAME BIRDS

Waterfowl and upland game bird species are numerous. There are 12 species of ducks and 3 species of geese that are abundant and extensively hunted in the basin.

Waterfowl populations are plentiful along many Cook Inlet coastal marshes; in many areas, spring and fall migration concentrations commonly range from 50,000 to 100,000 ducks and geese alone. Even though inland lakes and wetlands have fewer birds per square mile than coastal areas, the total number of birds utilizing these remote areas is also very large and equally important because much of the annual production occurs there. Many species use these areas for resting and feeding during migration; some breeding also occurs. Susitna Game Flats and Palmer Hay Flats State Game Refuges are, respectively, the numbers one and three most heavily used waterfowl hunting areas in the state.

FISH

Fishery resources are among the most important renewable resources in the Matanuska-Susitna-Beluga study area. Two categories of fisheries will be addressed -- anadromous and other fish species.

Populations

Anadromous Fish (salmon)

Anadromous fish found in the study area include five species of salmon (king, red, silver, pink and chum) as well as steelhead trout and some Dolly Varden. Adult salmon production in 1981

(harvest and escapement) for some study area streams included 75,000-125,000 kings; 1,019,000 reds; 403,555 silvers; 3.4 million pinks (1980 figure); 804,564 chums for a total of approximately 5.7 million fish. Spawning salmon, (which totaled approximately 2.8 million salmon in 1981), will produce, under normal favorable conditions, at least 600 million juvenile salmon.

Other Fish Species

Eight species of freshwater fish including rainbow trout, Dolly Varden, Lake trout, grayling, northern pike, Burbot and white fish are locally abundant and can be found throughout the study area.

Distribution and Habitat

In addition to information on caribou, Map 7 also presents information on important fish habitats within the study area. Map data were derived from Alaska's Fisheries Atlas (ADF&G) and from discussions with fisheries biologists familiar with the area. Two distinct areas are depicted on the map. Rivers and streams in the northeast portion of the study area support freshwater fish other than salmon. The western and extreme southeastern part of the map shows portions of river and stream drainages that provide spawning, rearing, and migration habitat for five species of salmon and a variety of freshwater fish.

Anadromous Fish (salmon)

Nearly every clear water stream in the Matanuska-Susitna-Beluga study area, except above Devil's Canyon in the Susitna River Basin and in the Nelchina Basin, provides important salmon spawning habitat. All streams including glacial ones are important migration corridors for adult as well as juvenile salmon. During the summer months, every creek, stream, river, slough, rivulet and back water area connected to the major waterways leading to Cook Inlet is important juvenile salmon rearing habitat. These are the areas which provide important habitat for salmon contributing to the Cook Inlet fishery. In the winter, juvenile salmon are occasionally forced to migrate from the widely dispersed summer rearing waters to areas where ice and water conditions are more favorable for survival. During the following summer, these displaced juvenile salmon migrate back to summer rearing habitats where food is obtained and growth occurs. Certain species of juvenile salmon migrate to the ocean upon emergence from the gravel while others remain up to two years in fresh water before migrating to the ocean.

Other Fish Species

The majority of the clearwater streams, lakes, and rivers in the study area are important for sustaining the eight species of freshwater fish mentioned earlier.

Human Use

Commercial Fisheries (salmon)

Approximately 58% of the upper Cook Inlet commercial salmon harvest is produced from the Susitna River system; 1981 harvest attributed to the Susitna River system included 361,000 reds, 371,000 silvers, 1.4 million pinks (1980 figure), 759,000 chums, and an unknown number of kings for a total of 2.9 million fish. This production is estimated to contribute approximately $8.7 million to Cook Inlet fishermen.

Personal Use of Fish

Fishermen purchasing sport fishing licenses expended approximately 190,000 angler days in 1980 in the Matanuska-Susitna-Beluga area to catch approximately 200,000 fish. For salmon, this included 9,700 kings, 23,300 silvers, 4,100 reds, 57,300 pinks and 5,000 chums. Harvest of other species included 23,300 rainbow trout, 6,600 Dolly Varden, 8,800 lake trout, 52,312 grayling, 3,600 land locked silver salmon, 230 northern pike, 1,100 burbot and 2,500 whitefish.

Other Personal Use of Fish

Subsistence permits have been issued to residents of Tyonek; recent annual king salmon harvests from this area have averaged 2,000 fish. Other species of salmon are harvested in lesser numbers. Residents of Knik and Eklutna have similar activities.

FISH & WILDLIFE

Needs and Issues

The following needs and issues related to fish wildlife in the study area have emerged from previous public meetings and staff analysis. They are concerns which must be addressed through the planning process. It is important that we receive any advice and comments you may have regarding the needs and issues identified below. In addition, we request that you assist in identifying land management issues which we have overlooked. (Please see the cover letter for appropriate persons to contact with your comments.)

Needs

1. Land Base to Support Fish and Wildlife Resources for Current and Future Human Use

   As the region develops there will be both an increase in human use of fish and wildlife resources and a decrease in the undeveloped land base which supports these resources. Therefore, it is important to identify through the planning process a land base to support fish and wildlife resources for current and future generations. This land base should include areas which support critical portions of species' life histories (calving grounds, overwintering areas, migration corridors and staging areas, etc.), as well as important harvest and observation areas.

2. Adequate Guidelines to Protect and Enhance Fish and Wildlife Resources in Multiple Use Areas

   In multiple use areas, appropriate management guidelines can minimize adverse impacts of other uses on fish and wildlife resources. These guidelines may include publically owned buffers for river corridors and wetlands, limiting stocking densities on range land, and forestry practices which enhance big game habitat.

Issues

1. Conflicts with Other Resource Values

   - As the region develops land uses will occur which are socially desirable but which reduce the area's ability to support fish and wildlife resources. A major issue in the planning process will be the conflict between the objectives of development and those of protecting fish and wildlife resources.

   - Although a principal objective of the plan will be to encourage multiple use of land, incompatibilities between fish and wildlife and other uses will occur and will require explicit identification so that techniques to eliminate or reduce conflicts can be developed during the planning process. An example is the potential conflicts between domestic stock and fish and wildlife species (competition for browse, pollution of streams, etc.).

- o Environmental processes which support fish and wildlife species cross various management and land ownership boundaries (hydrologic connections, atmospheric connections, patterns of animal movement, etc.). It is important to identify functional relationships among different areas and to take them into account in designating appropriate land uses.

- o Viewed individually, small, single-use development-oriented allocations (e.g., settlement disposals, "life-style" farms, placer permits, etc.) may appear to be environmentally and economically insignificant. However, cumulatively, these small developments can have major economic and environmental consequences.

2. Appropriate Role of Various Land Owners in Protecting and Providing Fish and Wildlife Resources

Fish and wildlife resources occur somewhat independently of land ownership boundaries. A considerable amount of hunting and fishing is done on private lands as well as on public lands. Cooperation among various land owners will be necessary in order to protect fish and wildlife resources.

3. Provision of Access

Much of the existing use of fish & wildlife occurs on or across presently undeveloped land. As this land is developed, publically owned access corridors to hunting and fishing areas, etc. must be provided.



recreation

INTRODUCTION

Recreational resources in the Susitna-Beluga basin are as abundant and varied as anywhere in the state. It is an area of dramatic contrasts in terrain and climate, encompassing elements of both interior and coastal Alaska. Rugged mountains and glaciers can be found next to gently sloping wooded valleys; areas with heavy precipitation occur near dry, rain-shadowed valleys. Recreation opportunities here are plentiful, increased by large amounts of public land, proximity to population centers, and significant road access by means of the Parks, Glenn and Denali Highways. Especially high recreational values occur in the road-accessed areas; these corridors receive very heavy use. Other methods of access (air, water, trail, etc.) are widely used to reach the more remote portions of the study area.

The historical and archaeological resources of the Susitna-Beluga Study area are numerous and of great recreational value to the area. A sizable study has just been completed by Alaskarctic Consultants for the U.S. Department of Agriculture, Soil Conservation Service. This study, entitled, "Cultural Resource Assessment; Talkeetna-Lower Susitna River Basin, Southcentral, Alaska," encompasses the western portion of the river basin. The results of this study will be incorporated into the more detailed planning effort to follow for this area.

Even though there are presently large amounts of land available for recreational use, pressures to develop the land for other uses continue to grow. This potential conflict highlights the major issue in the region: growing population in the borough and in Anchorage that both increases the need for recreation lands and decreases (through development) the land base from which that need can be met.

The remainder of this section discusses recreation facilities and use by geographic region. This description is divided into the following three categories: road accessed areas, non road accessed river corridors and other lowland areas, and mountainous areas (most of which lack road access). The discussions of each management unit in Chapter IV provide a more detailed description of recreation facilities and particularly recreational use. Hunting and fishing are popular recreational activities and are mentioned in this and the following chapter. A more detailed discussion, however, describing hunting and fishing man days expended, etc, can be found in the Chapter III and IV sections on fish and wildlife.

RECREATION FACILITIES AND USE

Map 8 illustrates important state recreation areas in the Matanuska-Susitna-Beluga study area. Areas less than ¼ township (approximately 6000 acres) are represented by symbols on the map. Existing areas are noted with a star; proposed areas with a triangle. As the key indicates, these areas encompass state campgrounds, picnic areas, scenic viewpoints, river/stream/lake access points and trailheads. These areas are most commonly found along or near roads and include facilities like Moose Creek and Matanuska Glacier State recreation sites. Areas larger than ¼ township are outlined on the map. Two categories of large areas are shown -- existing state recreation areas or parks (like Denali State Park) and other important recreation areas. In the second category, areas proposed for inclusion in the state park system (such as Talachulitna State Park) are differentiated from other important recreation areas. Areas included in the state park system will be managed by the State Division of Parks principally for their recreation values. Other multiple use areas will be managed to support a variety of uses.

The map also delineates important existing trails (utilized for a variety of summer and winter activities) and river corridors. Trails designated on the map are deemed important for some or all of the following reasons: they have historical significance (e.g., the Iditarod), they radiate from some portion of the existing road network, or they are extensions of trails identified in the Willow Sub-basin Area Plan. Important waterways shown on the map are divided into two categories -- those proposed for inclusion in the state recreation river system to be managed by the State Division of Parks and those not proposed for management by the Division of Parks but which have high recreation values.

Road Accessed Areas

The majority of the study area is remote and without road access. Those areas reachable by roads, particularly by the Parks and Glenn Highways, are thus extremely important because they provide easy access to a variety of surrounding recreational opportunities in addition to offering exceptional views of the nearby landscapes. Driving for pleasure is one of the most popular recreational activities in Southcentral Alaska. The Department of Natural Resources, Division of Research and Development has just issued a contract to conduct a

SUSITNA-BELUGA STUDY AREA

0 6 12 18 24 miles
SCALE

N

MAP 8
RECREATION

★ Existing state campgrounds, picnic areas, scenic viewpoints, river/stream/lake access points and trailheads less than 6000 acres.

△ Proposed state campgrounds, picnic areas, scenic viewpoints, river/stream/lake access points and trailheads less than 6000 acres.

Existing trails

Important Waterways - Those shown with ▭ are proposed for inclusion in the state park system.

Existing State Recreation Areas/Parks larger than 6000 acres.

Other Important Recreation Areas - Areas shown with ▨ are proposed for inclusion in the state park system.

visual resource analysis along the Denali Highway, portions of the Richardson and Edgerton highways, and the Chitna-McCarthy Road. This analysis will be completed by July, 1982, and results will be incorporated into the final plan for the Matanuska-Susitna-Beluga Study Area.

Short duration activities such as boating, overnight camping, picnicking, berry-picking, fishing, skiing and snowmobiling are extremely popular along the highway corridors. However, the number of state recreation sites, areas and trails along the road system are inadequate to satisfy the increasing demand. The Division of Parks is proposing two large state parks in road accessible areas -- Talkeetna Mountains and Gunsight Mountain State Parks. In addition to state owned recreation areas there are many privately owned facilities along the highways. Lodges, such as those at Sheep Mountain and Eureka, provide overnight services for recreationists traveling along the highways. There are also private camping facilities, some of which provide otherwise unavailable access to important fishing streams along the highways.

Non Road Accessed River Corridors and Other Lowland Areas

Rivers and waterways are extremely valuable recreational resources since they offer recreational opportunities in themselves and also provide access to other areas and activities. Popular water-related activities include canoeing, kayaking, rafting, motorboating, hunting and fishing, and travelling to recreation cabins. The Division of Parks is proposing several of the most frequently used rivers as state recreation rivers. These are Nelchina-Tazlina, Susitna Lake-Tyone, Talachulitna, Talkeetna Rivers; and Lake, Kroto and Alexander Creeks. There are also four proposed recreation sites along the upper reaches of the Yentna River.

Other remote lowland areas (particularly west of the Susitna River) offer a wide variety of recreational opportunities. Activities include moose and waterfowl hunting, summer and winter use of the many lakes and rivers (boating, fishing, swimming, ice skating, etc.). There are also numerous trails in this region, particularly in the area west of Talkeetna. Many of these trails stem from Petersville Road and provide access into the remote regions by foot, dogsled, snowmobile or off-road vehicle (ORV). The Iditarod Trail, an historical landmark, runs approximately east-west through the western portion of the study area from Knik to Rainy Pass.

State managed recreation facilities in the remote lowlands (excluding trails) are concentrated mainly along water courses. The Division of Parks is proposing two state parks in these lowland areas -- Lake Louise State Park and Talachulitna Lakes State Park. There are also a number of private fly-in lodges (particularly along Alexander and Lake Creeks) used as jumping off points for fishing and/or hunting expeditions.

Mountainous Areas

The vast mountainous regions within the study area provide a wide range of recreational opportunities. The remote Alaska Range is a popular area for sheep hunting and "flightseeing" (sightseeing by

air). The Chugach Range also offers excellent sheep hunting and flightseeing, along with mountain and glacier climbing, cross-country skiing, and ORV use. The Talkeetna Mountains probably receive the broadest spectrum of uses associated with any of the alpine areas in the region. Popular activities include caribou, moose, bear and sheep hunting, cross-country skiing, hiking, camping, snowmobiling, ORV use, rock climbing, gold-panning, and berry-picking.

The state currently does not manage many recreation facilities within remote mountainous regions, although the Division of Parks is proposing a state park for the area surrounding Mt. Susitna. There are, however, a number of privately owned remote camps and lodges which most commonly are used for hunting and fishing.

RECREATION

Needs and Issues

The following needs and issues related to recreation in the study area have emerged from previous public meetings and staff analysis. They are concerns which must be addressed through the planning process. It is important that we receive any advice and comments you may have regarding the needs and issues identified below. In addition, we request that you assist in identifying land management issues which we have overlooked. (Please see the cover letter for appropriate persons to contact with your comments.)

Needs

1. An Adequate Land Base for Existing and Future Recreation Needs

   The region is likely to experience significant population growth and tourism which will increase the demand for recreation opportunities. It is important to secure an adequate land base to provide these opportunities as more public land becomes private. Recreation is an important sector of the regional economy. The following are specific concerns in that regard:

   - In certain areas the combination of heavy use and limited facilities creates congestion, reduces user satisfaction, and causes management problems. This is a special problem during the salmon fishing season. The need for developed camping sites, waysides and road access to fishing greatly exceeds the current opportunities.

   - In many of the smaller towns there is a lack of community recreation areas.

   - There are numerous areas with historical and archaeological significance in the borough. Further measures are needed to identify and protect these areas.

   - Important views from roads, particularly along the Parks and Glenn highways are vulnerable to disruption by development and should be protected for public enjoyment.

   - Trails and waterway corridors provide important recreational opportunities. It is important to secure public access to these opportunities.

   - As a result of the state and borough land disposal programs large tracts of previously remote land have been opened to settlement. The residents of these areas will create increased demands for public recreation opportunities.

Issues

1. Conflicts with Other Resource Values

   - Land with high public recreation value, is by its very nature, often desirable for residential use. It may also be excellent agricultural land, forest land or important habitat. Competition among these resources will be a major issue in the planning process. The sale of large amounts of public land for settlement, in particular, may conflict with important recreation values. Demand for land for private use tends to focus on land adjacent to lakes, streams, and good hunting -- the kind of land that has important public recreation values.

   - As additional public lands are sold for private use, methods of protecting public access across these lands to important recreation areas will be an important issue.

   - Conflicts between mining and recreation may emerge as a central issue in portions of the study area, especially in the Talkeetna Mountains. Management guidelines will be necessary to minimize these conflicts.

2. Appropriate Roles of Various Land Owners in Supplying Recreational Opportunities

   The state, the Matanuska-Susitna Borough, and private landowners all own land with the potential to provide recreational opportunities. For optimum management it is important to assess the type of recreational opportunities each owner can best make available to the public based on location and quality of the resource.



settlement

INTRODUCTION

Settlement refers to residential (seasonal and year-round), commercial, industrial and related land uses. The Matanuska-Susitna-Beluga study area is sparsely settled. It contains approximately 20,000 people in an area one third the size of Washington State, 90% of whom live along the Parks and Glenn Highways from Palmer to Willow. Although numerous factors are changing the character of this region --regional population and economic growth, possible resource development such as the Susitna Hydro-project and Beluga coal, new roads, and state land sales -- the majority of the study area remains a remote, relatively uninhabited wilderness.

Although much of this region is either high mountain or wetland, the area is endowed with large amounts of land physically capable of supporting settlement. Within the road network there are many thousands of acres -- most in private, borough, and native ownership -- which can accommodate cabins, subdivisions, businesses, and industrial establishments. In the broad valleys between the Talkeetna Mountains and the Alaska Range are also many thousands of acres of remote public lands capable of supporting settlement.

This region's relative proximity to centers of population growth and its abundance of attractive sites for recreational and other residential uses have led to a large number of state land sales since 1979. During this period approximatley 79,800 acres of state land was sold or leased to private individuals in the study area. Demand for high quality land, especially for recreational use, is expected to remain high.

These pressures on the public land base give rise to the main settlement issue to be addressed by the Matanuska-Susitna-Beluga land use plan: the determination of the most appropriate amount, type, and location of future land sales in the area. Public land sales must address, in a timely way, land needs for community expansion, public facilities, seasonal use, and private investment. Against these needs will have to be measured the supply of public and private lands available and able to support settlement. Other important concerns include the following: access needs, the near and long-term costs (in excess of taxes and assessments generated) of providing settled areas with services and facilities, and opportunities foregone (such as forestry mangement or public recreation) by selling land for private use, effects on lifestyles of existing residents. A specific concern related to this last issue, is whether to sell state lands previously classified for public retention. These lands are intended for forestry management, hunting, fishing and other recreational uses, habitat protection, etc. but also offer prime sites for recreational/seasonal residential use.

The remainder of this section begins with a review of settlement patterns in the study area -- past, present and proposed --including a description of state and borough land sales. This is followed by a discussion of the demand and supply of land in major settlement land use categories. Finally there is a summary of major issues related to settlement which must be addressed through the public land planning process for the Matanuska-Susitna-Beluga area.

SETTLEMENT LAND USE - PAST, PRESENT AND PROPOSED

When the first Russian explorers arrived in Alaska in the eighteenth century, the Matanuska-Susitna-Beluga Study Area was already thinly settled by Athabascan Indians, specifically by the Tanaina group. Although the Athabascans moved seasonally and lived a subsistence lifestyle as hunters, fishers, and gathers, they established scattered villages in the Cook Inlet region.

The area remained thinly settled through the early twentieth century, by which time settlement was limited to the native village of Tyonek and a few scattered homesites. During the following decades, additional incentives for settlement were provided by gold mining, agriculture, and to a lesser extent, coal. Construction of the Alaska railroad between 1915 and 1917 opened local markets for Matanuska Valley agricultural products and attracted an influx of homesteaders. Coal mining towns such as Chickaloon, Eska and Sutton formed along the railroad. In 1935 the federal government initiated the Matanuska Colony farm settlement in which 200 families from the lower 48 relocated in the Matanuska Valley.

Gold mining and agriculture remained the economic mainstays of the region through the middle of the century. The Willow Creek, Nelchina, Yentna and Talkeetna mining districts were the principal locations of mining activity. The Jonesville coal mine was a source of power for Anchorage with until the 1960's. The area experienced substantial population growth in the 1960s and 1970s, growing at a pace comparable

to Anchorage. At statehood in 1959 the total population of the area now contained in the borough was 5,188. This climbed to 6,509 by 1970 and to about 20,000 in 1980.

Much of the recent population growth is attributable to people who commute to jobs outside the area. Recent census figures indicate that 35% of employed borough residents commute to jobs in Anchorage, the North Slope or other areas outside the borough.

Many of the existing communities and settled areas shown on Map 10 reflect historical settlement patterns. Approximately 90% of the area's approximately 20,000 residents are located within a ten mile radius of Wasilla, primarily in or near Palmer, Houston and Big Lake. As depicted on the map, other areas of relatively concentrated settlement are distributed along the Parks and Glenn Highways with increased densities at communities such as Talkeetna, Trappers Creek and Sutton. The one exception to this pattern is the native community of Tyonek located on the coast of Cook Inlet in the Beluga Management Unit. The remainder of the inhabitants are scattered throughout the study area in rural or remote areas, often near mines or at sites accessible by water, air or rail. The Skwentna, Sheep Mountain, Chase and Lake Louise areas are examples.

The settled rural and remote areas shown in Map 10 also indicate areas occupied on a seasonal basis. Concentrations of miners occur in the Cache Creek and Fairview Hills area (the Yentna Mining District) in the Sunflower Basin Management Unit, and in the Caribou Creek and Valdez Creek drainages in the Talkeetna Mountains Management Unit. Seasonal concentrations of recreationists are found primarily on or adjacent to the area's numerous lakes and streams. Areas with relatively dense recreational use include the Hewitt-Whiskey Lakes, Alexander Lake, the Yentna River and the Tokosha areas. Land adjacent to Lake Louise also hosts many recreational cabins.

Land Sales

Numerous state and Matanuska-Susitna Borough land sales have occurred in the study area. Land sales are the primary tools the state and borough have to meet settlement needs and direct future settlement patterns.

To date, borough land sales totaling approximately 2390 acres have occurred, primarily in the Parks Highway and Willow Sub-basin Management Units. Previous state land sales or land leases totalling 79,800 acres (see Map 9) have occurred throughout the road accessed and remote portions of the study area. The direct impetus for these state land sales was a legislative mandate (Section 13, Chapter 85, SLA 1979) which established a 100,000 acre per year land sale quota. Recent changes in legislation have replaced the 100,000 acre mandate with an acreage quota based on a yearly assessment of market demand.

Of the acres within the study area offered to date by the state, 7,735 acres have been offered under the subdivision program, 58,490 acres under the remote parcel program, 1,499 acres under the homestead

program, and 12,044 acres under the agricultural program. It is important to note that the boundaries of the remote parcel areas depicted on Map 9 indicate the areas in which people were allowed to stake and does not reflect actual acreage sold. For example 10,000 acres of land may be designated for a remote parcel staking but only 100 people might be allowed to stake a maximum of 40 acres each within the 10,000 acres. Thus the total land actually offered for sale would be 4000 acres, which could be distributed anywhere within the larger unit. Finally, the lots actually staked may be substantially less than 40 acres.

Those purchasing state land have shown a strong preference for waterfront property -- most parcels have been staked on or adjacent to streams and lakes. This preference is also evident in the selection of subdivision lots. Though both waterfront and non-waterfront sites have been offered for sale, a much higher percentage of lots with water frontage and/or road access have been sold than lots without these amenities.

Map 9 also shows proposed land sales for the state and Matanuska-Susitna Borough. State land sales proposed throughout the study area are in many cases contiguous to previous offerings. Notable exceptions to this are in the Lake Louise and Upper Parks Highway management units. These units, which have not been the locations of major land sales in the past, are scheduled for several land sales. Matanuska-Susitna Borough land sales in the Bulchitna Lake, Larson Lake and Amber Lake areas are under consideration. In addition, several state and borough agricultural sales are under consideration.

SUPPLY AND DEMAND OF LAND FOR SETTLEMENT

To address the central issue cited above, i.e., an appropriate public land sales policy for the region, it is important to assess the demand for land in various categories and then to assess availability, or supply, in each of these categories. Based on this analysis the state and borough can better tailor their land disposal programs to fit demand .

The following is a preliminary investigation of the supply and demand for land for various types of settlement. It is intended to frame the approach to be followed and the issues which must be addressed in a more detailed supply and demand analysis to be completed over the duration of the area planning process. This preliminary investigation is also intended to provide a rough estimate of demand for and supply of settlement lands in the study area.

The remainder of this discussion of supply and demand is organized as follows: first is an explanation of settlement land use categories for which demand and supply will be addressed; second, an explanation of the terms "demand" and "need" as used in this report; third, an assessment of demand by category; fourth, an assessment of supply; and finally, a summary which compares land demand to supply and examines implications for public land management. The discussions of settlement land use categories and the definitions of demand and need are somewhat lengthy. However, it is essential that a common basis of understanding be established before projections of supply and demand are presented.

SUSITNA-BELUGA STUDY AREA

0 6 12 18 24 miles
SCALE

N

NOTE: Parcels less than approximately 5120 acres in size are designated by symbol only.

MAP 9
LAND SALES

Past State Land Sales (1979 through Fall 1981)

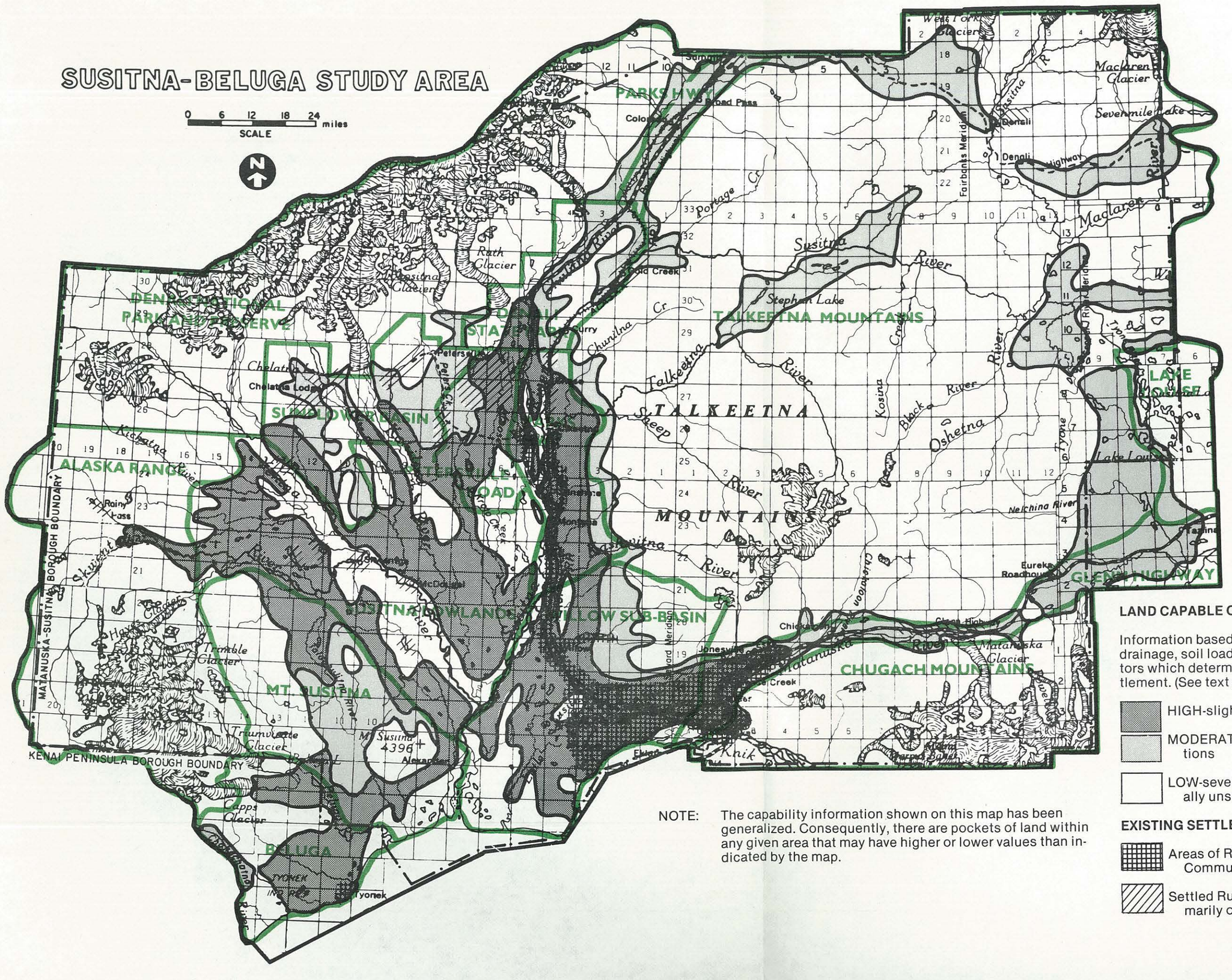
- Subdivision
- Remote Parcel
- Agriculture

Proposed Land Sales

- Proposed State Land Sales (spring 1982 through 1984)
- Potential Matanuska-Susitna Borough Land Sales (may be offered for sale when access is available if current access does not exist)

SUSITNA-BELUGA STUDY AREA

0 6 12 18 24 miles
SCALE



NOTE: The capability information shown on this map has been generalized. Consequently, there are pockets of land within any given area that may have higher or lower values than indicated by the map.

MAP 10
SETTLEMENT

LAND CAPABLE OF SUPPORTING SETTLEMENT

Information based on an evaluation of a slope, soil drainage, soil load bearing capacity, and other natural factors which determine physical capability to support settlement. (See text for details).

- HIGH-slight or moderate building limitations
- MODERATE-moderate or severe building limitations
- LOW-severe building limitations; areas generally unsuitable

EXISTING SETTLEMENT

- Areas of Relatively Concentrated Settlement/ Communities
- Settled Rural/Remote Areas (includes areas primarily occupied on a seasonal basis)

Settlement Land Use Categories

For purposes of this discussion settlement refers to residential, commercial, industrial and public facility land uses. Settlement land does not include sites of resource extraction or development such as mines or agricultural projects, although it does include residential, commercial or industrial building sites associated with such development.

Settlement lands are divided here into two general but overlapping categories: 1) land for community growth and for settlement associated with resource development, and 2) land for seasonal/recreational use. As will be seen below, these categories are useful for assessing land demand and availability and for clarifying public land sale objectives. It is important for public land mangers to know in which categories shortages lie in order to set land sale priorities directly related to the public interest.

The two categories of settlement lands identified above are intended to distinguish primarily between land for year-round use and land for seasonal/recreational use. The first category, land for community growth and land for settlement associated with resource development (year-round use), includes land to accommodate the homes of people whose primary place of residence is in the study area. (These people may work within the study area, commute to Anchorage or other areas, or live a subsistence lifestyle on remote land.) The category also includes land necessary for commerce, industry and public facilities within the study area. Land for these uses closely approximates what might be considered land for actual year-round use, although certain commercial establishments may be operated seasonally. An important point is that future space requirements for this category of settlement lands can be estimated based on projections of future employment and population.

Land needed for community growth and settlement associated with resource development are primarily a function of job opportunities and related population levels. Therefore, land to satisfy this demand generally must be road accessible and near centers of employment, although there will be land needed for settlement related to future resource development projects in currently remote areas and for a relatively few individuals who wish to live a remote, subsistence lifestyle.

The second category of settlement land considered here is land for seasonal/recreational use. Due to its proximity to population centers and its abundance of attractive land, the Matanuska-Susitna Borough has been a popular location for recreational property, second homes, and cabins. People who desire land for these uses generally seek lands outside urban areas yet close enough for weekend trips. As evidenced by state, borough and private land sales, the demand for this type of land has been strongly oriented to waterfront or view sites with road, rail, air, or boat access.

Land Demand and Land Needs-- Some Definitions

Prior to discussing projected land needs in each of the categories identified above it is important to distinguish between the concepts of demand and need, which are often used interchangeably. Demand as used here refers to effective market demand -- the amount of land of a particular type which will be purchased at a given price at a particular time -- a snapshot of market response. A "demand curve" establishes the quantity demanded at various prices -- generally the higher the price the lower the quantity demanded. Thus the answer to the question "what is demand?" requires the definition of a particular type of land at a particular price, and a particular time.

If data are available which show that buyers are willing to purchase more land than is available at a particular price, there is unsatisfied demand. It is important to discuss briefly the policy implications of unsatisfied demand. Unsatisfied demand is an indication that public desires are not being satisfied and may be used as a general guide to establish priorities in a land sales program. However, it is only part of the analysis necessary to determine a desirable, or optimum, land sale quota. Public land managers cannot simply conclude they should sell enough land to meet all unsatisfied demand. Land is also in demand for other purposes such as forestry, recreation, and habitat. Therefore, the benefits lost by selling land for settlement must be set against the benefits gained in meeting unmet demand. Although public land managers must compare the value of land for settlement with the value of land for alternative uses, an assessment of demand is essential for gauging the public's response to land sales.

Need is a different concept than demand. Whereas demand refers to quantity demanded at a particular price, need refers to land requirements necessary to accommodate projected growth. There are standard methodologies for converting expected levels of employment and population to acres of land needed for homes, commerce, industry and public facilities. (This calculation is being done now for the proposed capital site near Willow.) Need is also used to refer to desires which, because of limited financial resources, are not expressed in the market place. For example, if the community of Houston needs land for a community center but cannot afford it, either the state or borough may decide that it is a legitimate use of public land to meet the need. Similarly the housing needs of the poor are typically distinguished from effective market demand; various government policies may be aimed at meeting those needs by transferring resources (such as land) to the poor which they would not demand in the marketplace. For purposes of this discussion however, need refers to settlement land requirements for projected growth.

It is useful to discuss briefly the importance of projected needs for public land sales policy. As with demand, a calculation of land needed for actual use cannot alone define the socially optimum level of land sales. A supply of land over and above that needed for use is necessary to provide adequate choice in the market place and to prevent extremely high prices. Individuals and firms should be given adequate opportunity to invest in order to allow the market to help distribute

land uses efficiently. For example, the high price the private market sets on land suitable for commercial use at the intersection of two highways can preclude uses such as single family housing which would be an inefficient use of the attributes of the site.

In spite of the above caveats, the calculation of future land needs (space requirements) for settlement is an extremely important planning tool. State and borough land use plans must be based on a projection of future needs, as well as current market demand, if these plans are to accommodate growth without constant revision and conflict. If population projections indicate that a community is headed for a major shortfall in residential land, that may suggest not committing land which could meet residential needs to a use such as a park which would be difficult to change. In short, need projections are essential for rational land use allocations. In addition, need projections are important for fiscal and capital improvement planning. Utility lines, road corridors, and public facilities should be constructed with the capacity to accommodate projected residential, commercial and industrial development and should be consistent with the planned spatial allocation of those land uses.

Projected Land Needs

The preceding sections presented key concepts and definitions related to analyzing and formulating public land sales policy. The following sections put these concepts to work. This section investigates land needs associated with the two major categories of settlement -- year-round and seasonal/recreational settlement. These projections of land needs are then compared to the available supply of land.

A. Projected Land Needs for Community Growth and New Settlement Associated with Resource Development

As was explained above, this category of land includes that necessary for residential use by people whose primary place of residence is in the study area and the land for commercial and industrial uses associated with future development. This settlement category is largely a function of job opportunities; therefore land to satisfy this demand must generally be road accessible; however, land for year-round subsistence and settlement related to potential resource development in remote areas are both included in this category.

We have currently little information regarding effective market demand for this type of land. (The demand study for state land in the study are deals mainly with land more appropriate for seasonal/recreational use and agriculture.) We can however, make a prediction of space requirements or land needs based on anticipated growth. The prediction made here is a relatively crude one, which will be refined later in the planning process.

Given a projection of population we can estimate the land necessary to accommodate residential growth by making assumptions about the number of persons per household and about the amount of land

needed for an average household residence. Commercial, industrial and public facility land requirements, as well as land need for investment and market flexibility, can be estimated as a percentage of residential land requirements.

Growth inducing activities which could affect population in the study area include Beluga coal development, the Susitna Dam, the capital move, port and industrial development at Pt. McKenzie and development of mineral, agricultural, recreation and forestry resources. Another factor to be considered is the relationship of Anchorage's population growth to residential growth in the Matanuska-Susitna Borough. As mentioned previously, 35% of the borough workforce commutes to jobs outside the borough. If the Knik Arm Crossing were built this percentage could increase substantially.

Given these uncertainties, the following paragraphs are an attempt to project land needs for community growth and for settlement associated with resource development. The projections will include a factor to project land needed for commercial and industrial uses and also land needed to allow adequate market choice and investment opportunities.

The present population of the study area (1980) is approximately 20,000 people. Depending on which, if any, of the possible developments actually occur, population in the study area in 1990 could grow by 15,000 to 40,000 new residents (based on estimates prepared by the U.S. Department of Agriculture, Soil Conservation Service).* Present average household size in the borough is 3.1 people/unit; average lot size is approximately 1 acre.** Using these two averages, the need for residential land to accommodate new population over this 10-year period could range from 4,840 to 12,900 acres. While this projection methodology is crude, it nonetheless provides a reasonable estimate of the likely magnitude of residential land needs related to population growth through 1990.

Commercial, industrial and community facility land needs will also grow with population. While the total land devoted to these uses is currently very small (less than 2% of the total land in settlement related uses), as the total number of people in the area grows, the local population will demand and be able to support a relatively higher degree of local commercial/industrial uses. Even with increased per capita land requirements for these uses, it is unlikely that non-residential uses will comprise more than 5% of the total acreage devoted to settlement.

*The high range population projection assumes the following projects will be constructed: the Willow capital site, the Susitna hydro project, and the Knik Arm crossing. The lower figure assumes none of these projects occur.

**The Department of Environmental Conservation restricts lots with onsite water and sewer to a minimum of 40,000 square feet (slightly less than one acre).

Another important consideration, over and above projected land needs, is the consideration of land needed to insure market flexibility and also to accommodate the need for investment. In order to incorporate these considerations, the projections are based solely on population growth increased by 25%. The total projected land needs to accommodate projected population growth are therefore 6,300 acres in the low case and 16,770 acres in the high case. These final projections include the projections based solely on population growth plus an additional 5% to account for commercial land needs and an additional 25% to accommodate land needed for market choice and investment.

B. Projected Land Needs for Recreational/Seasonal Use

People who want land for recreational or seasonal use generally seek land outside established communities yet close enough to their primary place of residence for weekend trips. Marketable land for this purpose usually has some attractive attribute, such as proximity to water (either lake or stream), good views, or proximity to recreational activities such as good hunting or skiing. It also is usually accessible by car, boat, or airplane; although there is some demand for remote, walk-in, sites.

Assessing the amount of land necessary to satisfy future recreational land demand is very difficult. It cannot be estimated based directly on assumed population growth as easily as can year-round residential space requirements. Historically the Matanuska-Susitna Borough has been a popular location for recreational property and cabins. More than 70% of the lots in the borough are owned by non-residents, most of whom have Anchorage mailing addresses. One can certainly make the assumption that as long as the population of Anchorage continues to grow and the city's economy remains healthy, there will be a strong market demand for state land in the borough.

The state Alaska Department of Natural Resources recently commissioned a study of the market for state land in various regions. Based on a review of applications for past state land sales, the authors of the study projected demand for state owned settlement land in the Matanuska-Susitna Borough to be approximately 21,000 acres in fiscal year 1983 (July 1982-June 1983).* Because of the location of state land in the borough, almost all of this projected demand will be for land suited for recreational or seasonal use rather than for community growth. (The state has scheduled an offering of well over 30,000 acres of settlement land in the borough for fiscal year 1983.) An important task to be completed during the planning process is a projection of demand in future years for various types of receational lands.

* Real Estate Services Company, Assessment of Market Demand for State Land, Anchorage, January, 1982.

Based on current information it is possible to make a very general estimate of land needed for the construction of new seasonal homes and cabins through 1990 in the Matanuska-Susitna Borough. It is also possible to estimate land needed to provide adequate opportunities for private investment in land for this purpose. The following estimation of land needs for seasonal/recreational use is based on a number of key assumptions:

1) The ratio of recreational/seasonal housing units now in the Matanuska-Susitna Borough to the combined populations of the Anchorage Metropolitan area and the Matanuska-Susitna Borough will remain constant over the next ten years. This assumption means that the increase in seasonal homes is expected to be proportionate to the increase in population in the area which provides the major market for recreational property in the borough.

2) The average lot size of a seasonal home will be 12 acres. This is based on an average of past state land sales -- approximately 80% 5-acre lots, 20% 40-acre lots.

3) Adequate land for market choice and investment in recreational property requires seven vacant parcels for every one with a seasonal home constructued on it.

Based on these assumptions a range of 29,000 to 73,450 acres will be necessary to provide land for new recreational/seasonal homes and to provide adequate vacant recreational land for market choice and investment in the Matanuska-Susitna Borough through 1990. (See Table 2 for calculations.)

Those projections pertain only to the Matanuska-Susitna Borough, the major portion of the study area. Projections have not been made for the Beluga area due to the uncertainty of proposed coal development and the lack of available data on existing recreational/ seasonal housing units in the area. Projections of land needs for the Beluga area will be made in the summer of 1982 as the planning process continues.

TABLE 2

Projections of Land Needs for Private Seasonal/Recreational Use: Matanuska-Susitna Borough, 1980-1990

1980	Population of Anchorage Municipality and Matanuska-Susitna Borough	220,000
1980	Recreational/Seasonal Housing Units in Matanuska-Susitna Borough	1,170
1980	Ratio of Recreational/Seasonal Units to Population of Anchorage and Borough	.0053 (1 unit per 200 people)
1990	Projection of New Borough and Anchorage Residents (1980-1990) (Based on Population Projections Prepared by USDA-Soil Conservation Service)	
	Low 65,000 / High (assumes state capital moved to Willow) 165,000	
1990	Acres per Recreational/Seasonal Housing Unit	12
1990	Ratio of Vacant Recreational/Seasonal Parcels to Improved Parcels	7

Projection of Land Needs

Low:	65,000 (pop. increase by 1990)	X	.0053 (recreational housing units per person)	X	12 (acres per unit)	X	7 (vacant land factor)	= 29,000 acres
High:	165,000 (pop. increase by 1990)	X	.0053 (recreational housing units per person)	X	12 (acres per unit)	X	7 (vacant land factor)	= 73,450 acres

Supply of Land for Settlement

An assessment of demand is logically followed by an assessment of land availability in each of the demand categories. Through this analysis public land managers can better set priorities on land sales. The following discussion on supply begins with assessment of the physical capacity of land in the study area to support settlement. Limitations such as soil conditions, slope and climate are considered in an effort to identify the location and quantity of land in the study area which has good physical capability of supporting settlement. This assessment of land capability is followed by a look at the network of public facilities and services in the study area -- a major factor limiting the current supply of land available for certain types of development. The section concludes with an assessment of the supply of land in each of the categories discussed in the demand section: 1) land for community growth and economic development, and 2) land for seasonal/recreational use.

Land Capability

The most basic determinant of supply is the physical character of the land. Certain qualities of the land -- permafrost, erosion potential, floodplains, slope, soil drainage and bearing capacity, etc., -- determine the physical capability of an area to support settlement. Some environmental attributes, such as slope or bearing capacity, primarily affect construction costs and appropriate densities. Locating settlement in areas of natural hazards such as floodplains or unstable slopes, on the other hand, can pose a risk to human life and property.

Map 10 presents a very generalized picture of areas that are physically capable of supporting a typical residential structure with a light foundation load. It is important to note that this information is intended to provide a broad overview of the areas that have the physical capability to support development. This information may be misconstrued because it rates large areas as possessing high or moderate physical capability when, in fact, a significant percentage of the areas depicted are not physically capable. It is most accurate to think of the map as depicting regions where the majority of the land has whatever rating is shown by the map, but to recognize that net usable acres are much lower than what is shown. It is also important to note that the map does not reflect any judgment on the appropriateness of an area for settlement; it merely shows areas that are physically able to support this use.

Approximately 30% of the total study area is shown on the map as having high or moderate capability for settlement. The majority of these lands lie west of the Susitna River or along the Parks, Glenn and Denali Highways. The remaining 70% of lands in the study area are steeply sloping, in wetland areas, or underlain by permafrost where construction would be costly, and/or pose hazards to life and property.

This settlement capability information was derived through an evaluation and systematic rating of soil features which affect the capability of

a given area to support settlement. Soils associations were mapped and evaluated based on USDA Soil Conservation Service exploratory field notes (1:250,000 scale). The soil associations were then modified in some areas by resource managers personally familiar with the soils and by a more detailed report, Surficial Geology of the Susitna-Chulitna River Area, Alaska, prepared by Kenneth Dean of the University of Alaska. This report delineates active floodplains and major wetlands (areas with greater than 50% standing water) at a 1:125,000 scale. Soil characteristics evaluated were steepness of slopes or roughness of terrain, wetness (high or fluctuating water table, seepage), flooding hazard, presence or absence of permafrost or peat materials, low bearing strength, and shallow depth to bedrock.

Public Services & Facilities

Future economic development and population growth in this area will provide the impetus for additional development of services such as utilities and schools. However, the existing public facility and service network helps define the location and amount of land which can be used in the near term for many types of commercial, industrial, and higher density residential use. Existing public services and facilities in the study area are limited. The majority of the residences have some form of road access. Residences without road access are typically located near fly-in access (i.e. lakes, airstrips), along navigable streams, or within walking/snowmachine distance of roads or rail. There are no centralized water or sewer systems in the study area except in Palmer and Wasilla. (In Wasilla the sewer system is under construction.) The Matanuska-Susitna Borough presently operates sixteen schools: ten elementary schools, two junior high schools and four high schools,

Supply of Lands for Community Growth and Settlement Associated with Development

As explained above this category of settlement land refers to land necessary for residential use by people whose primary places of residence, and usually work, are in the study area. It also includes land necessary to accommodate businesses, industry, and public facilities. Land to satisfy this type of demand must be road accessible, though a minor demand for remote, inaccessible lands to provide opportunities for a year-round subsistence lifestyle must be recognized. Land to satisfy commercial, industrial and public facility needs normally centers around existing communities or around areas of potential resource development. The following paragraphs provide a general assessment of private, borough, and state supplies of land for community growth and economic development.

Private Lands

The majority of private lands in the study area are distributed along the Parks and Glenn Highways and the road network that services the Palmer-Wasilla area. Besides having access, these lands are generally physically capable of supporting settlement and are close to population centers with many existing public services and facilities. Much of this private land is within commuting distance to jobs.

The Matanuska-Susitna Borough Assessor's Office estimates that of the approximately 45,550 private lots in the Borough totaling 434,055 acres, approximately 35,500 lots (347,560 acres) remain undeveloped. A large portion of these lots are for sale. In addition, the Borough Planning Office has reported a recent increase in subdivision activity* that, if continued, will add to the supply of vacant subdivided parcels in road accessible areas. In short, there is an abundance of privately owned, vacant, buildable parcels in accessed portions of the study area which can accommodate the projected space needs for community development land. It is not possible, however, to say that the existing locations and characteristics of available private land will meet all settlement demands.

The previous discussion focused on private lands other than lands held by native corporations. Native regional and village corporations now own or will own within the next five years approximately 729,500 acres of land in the study area. This land was generally selected for its revenue producing ability (either due to resources or value as residential or commercial real estate). It is highly likely that some of these lands will be added to the supply of land available to meet community expansion and recreation/seasonal settlement needs.

Borough Lands

A large percentage of the borough's lands are not suited to community growth and economic development needs due to distance from employment opportunties. The majority of the borough's 327,000 acres lie west of the Susitna River or between the Susitna and Little Susitna Rivers. In selecting its 350,000 acre entitlement of state land, the borough generally chose land with development potential; consequently, like private lands, most borough lands are highly capable of supporting settlement. However, the bulk of these lands are not presently accessible, except for approximately 70,000 acres adjacent to the Petersville Road, Oilwell Road, and the Parks Highway, and the Glenn Highway. Portions of Petersville and Oilwell Roads may be travelled by four-wheel-drive vehicles or snow machines during the majority of the year.

The borough eventually plans to sell much of its land, but according to borough policy, areas lacking air or water access require construction of physical access (roads or air strips) prior to their sale. As access is developed and study area population grows, borough lands may fulfill year-round as well as seasonal and investment type demand.

The Kenai Peninsula Borough owns approximately 8,500 acres of land within the Beluga Management Unit. This land is strategically located near Congahbuna Lake and Threemile Creek and is considered a potential community site for impending Beluga coal development or as the location of secondary residential use associated with coal development.

*Informal subdivisions have increased from 77 in 1980 to 133 in 1981. Formal subdivisions have increased from 77 in 1980 to 88 in 1981. Informal subdivisions are distinguished from formal subdivisions in that a plat is not required. Each informally subdivided parcel must be 5 acres or larger in size and no more than 40 acres can be subdivided.

State Lands

Of the 8,850,204 acres of state owned and selected land, approximately 90% have low physical capability for settlement. This is due at least in part to the fact that the boroughs and natives were allowed to select much of the prime real estate originally conveyed from the federal government to the state. Large blocks of state land are either wetlands or mountainous areas which impose severe building limitations (refer to Map 10). In addition, 815,900 acres are legislatively designated state park and game refuge areas (see appendix for a listing of these areas), and 63,000 acres have been set aside for the proposed capital site.

The state does however possess a large quantity of land (approximately 900,000 net acres) with good capability for settlement, the bulk of which lies west of the Susitna River. Most of these lands are currently not accessible by road and without services. Exceptions include the limited quantities of land accessed by Petersville and Oilwell Roads. Portions of these roads may be traveled only be four-wheel-drive vehicles or snow machines during certain times of the year. Smaller parcels of state land with settlement capability east of the Susitna River are located in the Parks Highway, Lake Louise and Glenn Highway Management Units. Outside the accessed parcels mentioned above, most state lands are too remote to satisfy settlement land needs for community growth. Future resource development in remote areas, however, could provide jobs and services creating demands on state lands for year-round settlement.

Supply of Land for Seasonal/Recreational Use

The Matanuska-Susitna Borough is one of the most popular locations for cabins and second homes in the state. Land suitable for this purpose generally must have some attractive attribute such as proximity to water, a good view, or excellent hunting. The following paragraphs provide a general assessment of private, borough, and state supplies of land for seasonal or recreational use.

Private Lands

Private lands suitable for seasonal/recreational use fall into two categories: remote and accessed. Remote private parcels are scattered throughout the study area as a result of the old state open-to-entry land sale program enacted in 1968 and the more recent land disposal program. Approximately 430,000 acres of land are now in private ownership in the study area. A large percentage of this land is desirable recreational land, often adjacent to fly-in lakes or adjoining popular recreation streams. Thus, in the future many choice recreational sites in the area will be exchanged in the private market.

Native regional and village corporations own approximately 400,000 acres of land in the study area and have selected approximately 325,000 additional acres. As explained above, much of this land is developable and relatively well accessed. Much of it, although accessed, is many miles from centers of population and economic activity. Thus, private

lands provide an enormous supply of land suitable for second home investment in rural areas.

Borough Lands

Most of the borough's 327,750 acres are located around attractive recreational features such as Bulchitna, Larson and Amber Lakes or along popular streams such as Alexander Creek. Most of the lands are accessible by plane or boat and are ideally suited for recreational, seasonal type use. Therefore the borough is expected to provide many thousands of acres of recreational lands to private individuals. The borough policy of requiring road, air, or water access before land is sold will result in a relatively gradual disposal of land.

State Lands

State lands which can be reached by car, boat or plane are often well suited to satisfy recreational/seasonal type demands. It should be noted that substantial amounts of the more desirable state lands surrounding fly-in lakes or adjoining popular recreation streams have been sold through the old state Open-To-Entry (OTE) program enacted in 1968 or more recently through the land disposal program.

However, there are vast quantities of state lands presently classified for public retention which lie adjacent to rivers and streams in the study area and which would offer prime sites for recreational/seasonal use. There are other large areas owned by the state set aside for public forestry management or agricultural use. The lands set aside for public retention are referred to as Public Interest Lands. A long-term issue to be addressed in the area plan is whether some of this land should be sold to private individuals for recreational use.

Summary-Demand and Supply for Settlement Lands

The following points are an attempt to summarize the previous discussion of land demand and availability in the study area. The issue of supply and demand will be treated in greater depth as this planning effort proceeds. The comments here should therefore be viewed as a preliminary assessment only.

1. Land for Community Growth and Settlement Associated with Resource Development. Projections of space requirements compared to available land indicate that there are available many times the amount of land necessary to support current and projected needs for year-round homes, businesses and industry within the road network. Most of the developable land suitable for these purposes is privately owned.

   Remote lands which may be the site of settlement related to agricultural, coal or other major resource development projects are principally owned by the borough and state. This fact puts the burden of responsibility on public land mangers for making sure land of sufficient quantity, in correct locations is available in a timely manner to serve settlement needs associated with resource development.

2. Land for Seasonal/Recreational Use

The state and borough own many thousands of acres of remote lands with high potential for private recreational use. Although the disposal of public land has accelerated in recent years, demand remains strong -- especially under the favorable purchase terms offered by the state. Much of the state land which is attractive for this purpose is classified as retention lands because of its important recreation, habitat, forestry or agricultural values. Therefore, the issue becomes one of weighing the public interest in retaining the land against legitimate private interest in owning more waterfront, lakefront and other attractive recreational property.

Private land owners, including native corporations also own many thousands of acres of land suitable for second homes, especially within the road network. Through previous land disposals, private individuals now own many of the most attractive recreational sites that have not been classified as public retention land. Therefore the private market's role in providing recreational land is expected to be strong in the future.

SETTLEMENT

Needs and Issues

The following needs and issues related to settlement have emerged from previous public meetings and staff analysis. They are concerns which must be addressed through the planning process. It is important that the planning team receive any public comments regarding the accuracy and completeness of the needs and issues identified below.

Needs

1. It is important that the plan be flexible enough to provide residential, commercial and industrial lands in appropriate locations as the region develops. Such locations are not always predictable; therefore, many lands which will be used for settlement in the future may be designated for other near-term uses by the plan.

2. Based on past sales of public lands, there is a very high demand in the region for recreation sites for second homes, cabins, or investment -- especially sites which are adjacent to water, or have other attractive characteristics.

Issues

1. The Amount and Location of Public Land Sales

   The central settlement issue to be addressed by the Matanuska-Susitna-Beluga planning process is the determination of the appropriate amount, type, and location of public land sales. Addressing this issue involves establishing a land sales program which meets public needs while minimizing potential negative social, economic and environmental impacts.

2. Competition with Other Land Uses

   Lands with high development potential for settlement often have high values for agriculture, forestry management, recreation, or habitat. And although the study area has a large supply of public land to be divided among these uses, there will inevitably be trade-off decisions between competing uses. There are large quantities of state lands presently classified for public retention which lie adjacent to rivers and streams in the study area and which are intended as state forest areas and areas for hunting and fishing and other public activities. Much of this "Public Interest Land" would offer prime sites for receational/seasonal use. A major issue is whether some of this land should be sold to private individuals.

3. Socioeconomic Impacts of Settlement

   - The sale of public land can precipitate fundamental changes in the character of life in nearby areas. Changes in traffic

patterns, access to public open space, and perceived crowdedness are examples of potential impacts. It is important that positive and negative impacts be addressed through the location and design of settlement land sales.

- The pattern of development established by the sale of public land will have a major effect on the feasibility and costs of providing services to residential areas. Generally the lower the residential density, the higher the service costs. Fiscal impacts on local government should be a consideration in the location and design of land sales.

- The economic future of the borough is tied to the management of its land base: timber, agricultural lands, fish and wildlife, minerals and recreational resources. Disposal of important resource lands for settlement may limit economic development potential in the borough.

4. Environmental Impacts of Settlement

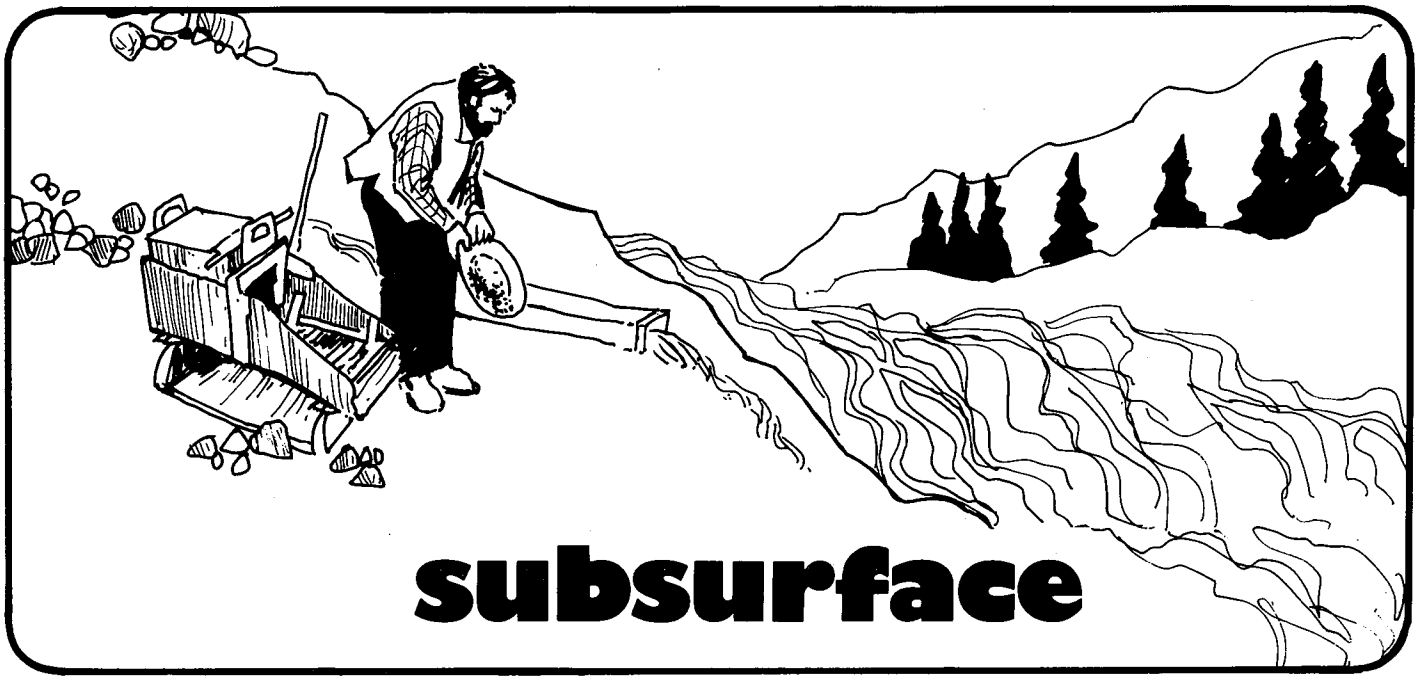
- Settlement in hazardous areas such as flood plains, unstable slopes, and avalanche tracks can lead to loss of human life and property.

- Settlement may adversely affect water quality and water availability, soil stability, sensitive habitat areas, and other environmental values.

- High settlement densities may exceed the land's capacity to supply a sustained yield of firewood, houselogs, and water. This is a major issue in areas lacking road access where year round or seasonal residents must depend on local supplies of these resources.

5. Appropriate Roles of Various Land Owners in Meeting the Demand for Settlement Lands

The state, the Matanuska-Susitna Borough and private land owners all own land with settlement potential. A rational land sale policy must be based on an assessment of the type of land each owner can best make available to the public, given that the quality and location of this land varies greatly by land owner. For example, the state owns relatively little developable land with access near communities -- a fact which must be considered in developing the state's land sale policy.



INTRODUCTION

Gold has been the primary mineral mined in the Matanuska-Susitna-Beluga Study Area over the last 80 years. Today significant quantities of oil and gas and sand and gravel are also extracted in the area. Interest in coal development, especially in the Beluga area, may further expand mineral production. The potential for finding new deposits of mineral and energy resources presently mined in the study area as well as deposits of a variety of other resources is good. Subsurface resource potential in much of the area has yet to be thoroughly explored. There is presently exploration occurring for metallic minerals, energy resources and other resources in several different parts of the study area.

The principal role of the planning process in the development of subsurface resources will be to attempt to harmonize surface uses and subsurface development. This includes both designating land uses to avoid conflicts between surface and subsurface uses and also planning the timing and location of transportation and other infrastructure development to aid subsurface resources development. The planning process will also attempt to plan for impacts associated with major subsurface resource development (such as development of Beluga coal).

The rest of this section presents a overview of the study area's subsurface resources and related issues. Subsurface resources are discussed under the following categories: oil and gas, coal, peat, geothermal, metallic minerals, and nonmetallic minerals.

OIL AND GAS

Three sedimentary basins with proven or potential capability to produce oil and gas lie wholly or partly within the Matanuska-Susitna-Beluga Study Area: the Copper River Basin, the Susitna Basin, and Upper Cook Inlet Basin. (Together, these basins cover almost the entire study area excluding the Talkeetna Mountains, Chugach Mountains, Alaska Range and Denali National Park and Preserve.) All are judged to have at least low or moderate oil and gas potential based on geologic characteristics, exploratory drilling, seismic work and other investigations by industry.1/ Existing oil and gas production occurs in the Upper Cook Inlet Basin where most of the exploratory drilling activity has been conducted. Future discoveries of natural gas deposits are seen as more likely than those of oil, particularly in the Susitna Basin.2/ Lease sales are either planned or have occurred in each basin (see Map 11). The remainder of the oil and gas section describes activities and development potential within each basin.

Copper River Basin

The Copper River Basin which lies primarily east of the study area extends slightly into the Lake Louise and Glenn Highway Management Units and is considered to have low oil and gas potential.3/ Industry interest in a proposed oil and gas lease sale within this area ranges from low to moderate (state lease sale no. 37, shown on Map 11, scheduled for mid-1982). To date, there have been no commercial discoveries of oil or gas, but some exploration activity is continuing. There is no current leasing activity in the Copper River Basin portion of the study area.

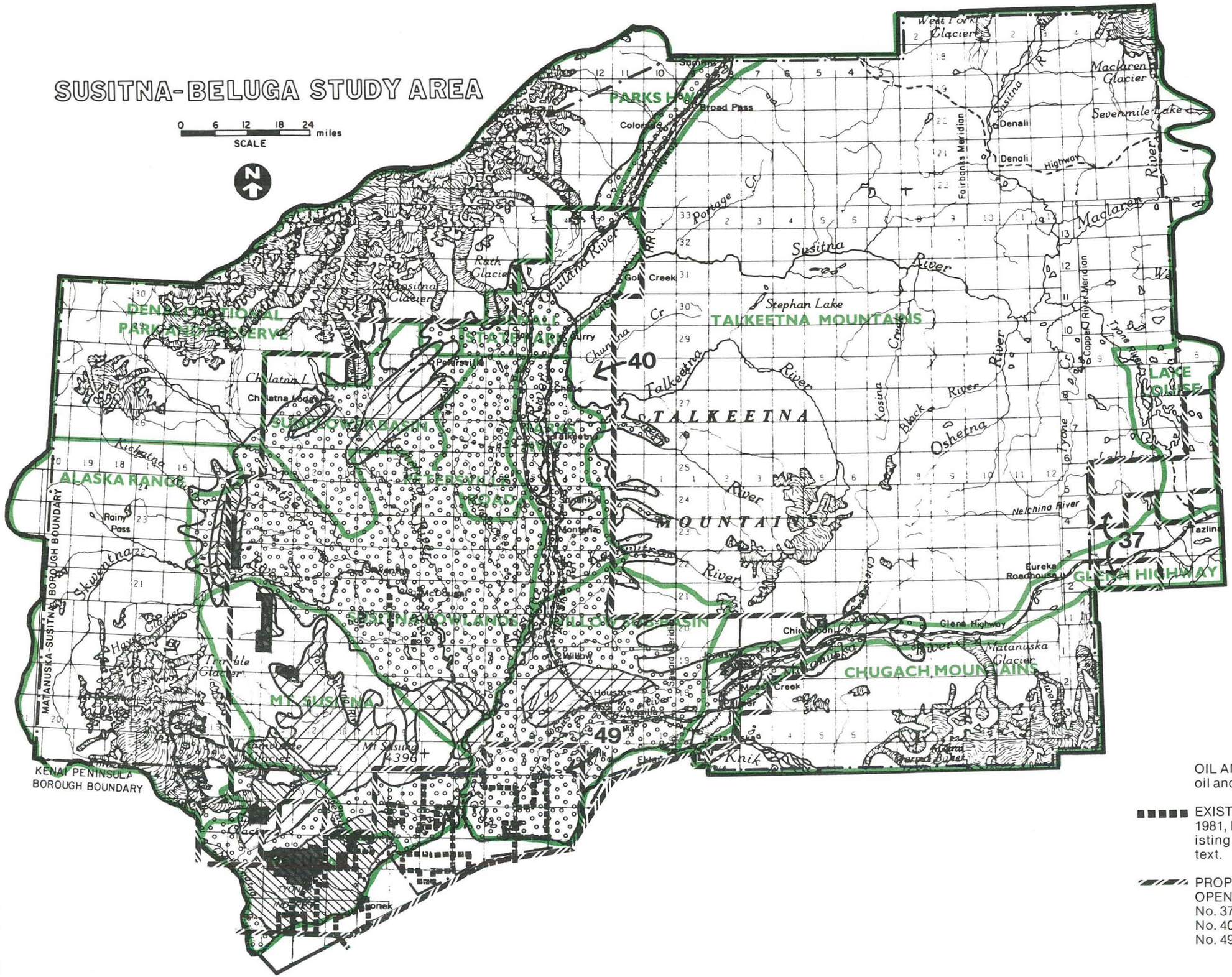
Susitna Basin

The Susitna Basin encompasses the nonmountainous portions of the study area north of Castle Mountain Fault. (Castle Mountain Fault separates the Susitna and Upper Cook Inlet Basins.) Only gas shows or non-commercial traces of gas have been found to date in this basin which is considered to have low oil and gas potential. Oil and gas leases are dispersed throughout the Susitna Basin with concentrations heaviest in the southern portion which adjoins Upper Cook Inlet Basin. Industry interest in the Susitna Basin portion of state oil and gas lease sale no. 33 (shown in Map 11) was low. Several tracts were leased but most of the sale activity occurred in Upper Cook Inlet Basin where commercial oil and gas finds exist. State lease sales no. 40 and no. 49 (see Map 11) scheduled for 1983 and 1986, respectively, will include lands not previously offered or areas not leased in this basin.

1/ DNR Division of Minerals and Energy Management, State Five-Year Leasing Program, January 1981.

2/ A.L. Renshaw, Matanuska-Susitna Borough (Generalized) Surficial Geology, June 1979.

3/ DNR Division of Minerals and Energy Management, State Five-Year Leasing Program, January 1981.


SUSITNA-BELUGA STUDY AREA
0 6 12 18 24 miles
SCALE
PARKS HWY
Broad Pass
Colorado
Denali
Denali Highway
Fairbanks Meridian
Maclaren Glacier
Maclaren River
Susitna River
Portage Cr
Gold Creek
Stephan Lake
TALKEETNA MOUNTAINS
Talkeetna River
Talkeetna
Kosina Creek
Black River
Oshetna River
Tyone River
Copper River Meridian
LAKE LOUISE
Nelchina River
Eureka Roadhouse
GLENN HIGHWAY
Glenn Highway
Matanuska Glacier
CHUGACH MOUNTAINS
Moose Creek
Knik
Chulitna River
Ruth Glacier
Susitna Glacier
DENALI PROVINCIAL PARK AND PRESERVE
STATE PARK
Chulitna
Petersville
Chulitna L.
Chulitna Lodge
SUSITNA LOWLAND BASIN
ALASKA RANGE
Kichatna
Rainy Pass
Skwentna
Hayes Glacier
Trimble Glacier
MT. GERDINE
MT. SUSITNA
4396+
MATANUSKA-SUSITNA BOROUGH BOUNDARY
KENAI PENINSULA BOROUGH BOUNDARY
Willow
Houston
Wasilla
Montana
Big Lake
Talkeetna Mountains
Chickaloon
Eska
Mt. Marathon
Alaska Range
Tazlina
Tyone
Lake Louise
Susitna
Maclaren
Portage Cr
Chulitna
Talkeetna
Kosina
Black River
Oshetna
Nelchina River
Tyone River
Glenn Highway
Matanuska
Moose Creek
Knik
Willow
Houston
Wasilla
Montana
Big Lake
Chickaloon
Eska
Tazlina
Eureka
Roadhouse
Denali
Highway
Fairbanks Meridian
Copper River Meridian
Maclaren River
Susitna River
Nelchina River
Tyone River
Lake Louise
Glenn Highway
Matanuska Glacier
Moose Creek
Knik
Willow
Houston
Wasilla
Montana
Big Lake
Chickaloon
Eska
Tazlina
Eureka Roadhouse
Denali

Recent exploration activities in the basin have included a well drilled by Union Oil in 1980 in the Trail Ridge Unit and a well drilled in the Kahiltna River Unit #1 by Union-Texas Petroleum Company.

Upper Cook Inlet Basin

Upper Cook Inlet Basin includes land south of Castle Mountain Fault and continues south and west of the study area. This basin is judged to possess moderate to high oil and gas potential.4/

Numerous oil and gas fields have been discovered in the Upper Cook Inlet Basin. The oil fields nearest to the study area, Granite Point and Trading Bay, are declining in production, but calculated oil reserves in these fields still total 40 million barrels.5/ Upper Cook Inlet Basin gas reserves in the study area are contained in seven fields (only four fields are actively producing) totaling 864 billion standard cubic feet.5/ Unlike oil, gas production has remained fairly constant.

Current oil and gas leases and exploration activities are concentrated in Upper Cook Inlet Basin where commercial finds exist and industry interest is high. As shown on Map 11, the majority of leasing activity resulting from state lease sale no. 33 occurred in Upper Cook Inlet Basin. Two additional lease sales, no. 40 and no. 49, also depicted on Map 11, are scheduled for 1983 and 1986. These lease sales will consist of lands not previously offered or areas not leased.

COAL

The known coal resources of the Matanuska-Susitna-Beluga Study Area are in the Broad Pass, Susitna and Matanuska Coal Fields. Matanuska and Broad Pass Coal Field deposits have been known and worked since the early 1900's. The towns of Chickaloon, Eska, Sutton and Houston developed as a direct result of coal mining. Commercial use of coal today is limited to the small Premiere Mine, near Eska in the Glenn Highway Management Unit. A small mine near Houston in the Willow Sub-basin Management Unit operated intermittently between 1920 and 1970 but is now closed. Current focus is on coal in the Beluga Management Unit, part of the Susitna Coal Field, where major coal development may occur as early as 1987.

Locations of these coal fields are shown in Map 11 based on the "Coal Potential of the Susitna Lowlands" map prepared the by Division of Geological and Geophysical Surveys (DGGS) and personal knowledge of DGGS geologists. These areas are ranked high, moderate, or low based on the potential for coal development in the forseeable future. More

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4/ Ibid.
5/ Alaska Oil and Gas Conservation Commission, 1980 Statistical Report.

specifically, high potential is shown generally in areas of current coal leases where reserves are proven; moderate potential where available data indicate coal is present within 200-300 feet of the surface in beds greater than five feet in thickness, and exploration is probably warranted; and low to very low potential where available data suggest that coal resources are uneconomic. Isolated coal occurrences have been documented in other areas such as northwest of Lake Louise Management Unit, but discussions with geologists familiar with the study area indicate that these coal-bearing formations are generally insignificant. The remainder of this section describes activities and development potential within each coal field.

Susitna Coal Field

The Susitna Coal Field lies north of Cook Inlet bordered by the Talkeetna Mountains, Denali State Park, Denali National Park and Preserve, and the Alaska Range. The quality of the coal in this field ranges from sub-bituminous to lignite. As shown on Map 11, the majority of the Susitna Coal Field has low potential for coal development, primarily because of the depth of overburden. Recent attention, however, has been focused on coal deposits in the Beluga area at the western edge of the field. In this area proximity to tidewater, large reserves of coal relatively near the surface, and developable Pacific-Rim markets combine to give Beluga coal high potential for near term development. The two Beluga coal operators are presently expanding their environmental and feasibility studies to gather information required for issuance of surface mining and other required permits. Present plans are aimed at export of coal by as early as 1987. (See Chapter IV, Beluga Management Unit for more detailed information.)

There are an estimated 500 million tons of coal which could be surface mined in the Beluga deposits; estimated gross coal potential of the entire Susitna Coal Field ranges up to 55 billion tons.6/

Areas with the highest potential for near term coal development in the Susitna Coal Field are indicated by the current coal leases depicted on Map 11. These leases are located in the western and southwestern portions of the Susitna Coal Field. Three of these leases (Capps, Chuitna and Threemile) owned by the Beluga coal operators mentioned above, are seen as the most likely near term sites of coal mining in the study area. The other two leases in the western portion of the field contain reserves of coal at mineable depths, but lack of access and distance from tidewater limit their near term development potential.

Coal prospecting permit applications blanket the Susitna Coal Field. DNR is currently evaluating these applications to determine which permits to grant.

6/ A. L. Renshaw, Matanuska-Susitna Borough (Generalized) Surficial Geology, June 1979.

Matanuska Coal Field

The Matanuska Coal Field overlaps a portion of the Susitna Coal Field in the Willow Sub-basin Management Unit and extends east into the Glenn Highway Management Unit. The coal increases in quality progressing eastward from bituminous in the Wishbone Hill and Chickaloon Coal Mining Districts to semi anthracite and anthracite in the Anthracite Ridge Coal Mining District, all located within the Glenn Highway Management Unit. Existing data also suggest coal beds become increasingly discontinuous in an easterly direction making coal extraction more expensive as the beds progress eastward, despite a general increase in the quality of coal.

Map 11 shows the area north of the Glenn Highway has moderate potential for coal development; however, the three specific coal mining districts mentioned above are considered high potential. The area south of the highway is considered low potential due to extensive overburden and discontinuous coal beds. Gross coal potential of the Matanuska field has been estimated as high as 2.4 billion tons.7/

Seven non-expiring coal leases are located in the Wishbone Hill and Chickaloon Coal Mining Districts, but present activity is confined to the small Premiere Mine operation in the Wishbone Hill District which produces about 500 tons of coal per year for local home heating use. Ten coal prospecting permit applications have been filed in and around the three districts shown as high potential on Map 11. Geologists familiar with the area believe that as future needs for coal rise, the Wishbone Hill District may be the next Alaskan location of major commercial coal production.

Broad Pass Coal Field

The Broad Pass Coal Field is located in the north half of the Parks Highway Management Unit and continues north out of the study area. The quality of the coal is primarily lignite and is considered low potential for development. Gross coal potential has been estimated as high as 2.4 billion tons.8/

Although coal has been extracted from several locations along the railroad in the past, no current activity is known. No coal leases exist in the portion of this field that lies within the study area and no coal prospecting permit applications have been filed.

7/ Ibid.
8/ Ibid.

PEAT

The U.S. Department of Energy estimates that peat is second only to coal as the nation's largest fossil-fuel energy resource. Alaska contains about one-half of the United States' entire peat resource. Dried, high-grade peat yields more BTU's per pound than Alaskan coal according to Don Markle of the state Division of Energy and Power Development (DEPD).

Extensive peat bogs are found throughout the Matanuska-Susitna-Beluga Study Area. Two areas, Rogers Creek and Houston, in the Willow Sub-basin Management Unit contain an estimated 5.6 million tons of air-dried, fuel-grade peat according to the U.S. Geological Survey and the state Division of Geological and Geophysical Surveys. Reserves of peat in other portions of the basin have not been estimated.

To date, these deposits have not been utilized commercially for fuel or other purposes such as agricultural soil conditioners. DEPD, however, has recently awarded a contract to Wheelabrator-Frye Inc. to study the feasibility of mining, processing and marketing Alaska's southcentral peat resources as an energy commodity. At this time, near term utilization of peat appears unlikely due to questions about economic feasibility and environmental considerations such as the effect of peat mining on water systems.

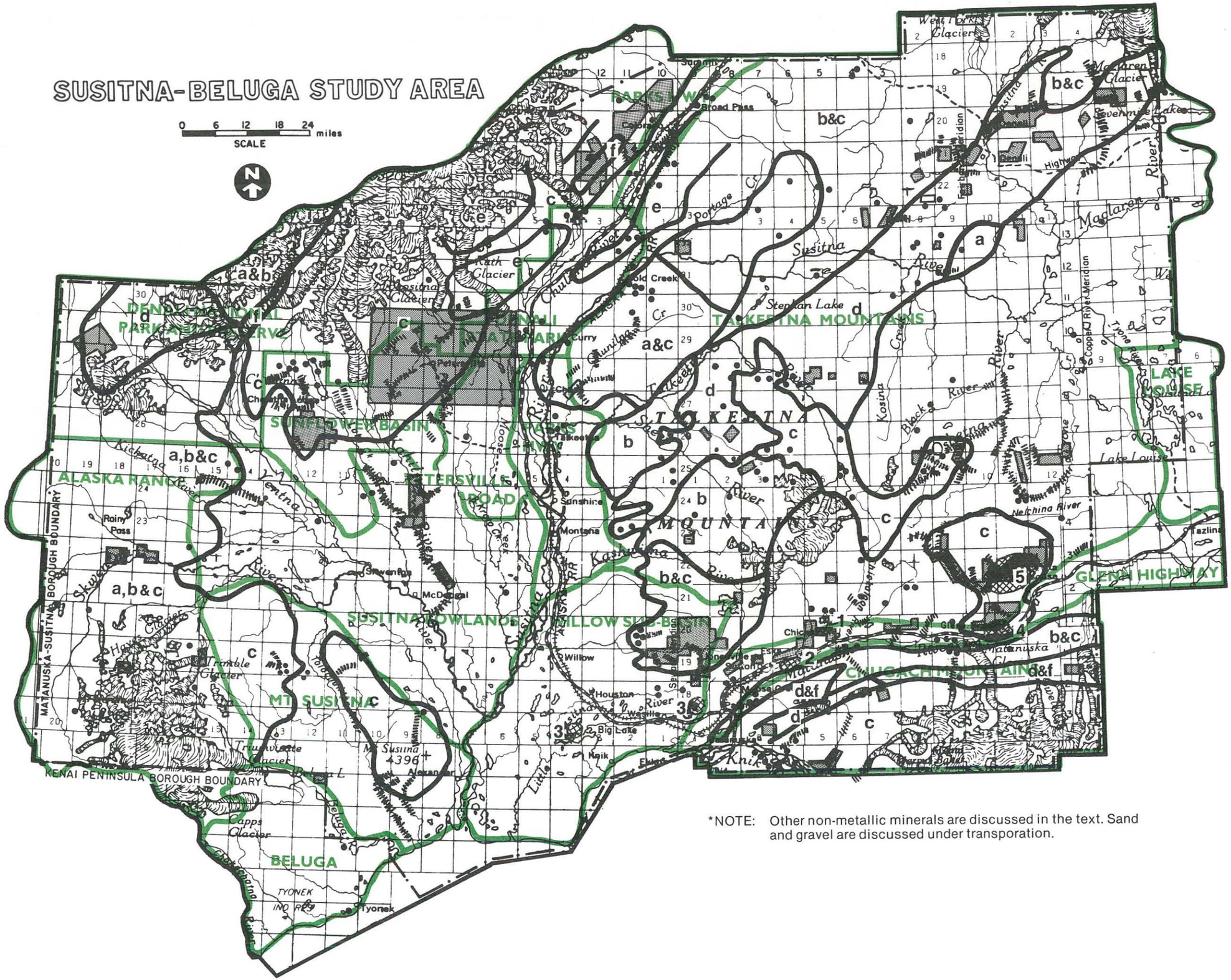
GEOTHERMAL

Geothermal potential in the Matanuska-Susitna-Beluga Study Area is limited to Mt. Spurr, a dormant volcano in the Alaska Range Management Unit. The geothermal potential is thought to be high but the utilization of this resource is not likely to be economically feasible for some time. The area is being studied for its geothermal potential, however, by U.S. Geological Survey. As this report goes to press, a report has been released by the University of Alaska, Fairbanks that describes geothermal resources in the Willow area.

METALLIC MINERALS

The Matanuska-Susitna-Beluga Study Area has vast potential for future metallic mineral development. Due to limited access and rugged terrain, much of the potential mineral bearing area remains unexplored. The great number of widely scattered occurrences and prospects which have been identified speak well for potential development. Aside from placer deposits, which are found throughout the study area, metallic minerals are located primarily in the Talkeetna, Alaska Range, and Chugach Mountain regions of the study area.

In order to gain a sense of past and present mining activity, mining claim maps procured from the U.S. Bureau of Mines (showing both federal and state claims) were mapped and are presented in Map 12. As shown on the map, mining claims are scattered throughout the study area with



*NOTE: Other non-metallic minerals are discussed in the text. Sand and gravel are discussed under transporation.

MAP 12
MINERAL RESOURCES

METALLIC MINERALS
METALLIC MINERAL POTENTIAL

(Based on identification of areas with similar mineral characteristics-mineral terrains)

Type of Deposit and Base Metals Associated With A Given Mineral Terrain:

Porphyry Deposit

a. molybdenum, gold, copper
b. copper, molybdenum, silver
e. tin

Massive Sulfide/Vein Deposit

c. copper, lead, arsenic, silver, gold, zinc, tin, tungsten, bismuth
d. molybdenum, copper, lead, zinc, gold, silver, strontium
f. nickel, chromium, platinum

EXISTING USE

- Individual Mining Claim (Placer or Lode)
- Concentrations of Mining Claims (includes placer claims)
- Concentrations of Placer Claims

NON-METALLIC MINERALS*

- Known Deposits of Potential Economic Significance

1-Limestone
2-Hadite
3-Marl
4-Gypsum
5-Zenolite

particularly intense concentrations in the historic mining districts: Willow Creek, Nelchina, Valdez, Chulitna and Yentna. Approximately 90% of past mining activities have occurred in these mining districts. According to mining geologists with the state's Division of Geological and Geophysical Surveys, most future mining and exploration may also be expected to occur within the districts. By 1910 the extent of the most intensely mineralized areas had been named and mapped by prospectors. Since that time, mining district names have been in common use by industry and government. Historically, the mining districts served functions similar to those of local government: most had elected councils to regulate local conflicts and common law. Today, several of the districts have been re-established to perform traditional arbitration functions and to present a united front in response to government regulations.

Gold has been the dominant metallic mineral mined in the study area. Tin and platinum have been mined primarily as by-products of gold placer operations and small amounts of copper have been produced as a spinoff of gold lode mining operations. Some antimony has been mined in the past in Denali National Park and Preserve.

Gold placer operations are the most common mining activity at present. As shown by the mining claims on Map 12, these occur primarily in the Peters Creek, Cache Creek and Kahiltna River drainage systems in the Sunflower Basin Management Unit (Yentna Mining District); in Valdez Creek in the northeast portion of the Talkeetna Mountains Management Unit (Valdez Mining District); and along Caribou Creek, Oshetna River, and Tyone River in the southeast portion of the Talkeetna Mountains Unit (Nelchina Mining District). Other operations are scattered on numerous streams and benches throughout the study area. According to the Division of Minerals and Energy Management, the greatest density of placer activity (in terms of number of placer operations, not productivity) occurs in Caribou Creek, in the Nelchina Mining District. The Peters Creek area in the Yentna Mining District is highest in terms of placer productivity.

Although in the past, placer operations have dominated the scene, hardrock activity is increasing. DGGS reports an increase in the number of active claims which serves as a positive indicator of increased metal exploration. Exploration is underway in various portions of the study area. Numerous massive sulfide vein occurrences in the Alaska Range are being evaluated by Anaconda and Resource Associates of Alaska and may be in a development stage as early as 1986. Hardrock exploration in the Talkeetna Mountains Unit is underway up the Kashwitna River, Sheep Creek and Sheep River and around Portage Creek area. Exploration is also occurring in the Sunflower Basin, the Denali National Park and Preserve Management Units, the headwaters of Peters Creek and the East Fork of the Yentna River.

Existing hardrock mining activity is underway at three lode gold mines in the study area. The old Independence Lode Gold Mine at Hatcher Pass in the Talkeetna Mountains portion of the Willow Sub-basin Management Unit (Willow Creek Mining District) is currently the largest mining operation, employing some 80 people last summer. The Coronado Mining Company, which operates this mine, also operates the Golden Zone Mine

west of Colorado Station in the north half of the Parks Highway Management Unit (Chulitna Mining District). Gold production has not begun in either mine but development and advanced exploration work continues.

One other smaller mine, the old Gold Cord Mine near the Independence Mine, may begin production next summer.

Mineral Potential

Map 12 shows metallic mineral potential based on mineral terrains mapped by DGGS and USGS geologists. A mineral terrain defines a general host rock in which specific ore deposits may be distributed and also identifies the type of deposit generally associated with that terrain. The type of deposit may suggest the type of mining development and operation that would be necessary to extract the ore. Two types of deposits, porphyry and massive sulfide/vein deposit, are shown on the map. Porphyry deposit is a term generally applied to copper or molybednum mineralization finely disseminated throughout the host rock. Tin mineralization may also occur as a porphyry. Porphyry deposits generally require an open pit or block caving mining operation in which large tonnages of rock are moved to recover the low grade ore. Massive sulfide or vein deposits are usually concentrated higher grade deposits developed via an underground, or open pit, mining operation where small to medium tonnages of rock are moved to recover the ore.

The mineral terrains shown in Map 12 depict the extent or areas where these minerals may be and the type of deposit. The Talkeetna Mountains Management Unit contains significant metallic mineral resources. Many porphyry copper and molybdenum prospects are known within this unit and some have been identified as deposits.

The Chugach Mountains Unit is targeted for an extensive mineral resource assessment project by DGGS over the next few years to gain a better understanding of the mineral potential. Presently known prospects include copper, zinc and gold in the eastern section and copper, chromium and nickel in the western section.

The Alaska Range has good metallic mineral potential -- molybdenum, copper, silver, and others in addition to gold. Investigation of the mineral potential in the Alaska Range is scheduled to begin this summer. This exploration work is being done by Anaconda and Resource Associates of Alaska.

NONMETALLIC MINERALS

A variety of useful nonmetallic minerals occur within the study area. Aside from sand and gravel, which is discussed under the transportation section of this chapter, prospects for commercial development of nonmetallic minerals are generally uncertain. Additional exploration and increases in mineral values and demand will determine when or if these resources are developed.

Map 12 shows known deposits of five nonmetallic minerals of potential economic significance identified by DGGS geologists. Large privately held, high quality limestone deposits (identified as 1 on the map) suitable for Portland cement are located near Castle Mountain on the southern periphery of the Talkeetna Mountains Management Unit. Limestone can also be found in the Nelchina area within the Talkeetna Mountains Management Unit and in the Denali National Park and Preserve Management Unit (the Chulitna area), but the quality is lower than the Castle Mountain deposits because it is mixed with silt, sand and clay. Hadite, (identified by a 2 on the map) is a lightweight aggregate which occurs near Castle Mountain in the Talkeetna Mountains Management Unit. Marl deposits (identified by a 3) are located near Big Lake, Wasilla, Lucille, and Finger Lakes in the Willow Sub-basin Management Unit. Gypsum deposits (identified by a 4), used primarily in the manufacture of Plaster of Paris, can be found near Sheep Mountain in the Glenn Highway Management Unit. The last mineral deposit shown on the map is zeolite (identified by a 5), located in the Horn Mountains in the Talkeetna Mountains Management Unit. Water is readily removed from certain zeolites which then renders them useful to industry as molecular sieves, gas sorbents, etc.

Additional nonmetallics in the study area include soapstone, abestos, clay, feldspar, fluorspar, mica, potassium, phosphorus, talc, and various abrasives. Several of these nonmetallics-soapstone, quartz sand and clay - have been utilized in small quantities at various times for sculpting and jewelry making, abrasives, and ceramics and brickmaking, respectively.

SUBSURFACE RESOURCES

Needs and Issues

The following needs and issues related to subsurface resources in the study area have emerged from previous public meetings and staff analysis. They are concerns which must be addressed through the planning process. It is important that we receive any advice and comments you may have regarding the needs and issues identified below. In addition, we request that you assist in identifying land management issues which we have overlooked. (Please see the cover letter for appropriate persons to contact with your comments.)

Needs

A major hurdle in the development of subsurface resources in the Matanuska-Susitna-Beluga Study Area is the lack of an adequate supporting infrastructure. Developing the region's subsurface resources will require access to explore and develop these resources, processing facilities, and the means to transport these resources from mine sites and processing areas to their final users. In addition, markets for some of these resources need to be explored and developed.

In many cases providing access for subsurface development is not economically feasible unless other access needs are served, e.g., forestry management, recreation, etc. The feasibility of a project may depend on the cooperation of a number of land owners, public land managers, and development interests to develop the necessary infrastructure. Helping to bring about this cooperation is a primary role of the subsurface resource portion of this land use plan.

Issues

1. The Effect of Land Use Designations on Economic Feasibility of Subsurface Resource Development

   In Alaska the ownership of the surface and subsurface estates are split. Developers of subsurface resources are required to protect surface resources and compensate private surface owners for any surface degradation related to subsurface development. As a result, the feasibility of subsurface development is strongly influenced by the costs associated with impacts on surface values. For example, coal mining or oil development in a developed residential area where surface resource values are high and there are many land owners will typically be substantially more expensive than a similar development in an area with no surface developments and a single land owner.

   The land use policy implication of the situation described above is clear: minimize surface development in areas with known or potentially high subsurface values. The problem facing the planning team will be to follow this policy while being equipped with only limited or speculative information on subsurface values and high level of demand for a variety of surface uses. The

problem is most difficult with respect to land sales; private residential/commercial uses are often the least compatible with mining and represent high costs for compensation of surface owners to subsurface developers.

2. Effects of Mining on Surface Values -- Socioeconomic Impacts

Subsurface development may have significant impacts on regional employment, population, income, community lifestyles, access and general development patterns. Although many of these impacts may be positive, it is important to anticipate and attempt to mitigate any negative impacts.

3. Effects of Mining on Surface Values -- Environmental Impacts

- o Degradation of water quality

  Many types of mineral extraction carry the potential for direct destruction of fish and wildlife habitat as well as loss of recreation potential by degradation of water quality in the immediate area and also downstream. It is important to note that the termination of mining operations does not necessarily eliminate water quality degradation since subsequent erosion and leaching from spoil piles may also occur.

- o Reduction of water quantity

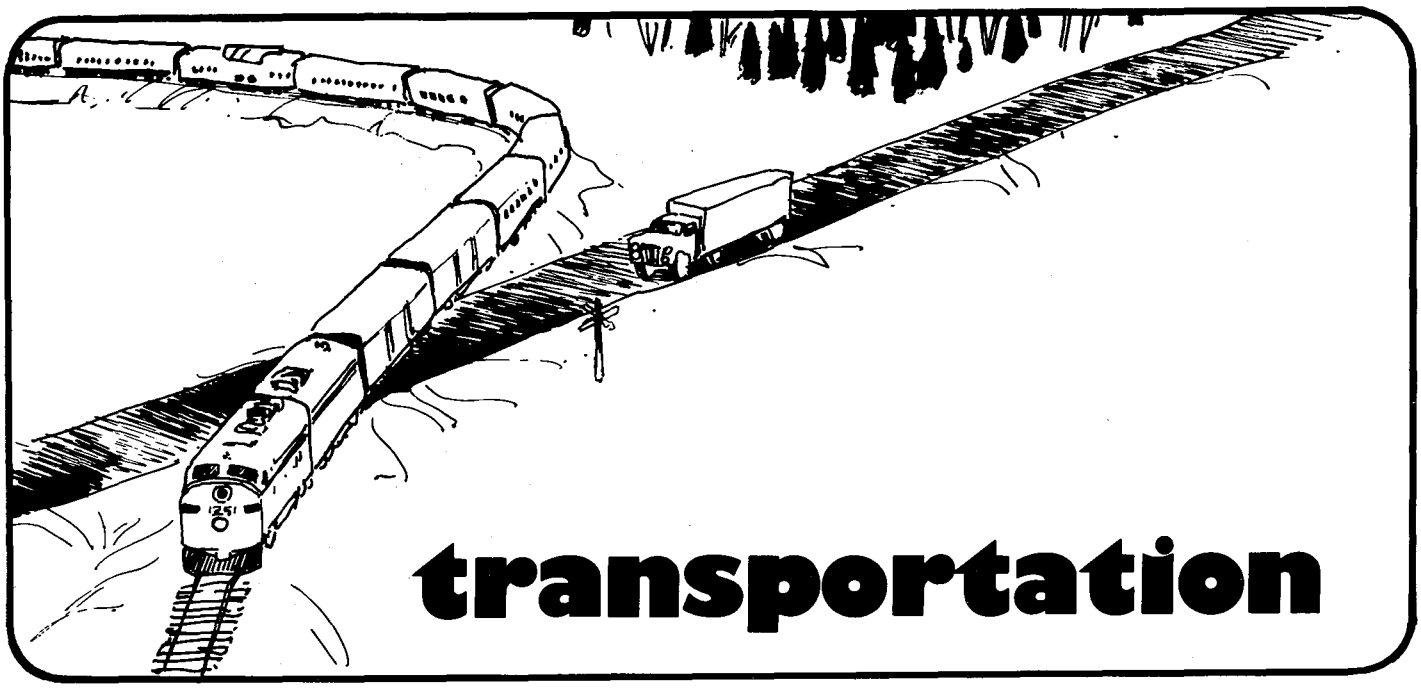
  Some forms of mineral or energy development divert or in some cases effectively consume large supplies of water. For example, the Usibelli Coal Company uses about 98 million gallons of water per year to wash an estimated 20% of their coal. In the latter stages of oil production, water is often injected into wells to increase production.

- o Displacement or disruption of wildlife due to mining or oil and gas activities

  In many cases, mining or oil and gas activities overlap with key periods of biological activity such as calving, nesting or spawning. Noise and visual intrusion from blasting, road building, above-ground pipelines, etc. can be very disruptive to wildlife.

Many of these environmental impacts of subsurface development can be mitigated through the existing permit and regulation system. However, a system of permits, regulations, performance bonding, performance standards, etc., that can adequately protect the environment, that can be implemented with available staff and funds, and that also allows mineral development to occur in an economic fashion is still in the developing stages in Alaska. State agencies responsible for issuing and monitoring water quality permits, anadromous stream permits, and miscellaneous land use permits do not always have the time or the staff to

review each mining claim carefully or check compliance to permit stipulations in the field. In additon, there are communication problems between the various agencies responsible for this process.



transportation

INTRODUCTION

Transportation planning is an essential component of comprehensive land use planning. The design of a regional transportation system will be the key to resource development and a major determinant of land use patterns in the Matanuska-Susitna-Beluga area. Transportation planning must consider existing and potential resource values and the relative costs and benefits of various transportation alternatives. It is important that transportation improvements can be constructed at reasonable costs, and that they do not have unacceptable social or environmental impacts. It is also necessary to analyze the alignment of potential transportation corridors to determine if they provide access to the identified resources, and to ascertain if construction materials such as sand and gravel deposits are easily accessible.

The following section describes the major forms of transportation commonly used in the Matanuska-Susitna-Beluga study area. Past and existing use of each transportation mode such as rail, road, trail, air and water are discussed along with the various projects that have been recommended to improve or expand the current transportation system. A brief discussion on sand and gravel and its importance to transportation follows the section on recommended improvements. The final section discusses the needs and issues concerning transportation which will be addressed in the forthcoming planning process.

EXISTING TRANSPORTATION CORRIDORS AND SYSTEMS

Railroad

The Alaska Railroad is the only railroad serving Alaska and the Matanuska-Susitna Borough region. It was built by the federal government between 1914 and 1923, and still remains the only federally owned and

operated railroad in the nation. The main line runs north and south through the study area, and provides access to Fairbanks and Seward. A spur serves Palmer and its small industrial park (see Map 13).

Historically, the Alaska Railroad provided land transportation in the region when there were only wagon trails. The railroad was a primary influence affecting the location and development of today's communities. Palmer, Wasilla and Sutton grew at points where the railroad crossed a wagon trail. The communties of Talkeetna and Willow were strengthened and stabilized when railroad depots were established at those locations. In years when the local economy faltered, people from the farming areas rode the railroad to jobs in Anchorage.1/

Today the railroad is less important as a means of commuter transportation. Although there are daily passenger stops at communities along the line, commuter use of the train is minor due to the development of local road and bus system. Heaviest passenger use of the railroad is to Denali National Park from Anchorage and Fairbanks, and to areas not served by roads north of Talkeetna (e.g. Chase area).

Presently the railroad's primary use is freight traffic northbound from Anchorage to Fairbanks. Southbound freight from the Matanuska-Susitna Borough to Anchorage and Seward consists mainly of gravel and timber.

Roads and Trails

The two principal roads in the study area are the Glenn Highway which runs east and west, and the George Parks Highway, which runs north and south. The two state-maintained* routes join south of Palmer, cross the Matanuska and Knik Rivers, and continue into Anchorage.

The Glenn Highway is 182.8 miles long and extends from Anchorage to the Richardson Highway at Glennallen. The Lake Louise Road branches off the Glenn Highway at Mile 157 and travels northward for 18 miles to Lake Louise.

The 358 mile Long George Parks Highway, also known as the Anchorage-Fairbanks Highway, is the most recently completed major road link in the state. It begins by branching off from the Glenn Highway in the Palmer area, extends westward to Willow, and following the Alaska Railroad it turns northward, ties into the Denali Highway at Cantwell, and continues north to Fairbanks where it connects with the Richardson Highway.

1/ Matanuska-Susitna Borough, Planning Department, Comprehensive Development Plan Background Report, April 1978, p. 76.

* See DOT/PF's CDS guide for a detailed inventory of state owned and maintained roads.

SUSITNA-BELUGA STUDY AREA

0 6 12 18 24 miles
SCALE

N

MAP 13
TRANSPORTATION

- EXISTING ROADS
- POTENTIAL TRANSPORTATION CORRIDORS
- EXISTING RAILROAD
- AIRSTRIPS (Publicly owned)
- AIRSTRIPS (Privately owned)
- TRAILS
- EXISTING DOCK
- PROPOSED PORT

Two spur roads branch off the Parks Highway at mile 98.7 and 114.9. These roads provide access to Talkeetna and Petersville, respectively. The main highway continues north, leaving the study area at Summit and eventually joins the Richardson Highway at Fairbanks.

In addition to the Glenn and Parks Highway, there are several smaller roads which feed into the highway system. These include the following: Palmer-Wasilla Highway, Trunk Road, Big Lake Spur, Hatcher Pass Road, Old Glenn highway and the Goose Bay Road.

Although there is no year-round land access into the Beluga Management Unit, there is a surprisingly extensive road system confined within the unit (see Map 13). This road system connects the timber harvest areas to the dock and to a chip mill operation at Northforeland. In addition to roads used for logging, there is a smaller road system for local traffic within lands owned by the Tyonek Native Corporation. Just northeast of this land there are roads connecting an airstrip and the Anchorage gas fired power plant and several oil/gas wells and drilling sites.

Many areas throughout the region which do not have road access are reached by winter and tractor trails (see "Trails" on Map 13). The major trails which branch off existing roads to provide access in more remote areas include a winter trail which extends southward from Oilwell Road to the Iditarod Trail (Oilwell Road is a 6.5 mile southern spur off of the Petersville Road), a 30 mile tractor trail which travels south from the Parks Highway through the Susitna Lowlands Management Unit and the Iditarod trail which passes through the southcentral and western portions of the study area.

The Sunflower Basin Management Unit is fairly well accessed by a winter trail system which branches off the Petersville Road in two locations. The unit contains approximately 80 miles of trail which provide access to Collinsville, Chelatna Lake and Sunset, 15 landing strips, a number of placer mines and several cabins.

There are also three trail systems which branch off the Glenn, Denali, and Parks Highways within the Talkeetna Management Unit. The system that branches off the Glenn Highway extends to Chickaloon, Chitna Pass and Nelchina. The second system branches off the Denali Highway and runs southward between the Clearwater Mountains and the Susitna River, and eastwardly through the Clearwater Mountains to the Maclaren River. A third trail extends from the Parks Highway Management Unit eastward for about 35 miles along the Talkeetna River providing access to several remote cabins. (Refer to the Susitna Basin Land Use/ Recreation Atlas for additional information on trails within the study area.)

Public Transit

As of September, 1981, Transportation Services, Inc., a private contract carrier has been providing bus service from the Palmer-Wasilla area to downtown Anchorage, the University of Alaska, and Providence Hospital. There are currently two buses on this route which each make one round trip daily.

Additionally, Anchorage's public bus system, the People Mover, runs two buses daily from Anchorage to Peter's Creek. Although twenty-four round trips are made each weekday and sixteen on Saturdays, tentative plans have been made by People Mover to increase the number of buses serving the Peter's Creek area. (See "Public Transit" under PROPOSED TRANSPORTATION CORRIDORS AND SYSTEMS.)

Air

Compared to other regions of Alaska, the Matanuska-Susitna-Beluga area is generally not as dependent upon aircraft for a means of transportation due to the region's more developed road network. However, the use of small aircraft is still an important transportation mode-especially in areas west of the Susitna River and in the Beluga area. The sole scheduled air service which provides daily service to Anchorage, Palmer, Wasilla, Settlers Bay and Big Lake is based at Birchwood near Chugiak. The largest airport is the Palmer Municipal Airport, which has a 5,000 foot asphalt runway and provides a flag stop for the commuter service as well as general access to the Palmer Industrial Park. The Palmer Airport is also a base for several charter services and flight schools. Elsewhere air transportation is used for transportation of recreational visitors and cargo. There are approximately 26 small air fields which have been classified for public use in the Susitna-Beluga Study area. Approximately 14 others are restricted, and at least 65 additional airstrips whose condition is poor or uncertain exist throughout the area. Lakes and other bodies of water are used for float planes or ski planes in the winter months. (See Map 13 for identification of publicly and privately owned landing strips.)

Ports and Harbors

With the exception of a timber landing dock and barge site in Beluga, (see Map 13) there is no substantial use of waterways for anything other than recreational use at this time. However, there are two port sites presently being proposed. (See Ports and Harbors under PROPOSED TRANSPORTATION CORRIDORS AND SYSTEMS.

PROPOSED TRANSPORTATION CORRIDORS AND SYSTEMS

The following section describes the recommendations made for improving and expanding the existing transportation system in the Matanuska-Susitna-Beluga study area. The potential transportation corridors discussed are for rail, road, or a combination of both. However, the decision whether or not a transportation corridor will be used for a rail or road will probably not occur until after two thorough regional transportation studies are completed. Presently, both the state Department of Transportation/Public Facilities (DOT/PF) and the Matanuska-Susitna Borough are conducting regional transportation studies. The main objectives of both transportation studies are: 1) to identify future transportation needs; 2) to evaluate alternative forms or modes of transportation to meet these needs, and 3) to prioritize transportation projects.

Transportation improvements which are currently recommended by DOT/PF and the Matanuska-Susitna Borough are discussed below in the following order: 1) rail, 2) roads and trails, 3) public transit, 4) air, and 5) ports and harbors.

Rail

Possible development plans of the Beluga and Yentna coal fields have sparked discussion of constructing a rail extension into these areas. However, the economic viability of Beluga coal development is based on its close proximity to a deep water port site at Granite Point or on the Tyonek reservation (see Map 13). Consequently, there is little chance that a rail line between Beluga and the more distant deep water ports of Pt. Mackenzie or Anchorage will be constructed to transport coal.

A possible rail link between the Mobil Oil Co. coal lease in the Yentna area and the existing rail system may, however, prove to be the least expensive way to export this coal. There are currently, however, no plans for such a rail link.

Another possible rail spur is a connection off the existing rail line at Houston or Pittman. This would line travel south to the proposed Point MacKenzie agricultural project and possibly extend southeast to Point Mackenzie for a possible link across Knik Arm to Anchorage. Although there are no construction plans, analysis of a rail crossing at Knik Arm is included in DOT/PF's preliminary engineering study of the Knik Arm crossing.

A spur line from the Alaska Railroad main line to the capital site has been recommended in a draft report by the New Capital Site Planning Commission -- in the event of a capital site move. The purpose of the rail would be for shipment of coal to the capital site power plant. It has been suggested that this line also be used for transporting materials during capital site construction and for some types of freight movements thereafter. (See "Long Term" possibilities under "Roads" for additional information on potential transportation corridors.)

Roads and Trails

There are two separate road building entities within the study area -- the Department of Transportation/Public Facilities (DOT/PF) and the Matanuska-Susitna Borough. Before going into the details of proposed road building projects, the following section explains the division of road building authority between the state and the borough.

Major road projects of regional and state significance are generally under the jurisdiction of the DOT/PF. Such projects include maintaining and upgrading existing state and federal highways, and proposing new roads which would serve regional and state needs.

The DOT/PF is currently engaged in a regional transportation study (the Matanuska and Susitna Transportation Study -- MASTS) which will evaluate and prioritize projects on the state-owned and operated

system. Based on the study's findings, DOT/PF will prepare a capital budget which identifies specific transportation projects. The state legislature will then review and approve a capital budget which identifies those transportation projects to be constructed through the DOT/PF. In addition to construction of new transportation projects, the DOT/PF is also responsible for maintenance and operation of the existing state transportation system.

The Matanuska-Susitna Borough is currently preparing a Comprehensive Plan which also includes an evaluation of transportation needs. The study will inventory non-state roads, recommend improvements for the existing system and project future transportation needs.

The Borough can request road funding from the two following state sources: 1) State Shared Revenue which allows up to $2500 per mile for maintenance of service roads; 2) Direct grants received outright from the legislature for road projects. Once the Borough receives funding, it has the option of contracting with private firms for road maintenance, engineering or construction jobs, or assume these tasks itself.

The remainder of this section is organized in two parts; the first is a discussion of large scale regional and statewide projects under consideration by DOT/PF -- including those proposed by the Willow Sub-basin Plan (a cooperative state and borough plan for public lands in the southcentral portion of the borough). The second is a discussion of the Matanuska-Susitna Borough's proposals aimed at serving regional and local needs.

o DOT/PF Considerations

Both short term and long term transportation possibilities are considered here. Short term refers to those projects that are presently receiving serious study (e.g., preliminary feasibility/ engineering studies), but are not yet funded by the legislature. Long term refers to those projects that have only been informally discussed. No decision has been made to fund long term projects; nor has an appropriate transportation mode (road or rail) been determined. Only a general route have been recommended.

Short Term Possibilities

1. The Knik Arm crossing has been under consideration for at least 15 years. Presently, a preliminary engineering study is being done and is expected to be completed by October 1984. If the state legislature decides to fund the project, the crossing is expected to be completed five years after construction begins. The cost of the project will depend on the type of structure built. Preliminary costs for one alternative has been estimated at $300-700 million.

   The crossing would tie Anchorage to Point MacKenzie, and provide a route that would shorten the distance between Anchorage and Fairbanks by 30-50 miles depending on which

alternative route is built. Past studies indicate that the crossing would bring substantial residential development pressures in the southern portion of the Matanuska-Susitna Borough and stimulate economic development, including a possible port and industrial park area.

2. Several alternative routes accessing the proposed Susitna Hydroelectric Project are presently being considered. One possible corridor for either rail or road leads from the existing Parks Highway or Alaska Railroad at Gold Creek and extends to the Devil's Canyon Dam site (see Map 13). The Watana Dam site may be accessed by a south bound spur road from the Denali Highway. The mode of transportation as well as the corridor chosen will depend greatly on whether or not public access into the dam site is desirable.

3. The Capital Site Planning Commission has been considering several road alternatives which would provide access into the Capital Site -- in the event the capital site is moved. In a draft report, a recommended alignment would join the Parks Highway near Houston as shown on Map 13. This route is the shortest (5.1 miles) and least costly of all the alternatives considered. It was recommended that the road be designed to accomodate four lanes, but to initially be built for two-lanes. Projected costs for the initial two-lane facility is $3.2 million, with an additional $3.1 million for expansion to four lanes.

Long Term Possibilities

1. As a long-term possibility, DOT/PF has developed a conceptual scheme for providing access to lands west of the Susitna River. This scheme consists of either a road or rail or both from the Parks Highway or Alaska Railroad west across the Susitna River in the vicinity of Alexander. (See Map 13). On the west side of the river, one spur would head northwest through Rainy Pass towards McGrath. The second spur would travel south to Beluga, and from there west along the Chakachatna River, through Merrill Pass toward the Kuskokwim River. Although the system described is a long term possibility only, the portion of the route between the Parks Highway and the east side of the Susitna River is proposed for construction to provide access to agricultural lands in the Fish Creek area within the next 10 years. (See the Point MacKenzie Road under "Borough Proposals.") Construction of the section crossing the Susitna River and traveling to McGrath or to the Kuskokwim River will be addressed in DOT/PF's regional transportation study (MASTS). For additional details on the recommended corridors, see the Joint Federal-State Land Use Planning Commission Report on Transportation, Communication, and Utilities for the Southcentral Region.

2. Two major long term routes have been proposed through a joint planning effort between the state Department of Natural

Resources and the Matanuska-Susitna Borough (see Susitna Road and Kashwitna Corridor on Map 13). The two routes were recommended as part of the Willow Sub-basin land use plan* to provide access to forestry, recreation and agricultural areas located just east of the Susitna River, and between the Kashwitna River and Willow Creek drainages.

a) The Susitna Road would provide access into 18,000 acres along the east side of the Susitna River from near Willow to the Susitna Game Flats. The Willow Sub-basin Plan designates this area for commercial timber management with some agricultural and grazing use. The recommended route branches off the Parks Highway and travels south and parallel to the Susitna River for 24 miles. (See Susitna Road on Map 13.) The primary use of this road would be for forestry and hunting activities, and therefore would not need to be of the same quality of other regional roads. For example, the width of the road could be less, clearing need not extend beyond the road itself, and the road surface can be gravel.

b) The Kashwitna Corridor would provide access into 60,000 acres located between Willow Creek and the Kashwitna River along the foothills of the Talkeetnas, north of the capital site. This area has been designated by the Willow Subbasin Plan as a multiple use area for commercial forestry, grazing, small farms, and habitat management. The most feasible alternative into this area is the Kashwitna Corridor which runs 9 miles north to south from Kashwitna to Hatcher Pass Road. (See Kashwitna Corridor on Map 13.) A road to the farm lands (just north of Willow Creek) identified in the Willow Sub-basin Plan would have to be suitable for conventional vehicles. The portion of the road intended for forestry operations could be of lower quality, similar to that described in "a)" above.

o Matanuska-Susitna Borough Requests

The Matanuska-Susitna Borough is currently requesting the legislature to fund two categories of roads: those of regional significance and, local roads and trails.

Roads of Regional Significance (Refer to Map 13).

1. Point MacKenzie Road -- Phase 1:

The Borough is requesting $2,500,000 from the legislature to fund the engineering and construction of a road leading from Point MacKenzie west across the Little Susitna River. This

*For further details, refer to the Land Use Plan for Public Lands in the Willow Sub-basin; Alaska Department of Natural Resources; October, 1981.

segment would be the beginning of a road that would provide access to the proposed agricultural project on borough and state lands in the Fish Creek drainage area. In addition, the Department of Natural Resources is currently preparing a detailed road layout which provides access into various portions of the Fish Creek area. (This is the first portion of a possible transportation corridor leading furhter west discussed under the DOT/PF proposed roads section.)

2. Hatcher Pass Road:

The Borough is proposing to realign and pave 11.5 miles of road going from Hatcher Pass to Independence Mine. This is a major tourism and mining road, and its condition is important in attracting visitors and supporting mining operations.

3. Valdez Creek Road:

The proposed road is presently a heavily used trail which branches off the Denali Highway at the east side of the Susitna River. The route runs northward past Denali to Valdez Creek. The proposed road will serve about 15 small mining operators plus part of the Denali Mining Company.

4. Oilwell Road:

Oilwell Road is an unpaved road which runs south from Petersville Road to Moose Creek. The borough is proposing a bridge to be built over Moose Creek, and an eventual southeast extension which is presently a heavily used winter trail. Such an extension would provide access into state and borough agricultural and settlement lands.

5. Bartlett Hills Road:

Several alternative routes leading from the Talkeetna Road to the east into the Bartlett Hills agricultural area are presently being reviewed. Access to the Bartlett Hills area would not only enable the development of previously disposed agricultural tracts, but also facilitate the development of timber resources. Additionally, the road would provide better access to lands lying east of Bartlet Hills such as the areas around Montana Creek Falls and Larson Lake.

6. Tellier Road:

The proposed Tellier Road would run north of and parallel to the Little Susitna River from the Hatcher Pass Road to Houston. This route would provide access to Borough agricultural tracts, upgrade the existing trail leading to private properties, and perhaps reduce the need for additional bridges crossing the Little Susitna River to reach a more developed road system south of the river.

Local Roads and Trails (Refer to Map 13)

The Borough has requested state funds to construct seven connector roads to increase the efficiency of the existing road network. The Borough has also requested funding for trail maintenance, right-of-way acquisition, design, and construction. A sum of $850,000 has been requested for paths and trails within the Matanuska-Susitna Borough.

The monies requested are intended for construction and maintenance of separated pathways (off road bike paths) along state maintained roads, and for other off-road trails. $500,000 has been requested for the construction of separated bike paths along state maintained roads. The highest priority paths are those along the Old Glenn Highway and near schools along Bogard Road and the Palmer-Wasilla Highway. The Borough Trails Committee has prioritized trail needs based on child safety.

The proposed off road trails serve both regional and local needs. The trails which are of regional significance include the following: (1) the first 10 miles of the Iditarod Trail off Knik Road; (2) the Chickoloon-Nelchina Trail and (3) the Skwentna Ice Trail (Moose Creek to Swentna). Trails proposed for construction which are primarily of local significance are along the west and south sides of Lazy Mountain, in the Keplar-Bradley Lake area and near Bagard-Trunk Road.

Public Transit

Leonard Lane Associates and PRC Voorhees have submitted a public transit plan to the Matanuska-Susitna Borough. The plan recommends that the Borough consider expanding bus service from the Palmer-Wasilla area into Anchorage over the next five years. Based on current and projected commuter demands, the following recommendations have been submitted to the Borough: (1) install a park-ride transfer station near the Glenn and Parks Highway, (2) provide four rather than two daily round trips to Anchorage, and (3) consider the possibility of eventually purchasing four or five buses required for the expanded commuter service. The Borough is presently working on plans to add a third and perhaps a fourth bus to meet existing needs.

Air

The DOT/PF just completed an Airport System Plan for Upper Cook Inlet. Based on projections through the year 2,000, it was determined that there are generally enough landing strips currently in the area to support air traffic through the year 2,000. However, existing facilities will require expansion and improvement to meet future traffic demands. In addition to improving existing facilities, the Airport System Plan recommends two significant developments by 1990: 1) development of a site for general aviation training in (or near) the Point MacKenzie Development area, and 2) relocation of the Wasilla Airport. An airport facility designed to accomodate commercial, business, and general aviation needs may also be necessary near Willow if a new capital is

developed in the area. Additional aviation development plans may be recommended upon completion of DOT/PF's Statewide Aviation System Plan and the Matanuska and Susitna Transportation Study (MASTS).

Ports and Harbors

There are currently two proposed port sites in the study area -- one at Point MacKenzie and the other at Granite Point (see Map 13). Anchorage is currently the principal port in the area for cargo-bearing ships; however, the Matanuska-Susitna Borough wishes to share some of this traffic. Thus, a major port facility is planned for Point MacKenzie as part of the overall development plan there. Several different port proposals exist for the potential port sites at Granite Point and the North Forelands in the Beluga area. Dominant is the possible need for an export facility to handle 5 to 30 million tons of coal per year. Another proposal is to use the Granite Point area as an export site for forestry products. The need for this proposal assumes the existing site at North Forelands would no longer be useable.

SAND AND GRAVEL

"Materials" (sand and gravel) are essential for both the construction and maintenance of roads, railroads, and airports. In 1981, revenues from sand and gravel reached $128 million -- second only to oil and gas of all mineral resources extracted in Alaska. DOT/PF is the state's largest user of sand and gravel.

The cost of building and maintaining a road is in large part dependent on whether materials must be purchased from private sources or are available from public lands, and whether they must be found locally or must be hauled from a distance. Personnel at DOT/PF suggest that five miles from material site to building site is the maximum feasible hauling distance. Thus, it is critical that an analysis of potential material sites precede detailed design of proposed routes.

The quality of information concerning the locations of sand and gravel deposits varies throughout the area. In road accessed parts of the basin fairly good information exists, and DOT/PF has located enough potential material sites to supply maintenance needs through at least the year 2000. In areas currently without road access, existing soils data provide an indication of the existence of material deposits; however, a much more detailed analysis will be necessary to locate the required material sites. This analysis will be conducted by Division of Geological and Geophysical Surveys (DGGS) or DOT/PF and the results integrated into a management plan for non-accessed areas.

TRANSPORTATION

Needs and Issues

The following needs and issues related to transportation in the study area have emerged from previous public meetings and staff analysis. They are concerns which must be addressed through the planning process. It is important that we receive any advice and comments you may have regarding the needs and issues identified below. In addition, we request that you assist in identifying land management issues which we have overlooked. (Please see the cover letter for appropriate persons to contact with your comments.)

Needs

1. Identification of Material Sites

   - Material sites (sand and gravel) are essential for both construction and maintenance of roads, railroads, and airports. The cost of building and maintaining a road and railroad is in a large part dependent on whether materials must be purchased from private sources or are available from public lands, and whether they must be found locally or must be hauled in from a distance. Thus, it is critical that an analysis of potential material sites precede detailed design of proposed routes.

Issues

1. Setting Priorities on the Area's Transportation Needs

   - The factor which most limits use of natural resources in the study area is lack of access. Agricultural, mineral, forestry, recreation and settlement activities are all limited by the cost of providing access. Since the state lacks money to meet all access needs, a basic issue is which among the many desired transportation projects will be developed.

2. Efficiency of the Area's Transportation Systems

   - A major goal of a transportation project is to maximize the net benefits over time. Achieving this goal involves an evaluation of the short-term costs and benefits associated with each transportation project and an evaluation of the efficiency of the overall transportation system. An issue is which of various alternative transportation systems provides maximum efficiency while still achieving the established priorities. Efficiency in transportation is directly dependent on the following factors: 1) the choice of mode (road, rail, air, etc.); 2) the long-run costs such as operations, maintenance and replacement costs; and 3) the energy efficiency, or the amount of fuel required to travel alternative systems.

3. Social Impacts of Transportation Systems

- Transportation systems greatly influence the quality of life in areas served. Perceived crowdedness, limited pedestrian mobility, and noise are examples of negative impacts which can be minimized through planning. On the other hand, improved local circulation and access to major highways may enrich the lives of people in remote areas. Social impacts should be carefully considered in designing transportation systems.

4. Environmental Impacts

- The construction of roads and other transportation facilities can adversely affect water quality by increasing run-off and sedimentation. Construction can also damage terrestrial habitat such as wetlands or important calving and denning areas. These effects may be mitigated through careful planning.

5. Protecting Access to Important Public Lands

As additional public lands are sold for private use, methods of protecting public access across those lands to important public use areas will be an important issue.

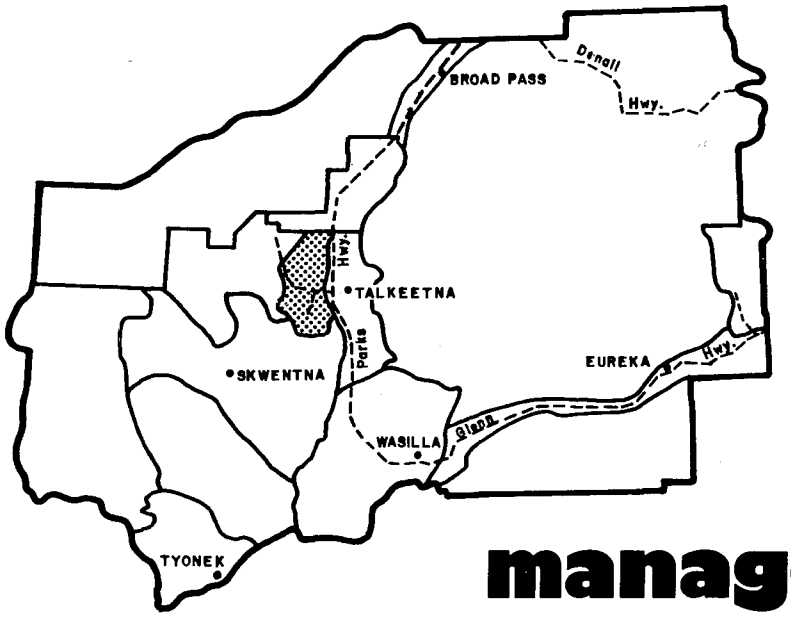
6. Transportation Requirements for Disposal Areas

The state has recently sold and will continue to sell thousands of acres to private individuals annually. In addition, the Borough also has a strong land disposal program. However, much of the state land sold has no access, and there are no plans for providing access to much of this land. The future access needs of these disposal areas should be addressed through the regional transportation plan.

7. Construction of Unauthorized Roads and Trails on Public and Private Lands

A major issue in the study area is the development of unauthorized roads and trails across public and private lands. These roads spring up wherever people desire to travel across non-road accessed areas for reasons related to hunting and fishing, mining, settlement or any other purpose. The main problem associated with the illegal roads is the disruption of wetlands, tundra, or other sensitive landscapes. Because these roads are not planned, often many routes are developed in a single area-maximizing the degree to which the land is torn asunder.

CHAPTER IV
MANAGEMENT UNIT RESOURCE SUMMARIES AND ISSUES



petersville road management unit

1. Overview

The dominant issue within the Petersville Road Management Unit is a classic land management concern: protection of existing values vs. the pressure to open the area to increased and more intensive land uses. Unlike other management units in the Matanuska-Susitna-Beluga Study Area, this unit has relatively good road access. No area within the management unit is more than ten miles from an existing road. This fact, combined with the area's supply of land with settlement potential, its high level of recreation use, and its unique setting at the base of Mt. McKinley, set the stage for growing pressure for development. The residents and landholders in the area hope to protect the qualities that originally attracted them but are aware of the pressures for development. Toward this end, one group, the Tokosha Citizen's Council, has proposed that four townships north of Petersville Road be designated as roadless in order to help retain the rustic character of the area. This concern, as well as related issues such as land sales and forestry and agricultural development must be addressed over the course of the Matanuska-Susitna-Beluga Area Plan.

2. Boundaries

The Petersville Road Management Unit is comprised of approximately ten townships or 230,000 acres. The unit is bounded on the east by a line which extends north from the Petersville Road to the boundary of Denali State Park and south of the road approximately three miles down the drainages of Kroto, Gate, 17 Mile and 9 Mile Creeks. The unit includes all lands adjacent to Oilwell Road to the point where it crosses Moose Creek. Peters Creek is the western border of the unit.

3. Land Ownership

This unit is a checkerboard of state, borough and private parcels. State land comprises approximately 50% of the area. The majority of the private land was transferred from the state under the open-to-entry (OTE) program or, more recently through the state land disposal program. Private land, as is common throughout the study area, tends to be found along roads and adjacent to water. Many of the lakes within the unit are completely surrounded by private five-acre OTE sites. The borough has received title to five large blocks of land (totaling approximately 30,000 acres). Much of the borough land lies adjacent to Amber, Scotty, and Swan Lakes. Other parcels are along Moose Creek north of Petersville Road and near the "town" of Peters Creek.

4. Access

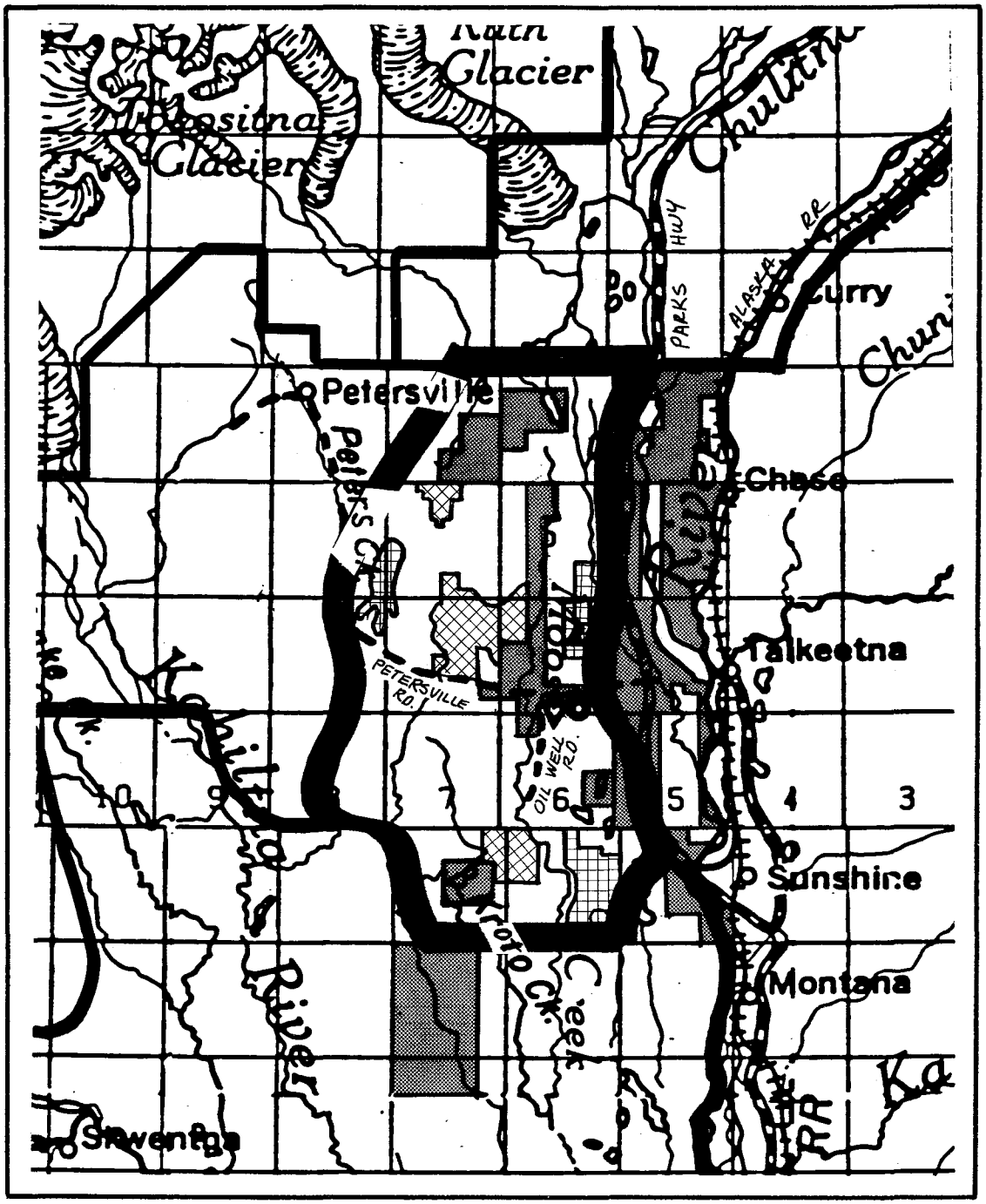
Unlike the majority of management units west of the Susitna River, the Petersville Road Management Unit has road access. It is bounded on the east by the Parks Highway and crossed by the Petersville Road. This latter road branches off the Parks Highway at Mile 115 and continues west, leaving the management unit at Peters Creek and continuing north to Petersville. (Beyond the Forks Roadhouse, the Petersville Road is primarily four wheel drive and open only during the summer. Winter maintenance extends to Moose Creek.) Oilwell Road branches off Petersville Road approximately 4 miles from the Parks Highway and travels south for approximately 6.5 miles to Moose Creek. The Matanuska-Susitna Borough has requested funding from the legislature this year to bridge Moose Creek and extend the road south towards Amber Lake, thereby opening up state and borough lands with potential for agriculture, forestry, settlement, increased moose production and various public uses.

In an area north of the Petersville Road known as Tokosha, a number of local land owners and residents are petitioning the borough and state to formally exclude roads in order to preserve the existing rustic lifestyle.

Although there are not any recorded landing strips within the unit, there are several lakes used for float plane landings.

5. Existing Uses

Currently, the major land uses within the Petersville Road Management Unit are year-round and seasonal/recreational settlement, and hunting, fishing, and trapping. Most settlements are low density, are occupied on a seasonal/recreational basis, lack road access, and are located either adjacent to small lakes or along Trapper, Moose, and Peters Creeks. Approximately one hundred people reside year round in this unit including the approximately 10 people living in the small community of Peters Creek.



PETERSVILLE ROAD MANAGEMENT UNIT

LAND OWNERSHIP

STATE (includes selected land)

MATANUSKA-SUSITNA BOROUGH

LAND SALES

or ● EXISTING RESIDENTIAL

or ● PROPOSED RESIDENTIAL

▲ EXISTING AGRICULTURAL

◊ PROPOSED AGRICULTURAL

Scale - 1:500,000

As shown on the map, many land sales have occurred in this unit. Seven state land disposals -- Swan Lake, Peters Creek, Trapper Creek, Gate Creek, Kenny Creek, Nine Mile and Denali View -- have already been offered. Five disposals -- Safari Lake, Amber Lake, Amber Lake North, Peters Creek addition, and Nine Mile -- are planned over the next two years.

Agricultural activities within the unit consist of non-commercial and commercial farming. Commercial development is occurring on part of the 400 acres of agricultural lands sold by the Matanuska-Susitna Borough in 1977. In 1981, the state sold an additional 2160 acres of agricultural land in the vicinity of Scotty Lake. This land, however, is not yet in commercial production. An additional 760 acres at Mile 10 of the Petersville Road are scheduled for sale by the state in spring 1983.

This unit supports sizable and varied recreational and fish and wildlife-related uses. Most of these uses are associated with borough and Anchorage residents, and with local settlement; they include snow-machining, cross-country skiing, hiking, hunting, trapping and fishing. In the Tokosha area, recreational activities have expanded to the extent that a fledgling commercial operation promotes ski touring and offers overnight cabin lodging.

The unit has historically provided popular moose hunting areas, especially five to eight miles either side of the Petersville Road off the Parks Highway, and along all waterways crossing Petersville Road. In recent years, however, moose hunting effort has increased, while the harvest has remained the same; thus, success rates have dropped. Additional recreational activities are provided along Kroto Creek, which joins Moose Creek fifteen miles south of this unit and becomes the Deshka River. Kroto Creek is very popular for big game hunting, boating, and fishing; the Petersville Road crossing is often used as a starting point for float trips down this river. Other popular streams include Moose, 20 Mile, 9 Mile, 17 Mile and Gate Creeks.

This unit currently contains four proposed state timber sales. These are generally located south of Petersville Road and between Gate and Kroto Creeks. Although timber volumes have been estimated, there is yet no specific schedule for the timber sales. Three of these sales are less than 1,500 acres and are located just south of Petersville Road. The large sale is at least 60,000 acres and extends south into the Susitna Lowlands Unit. The sale is speculative at present due to potential problems with land ownership.

There is relatively little mining in this unit; the concentration of gold and other placer mining claims occur several miles to the west in the Sunflower Basin Management Unit. The majority of mining activity that does occur in this area is located along Peters Creek south of the Petersville Road.

6. Resource Base -- Potential Uses

The management unit contains a mixture of lands with the physical capability of supporting developed uses (agriculture, forestry and settlement), and other areas -- primarily wetlands -- with limited or no development potential. Areas with soils, slope, vegetative and other characteristics favorable for development generally occur in relatively small, discontinuous parcels. This is due largely to past glacial activity which has left the area with bands -- trending north to south -- that alternate between areas with development potential and the strips of wetlands and/or lakes.

The overall potential for settlement, forestry, agriculture, and fish and game within the area is good, although the lack of large contiguous blocks (greater than several hundred acres) will limit the scale of developed uses. Areas with this potential lie generally north of Petersville Road along and between Moose and Trapper Creeks and in the southwest portion of the unit in the Kroto Creek/Amber Lake area. The following section discusses potential settlement as well as other uses in the area.

Settlement potential in the unit is high. In addition to the physical capability mentioned above, the area has relatively good access (no area within the management unit is more than approximately ten miles from one of the three existing roads), numerous fly-in lakes, and high asthetic values including access to water, varied terrain, and exceptional views of the Alaska Range.

The unit is heavily wooded with birch, alder and spruce. Approximately half of the unit has forest stands rated as high or moderate for commercial use. Because of the configuration of these stands, the Division of Forestry believes the area will generally be most appropriate for personal use forestry (firewood and houselogs) and small scale commercial production. The areas with greatest potential for commercial production are stands along Moose and Trappers Creek north of the Petersville Road in the area surrounding Amber Lake.

Fish and wildlife values in this unit are high. Kroto and Moose Creeks combined have an annual escapement of approximately 15,000 king salmon in addition to large numbers of pink (in even years) and silver salmon. These streams also provide high quality rearing habitat for king and silver salmon. The existing road and trail system, good moose habitat, large moose populations, extensive forested and brush areas, and a high public demand for moose, make portions of this unit suitable for using habitat enhancement techniques to increase moose production an estimated five-fold.

There are approximately 50,000 acres of class II and III agricultural soils along the lower portions of Peters, Moose and Trappers Creeks. The discontinuous nature of areas with cultivable soils may give the unit greater potential for small farms (less than

160 acres) than for large scale agricultural production such as the Point MacKenzie or Delta projects.

The unit's accessibility, terrain, and proximity to Denali State and National Parks, as well as its wealth of fish and wildlife resources combine to give it extremely high recreational values. Potential future uses are likely to include increased emphasis on overnight visitors for skiing, snow machining and sightseeing, and boating and fishing on Moose Creek and Kroto Creek.

7. Management Issues

o Amounts/Density of Residential and Agricultural Land Sales.

As discussed previously, this area has attributes that make it highly desirable for seasonal/recreational residential use, agricultural development and, to the degree that employment opportunities are available, for year-round settlement. Proposals for additional land sales in this area will require consideration of the issues outlined below:

a. Effects on lifestyles of existing residents: Substantial additional state and borough land sales will have noticable effects on the non-road accessible, largely undeveloped character of the region. While many residents oppose the additional land sales, people outside the area continue to demand land with qualities that this management unit offers. (Note: even if the borough and state sell no additional land in this area, development of the large amount of existing private holdings will significantly alter the present character of the area).

b. Carrying capacity of the land: The majority of cabins in this management unit depend by choice or necessity on surrounding land for firewood and building materials, water, and in some cases, a significant portion of the year's food supply. There is a practical limit on the degree to which surrounding lands can meet these needs. Decisions made regarding the densities of future development, including state and borough land sales, must consider the level of demand placed on local resources. It is important to note that dependency on local supplies of fuel wood, lumber and other subsistence goods will be significantly lessened if road access is developed. These decisions will also require determination of whether dependence on the land is intended to be on a sustained yield basis.

c. Effects on fish and wildlife habitat, production, and human use: Increased settlement through state and borough land sales will have substantial effects on fish and wildlife species in the area. A larger population could create higher demands for use of fish and wildlife, while the ensuing settlement would reduce the amount of

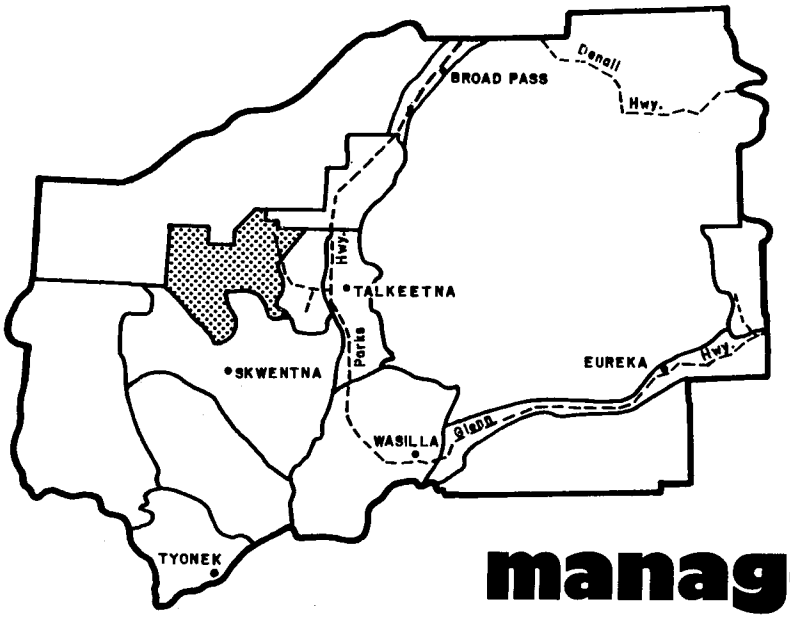
land available to provide needed habitat to maintain existing fish and wildlife population levels.

- Tokosha Roadless Area

The Tokosha citizen's council, a group of approximately fifty people with land and/or cabins in the northern portion of the management unit, have requested that construction of roads be prohibited in four townships. An early version of their proposal was debated and ultimately denied by the Matanuska-Susitna Borough Assembly, but the group is still very interested in achieving their goal. This area plan will review the roadless concept and make a recommendation on the issue in the draft plan.

- Degree of Developed Recreation

The Petersville Road area was recently proposed as a site for a four-season recreational complex, the Tokasitna Visitors Center. This controversial proposal was ultimately dropped, primarily due to uncertainties about its large scale, and questions about the likely demand for such a facility and the impacts of its development on local residents. It is likely, however, that the substantial and largely untapped recreational potential of this region will generate other proposals for recreational development that will raise similar issues.



sunflower basin management unit

1. Overview

The Sunflower Basin Management Unit contains a variety of surface and subsurface values. Among the numerous resource values in this unit, mining, fish and wildlife, and recreation presently receive the most human use. Limited, potentially valuable forestry and agricultural areas have been identified, but physical limitations of topography, elevation and lack of access inhibit near term development. This unit also has the potential to support increased seasonal - recreational settlement.

2. Boundaries

The Sunflower Basin Management Unit lies in the northwest part of the study area and includes Chelatna Lake, the majority of the Dutch Hills - Peter Hills area, and Petersville. Its north and west boundary are formed by Denali National Park and Preserve and Denali State Park. The eastern border runs roughly five miles east of Petersville down through Peters Creek to the line between townships 25 and 26 north. The southern border follows that township line west to where it jogs south to include Mt. Yenlo and Donkey Creek. The area encompasses approximately 507,000 acres.

3. Land Ownership

The State of Alaska owns or has selected all the land within this unit with the exception of numerous small private parcels and one section (640 acres) owned by the borough. The private parcels are located primarily along the southern portion of Peters Creek and in the Yenlo Hills Remote Parcel state land sale offering (see management unit map). The majority of the successful entrants in the Yenlo Hills sale have staked land along the Yentna River, Donkey Creek or Donkey Creek Lake.

The borough land straddles the border between this management unit and the Petersville Road Management Unit. This parcel of land is accessed by Petersville Road and fronts on Peters Creek.

4. Access

Existing access into the Sunflower Basin Management Unit is by road, trail and air. Petersville Road, a four wheel drive road open primarily in the summer (winter maintenance extends only to Moose Creek), extends into the northeast corner of the unit past Petersville ending at Cache Creek. An extensive trail and airstrip system takes over where the road system leaves off to provide access to the remainder of the unit. Two major trail systems, one originating about five miles north of Petersville, the other originating at the juncture of Petersville Road and Peters Creek, branch off to access placer mines, remote settlement areas and hunting - recreational areas (see management unit map). These trails (primarily east of the Kahiltna) receive extensive ATV use by hunters.

At least 15 landing strips are located along the trail system in this unit: four are publicly owned and 11 are privately owned. Access in the west half of this unit is predominantly by air.

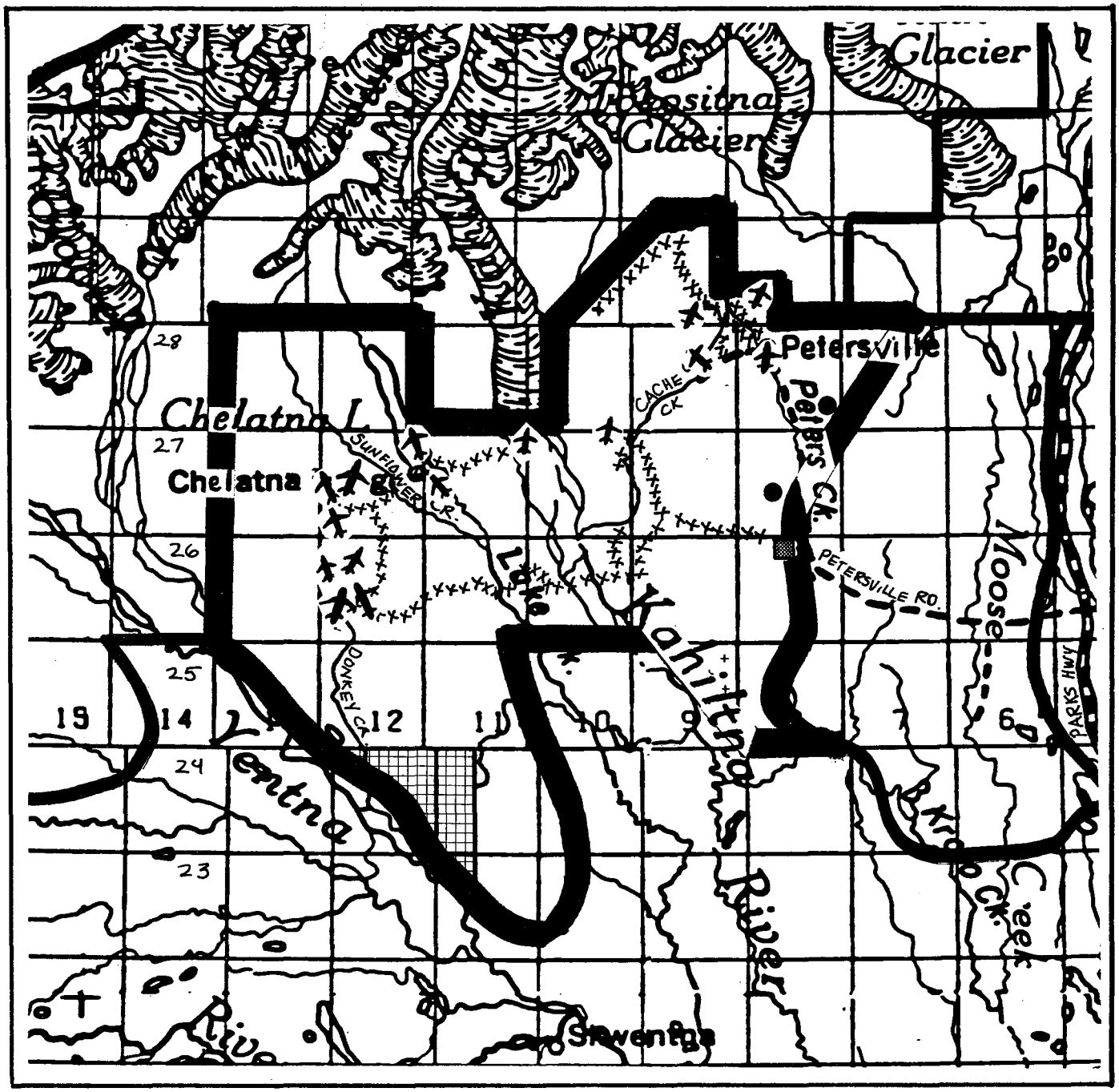
No additional access is planned for this unit at present.

5. Existing Uses

The uses most prevalent in the unit are placer mining and hunting, fishing, and other recreational uses. Nine large mechanized placer operations are found in this unit: six of the operations are located in Cache Creek, the other three are located in Peters Creek. The operation at Petersville is generally recognized as the largest placer operation in the state. Numerous smaller operations (the state Division of Geological and Geophysical Surveys estimates 20) are also active in this unit, primarily in Cache Creek, Lake Creek, and the Kahiltna River. Gold is the primary product of the placer operations with small amounts of tin and platinum produced as a spin-off of placer operations.

Hunting is very popular in this unit. The numerous airstrips and trails provide access to virtually all of the unit. Four big game guides (operating generally west of the Kahiltna River) lead sport hunters in search of moose, black and brown bear, and sheep. Non-guided sport hunters and subsistence users generally hunt east of the Kahiltna River, utilizing the many trails. Yearly harvests have ranged between 225-350 moose (many of them trophy size), 20-43 brown bear and 65-210 black bear. Popular hunting areas include Peters Hills, Little Peters Hills, Peters Creek, Martin Creek, Cache Creek, Lake Creek, Sunflower Creek, the Kahiltna River, and the Petersville Road area.

Commercial trapping, grouse and ptarmigan hunting, and fishing are also important in this unit. People come from throughout the



SUNFLOWER BASIN MANAGEMENT UNIT

LAND OWNERSHIP

STATE (includes selected lands)

BOROUGH

LAND SALES

or ● EXISTING RESIDENTIAL

ACCESS

xxxxxx TRAILS

AIRSTRIPS

Scale - 1:500,000

borough and Anchorage areas to trap mink, fox and other furbearers. Hundreds of grouse and ptarmigan are taken annually. Lake Creek, Peters Creek, and their respective tributaries are important salmon, rainbow trout, and grayling fishing streams. During 1980, Lake Creek, nationally known for its fishing, supported over 8300 man-days of sport fishing; Peters Creek supported over 3000 man-days.

In addition to fishing, Lake Creek is popular for raft trips which typically begin at Chelatna Lake (air access). Other recreational opportunities are provided by the trails in the Peters Hills area which are used for off-road vehicle travel (ORV), snowmobiling, hiking, berrypicking, and cross country skiing. The town of Petersville is an attraction because of its rich gold mining history.

Settlement in this unit is limited to 10-20 year-round residents at Petersville and along Peters Creek. Seasonal-recreational settlement is much greater and is scattered around the unit, predominantly along the active placer mining streams in the Peters Hills and Fairview Mountains areas. The seasonal population has been estimated to be as high as 200 people.

The state has had one land sale in this unit, Yenlo Hills Remote Parcel, as shown on the attached map. Of the 4,000 net acres offered for sale, 3,509 acres were staked and leased or purchased. Successful entrants have staked lands primarily along the Yentna River, Donkey Creek and Donkey Creek Lake. There are no future land sales proposed for this unit at this time.

6. Resource Base -- Potential Uses

Many of the resources in this unit are limited in distribution by mountains and wetland areas. However, the southwest portion (along Donkey Creek drainage and Yenlo Hills area) and the southeast section (along the east side of the Kahiltna River) have overlapping forestry, settlement, and grazing potential in addition to the fish and wildlife habitat, recreation, and mineral values previously discussed. There are approximately 72,000 acres with high or moderate forestry management potential and 8,000 acres of low, but notable potential (see Map 5, Chapter III). Timber in this unit is generally hardwood mixed with white spruce. Long-term commercial management is a possibility in portions of this unit if access were developed.

The Sunflower Basin Unit does not contain any large expanses of cultivable soils, but it does have approximately 30,000 acres of potential rangeland. Roughly 20,000 acres encircle Yenlo Hills and the remaining 10,000 extend northwest along Donkey Creek drainage (see Map 4, Chapter III). The area with most potential for grazing is south of Yenlo Hills adjacent to the cultivable soils in the Susitna Lowlands Management Unit. Future use of this rangeland is largely dependent upon access and agricultural

development in the Susitna Lowlands Unit, particularly near Amber Lake.

Over 299,000 gross acres of land with the physical capability to support settlement have been identified (see Map 10, Chapter III). The best settlement land is along the south facing terraces above Donkey Creek and the east side of the Kahiltna River. (The state offered some of this land for sale during the Yenlo Hills Remote Parcel offering.) Remaining lands with settlement value are scattered throughout the unit.

The fish and wildlife resource values in this unit are high. The area supports upwards of 6,000 moose (many of them trophy size), 400-600 black bear, and 100-150 brown bear. Wolf, wolverine, and other furbearers are also plentiful. Some sheep roam the mountainous area north of Chelatna Lake. Major anadromous streams such as Lake Creek, Peters Creek, the Yentna and Kahiltna Rivers have headwaters and/or reaches located in this unit. The Department of Fish and Game estimates that, through habitat enhancement techniques, moose production and public use can be increased four-fold in the areas east of the Kahiltna River and around the Yenlo Hills.

Mining activity currently centers around placer operations but potential exists for coal, strategic minerals, and to a lesser extent, oil and gas development. As noted on Map 11 in Chapter III, an area south of Chelatna Lake is considered to have high potential for coal development, and a larger block of land stretching from Lake Creek northeast to Petersville is considered to have moderate potential. Oil and gas potential is thought to be low.

7. Management Issues

° Mining/Water Quality

Placer mining may reduce water quality, although settling ponds and other techniques can be used to mitigate this impact. Continued enforcement of water quality regulations, and implementation of monitoring programs will be required to protect the quality of water in important anadromous and recreational streams that flow out of or through this management unit.

° Conflicts Between Mining and Recreation and Other Uses

Increases in both mining and recreational use in this area could result in conflicts such as vandalism and theft of mining equipment or accidents to hunters and other recreational users at mine sites. In addition, recreationists may find their access limited due to mining. Generally neither of these potential conflicts are particular problems because uses are concentrated during different seasons, and overall, relatively low levels of recreational use occur in active mining areas.

- Retention of Land Base for Wildlife (especially moose)

  Hunting and trapping are important existing uses of this area and are likely to become even more important as access improves. Increases in land sales, mining, and access can reduce the habitat land base and the wildlife populations needed to meet existing and future demands.

- Future Land Sales by the State

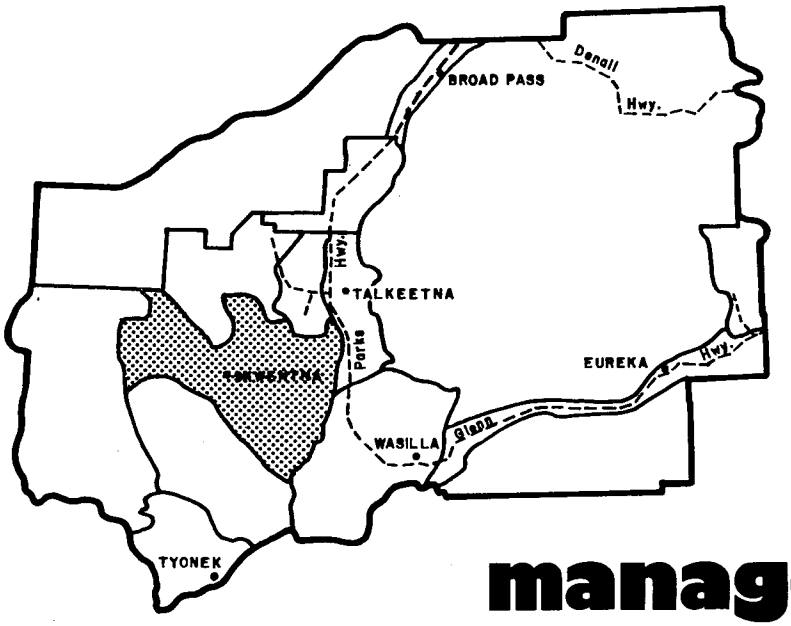
  Continuing demand for seasonal/recreational settlement purposes may lead to land sales that compete for land used by existing activities (mining, fish and wildlife, public recreation) as well as potential future uses such as forestry.

- Grazing/Fish and Wildlife Habitat Conflicts

  The introduction of domestic livestock in ranges used by moose, sheep, bear, wolves, etc. can result in a number of problems including: livestock-caused degradation of fish and wildlife habitats, livestock-wildlife competition for valuable forage, and disease transmission between livestock and wildlife. Grazing domestic stock in open forest or shrub tundra communities can reduce the carrying capacities and value of these habitats for moose and other species; in alpine areas grazing could have negative impacts on Dall sheep. In bear country, livestock introductions frequently lead to bear predation on cattle, followed by extermination of or severe reduction in bear populations. Bear, moose and other species in this unit are plentiful and highly valued; caution will be required to develop grazing resources while minimizing conflicts with fish and wildlife populations.

- Acriculture/Forestry/Recreation/Wildlife Habitat/Settlement Conflict

  Lands that can support any one of these uses are often ideally suited for the other four. Not all of these uses are compatible, however -- sustained yield timber management and cultivation of crops cannot simultaneously occur on the same piece of land; the sale of land for private uses can reduce or eliminate the opportunity for hunting and other recreational uses. Thus, a major issue to be dealt with will be the determination of the optimum type and timing of use on these lands with multiple potential uses.



susitna lowlands management unit

1. Overview

This area contains the greatest untapped wealth of surface resources within the study area. The management unit has the potential to provide large amounts of forest and agricultural products; it presently provides substantial hunting, fishing and recreational opportunities which could expand with improved access, better facilities and habitat enhancement; and it has potential to support large growth in year-round and seasonal recreational settlement. With a measure of planning it can provide a balanced use of all these resources. However, to maximize any single resource use will diminish potential for use of some other resource.

2. Boundaries

This management unit is bounded on the northeast by the Parks Highway, on the eastern and southern border by the Big Susitna River, and on the south and west by the 1500 foot contour near Mt. Susitna and Mt. Beluga. The north boundary follows the Yentna River southeast for approximately 20 miles, turns north at the confluence of the Yentna and Kichatna Rivers to the line separating Townships 25 and 26 North which forms the northern boundary. This area is comprised of approximately 52 townships or 1,200,000 acres.

3. Land Ownership

Land within the Susitna Lowlands Management Unit is primarily owned by the State of Alaska. The Matanuska-Susitna Borough owns approximately 43,500 acres in ten parcels adjacent to various

lakes and rivers (see management unit map). There are also numerous small parcels in private ownership which were purchased under the state's open-to-entry program and more recent land disposal program -- most of which are located on or near water.

4. Access

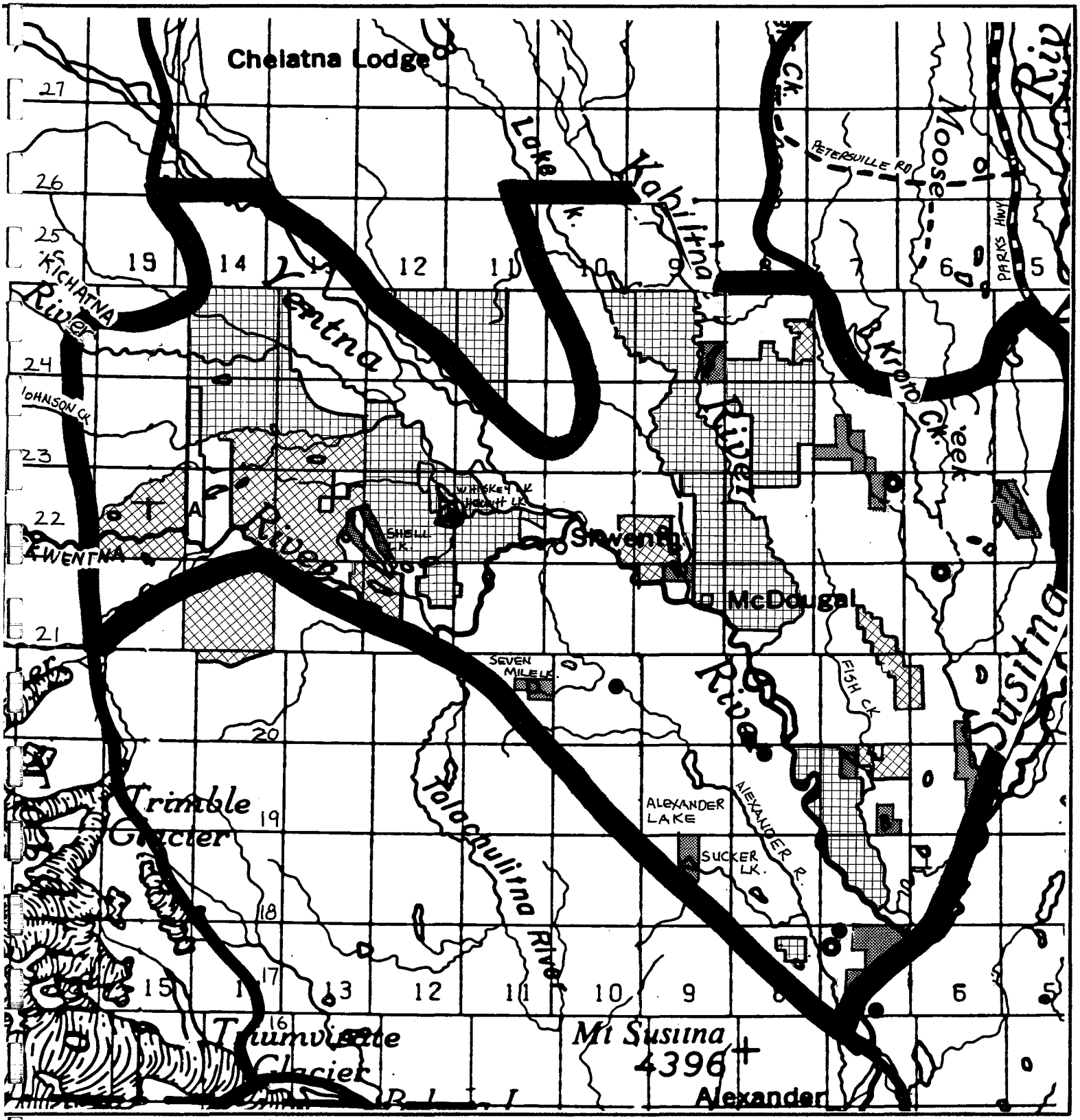
Existing access into the Susitna Lowlands is by air, boat and trail. There are at least three private landing strips in the area: at Yenlo Lake, Trailridge, and Alexander Lake, as well as a public airfield at Skwentna. Public landing strips may be recommended in the vicinity of Bulchitna and Neil Lakes to accommodate future settlement needs. Boat access from Anchorage or the Parks Highway is available via the Skwentna, Yenta and Susitna Rivers, and many other lateral streams.

Although there are no roads within the unit, Oilwell Road provides access to the north edge of the management unit, and the area has an extensive summer and winter trail network. Primary trails include 60 miles of the Iditarod Trail, a winter trail running southward from Oilwell Road (eventually connecting with the Iditarod), and a 30 mile winter tractor trail from the Parks Highway by Trapper Creek south to near Delta Island on the Susitna River (see Map 13, Chapter III). In addition, seismic lines crossing the area are used as winter trails. These trails are used by people residing within the area and less frequently as a means of moving machinery and equipment related to oil and gas and other resource developments.

The Department of Transportation/Public Facilities has considered two possible routes in the area. One would traverse the management unit from east to west following a route which approximates the Iditarod Trail. The other would extend south from Oilwell Road along the existing winter trail. The first of these two routes is a conceptual scheme of providing access to McGrath, and is not funded or being seriously considered at this time; the second, which is a proposal to extend Oilwell Road further south, is a current priority of the Matanuska-Susitna Borough. The borough is seeking funding from the legislature this session to extend Oilwell Road across Moose Creek, opening up state and borough lands with potential for agriculture, forestry, settlement and other uses.

5. Existing Uses

Hunting, trapping, fishing, various recreational activities, and remote low density "subsistence" living are currently the primary uses within this management unit. Kroto Creek, Lake Creek, the Talachulitna River, and the Alexander River are all heavily used, high-quality boating, rafting, hunting, and fishing streams. The area provides good moose hunting, most of which occurs adjacent to rivers and fly-in lakes. Trapping is a popular commercial and recreational activity along streams and rivers.



SUSITNA LOWLANDS MANAGEMENT UNIT

GENERALIZED LAND OWNERSHIP

STATE (includes selected lands)

MATANUSKA-SUSITNA BOROUGH

LAND SALES

or ● EXISTING RESIDENTIAL

or ⊙ PROPOSED RESIDENTIAL

OTHER

A — COAL LEASE (MOBIL)

Scale - 1:500,000

As mentioned above, this area contains numerous small private landholdings, some of which support cabins and lodges and are occupied on a seasonal or year-round basis. Private landholdings are scattered throughout the area with notable concentrations at Skwentna, Whiskey-Hewitt Lakes, Shulin Lake, and along Alexander and Kroto Creeks. Skwentna is a small, remote community, possessing an airport and boat landing. Hunting and fishing lodges are located at McDougal, Alexander Lake, and Seven and Eight Mile Lakes.

State subdivision and remote parcel land sales, both past and proposed, are shown on the attached map. Approximately 13 land sales have occurred in this unit since 1979. To date, approximately 46,135 acres have been offered in parcels which range in size from 5 to 40 acres. Most of the land sold through the state's disposal program has not yet been developed. An additional 13 state land sales are proposed for this unit during the next two years. The Matanuska-Susitna Borough may also offer land for sale around Bulchitna Lake.

Forestry and agricultural use in this unit is limited to personal use activities by seasonal and year-round residents.

Mining activity in the management unit includes exploration for coal and oil and gas, as well as placer mining for gold. Recent exploration activities for oil and gas include a well drilled by Union Oil in 1980 several miles south of the confluence of the Yentna and Skwentna Rivers and a well drilled near the Kahiltna River by Union-Texas Petroleum Company. Active placer mining occurs along the drainages of the Nakochna River in the northwest portion of the management unit, and along the Kahiltna River and Lake Creek. Mobil Oil has coal leases at a site with commercial potential north of the Skwentna River at Johnson Creek. (See map for coal lease location and discussion in following section.)

6. Resource Base -- Potential Uses

The Susitna Lowlands Management Unit encompasses the majority of the study area's high quality, undeveloped surface resource lands - over 300,000 acres of well-drained, productive soils on gentle terrain, capable of supporting agriculture, forestry, settlement, fish and wildlife production, or other uses. In several locations these lands occur in large, fairly contiguous blocks with potential to support large-scale commercial development. Land with high potential for development lies generally between the Susitna and Yentna Rivers, along the eastern edge of Mt. Susitna and Mt. Beluga, and between the Yentna and Skwentna Rivers. In each area the blocks of good soils are intermixed with numerous wetlands.

Within this management unit there are an estimated 350,000 acres of Class II, III and IV soils (more than 50% of total cultivable soils in the study area); over 550,000 acres of hardwoods, spruce, and cottonwood with high or moderate potential for forestry; and

an equally large area physically capable of supporting settlement. As is often the case, areas that are potentially productive for agriculture or forestry also have very high habitat values, particularly for moose. It is important to note that many of these areas overlap, i.e., the best forestry land is often the best agricultural and settlement land. The area also includes approximately 15,000 acres with vegetation capable of supporting grazing.

The area is drained by numerous major anadromous fish streams. These are, from west to east, the Alexander, the Skwentna, the Yentna, Lake Creek, the Kahiltna, Peters Creek, and the Deshka (Kroto and Moose Creeks). These are all important anadromous streams - the clear water streams for salmon spawning and rearing (Alexander River, Lake Creek, Peters Creek and Deshka River), the glacier-fed streams for salmon migration to clear water tributaries and winter rearing habitat. More than 2 million salmon (including 75,000-125,000 kings) migrate through and spawn in the rivers and tributaries in this unit. Spawning salmon in this unit contribute to the sport and commercial fisheries of Cook Inlet by producing more than 195 million King Salmon fry and 300-500 million coho fry. Several of these rivers, including Alexander, Deshka, and Lake Creek are among the highest value recreation rivers in Alaska.

The management unit also provides very important big game habitat and hunting opportunities, particularly for moose. Approximately 200 moose were harvested in this management unit in 1981. Many moose that were harvested elsewhere in the study area also spend portions of the year within this unit. In particular, large areas of muskeg and streamside habitats are heavily used by moose for calving and winter habitat. During summer, moose disperse throughout the unit and into surrounding uplands. Extensive forested and brush areas, and numerous rivers and wetlands, combined with large moose populations, and a high demand for moose hunting opportunities, make portions of this unit suitable for habitat enhancement techniques. The Department of Fish and Game estimates that, through habitat enhancement, moose populations in this unit could be increased by as many as 10,000 to 20,000 animals.

Land near Johnson Creek is thought to possess coal in commercial quantities (Johnson Creek is located north of the junction of the Hayes and Skwentna Rivers). Mobil Oil Company has leased this land from the State of Alaska, and plans to drill 70 holes in the area during summer 1982 to test development feasibility. The entire remainder of the area has low to moderate potential for coal and similar prospects for oil/gas.

7. Management Issues

o Agriculture/Forestry/Settlement Conflict

Lands that can support any one of these uses are often

ideally suited for the other two. Thus, a major issue to be dealt with in the land use planning process is the determination of which of the three land uses is most appropriate on any given capable site.

o Competing Land Uses Within River Corridors

The river corridors in the Susitna Lowlands Management Unit are among the most valuable habitat, recreation, and public hunting areas for bear and moose in the study area. These areas adjacent to clear water and glacial fed anadromous streams and rivers privide a wide variety of high quality recreation opportunties as well as habitat for many aquatic and terrestrial species. However, these same areas are also desirable for residential uses as well as for agriculture and forestry. Proper allocation of public lands in the river corridor is a major issue for the area plan to address.

o Reduction of Habitat for Game and Other Terrestrial Species

Big game hunting (especially for moose) and other uses of terrestrial species are important in this area and will likely become even more important as access improves. Agricultural development, increased residential use, and access improvements can reduce the amount and quality of species habitat and populations needed to meet existing and future user demand.

Another related issue exists as a result of the proposal to build two large dams on the Susitna River. The Alaska Power Authority, the agency in charge of the assessment of the feasibility and impacts of the proposed dams, has suggested that large areas of state land west of the Big Susitna River might be set aside as habitat lands to balance the dam's impacts on the habitat of moose and other species along the upper Susitna. If a decision is made to build the dams, and this "habitat substitution" measure is pursued, it could result in conflicts with possible agriculture and forestry development.

o Impacts on Existing Lifestyle

As was mentioned earlier in this discussion, this management unit has very high potential for a variety of resource developments -- agriculture, forestry, intensive recreation, habitat enhancement, mining, etc.

Almost any new, large scale use of state land is likely to affect the remote, undeveloped quality of area that makes it desirable to many existing residents. For example, perceived crowdedness, and increased traffic are likely to occur.

- Future Land Sales by the State and Borough

  a. The amount and location of state and borough land sales is a critical issue in this management unit. Decisions need to be based on the demand for land for year round, seasonal/recreational and investment purposes balanced against the value of uses that would be given up as a result of land sales.

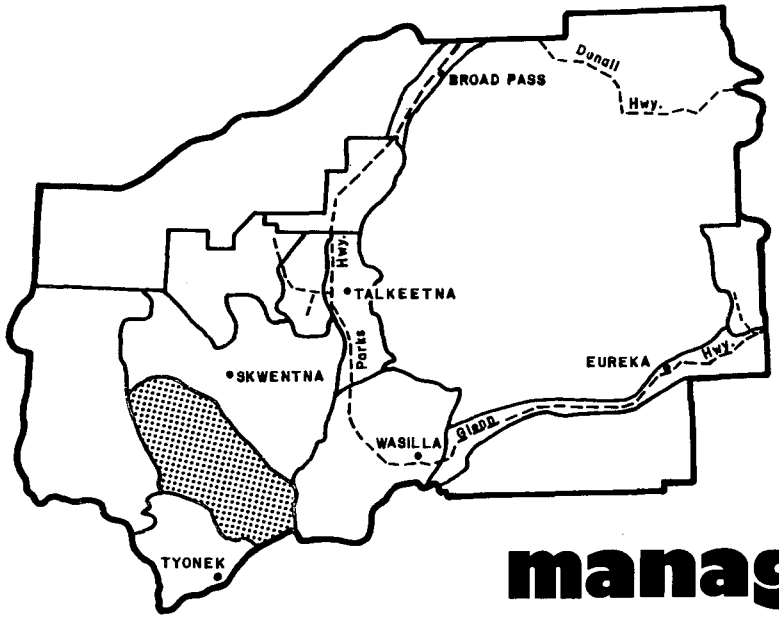
  b. Land sales can have significant negative affects on water quality and other environmental values. The location and density of disposals should be planned to minimize or avoid these problems.

  c. If public land managers provide land for a remote "self-sufficient" lifestyle, sufficient land must be made available to support needs for firewood, houselogs, water and game.

  d. Designing land disposals which are aesthetically pleasing, with adequate circulation patterns, and public open space, and which do not degrade public enjoyment of neighboring lands will likely increase costs for surveying. It may also reduce the amount of land sold, and perhaps slow the process of "getting land to the people."

- Access to Public Lands

  As state land sales and other resource developments occur, traditional access routes can be severed. Site access to hunting and fishing areas may also be reduced when public land is sold to private owners.



mt. susitna management unit

1. Overview

The Mt. Susitna Management Unit is a remote area of approximately 800,000 acres containing a great variety of resources. The majority of these resources presently exist in a natural, relatively undisturbed state. Untapped potential resources in the area include coal, agricultural lands (including potential grazing areas), commercial grade timber, and settlement lands. There is also potential for increasing the already considerable moose production in the area through habitat enhancement techniques. Among resources presently used are oil and gas, fish and wildlife, and recreation along the Talachulitna and other rivers in mountainous areas. There is a limited amount of placer mining in several streams in the area and recreational/seasonal settlement around Judd, Coal Creek, Hiline and other fly-in lakes. With the prospects of coal development just across the Beluga River to the west, as well as potential for connection to the road system through this unit from Beluga to points east, this area faces a strong likelihood of substantial change over the upcoming years.

2. Boundaries

The boundaries of this management unit follow the Beluga River on the southwest and continue north along the foothills of the Alaska Range north to the Skwentna River. The northeastern boundary follows the one-thousand foot elevation contour passing just north of Beluga Mountain and Mt. Susitna. The Susitna River and Cook Inlet serve as the southeastern boundary. Major geograpic features in this upland area include Hiline, Judd and Trinity Lakes; the Talachulitna River; Beluga Mountain; and Mt. Susitna.

3. Land Ownership

Over 90% of land within this unit is owned by the State of Alaska. Also owning land in the area are the Matanuska-Susitna Borough, CIRI, and private individuals. The Matanuska-Susitna Borough owns seven parcels of land within the area totaling approximately 17,000 acres. These are located adjacent to a number of lakes with high recreation value, along the Beluga River south of Beluga Lake, and on the forested, well drained terraces above Susitna Game Flats. CIRI owns approximately 115,000 acres in the southwest portion of the management unit. Private land holdings occur primarily in the areas of recent state land sales (see management unit map), adjacent to the numerous lakes, and along the southern flanks of Mt. Susitna and Little Mt. Susitna. A portion of the Susitna Flats State Game Refuge is located in the southern part of the area.

4. Access

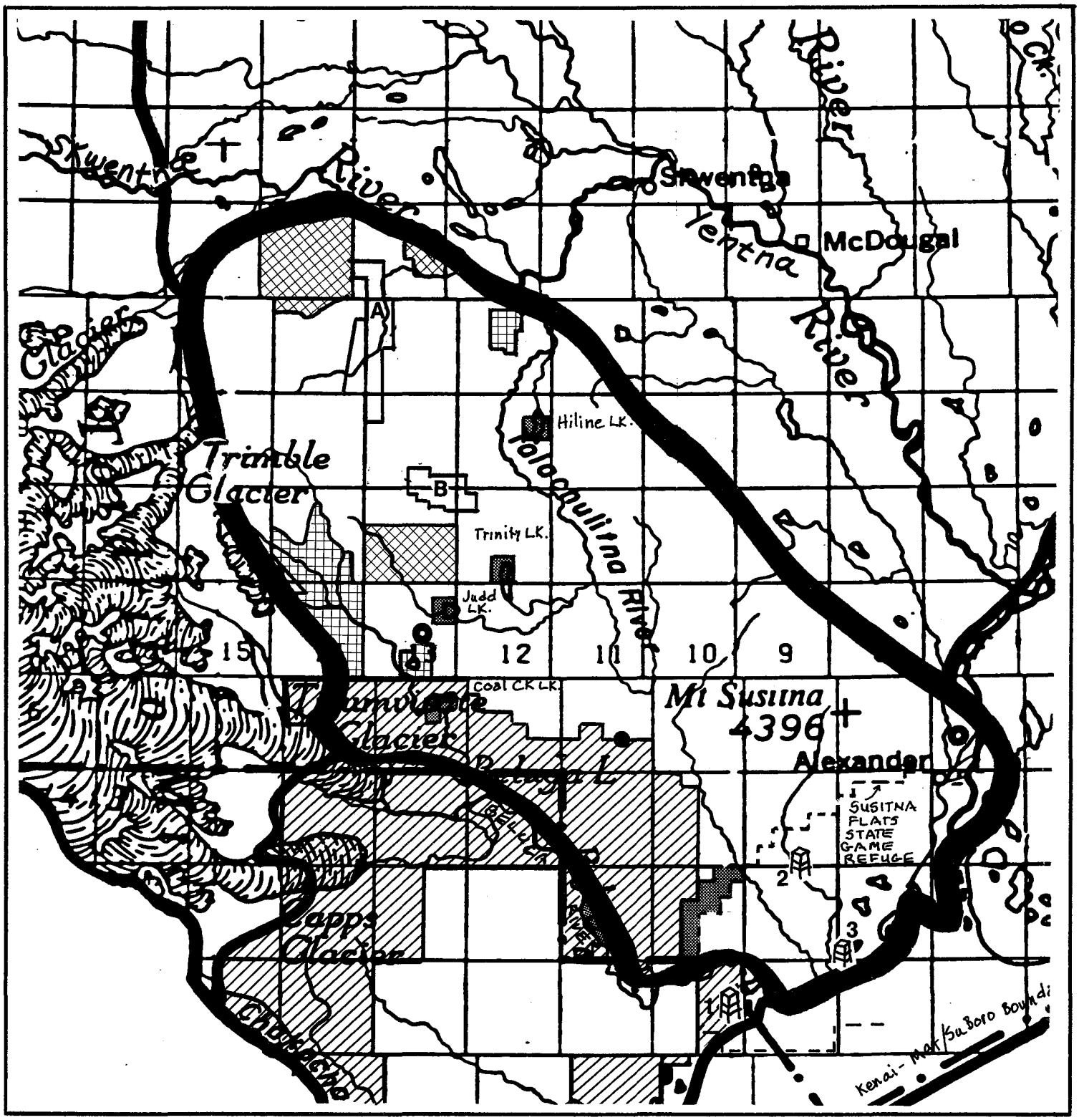
Except for a winter ice road which crosses the Susitna River and extends across the unit to the Beluga Power Plant (located three miles southwest of the mouth of Beluga River), there are no roads or major trails leading into the Mt. Susitna Management Unit from the east. There is, however, a four-season gravel road running from the airstrip near the power plant in the Beluga unit across the Beluga and Theodore Rivers to the edge of Lewis River. This road was built as part of the exploration and development of oil and gas in the region.

Five privately owned landing strips provide primary access to the management unit: three in the Susitna Game Flats, one southwest of Mt. Susitna, and one at Alder Creek (See Map 13, Chapter III). There are also several lakes in the area used for float plane landings, notably, Hiline, Trinity, Judd, Coal Creeks, and Stump Lake.

There are two transportation corridors which have been proposed as long-term possibilities within this management unit: 1) a road or rail extension from the rail belt east of the Susitna River; and 2) a route to transport coal out of the Canyon Creek lease area located in the northern part of the management unit. The road or rail extension from east of the Susitna River into the Mt. Susitna Management Unit would probably originate at the Parks Highway and/or Alaska Railroad, and travel westward across the Susitna River to Alexander, and south through the lower half of the Mt. Susitna Management Unit. The second possibility includes development of a road or rail corridor from the Canyon Creek coal lease area east to the existing railbelt, or south to a potential port site at Beluga.

5. Existing Uses

This management unit supports very few developed uses. Hunting, fishing, trapping, and other recreation-related uses are the primary activities in the area, each of which is described below.



MT. SUSITNA MANAGEMENT UNIT

GENERALIZED LAND OWNERSHIP

- STATE (includes selected land)
- MATANUSKA-SUSITNA BOROUGH
- NATIVE CORPORATION (other private land discussed in text)

LAND SALES

- or ● EXISTING RESIDENTIAL
- or ◉ PROPOSED RESIDENTIAL

OTHER

A **COAL LEASES**

A. Mobil Oil
B. Meadowlark Farms, Inc.

OIL AND GAS FIELDS

1. Beluga River (gas-producing)
2. Lewis River (gas-shut-in)
3. Ivan River (gas-shut-in)

Scale - 1:500,000

This management unit is one of the better big game hunting areas in the study area. At least six registered big game guides have established exclusive guide districts encompassing some part of the management unit. Guided and non-guided hunts take place along the rivers and lakes accessible by float plane and boat. Mt. Susitna and Mt. Beluga are major big game trophy areas.

The Talachulitna River is one of the most highly regarded recreational rivers in Alaska. It is used extensively for rafting and salmon and trout fishing. The Alexander River, another popular rafting and fishing stream, flows through the southeastern portion of the management unit. The Lewis and Theodore Rivers, also clearwater streams, receive a fair amount of fishing activity. Susitna Flats State Game Refuge, the most heavily used waterfowl hunting area in the state, extends into this management unit from the coast. A number of duck hunting cabins and landing sites exist within this area.

A fair number of cabins are located around fly-in lakes in the upland portions of the management unit and in the far north section along the Skwentna River, primarily as a result of recent state land sales. The majority of these are used seasonally for recreation, particularly during hunting and fishing seasons. As shown on the management unit map, four state land sales have taken place in the area. Five additional state land sales are planned during the next two years.

No commercial agriculture or forestry currently occurs in the mangement unit. However, over 140,000 acres along the Talachulitna River and near Mt. Susitna have been proposed for future timber sales. One area in the southeast portion of the unit, totalling approximately 25,000 acres, is scheduled for sale in the next five years. The remaining areas will be put up for sale beginning 1992.

Numerous placer mining claims are located along the Theodore and Lewis Rivers, along Wolverine Creek which drains north into Alexander Creek, and along several tributaries to the Talachulitna (Friday and Saturday Creeks area). Several small-scale operators are currently working these claims. The coastal area (within the Susitna Flats State Game Refuge) is experiencing extensive exploration and development of oil and gas reserves. Further drilling may occur as a result of the recent state lease sale no. 33 shown on Map 11, Chapter III. Additional exploration should follow proposed state lease sales no. 40 and 49.

6. Resource Base -- Potential Uses

A diversity of ecological types occurs in this management unit, from coastal mud flats to alpine tundra, from mature well-drained forests to black spruce bogs. Potential land uses are equally diverse. They include crop cultivation and grazing; forestry; existing fish and wildlife production, habitat enhancement techniques to increase moose production, and related recreational uses;

settlement; coal, oil and gas development; and extraction of other subsurface resources.

Approximately 32,000 acres (5% of this unit) are suitable for cultivation. Roughly 13,000 acres lie between Theodore and Lewis Rivers, an additional 10,000 acres surround Dinglishna Hill, and the remaining acreage is located on the eastern flanks of Mt. Susitna adjacent to Wolverine Creek.

About 90% of the potential agriculture soils occur on moraine hills and terraces, and consist of well drained silt loams. The remaining 10% occupy nearly level flood plains along the Susitna River by Dinglishna Hill. Generally these soils are layered silty and sandy sediments over gravely sand, and are of poorer quality than the surrounding agricultural soils.

Approximately 100,000 acres of marginal agricultural soils support natural vegetation that is suitable for domestic livestock grazing. Extensive areas of Bluejoint Reedgrass and various forbs begin just north of Beluga Mountain and stretch south along the management unit border to Mt. Susitna. These grasslands are located next to thousands of acres of cultivable soils which could be used as headquarter sites for possible grazing operations.

Relative to much of the study area the climatic conditions in this management unit are favorable for agriculture. The growing season is 105 days, and the average annual precipitation ranges between 27 and 28 inches.

Lowland portions of this unit are capable of producing high quality stands of timber. High forestry values are generally concentrated in eastern and southern portions of this unit at the headwaters of the Talachulitna River. Hardwood and mixed stands exist along the lower regions of the Talachulitna River. Timber stands are most abundant on the east side of the river and southwest of Beluga Mountain. On the west side of the river are numerous wetlands and mountainous terrain generally supporting lower quality stands, although some areas of high quality hardwoods/white spruce are found.

The quantity and diversity of habitat in this area support large numbers of big game and other fish and wildlife species. Moose densities in this unit are second only to those in the Sunflower Basin Management Unit. The total moose population is estimated to be as high as 5,500 animals. Habitat enhancement techniques such as manipulation of vegetation could increase moose production four-fold or more in these prime areas. The best lands for habitat enhancement are between the Theodore and Lewis rivers near Dinglishna Hills, on the flanks of Mt. Susitna and Beluga mountain, near Wolverine Creek, along Moraine Hills and Terraces and in river floodplains.

Other important big game species which are abundant in the Mt. Susitna and Mt. Beluga areas include brown and black bear, wolf,

and wolverine. When deep winter snows accumulate, moose migrate to important winter habitat in the spruce, shrub, and riparian plant communities along major streams and rivers (Alexander, Sucker, and Canyon Creeks, and the Susitna, Skwentna, Lewis, Theodore, and Talachulitna Rivers). These streams are also important in producing salmon for sport and commercial fishing. Black bears commonly den in spruce thickets along all the rivers and their tributaries. Brown bear are abundant and tend to den in the higher elevations on well-drained south-facing slopes in open forests and grassy areas.

The most important recreational resource areas in this management unit -- the Talachulitna River and Alexander Creek -- already support a high level of boating, fishing and other recreational uses. Most of the other waterbodies -- both lakes and streams -- have good recreational potential or are already used for recreational pursuits such as fishing, boating, and hiking. Besides water-related activities, there are excellent opportunities for hiking and cross-country skiing in the alpine country near Mt. Susitna, Little Mt. Susitna, and north toward Beluga Mountain. The State Division of Parks also places very high value for hiking, camping and fishing on the Dickason Mountain, Contact Canyon and Thursday Creek areas west of the confluence of the Talachulitna and Skwentna rivers.

Large tracts of land with physical capability to support settlement are located on the terraces above the Susitna Flats State Game Refuge and in the adjacent area near Dinglishna Hill. Another relatively large area capable of supporting settlement lies in the northern portion of the management unit along the Talachulitna River. Together these two areas constitute about 200,000 gross acres, or 25% of the management unit. Many areas at higher elevations also have moderate physical capability for settlement.

Subsurface resource potential in the area includes coal, oil and gas, and metallic minerals. In the Canyon and Contact Creek areas (in the northern portion of the management unit), a substantial deposit of coal has been rated by DGGS as having high potential for development. Most of this coal deposit is leased to Mobil Oil. A smaller deposit of coal, also considered to have high potential for development, is located just south of the Mobil lease. This coal deposit is leased to Meadowlark Farms, Inc. There has been little or no exploration activity at these sites, nor are there plans for exploration or development in the near future. (See management unit map for lease locations.)

The southern portion of the management unit is part of the Cook Inlet sedimentary basin which has proven gas reserves of 48 billion standard cubic feet (Alaska Oil and Gas Conservation Commission 1980 Statistical Report). The two onshore gas fields containing these reserves, Ivan River and Lewis River, are not presently in production.

This management unit has produced moderate amounts of gold and other metallic minerals in several streams originating in the Mt. Susitna and Dickason Mountain areas. Despite fairly extensive exploration in the last 60 to 80 years, the area could yield substantial precious mineral finds in the future.

7. Management Issues

This unit is presently remote and undeveloped. Most management issues outlined below will become topical only as the area becomes subject to more development pressure. The event most likely to lead to development within this unit would be extraction of coal resources in the adjacent Beluga area. Even greater land use demands would result if Beluga coal development were to lead to the construction of a road through the Mt. Susitna Management Unit from the east.

- Potential Conflicts Between Existing Hunting, Fishing, and Other Recreational Uses and Potential Developed Uses

  The most basic issue in this management unit is a determination of the best use of lands that currently are undeveloped and support fish and wildlife but have potential to support agriculture, grazing, settlement, and other developed uses. Resolution of this issue will require weighing the relative importance of these alternative uses with consideration of the regional abundance or scarcity of lands that can provide fish, game, agricultural products, timber and other valued public and private goods.

  The large amount of land with physical capability for grazing suggests that conflicts between grazing and habitat protection will be a particular issue. Many of the upland areas on the south-facing slopes of Mt. Susitna and Mt. Beluga are highly capable to support grazing, and also provide excellent summer habitat for moose and bear. If access makes grazing possible in these areas, a number of wildlife-grazing conflicts could develop. Potential conflicts include predator-livestock problems, wildlife-livestock competition for forage species, introduction of disease, and disruption of fish and wildlife habitats (such as destruction of riparian habitat and increased erosion).

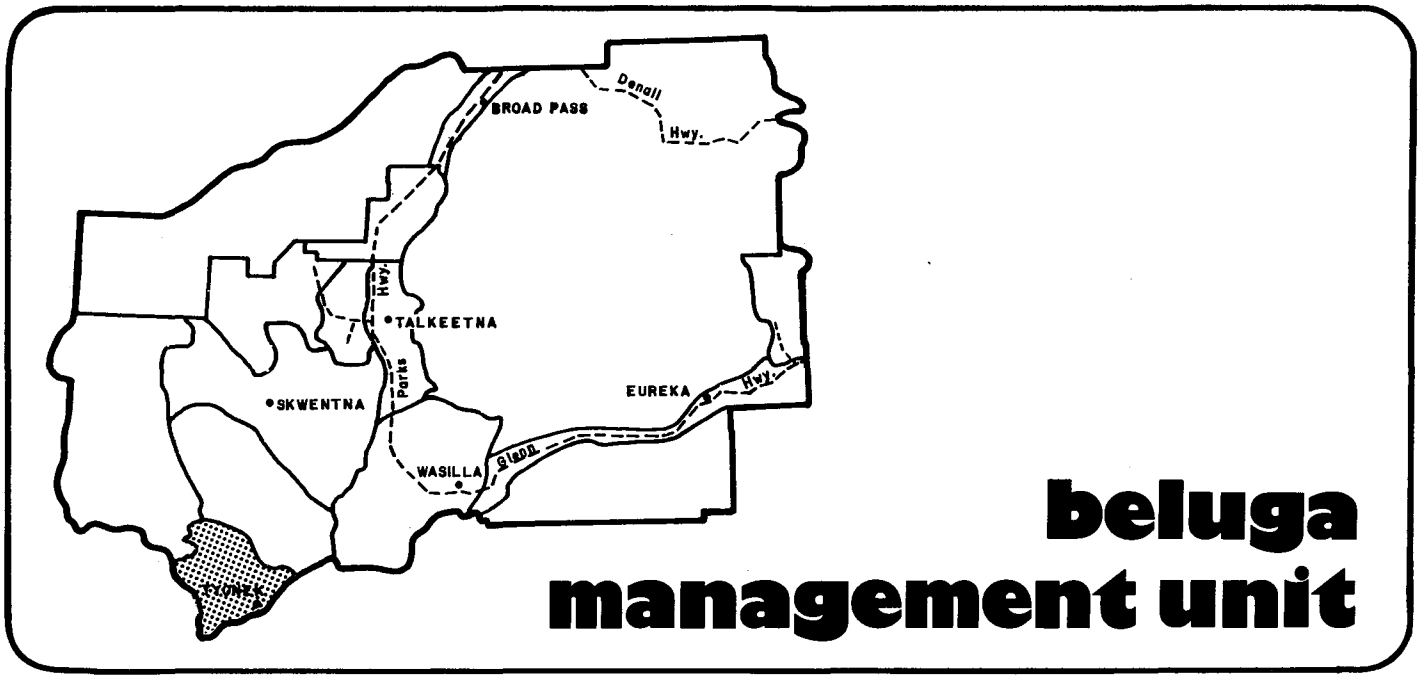
- Competing Land Uses on Lands With Capability for Developed Uses

  North of the Susitna Flats State Game Refuge, south-facing, well-drained, gentle slopes between the Susitna and Beluga Rivers have potential to support agriculture, forestry, intensive recreation, settlement, and other developed land uses as well as increased production of big game through habitat enhancement techniques. Not all of these uses are compatible -- sustained yield timber management and cultivation of crops cannot simultaneously occur on the same piece of

land; the sale of land for agriculture or residential purposes can limit the opportunity for hunting and other recreational uses. As is the case with decisions regarding developed versus undeveloped land uses, decisions will need to be made regarding the optimum use of these lands.

- Coal Development

The existing Mobil Oil coal lease in the northern portion of the management unit spans three drainages and surrounding land of particularly high value for future recreational uses. Development of this area or of other areas with coal potential in the region raises issues typically associated with large scale strip mining: effects on air and water quality, impacts on aquatic and terrestrial habitat and also a range of secondary impacts associated with major development activities in presently remote areas.



beluga management unit

1. Overview

The Beluga Management Unit faces more near and long term development opportunities, and correspondingly, more difficult management decisions, than any comparably-sized region within the study area. By the year 2000 the area could conceivably be a highly developed coal mining and export center. On the other hand it is plausible the region could retain its present remote, largely undeveloped character. At present, the region is home to the native community of Tyonek -- a group that continues to depend on the region's rich reserves of salmon, moose and other food sources for their mix of subsistence and cash economy lifestyle; at the same time, the area is the scene of a large timber sale and export chipping operation with an equally large sale scheduled to begin in 1983. The unit also is the location of substantial oil and gas production. Even more importantly, the area possesses enormous coal reserves. These coal reserves are presently the subject of multi-million dollar feasibility and pre-permit application environmental studies which could lead to coal export by as early as 1987.

Future decisions regarding these varied uses will need to tie planned and existing uses into an integrated, workable whole. The ultimate land use pattern in the area must incorporate the land use, transportation, and resource needs of both the local population and people throughout the state.

2. Boundaries

The Beluga Management Unit is bounded on the north and east by the Beluga river and lake system, on the south by Cook Inlet, and on the west by the Chakachatna River and the edge of the Alaska Range (approximately the 1500' contour). The management unit contains approximately 415,000 acres.

3. Land Ownership

Land ownership in this management unit is roughly split between the State of Alaska and the Cook Inlet Native Regional and Village Corporations (see management unit map). Additionally, there are approximately 8,500 acres owned by the Kenai Peninsula Borough and a number of isolated parcels, primarily along the coast, which are owned by private individuals.

Cook Inlet Region, Incorporated (CIRI) owns a large block of land along the north half of the management unit. The parcel totals approximately 300,000 acres, half of which is in this unit and half of which lies in the Matanuska-Susitna Borough in the Mt. Susitna Management Unit to the north. CIRI also owns a parcel of approximately 2500 developable acres along the beginning of the Nikolai escarpment in the southern portion of the management unit.

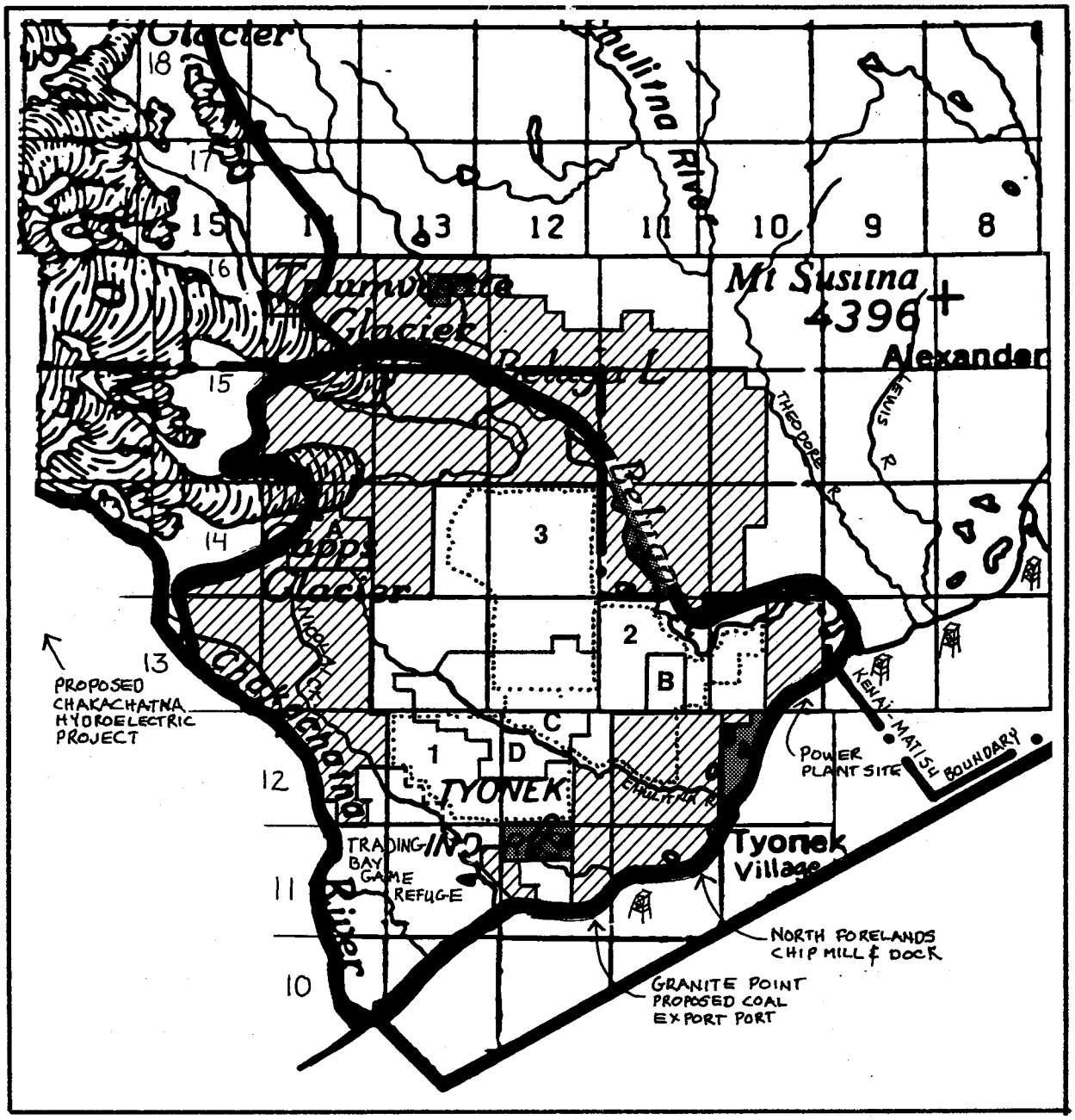
Tyonek Native Corporation (TNC), which represents the Tyonek Village Corporation, is the surface owner of land that was originally set aside as the Moquawkie Indian Reservation, totaling over 34,550 acres. TNC title to an additional 10,240 acres adjacent to their existing entitlement is pending outcome of litigation between TNC and the State of Alaska. (TNC has also selected an additional 70,000 acres of land in the Matanuska-Susitna Borough along the Upper Susitna River.) CIRI holds subsurface title to all lands held by the village corporation.

The boundary line dividing the Kenai Peninsula Borough from the Matanuska-Susitna Borough roughly follows the path of the Beluga River -- placing nearly all the Beluga Management Unit within the Kenai Peninsula Borough. There are two parcels of Kenai Borough land within this management unit: an 8-section (5120 acre) parcel including most of Congabuna Lake and an adjacent lake, and an approximately 3,300-acre parcel on the coast between the outlets of the Chuitna and Beluga rivers. The borough has also selected 5120 acres of state land just north of Congahbuna Lake.

The remainder of the management unit is in state ownership. This includes a portion of the Trading Bay State Game Refuge which begins at Nikolai Creek and extends southwards approximately 30 miles.

4. Access

Although there is no year-round land access into the Beluga Management Unit, there is an extensive road system confined within the unit (see Map 13, Chapter III to see locations of the larger of these roads). The largest network of roads leads from logging areas to the dock and chip mill operation at the North Forelands. In addition to logging roads, there is a smaller road system for local traffic within the Tyonek Reservation. On the coast just north of the TNC land there are roads connecting an airstrip, the gas-fired power plant that serves Anchorage, and several oil and gas wells and drilling sites.



BELUGA MANAGEMENT UNIT

GENERALIZED LAND OWNERSHIP

STATE (includes selected lands)

BOROUGH (Mat-Su and Kenai Peninsula)

NATIVE CORP. (other private land discussed in text)

EXISTING AND PROPOSED STATE TIMBER SALES

TYONEK 1, 2 and 3

OTHER

A — COAL LEASES

A. Capps Lease - Placer Amex (CIRI)
B. Three Mile - Placer Amex
C. Lone Ridge - Diamond - Chulitna
D. Center Ridge - Placer Amex

OIL/GAS FIELDS

(approximate locations, see Mt. Susitna mgt. unit for additional discussion)

Scale - 1:500,000

Regular scheduled air taxi service runs from Anchorage to Tyonek with stops at Beluga and the Kodiak Lumber mill site. There are also several air strips near the power station, near Tyonek, and west of Granite Point. There is currently a barge site north of Tyonek, and a timber loading dock at the North Forelands. A large scale dock and coal processing and storage facility is proposed at Granite Point to accommodate proposed coal exports sales.

Two potential transportation corridors have been discussed affecting this area: one is a coal transport system from the Beluga coal fields to a potential deep water port at Granite Point; the second is a road or rail extension from east of the Susitna River leading into the unit. The Department of Natural Resources is presently working with the coal operators on proposed rights-of-way for coal transport from mine site to Granite Point.

A proposed road or rail route from east of the Susitna River into the Beluga Management Unit would probably originate at the Parks Highway and/or Alaska Railroad, and travel westward across the Susitna River to Alexander, south into Beluga, and then perhaps further west along the Chakachatna River. The economic viability of Beluga coal development is based on its close proximity to a deep water port site at Granite Point or on the Tyonek reservation. Consequently, there is little chance that an expensive rail line between Beluga and the more distant deep water ports of Pt. MacKenzie or Anchorage will be built to export coal. Road access into this unit from across the Big Susitna River is a more plausible possibility. The high cost of such a road suggests, however, that it is unlikely to occur in the near future.

5. Existing Uses*

There are a variety of developed uses occurring within this management unit: settlement, forestry, power generation, and exploration and development of oil and gas. Existing, less intensive uses include hunting and fishing for subsistence and sport by local residents and people from outside the area.

Unlike other non-road accessed management units in the study area, this area has a substantial year-round population. The village of Tyonek has a population of 239 people (U.S. Census Bureau of 1980), up just slightly from the 1970 population. Tyonek Village, which has existed in its existing and on a nearby site for at least several hundred years, is located on the coast of Cook Inlet, approximately one mile south of the mouth of the Chuitna River. The village has phone, power and water service, an

*Darbyshire and Associates, with Northwest Cartography, under contract to the Alaska Department of Community & Regional Affairs, recently completed a community profile for the village of Tyonek. Readers are referred to this publication for a more in-depth coverage of land use and socio-economic characteristics of Tyonek Village.

elementary/high school, health care facilities, an airport and other urban services. The residents of Tyonek support themselves through a combination of cash employment, gas royalties, and traditional hunting, fishing and gathering pursuits. Cash employment includes local service and local government positions, commercial fishing, and to a lesser degree, employment at the nearby timber camp.

Another unusual characteristic of this unit is the absence of state land sales. Three mile Creek subdivision, north of Tyonek, is the only state land sale that has occurred. About 30 lots, averaging one to one and a half acres in size, were offered in 1970. Today all the lots are sold and five or six faimilies live there year-round. The subdivision is served by an airstrip. There are no proposed land sales in this unit at present.

Other than Tyonek Village itself, forestry, oil and gas development, and operation of the Beluga Power Plant are the area's dominant activities. People employed in forestry-related activities and power plant operations account for the majority of the area's year-round population other than the village of Tyonek. In 1976, Kodiak Lumber Mills entered into a 8-year contract with the State of Alaska to cut 285 million board feet of white spruce, and an unspecified amount of birch and cottonwood on approximately 40,000 acres of state land south of the Chuitna River. (Note: Some of this land was later conveyed to CIRI under the Alaska Native Claims Settlement Act.) This timber sale, (officially called Westside Salvage #1, more commonly known as "Tyonek #1"), was primarily motivated by the large amount of spruce beetle infestations in the area. The sale has proceeded with approximately 3000-7000 acres being clearcut each year. Natural hardwood reforestation is being encouraged; there is limited planting of white spruce seedlings in clearcut areas.

Timber from this sale, the largest sale ever to occur in Alaska outside of Southeast, is presently being chipped at a mill south of Tyonek Village at North Forelands and shipped to Japan. The mill site has a capacity of 30 million board feet per year and includes a dock and a chip blower. The existing mill and logging operation directly employs 15-20 year-round employees, plus 50-60 seasonal employees, as well as providing related service jobs (e.g. air charters, barging of supplies, etc.)

Oil and gas exploration and development is rather extensive in this unit which contains three fields with gas reserves: Nikolai Creek, Beluga River, and Trading Bay. The Nikolai Creek gas field is not currently producing. Oil production occurs in the Granite Point and Trading Bay offshore oilfields which contain estimated oil reserves of 40 million barrels. Oil is pumped to the ARCO and Mobil production facilities located near Granite Point. A pipeline then carries the oil south to the oil tanker loading facility at Drift River.

Exploration for oil and gas is continuing in this area and in adjacent coastal mud flats to the east. Additional drilling is imminent as a result of state lease sale no. 33 (see Map 11, Chapter III). Drilling is also expected to follow proposed state lease sales No. 40 and No. 49.

A large percentage of Anchorage's electrical power provided by Chugach Electric Company is produced by the Beluga Power plant, a gas-fired turbine facility located on the coast between the village of Tyonek and the mouth of the Beluga River. Transmission lines run east from this facility to Point MacKenzie and then under Knik Arm to Anchorage. This power plant employs approximately 30 people.

Hunting, trapping, and fishing are important subsistence activities for area residents. Moose, black bear, and salmon head the list of subsistence foods. In 1981, approximately 15 moose and 2000 king salmon were taken. Other important subsistence sources of food include waterfowl and game birds, hooligan, seal, porcupine, berries, celery, and rhubarb.

The area is equally important for hunting and fishing by users from outside the management unit, primarily for moose, waterfowl, and salmon. However, limited access to most of this unit keeps overall use relatively low. Important hunting areas are those accessible via the Beluga and other rivers, fly-in lakes, and from logging roads west of Tyonek. Sport fishing occurs along the Beluga and Chuitna rivers and their tributaries, with access gained by floatplanes or wheeled-planes landing on airstrips constructed during past oil and gas exploration. In 1979 an estimated 1069 angler days were spent in the Chuitna drainage to harvest 78 king salmon, 287 silvers, 55 pinks, 336 rainbow trout and 664 Dolly Varden. Moose hunters took 40 animals from the Beluga drainage and 19 from the Chuitna in 1980. Other recreational land uses include mountain climbing in the adjacent Alaska Range and rafting in the Chakachatna River.

Area residents and users from outside the management unit use this area for commerical fishing. Beach set-net sites are located along the coast from Trading Bay to Pt. MacKenzie.

6. Resource Base -- Potential Uses

The Beluga area has considerable potential for future resource development. The discussion here will begin with the resource that has recently been in the headlines -- coal -- and then move on to the other subsurface and surface resources of the area.

There are estimated to be 500 million tons of minable coal in the Beluga Coal Field (the majority of which is within the Beluga Management Unit). Two companies, Diamond-Alaska and the Beluga Coal Company (Placer Amex), are in the process of attempting to develop coal at four existing leases in the area (see management unit map). These companies hope to be exporting coal to buyers

in the Pacific Rim by approximately 1987. The companies are presently conducting required feasibility studies and environmental research. They intend to submit applications for necessary permits (surface mining, water and air quality, etc.) by the third quarter of 1983. With necessary regulatory approval, construction of docks, loading facilities, the transportation system, and work camps (or townsite) could begin in 1984-85. Mining is planned at the Capps, Lone Ridge and Center Ridge mine sites. Tentative mining plans aim at extraction of between six million and 23 million tons of coal per year (3 mine sites) for approximately 30 years. Direct employment during the startup phase of coal mining would be approximately 2,000 people; during operation the mines would employ approximately 1300 people (if mining occurs at all three sites).

Although potential is limited in much of the Beluga area due to depth of overburden or absence of coal, it is likely that if markets for Alaskan coal continue to develop and export from the existing leases proves successful other areas within the management unit will be leased for coal mining.

The above discussion focuses on the development of mines at three of the four coal leases within the management unit: the Capps lease on land owned by Cook Inlet Region Incorporated, and the Lone Ridge and Center Ridge leases on lands owned by the State of Alaska. An additional lease area, known as "Three Mile," is the subject of recent discussions aimed at developing a plan to export coal across the Chuitna River to the timber mill dock site at North Forelands. Placer Amex leases the Three Mile site from the State of Alaska.

Other known and potential subsurface resources within the management unit include oil and gas (previously discussed), and sand and gravel.

In addition to rich potential for coal and other subsurface resource development, the area also has high value agricultural soils, timber resources, fish and wildlife population and habitats, recreational opportunities, and settlement lands. There are approximately 33,000 acres of cultivatable soils within the Beluga Management Unit: approximately 24,000 acres of CIRI land along the Chakachatna River in the southwest portion of the unit, and 9,000 acres between the Beluga River and Three-mile Creek owned by the state and the Tyonek Native Corporation. The majority of these soils are well-drained silt loams capable of supporting barley, oats, brome, potatoes, and vegetables. The climate is slightly better for agriculture in the Beluga area than elsewhere in the study area. The growing season is about 105 days and average annual precipitation is 27 inches.

This unit contains the highest volume contiguous stand of commercial timber within the study area. Approximately 45% of the area (approximately 180,000 acres) has high value for forestry, and 5% has moderate or low values. The commercial stands of timber

consist of white spruce, birch and cottonwood. Volume ranges between 6,000 and 10,000 board feet per acre. White spruce and birch are found on the morraine hills and terraces, and cottonwood is prevalent along the stream corridors. Timber presently being cut and chipped in the area is thought by Division of Forestry personnel to be of sufficient quality for saw timber if local processing and marketing infrastructure were available.

The forestry areas also have high potential for moose production. Through habitat enhancement techniques, it is estimated that moose production could be increased more than four-fold.

Historically, much of the Beluga area provided only fair moose habitat, largely due to the lack of cultural and natural disturbances which promote early successional vegetation on which moose depend. However, recent logging dramatically modified the vegetation over large areas. Biologists from the Alaska Department of Fish & Game predict large, if not spectacular, increases in moose populations as preferred shrub browse becomes abundant in clearcut areas.

Areas that have historically provided high-quality moose habitat include the Lone Ridge area and adjacent ridges (primarily summer habitat), and the Susitna Flats and Trading Bay State Game Refuges (primarily winter habitat). Estimated moose population in the unit is 800. Substantial numbers of brown and black bear, beaver, and otter are also present.

The Beluga River system supports five species of salmon, rainbow trout, Dolly Varden, grayling, and burbot; Beluga Lake also supports lake trout. The Chuitna River supports four species of salmon, rainbow trout, and Dolly Varden. Nikolai Creek and other smaller streams support similar species.

Approximately 50% (190,000 gross acres) of the unit has high or moderate physical capability of supporting settlement. Generally those lands identified as having high agricultural and forestry values also have high settlement values. Soil, slope, drainage and vegetation conditions which render land capable of supporting forestry or agriculture frequently render it valuable for settlement.

Hydropower is an additional developable resource in this management unit. The Chakachatna River has long been viewed as a potential power generation source. The proposed Chakachatna Hydroelectric project will come under further study as power generation costs from other sources escalate.

7. Management Issues

- o Involvement of the Susitna-Beluga Land Use Plan in the Coal Development Process

  Development of the area's substantial coal reserves raises numerous land and resource management issues. The majority of issues directly related to coal development -- impacts on

air and water quality, fish and wildlife habitat, wetlands, etc. -- will not be the focus of this land use plan. These issues will be given thorough coverage in the review of permits required for mining, as well as through the environmental impact statement process.*

The land use plan will address certain issues related to coal development; these fall into two general categories: location of land uses related to coal development, and secondary impacts of coal development on adjacent lands. Planning team activities related to these issues are outlined below.

1. Assist in the process of reviewing and approving locations for major land use activities directly related to coal mining These include a townsite or workcamp, transportation system (including port, rail and road), power generation facilities, material sites, and coal storage/processing areas. The planning team's primary responsibility will be to encourage locations for coal related activities that will have minimum adverse impacts on or will meet needs of existing or potential uses in the area. For example, the planning team will encourage development of multiple use transportation corridors to serve the needs of coal mining and forestry, recreation and settlement.

2. Management of Public Lands Within the Regions Surrounding Proposed Coal Development Coal development will bring a year-round population of 2000-4000 into this presently remote management unit. This will result in a significant increase in the demand for the use of land and resources in the surrounding area. The planning team will work toward design of an area-wide land use pattern which accommodates these needs.

o Discussion of Land and Resource Management Issues

Specific management issues related to coal as well as other management issues are outlined below.

a. Transportation System: Roads, airstrips, and a dock for chip exports were previously built in the area to meet the transportation needs of forestry, oil and gas exploration and development, and power generation. In the future, coal mining as well as planned timber sales will result in substantial additional transportation development. Overall transportation planning is needed to produce an integrated transportation system that will serve transportation needs related to both planned and potential uses in the area.

*Further details on the division of federal, state and local government responsibilities related to development of Beluga coal are described in Appendix 3.

The possibility of road and/or rail connection between the Beluga Management Unit and the railbelt area merits consideration. Portions of a potential road link to the Parks Highway area are already complete. These include bridges across the Beluga and Theodore Rivers, and roads between Granite Point and Tyonek and between the power plant and the Lewis River. Funding for a bridge across the Little Susitna River, the first link in the road, is presently being sought by the Matanuska-Susitna Borough.

b. Port Site: Feasibility of coal export is based on proximity to a deep water port site. This also may be true of forestry, agricultural or other resources that may be developed in the area. There are essentially only two deep port water sites in the region -- one at Granite Point (state owned) and the other at North Forelands (TNC owned). Planning is needed to evaluate the feasibility of multiple uses of the state-owned Granite Point port site.

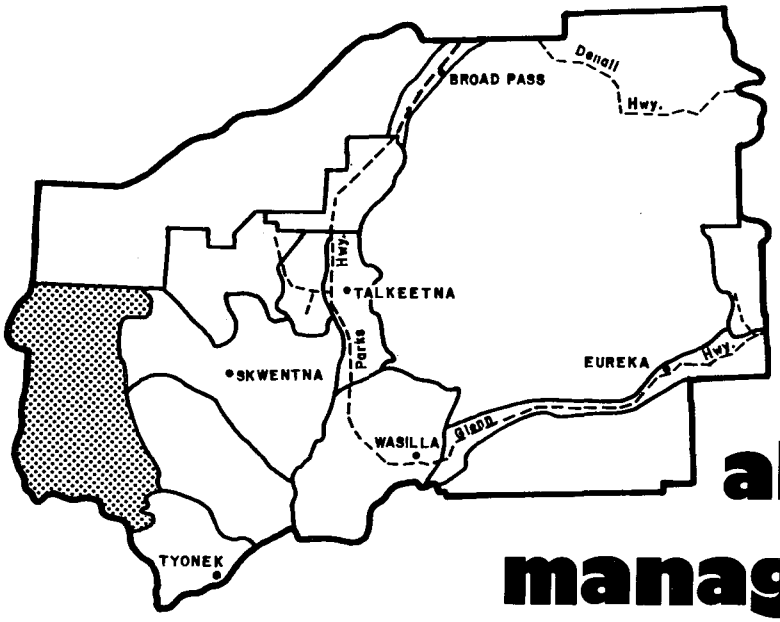
c. Impacts on the Lifestyle of Tyonek Natives: Development of coal and other resources will result in large population growth and significant environmental change. Management of state lands adjacent to resource development areas -- especially with respect to land sales and road construction -- provides an important mechanism for affecting the impacts of these changes on the existing residents.

d. Environmental Impacts, Reforestation Plans Associated With Tyonek II Timber Sales, Other Future Timber Sales.

e. Management of Big Game: In Southcentral Alaska, timber sales generally result in a substantial increase in moose browse because preferred browse species, such as willow, birch, aspen, etc., rapidly revegetate clearcut areas. Recent timber harvests in this unit have created conditions favorable for rapid expansion of local moose populations. As populations increase, increased access for hunting would both benefit hunters and help keep moose populations in balance with the long-term carrying capacity of available habitat. Also essential in maintaining big game species (black and brown bear as well as moose) is protection of migration routes between seasonal habitat areas.

f. Management of River and Stream Habitats: Development of coal and other resources could have significant impacts on stream habitats. It will be important to minimize adverse impacts of development on stream quality (particularly in Beluga River, Chuitna River, and Nikolai Creek) in view of the contribution of these streams to the Cook Inlet commercial fishery and sport fishing opportunities.

g. Study Area Boundaries: Trading Bay State Game Refuge will be at least indirectly impacted by the proposed development of the area's coal reserves. The majority of this large refuge is outside the boundaries of the Susitna-Beluga land use plan. However, the Department of Fish and Game, working with the Department of Natural Resources, may wish to prepare a management plan for this area concurrent with the Matanuska-Susitna-Beluga plan.



alaska range management unit

1. Overview

This unit is extremely remote, mountainous and partially glaciated. It is expected that this area will remain essentially undeveloped and roadless for years to come. Resource values include mining, fish and wildlife, and recreation.

2. Boundaries

This westernmost unit in the study area is bounded by Denali National Park and Preserve to the north, the Kenai Peninsula Borough and Chakachatna River to the south, the Matanuska-Susitna Borough boundary to the west, and the 1000 foot contour to the east. The unit encompasses approximately 60 townships, or 1,382,400 acres.

3. Land Ownership

All land within this unit is either selected or owned by the State of Alaska (see management unit map). There are several small parcels in private ownership located in the Rainy Pass area.

4. Access

Access to the area is limited to the Iditarod Trail, several smaller local trails, several privately owned landing strips, and boat access via the Skwentna River. As shown on the management unit map, the Iditarod Trail follows the Skwentna River to Shirley Lake and then heads northwest through Rainy Pass. Two of the privately owned landing strips are located at Puntilla Lake near Rainy Pass; one provides float plane access and the other is a ground strip.

There are no immediate plans to increase access. The Department of Transportation/Public Facilities has, however, developed a long-term conceptual scheme for providing access across the Susitna River through Rainy Pass into McGrath. Additionally, if the coal lease north of the Skwentna River in the adjoining Susitna Lowlands Management Unit is ever developed (see management unit map), a spur road or rail line may be built to provide access to this lease. The possibility of these routes being funded and developed within the next 20 years appears at this time to be remote.

5. Existing Uses

Mining, commercial guiding for big game, trapping, non-guided hunting and other recreational activities are the primary uses within this management unit. Most mining activity occurs in the northern half where there are several active placer claims.

Although the area lacks road access, this mountainous unit supports a variety of recreational uses. The Skwentna River is used by boaters who motor upstream from the Susitna and Yentna Rivers. The Iditarod Trail, a National Historic Trail which crosses this unit, is used annually for the Iditarod sleddog race. "Flightseeing" (usually originating in Anchorage) is a popular way to view the mountainous and glaciated country; Mt. Spurr (just outside the southwest border of the study area), is a semi-active volcano and a favorite attraction. Skiing and hiking occur to a minor extent.

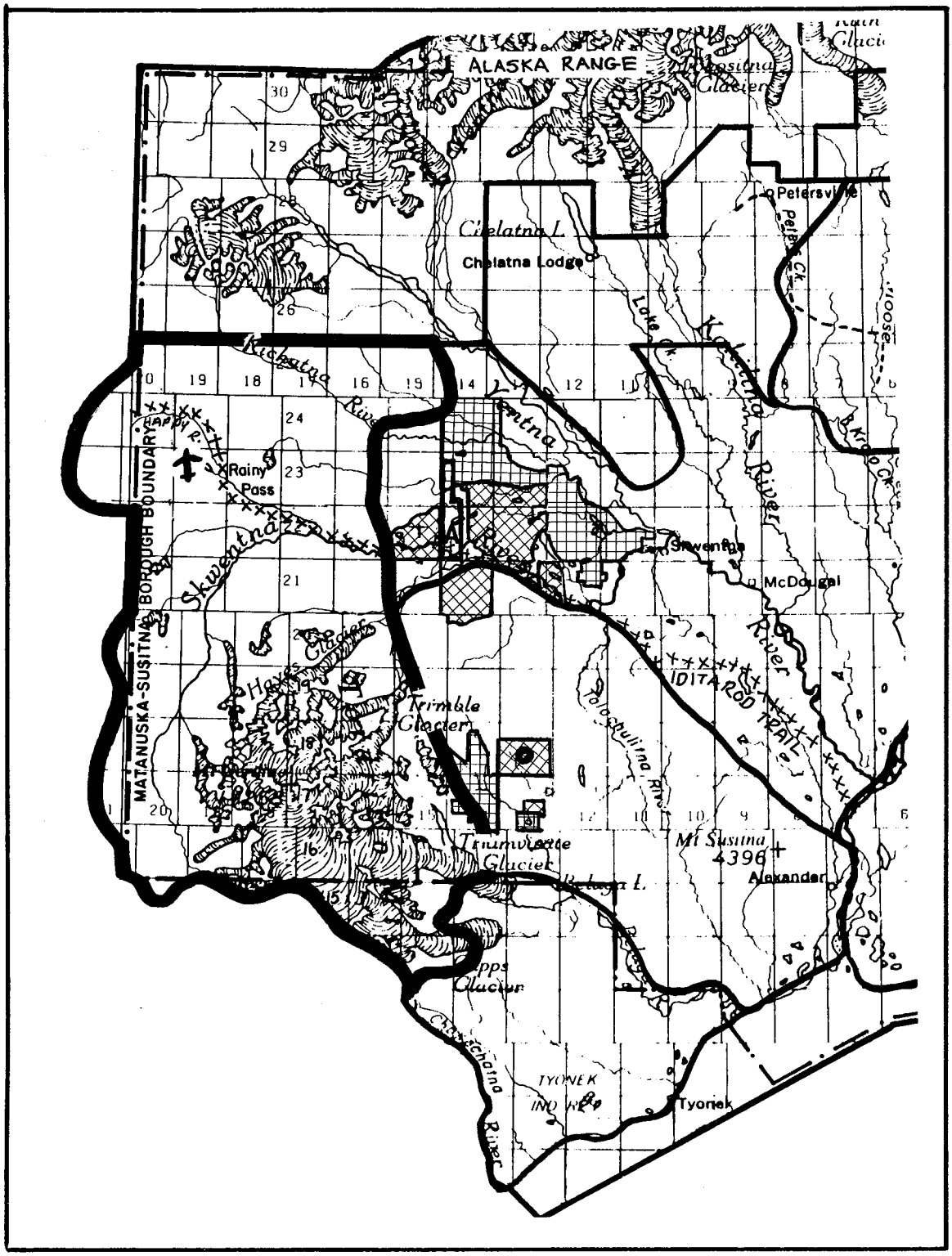
Hunting is a popular sport in this unit. Eleven registered guides lead hunting parties in search of sheep, moose, caribou, black and brown bear as well as sport fish. Moose are hunted along the Skwentna and Happy Rivers; sheep are hunted west and north of the Skwentna River (see Map 6, Chapter III). The Skwentna, Kichatna and Happy Rivers plus their tributaries are major anadromous streams which produce salmon for the Cook Inlet fisheries. In addition to commercial guiding and hunting activities, residents of the area also hunt and trap. Extensive commercial trapping occurs along the rivers.

Settlement in the unit is primarily confined to the Happy River and Skwentna River drainages with a small nucleus of people at Rainy Pass, a popular hunting lodge.

6. Resource Base -- Potential Uses

Potential uses in this unit are for the most part an extension of existing uses, i.e., recreation, fish and wildlife use, and mineral extraction. An increase in these activities is contingent to a large degree upon provision of access. Other resources not previously discussed include forestry and settlement.

Known mineralization in this unit is in the Hayes River District and is dominantly placer gold. This management unit has good potential for hardrock metallic minerals -- molybdenum, copper,



ALASKA RANGE MANAGEMENT UNIT

LAND OWNERSHIP

STATE (includes selected land)

LAND SALES

or ● EXISTING RESIDENTIAL

or ● PROPOSED RESIDENTIAL

ACCESS

AIRSTRIP

TRAILS

OTHER

A — COAL LEASE
A. Canyon/Contract Creeks Lease (Mobil)

Scale - 1:1,000,000

silver, etc., in addition to gold. Several molybdenum claims are located near the Trimble Glacier. Anaconda and Resource Associates of Alaska will begin investigation of the mineral potential in this unit this summer.

Forestry resources are very limited as most of this unit is above timberline. Existing stands occur along stream drainages and are capable of supplying personal use material to support local use.

Approximately 24,000 gross acres (roughly one township) of these remote lands are capable of supporting low density settlement. These lands occur around the confluence of the Skwentna and Happy Rivers and may conflict with some existing mining claims.

7. Management Issues

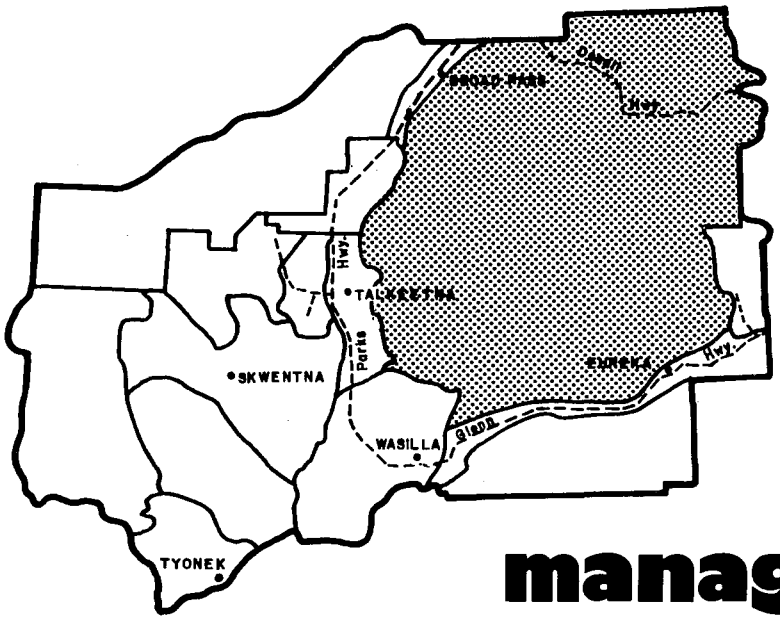
Remoteness and lack of development pressures minimize the number of issues in this unit.

° Future Land Sales by the State

The continuing demand for state land sales may lead to proposals for additional land sales in this unit; land disposals here raise the following issues: disruption of presently remote, relatively undisturbed lands having high fish and wildlife and recreation values; alteration in water quality, and long-term fiscal impacts to the state and borough associated with serving scattered low density development.

° Habitat/Mining Conflict

If the mineral potential of the area is to be realized, environmental impacts such as water quality degradation and degradation of fish and wildlife resources could occur.



talkeetna mountains management unit

1. Overview

The Talkeetna Mountains Management Unit is a vast region -- equal in size to almost half the total study area. Although most of this rugged area does not offer the potential for agriculture, forestry, or settlement found elsewhere in the study area, these shortcomings are well balanced by the region's rich fish and wildlife, recreational and mineral resources. This area is one of the premier big game hunting areas in the world, offering moose, Dall sheep, bear, and caribou. The majority of the range of the 20,000 animals of the Nelchina caribou herd is within this management unit. The area's many lakes and rivers including the Susitna, Montana, Kashwitna, Sheep, Chunilna, Honolulu, Talkeetna, Tyone and MacLaren, offer excellent fishing for salmon, lake and rainbow trout, grayling and other species. The management unit offers literally millions of acres of alpine country for hunting, hiking, camping, skiing and climbing.

These same alpine areas have a rich and to a large degree unexplored potential for mineral development. Several areas -- Hatcher Pass, Nelchina and Valdez Creek -- are presently active producers of gold and other precious minerals.

Another major potential resource development in this unit is hydropower. Two major hydroelectric proposals at Devil's Canyon and Watana on the Susitna River are presently the subject of feasibility studies. The legislature recently decided to apply to the Federal Energy and Regulatory Commission (FERC) for a license to build the dam, a process which could take two to three years. If the license is granted, the state will then need to make a final decision whether to build the dams.

2. Boundaries

The boundaries of the Talkeetna Mountains Management Unit parallel the Parks Highway on the west and the Glenn Highway on the south; in both instances the boundaries generally separate lowlands from mountainous areas. The northern and eastern boundaries for the most part follow the edge of the Matanuska-Susitna Borough. This management unit contains approximately 6 million acres.

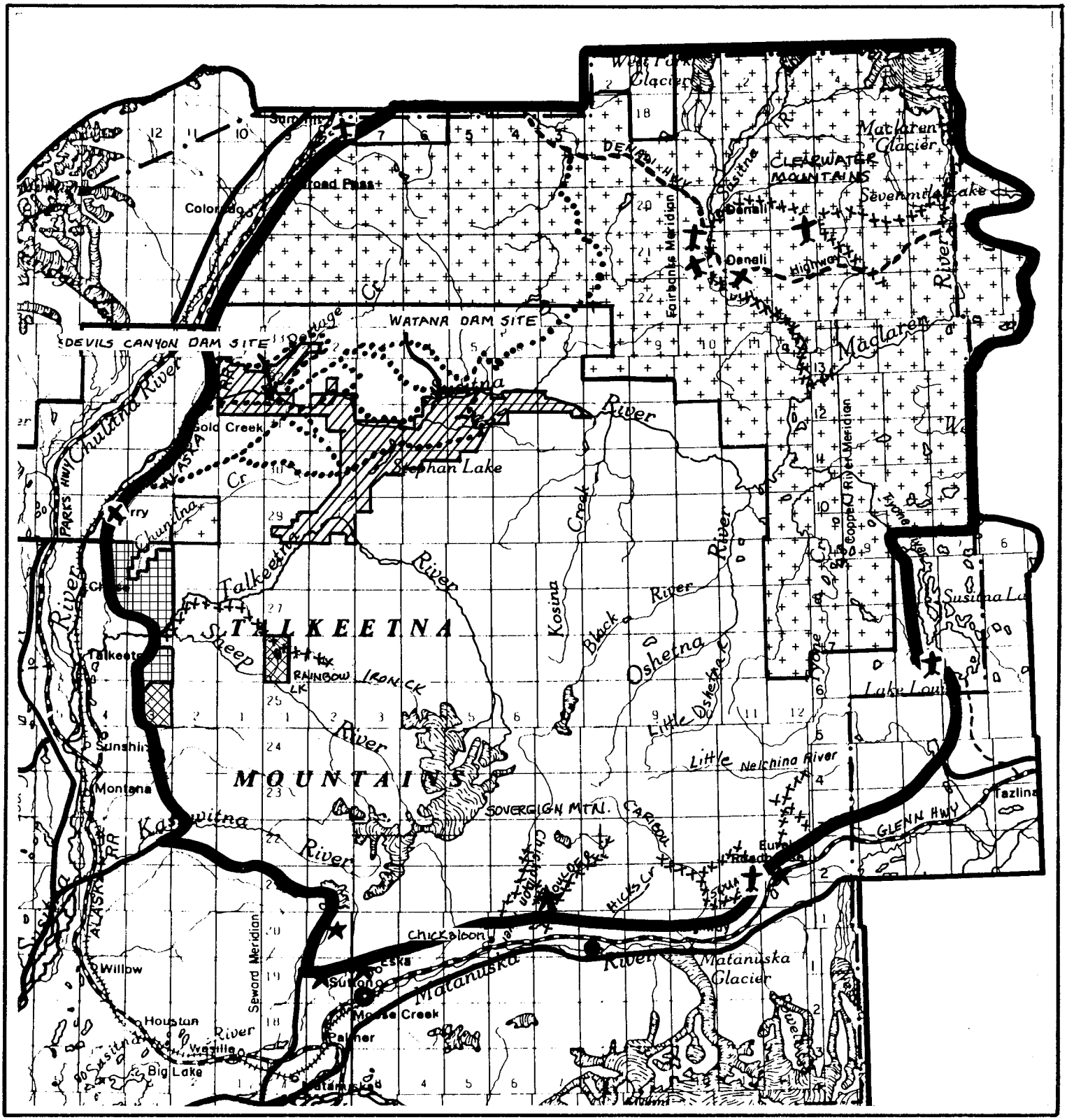
3. Land Ownership

A large majority of land in the Talkeetna Mountain Management Unit is publicly owned; the northern half of the unit is primarily in federal ownership, the southern half is held by the State of Alaska (see management unit map). The state has selected approximately 80 townships (1,840,000 acres) of federal land, the majority of which will likely be conveyed to the state. There are approximately 206,000 acres of Native selections in the area. These selections, made by Eklutna, Tyonek, and Chickaloon Village Corporations, primarily are located in the Susitna River-Stephan Lake area (surrounding the area that would be inundated by the proposed Susitna dams). Chickaloon also has selected land on the King River drainage (north of the Matanuska River) which is the site of a major limestone deposit. The lands selected by Native regional and village corporations are likely to be formally conveyed within the next five years.

In addition to the private land held by Native corporations there are also numerous scattered parcels held by private individuals. These holdings are generally divided into two types of holdings: state open-to-entry sites adjacent to many of the area's fly-in lakes (primarily used for recreational purposes), and patented mining claims located in the Nelchina area, the Clearwater Mountains and various other mining areas.

4. Access

This management unit is generally bounded on three sides by highways -- the Glenn on the south, Parks on the west and Denali on the north. The huge area enclosed by these roads (roughly 6 million acres) is some of the more remote country in Southcentral Alaska. The Glenn Highway, traveling roughly east to west, provides access to several small communities on the southern Talkeetna foothills. The Parks Highway runs north to south near the unit's western border and provides access to the western Talkeetna foothills. The Denali Highway enters the study area near the MacLaren River, and continues in a northwesternly direction, eventually joining the Parks Highway north of the Matanuska-Susitna-Beluga study area. The highway provides access to the upper Susitna River as well as many miles of alpine back country. Other means of access to and within this management unit include landing strips, fly-in lakes, navigable rivers and trails which branch off existing roads.



TALKEETNA MOUNTAINS MANAGEMENT UNIT

Scale - 1:1,000,000

GENERALIZED LAND OWNERSHIP

- STATE (includes selected lands)
- NATIVE CORP. (other private land discussed in text)
- FEDERAL

LAND SALES

- or ● EXISTING RESIDENTIAL
- or ⊙ PROPOSED RESIDENTIAL

ACCESS

- ××××× TRAILS
- ..... SUSITNA HYDROELECTRIC PROJECT - PROPOSED TRANSPORTATION CORRIDORS
- AIRSTRIPS

OTHER

- STATE GRAZING LEASES

A number of trails tie into the Denali Highway at four locations and run southward between the Clearwater Mountains and the Susitna River, and easterly through the Clearwater Mountains to the MacLaren River (see management unit map). There are four publicly owned, and several privately owned, landing strips within this vicinity.

Several additional trails within the management unit branch off the Glenn Highway. These trails provide access to the Chickaloon, Hicks Lake, Granite Creek, Chitna Pass and Nelchina areas as well as to numerous mining claims, remote cabins and several landing strips. The remaining major trail in the area extends from the Parks Highway Management Unit eastward along the Talkeetna River for approximately 35 miles and provides access to several mining areas and remote cabins. The Susitna Basin Land Use/Recreation Atlas, published by the Alaska Department of Natural Resources, provides further information on trails within the Talkeetna Management Unit.

The Matanuska-Susitna Borough is requesting funding from the legislature this year for improvements on the Valdez Creek Road. This road branches off the Denali Highway near the old mining town of Denali and runs northward for approximately five miles before continuing into a winter trail system. The Valdez Creek Road and the connected trail system provide access to about 15 small mining operations in addition to the Denali Mining Company in the Valdez Mining District.

Transportation corridors to provide access to the potential hydroelectric dam sites on the Susitna River are currently being considered. The two general options being investigated are access from the Denali Highway to the north and from the Parks Highway and rail corridors to the west. At the time this document went to press the Alaska Power Authority had recently announced selection of their preferred alternative: a route from the Parks Highway near Hurricane, through Chulitna Pass to the Devil's Canyon site, and from there along the north side of the Susitna River to the Watana site. Final decisions on the construction of the dams and the appropriate transportation route await further consideration by the public and the legislature.

5. Existing Uses

Mining, and hunting and fishing and other types of recreational uses are the dominant activities in this large, relatively remote area. Limited settlement associated with mining or recreational activities is scattered throughout the unit. In the southern foothills of the Talkeetnas there is a small amount of domestic livestock grazing.

Historically, mining has been the dominant use of this area and continues to be important. Gold is the primary mineral mined accompanied to a much lesser degree by molybdenum, copper, silver, zinc, tungsten and other metallic minerals.

Mining can be roughly divided into a sequence of three activities: exploration, development and production. The most important areas of present gold and other metallic mineral production and development are the Hatcher Pass area (this area is actually within the Willow Sub-basin which was addressed in a previous land use plan), the Nelchina Mining District north of the upper reaches of the Matanuska Valley, and the Valdez Mining District in the Clearwater Mountains (on federal land) in the northeastern corner of the Borough.

Except for lode mining at the Independence Mine in Hatcher Pass, mining in the management unit is nearly all placer mining, ranging from numerous small scale single operators to the larger well-funded operations employing up to 25 people (the Denali Mining Company operation in the Valdez district). In addition to these areas of relatively concentrated activity, there are many other claims -- some of which are being actively developed -- scattered in virtually all areas of the management unit. (See Map 12, Chapter III.)

Even by the high standards prevalent in Alaska, this management unit is a big game hunter's paradise. Approximately 100 Dall sheep, 475 moose, 500 caribou, 35 black bear and 35 brown bear are harvested annually from this management unit. Approximately 500-700 man-days are expended annually for sheep hunting, and 2200, 2500, and 150 man-days are expended annually hunting for moose, caribou, and bear (black and brown) respectively. Thousands of man days are expended annually hunting ptarmigan, grouse, and hare, and trapping furbearers.

This area is one of the most important commercial guiding and public hunting areas in the Matanuska-Susitna-Beluga area. More than 28 registered commercial big game guides and 84 assistant guides have exclusive hunting districts within this unit.

Waterfowl hunting is popular on the hundreds of small lakes in the southeast portion of the unit (near Lake Louise) and also in Monahan Flats in the central portion of the unit, just north of Denali Highway.

The streams that drain the western slopes of this unit provide habitats favorable for salmon. Lakes and streams in the northern and eastern portions of this unit provide excellent fishing for grayling, burbot, lake trout and whitefish. Total fishing effort in the management unit is estimated to be 50,000 man-days per year.

In addition to sport fishing and hunting, the unit offers numerous other recreational opportunities, particularly those associated with river use. The upper Talkeetna River offers some of the finest rafting and whitewater kayaking in Alaska; the lower reaches provide excellent canoeing. The Susitna River offers additional opportunities for very high-quality boating. Devil's Canyon is considered by many to be the "Mt. Everest" of whitewater boating in North America. The upper Susitna River is calmer and

provides good canoeing. The Little Nelchina, Nelchina, and Tazlina Rivers (which extend into the Glenn Highway unit) form a continuous float system readily accessible from both ends; this system provides high-quality three or four day boating trips.

The region as a whole provides excellent opportunities for hiking, climbing, skiing, ORV and snowmobile travel, wildlife viewing, and wilderness camping. The Denali Highway provides a prime scenic corridor through a favored berrypicking area. Private operators offer guided horseback wilderness tours of the Jack River Valley (southeast from Cantwell), and along Brushkana Creek (just south of the Denali Highway and Monahan Flats). Other popular horseback trips are up the Chickaloon River, Boulder Creek and Chitna Pass. Cross-country skiing is a popular activity throughout the region, but especially along the Glenn Highway near Eureka and Gunsite Mountain where the season is somewhat extended. Other highway-related activities include hiking to Slide Mountain to hunt fossils,* and to the old Nelchina area to explore historical mining sites. The small lakes and ponds in the southeastern part of the unit offer good early winter iceskating.

Relatively few other uses exist within this unit. Miners reside in Nelchina and Clearwater Mountain/Valdez Creek mining districts during the mining season. A number of scattered cabins are located on fly-in lakes such as Rainbow, Stephan, Clarence and Fog lakes. With few exceptions, these are used only on a seasonal basis for guiding, hunting, and trapping. The area also includes a number of hunting and fishing lodges.

State land sales have occurred primarily on the western fringes of this management unit in the Talkeetna area. To date, two state sales have been held, and two more are proposed. As shown on the map, one of the proposed sales, Rainbow Lake, is in the center of the unit.

Agricultural activity within the unit is limited to domestic livestock grazing and personal use farming. There are currently two state grazing leases totalling approximately 19,000 acres within the unit (within the Willow Sub-basin area), and another three which border the Talkeetna Mountains and Glenn Highway Management Units. The remaining agricultural, as well as forestry, activity is limited to personal use by seasonal and less common year-round residents of the area.

6. Resource Base -- Potential Uses

Potential uses within the Talkeetna Mountains Management Unit are largely extensions of existing uses: mineral development, use of fish and wildlife, various recreational uses and low density settlement. Two important untapped resources within the area are

*Note: Fossils are state property.

grazing and the hydropower potential of the Susitna River. There is also potential for increased wildlife production through habitat enhancement. Forestry offers minor potential for development. The following brief discussion presents more information on each of the resources, beginning with the much discussed Susitna hydro project.

Two large hydroelectric dams have been proposed for sites on the upper Susitna River, one in the Devil's Canyon area, one upstream at Watana (see map). If constructed, these dams would have the capacity to provide 1620 MW of electric power to the railbelt area. Construction would occur over a ten-year period employing 3,500 persons at construction peak.*

The Alaska Power Authority (APA) is charged with the responsibility of investigating the feasibility of constructing these dams. APA has commissioned a series of studies on various aspects of the project, including impacts on fish and wildlife, socio-economic impacts, engineering feasibility and alternatives to the dams. The work culminated in April this year, with a final recommendation to construct the two dams. Construction is tentatively scheduled to begin in 1985 (Watana) and 1996 (Devil's Canyon), with the first power becoming available in 1993. The legislature has decided to apply to the Federal Energy and Regulatory Commission for a license to build the dams.

This land use plan will not be used as a tool to evaluate the appropriateness of these possible hydroelectric projects. The state legislature has established the framework within which that decision will be made. However, construction of the dams would greatly influence land uses on state, borough and private lands in the region.

The Talkeetna Mountains offer a wealth of mineral potential. As was noted in the previous section, some mineral resources have been discovered and developed, while exploration continues in the lesser known portions of the management unit. Hardrock exploration is underway up the Kashwitna River, Sheep Creek, Sheep River, and around the Portage Creek area. In addition, headwaters of active gold placer streams such as Caribou Creek (Nelchina Mining District) are being explored.

Based on mineral terrain information (discussed in Chapter III), this unit is thought to contain significant metallic mineral resources (see Map 12). Many porphory copper and molybdenum prospects are known. In addition, some copper deposits have been identified. Other potential minerals include silver, lead, tungsten, tin, zinc, and bismuth and of course, gold.

*A gradual increase in the work force would lead to an average employment of about 1450 persons between 1985 and 2000.

As noted earlier, this unit supports a great abundance and variety of fish and wildlife species including more than half of the Matanuska-Susitna-Beluga area's estimated 30,000 moose, over 4,000 Dall sheep, 20,000 caribou, 1000 brown bear, and hundreds of black bear and wolves. Furbearing animals, including mink, wolverine, marten, lynx, muskrat, and beaver, as well as ptarmigan and grouse, also are abundant in this unit.

Moose habitat extends from the highways bordering this unit to alpine shrub vegetation at 4500' elevations. Nearly all vegetated stream and river valleys are important to moose and bear populations. Shrub and forest communities containing abundant birch, willow, aspen, cottonwood, low shrubs, and herbaceous species provide prime moose feeding habitat (see Map 6, Chapter 3, fish and wildlife section for more information). The Department of Fish and Game estimates that moose production in this unit can be increased three, four or more times through habitat enhancement techniques, particularly on the western, eastern and southern slopes of the Talkeetna Mountains.

Most of the Nelchina caribou herd use this management unit for springtime calving. Calving occurs in four specific areas. The main herd, constituting more than 90% of the caribou in the unit, calve from Clarence Lake south to the headwaters of the little Nelchina River (see Map 7, Chaper Three). Satellite herds also calve at the headwaters of the Talkeetna River, the Chunilna River, and the Jack River Mountains. The mountainous areas are heavily utilized as summer range. Before breeding, caribou move en masse from higher summering elevations to foothills and shrub or timber lowlands where rutting takes place; most of the hunting and harvest occurs at this time. Most of the caribou winter in the foothill and lowland areas.

Streams and rivers located on the west and southern slopes of the Talkeetna Mountains Management Unit are important for salmon production (spawning and rearing), and supply both local sport fisheries and upper Cook Inlet commercial fisheries. Most streams and lakes located in the northern and eastern portion of the unit produce grayling, lake trout, burbot, and whitefish, and constitute important harvest areas.

Recreational potential within this management unit is too varied and large to quickly catalogue. The preceding section provided an overview of the existing recreational uses; in addition to current uses, the management unit has largely untapped potential for high quality boating, hiking, skiing (cross-country and downhill), and snowmobiling, as well as fish and wildlife related recreation opportunities.

There are at least 70,000 acres of range lands within this unit. About 42,000 acres lie along the western management unit border adjacent to the grazing area in the Parks Highway Management Unit. An additional 18,000 acres of rangeland are located in the southwestern foothills just east of the Horn Mountains, and about 10,000 acres along Boulder Creek. More detailed study of the

southern foothills is expected to reveal additional acres of grasslands and potential areas for domestic livestock grazing.

Although the majority of this unit is above timberline, major drainages (Susitna, Talkeetna and MacLaren Rivers) may have commercial timber harvest potential if access is developed in conjunction with other resource developments such as the Susitna Hydroproject.

A relatively small percentage of the Talkeetna Mountains Management Unit has the physical capability to support settlement. There are, however, several substantial blocks of land with moderate physical ability to support settlement: 1) immediately west of Lake Louise and Lake Susitna, 2) in the Sanona/Tyonek Creek area west of the Black River, 3) along the southern edge of unnamed hills south of the MacLaren River, and 4) following the Denali Highway. These areas are located generally in the eastern Nelchina portion of the unit where terrain is more rolling than rugged. (Specific locations of these areas can be seen on on Map 10 in Chapter 3.) In addition, the land in Stephan Lake area south of the Susitna River has moderate physical capability for settlement. The total gross acreage of these areas owned or selected by the state is approximately 250,000 acres. It is likely, however, that less than 50% of this acreage actually has the slope, soil and other characteristics that favor construction. With the exception of land along the Denali Highway the majority of these areas are very remote. These areas also present problems such as permafrost, lack of firewood and houselogs, and potential water quality problems (due to generally shallow water tables).

The southern and western portions of this management unit also offer land with physical potential to support settlement. These areas are quite different from the lands previously discussed -- being composed primarily of the various river valleys that carve into the western and southern portions of the Talkeetna Mountains. These areas, while not as large in total acreage as those described above, have better near term potential for road access and perhaps offer more attractive landscapes. Examples include land adjacent to the Talkeetna River, Sheep River, Iron Creek, Kashwitna River, and Indian River.

7. Management Issues

o Susitna Hyropower Development

As was mentioned previously, this land use planning effort will not be used as a tool to address issues related to the decision on Susitna dam. The questions to be resolved regarding the dam are receiving extensive and detailed consideration by a great variety of government and public entities, and the Susitna-Beluga planning team is unlikely to make substantial additions to the work presently underway. The planning effort will, however, consider the land and resource demands likely to be associated with the proposed

development (if a decision is made to build the dam) and incorporate this analysis into the final plan's land use designations and land policies.

Specific issues to be considered include the design of an appropriate transportation system and the need to accommodate short and long term population growth that would accompany construction of these proposed dams.

o Settlement

The most difficult management issue in the Talkeetna Mountains Management Unit is a determination of the appropriate type, amount, and location of state land sales. The area presently supports almost no settlement. Several disposal-related issues (some of which overlap) are discussed below:

a. Settlement on high amenity lakes and rivers: Demand for land sales on or adjacent to rivers and lakes is strong. This management unit could provide large amounts of such land, especially in river valleys along the Talkeetna, Sheep, and Kashwitna Rivers in the western portion of the unit. These same areas also have very high habitat and public-use values. Decisions will be required that consider the optimum use of these areas and the pattern and density of settlement that would protect recreational and fish and wildlife values.

b. Settlement in environmentally sensitive areas: Many of the high to moderate capability settlement lands in the eastern portion of the management unit are also important in maintaining populations of caribou, moose, bear and other wildlife species, as well as valuable for hunting and trapping. Permitting settlement while maintaining wildlife resources and public uses constitutes a difficult challenge. Additionally, disposals proposed for these areas will have to be designed to accommodate permafrost, shallow water tables, and other construction and environmental constraints.

c. Settlement associated with resource development: Mining, dam construction, and other resource developments will likely require land for short- and long-term settlement. As developments occur, settlement areas should be provided in ways which minimize the negative effects in other land uses.

d. Legislative consideration of the Nelchina Public Use Area: Important wildlife habitat, public hunting and commercial guiding areas have been identified for legislative designation.

- Grazing/Fish and Wildlife Conflicts

  The introduction of domestic sheep, cattle, or other livestock in ranges used by moose, sheep, caribou, bear, wolves, etc. can result in a number of problems including: livestock-caused degradation of fish and wildlife habitats, livestock-wildlife competition for valuable forage, and disease transmission between livestock and wildlife. Grazing domestic stock in open forest or shrub tundra communities can reduce the carrying capacities and value of these habitats for moose and other species. Grazing domestic livestock in alpine areas could potentially have negative impacts on Dall sheep and caribou habitat. In bear country, livestock introductions frequently lead to bear predation on cattle, followed by extermination of or severe reduction in bear populations. Bear, moose, and other species in the Talkeetna Mountains are plentiful and highly valued; caution will be required to develop grazing resources while minimizing conflicts with fish and wildlife populations.

- Potential Impacts of Mineral Development on Fish and Wildlife and Recreational Uses

  Mineral development can significantly degrade aquatic and terrestrial habitats and lead to increased hunting pressure that can reduce species populations. Simultaneously, road construction related to mineral development can lead to the opening of otherwise inaccessible areas (e.g. Hatcher Pass) allowing increased recreational use.



chugach mountains management unit

1. Overview

This unit is comprised almost entirely of rugged mountains with little access, yet the area supports considerable recreational use, including hunting, hiking, climbing, and skiing. It also provides important habitat for sheep, bear, moose, waterfowl and small game. In addition, the area has potential for long-term mineral development. Farming occurs in the less rugged southwest and northeast portions of the unit, and a minor amount of settlement is scattered in the foothills near the Glenn Highway.

2. Boundaries

This management unit encompasses the northern flank of the Chugach Range. The area is bounded on the east and south by the Matanuska-Susitna Borough boundary, on the west by the head of Knik Arm and on the north by the Matanuska Valley and Glenn Highway. The area is comprised of approximately 45 townships, over 1,050,000 acres.

3. Land Ownership

The majority of the land in this unit (approximately 97%) is owned by the State of Alaska (including patented, tentatively approved and selected). Approximately 1% of the land is owned by the Matanuska-Susitna Borough and 2% is in private ownership. Borough and private land is concentrated exclusively in the western most portion of the management unit adjacent to the Matanuska and Knik Rivers and surrounding the community of Palmer (see management unit map). Land in this unit may be the subject of a land exchange between the state and the Eklutna Native Village Corporation. Should this exchange occur, land ownership patterns could change considerably.

4. Access

The Matanuska River acts as an effective barrier between road-accessed portions of the borough and much of the land within this management unit. Existing access into the area is primarily by air and trail. The westernmost portion of the unit is road accessible by means of the Glenn Highway and by local roads from Palmer. There is an airstrip located just west of Bodenburg Butte. Several trails run up the Knik River Valley and along Moose Creek. In addition, there is a trail that extends southeast from the Glenn Highway down to the east side of Nelchina Glacier. These trails are commonly used to reach popular moose, bear, and sheep hunting areas. Currently there are no plans to provide additional transportation routes to or within this management unit.

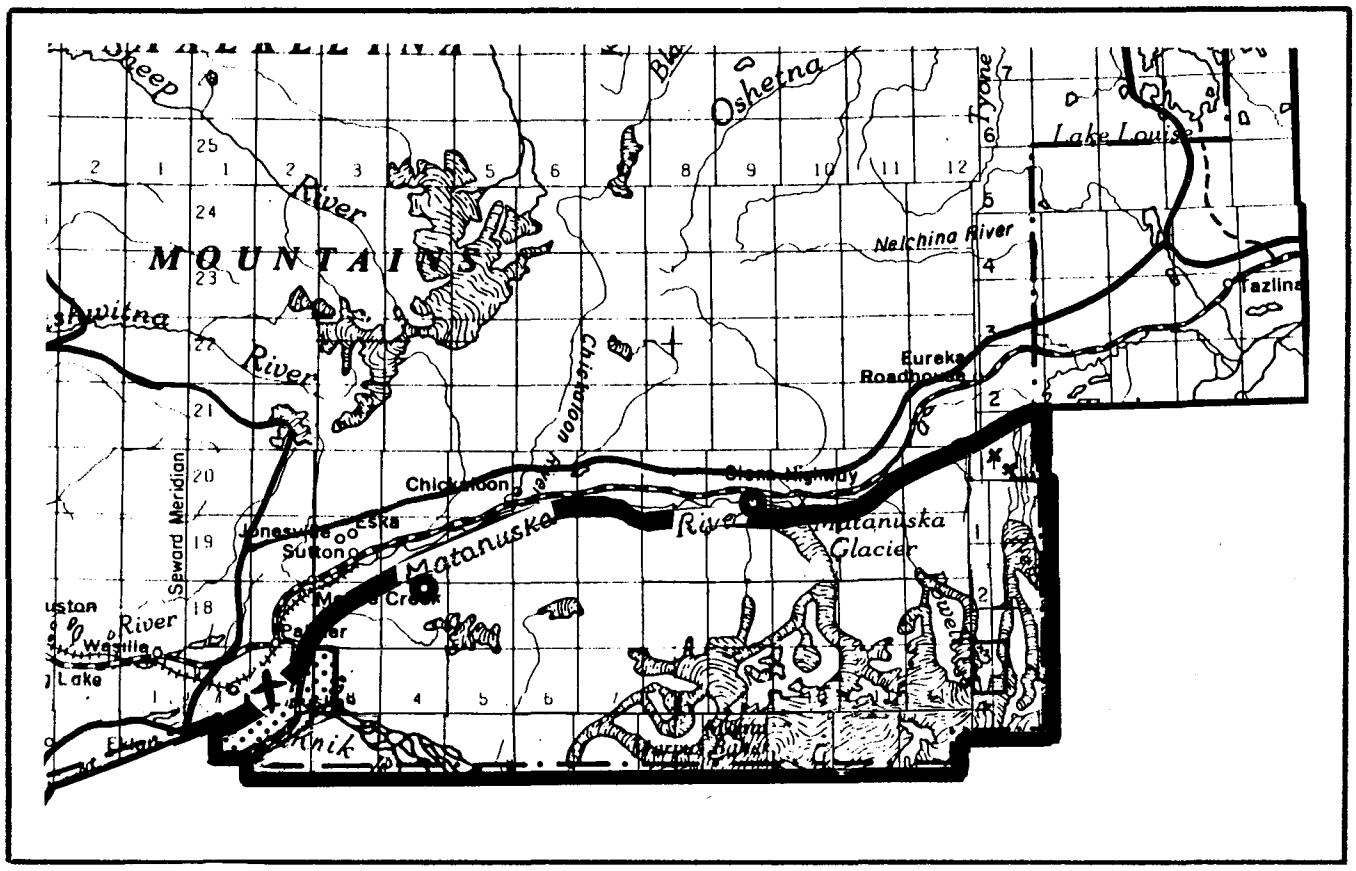
5. Existing Uses

Recreation, hunting, fishing, and exploration for subsurface resources are presently the primary uses within this management unit. Harvest of fish and wildlife is a popular activity throughout much of the area. Moose are hunted in mountain foothills and river valleys, especially near Jim Lake and Swan Lake in the Upper Knik River Valley. Between 25 and 50 moose are harvested annually in this unit. The Knik River Valley is also popular for hunting bear, waterfowl, ptarmigan, and snowshoe hare, in addition to fishing for trout and salmon. The main species hunted, however, is Dall sheep; sheep hunting occurs in generally remote alpine areas. Sheep populations in the unit estimated to be between 3500 and 4000 animals, 100-150 of which are harvested annually, often with assistance from one of the 12 registered big game guides in this region. Brown and black bear hunters also often use guiding services. In addition to hunters, trappers living along the Glenn Highway also use the area.

Other recreational activities occurring in the unit include mountain and glacier climbing (Mt. Marcus Baker, Pioneer Peak, and Twin Peaks are especially popular spots), "flightseeing," skiing, canoeing on lakes in the western portion of the unit (especially Jim and Swan Lakes), rafting the Matanuska River, and limited ORV use (mostly along the Knik River Valley).

Agricultural development has occurred at the base of the mountains in the southwest (the Bodenburg Butte area) and northeast portions of the management unit. The southwest area contains about 33 active farms ranging from 20 to 1300 acres: one dairy farm; nine or ten vegetable farms; and about 22 hay and grain farms. Additionally, the Matanuska-Susitna Borough has sold 200 acres of agricultural land which is expected to become productive in the next few years.

Almost half of a 32,000 acre grazing lease is located at the base of the Talkeetna Mountains foothills in the northeast portion of the management unit just south of the Glenn Highway and in the vicinity of the Nelchina River. Presently, there are no further plans for additional grazing leases in the area.



CHUGACH MOUNTAINS MANAGEMENT UNIT

GENERALIZED LAND OWNERSHIP

STATE (includes selected lands)

MIXED (land ownership is too complex to depict at this scale; ownership is at least 60% private with remainder state, borough and native)

LAND SALES

PROPOSED RESIDENTIAL

ACCESS

×××× TRAILS

AIRSTRIPS

Scale - 1:1,000,000

Forestry activity is limited to minor personal use in the western portion of the region along the Knik River drainage. Settlement is also limited to the western part of the unit, along the Knik River drainage and near Bodenburg Butte.

Current mineral activity in the management unit is limited to sand and gravel extraction along the Matanuska River and scattered placer operations along streams and benches. Claims are concentrated in the following locations: Grasshopper Valley, along Glacier Creek, Metal Creek, Friday Creek, Coal Creek (up to the headwaters), Nelchina River, and portions of Knik River. Mining activity is concentrated primarily in the eastern part of the unit, near the Nelchina River.

6. Resource Base -- Potential Uses

The Chugach Mountains management unit encompasses the northern portion of the Chugach Range and is most noted for its fish and wildlife and recreation resources. More than 90% of the unit is above timberline in mountainous and glaciated terrain. Consequently, the majority of this unit will never support more developed uses like agriculture, settlement or forestry. The major exception to this is in the western lowland portion of the unit along the Knik River Valley and in the Palmer-Bodenburg Butte area. Approximately one township (23,000 acres) in this area has high capability for settlement, and about ½ township in the northwest corner of the unit has high potential for agriculture. Forestry resources in the unit are also concentrated in the southwest corner (moderate value), in the northwest near the Glenn Highway (low value), and along river valleys (high value) such as Gravel and Glacier Creeks, the South Fork of the Matanuska River and along the west side of Nelchina River.

Mineral resources in the unit appear to be significant. The area has been targeted for an extensive resource assessment project over the next few years to gain a better understanding of the potential. The study will be done by the State Division of Geological and Geophysical Surveys. Presently known deposits include copper, chromium and nickel in the western portion and copper, zinc and gold in the eastern portion of the unit. There is very little coal or oil and gas potential within this unit. Minor amounts of coal may be found on the northern fringes of the range, south of the Matanuska River, but development potential is low, and the area is currently without access.

Fish and wildlife resources within the unit include sheep, brown and black bear, moose, furbearers and small game (wolverine, marten, lynx, wolf, fox, hare, ptarmigan, etc.), waterfowl, and fish. Moose concentrate mainly in the river valleys, particularly along the Knik River. It is estimated that with habitat enhancement techniques, the foothill and lowland portions of this unit could produce four-fold or more times the current number of moose. These lowland areas also support many small game species and waterfowl. Sheep and brown bear tend to occupy the higher elevations.

As was described in the previous section, the unit is poorly accessed, but recreational resources are abundant and well used. The vast mountainous regions support relatively large big game populations, and provide areas for hikers and mountaineers to enjoy. The lowland areas support commercial and recreational trapping, moose, waterfowl and fish, and provide opportunities for hunting and fishing and other water-related recreational activities like canoeing.

7. Management Issues

° Conflicts Between Mining and Fish and Wildlife Habitat Protection

The major issue facing this mountainous unit is the problem of impacts of future mining on recreation and fish and wildlife values. Mining, particularly placer and surface mining, can degrade water quality and damage riparian habitat. This is of special concern in the Chugach Mountains Management Unit in relation to maintenance and public use of the following species: Dall sheep, moose, mountain goat and bear (especially brown bear).

° Potential Impacts of Access

Provision of access to the area would benefit the development of mineral resources and improve opportunities for some recreational activities, but could prove detrimental to the big game guiding industry, reduce the distribution of certain species, and possibly damage habitat important during particular periods of species' life histories, for example, calving areas or overwintering areas.

° Issues affecting the road-accessible western portion of the unit near Bodenburg Butte are more appropriately discussed as part of the Glenn Highway Management Unit (see Volume 2, Chapter IV).



lake louise management unit

1. Overview

The Lake Louise Management Unit is a unique and popular residential and visitor recreation area, with an "interior" Alaska character quite different from the rest of the study area. The numerous lakes and streams throughout the unit provide many forms of recreational opportunities, as well as habitat for waterfowl and other wildlife. Much of the ground vegetation is used by moose and caribou for browse. Present land use activities consist of substantial hunting, fishing, wildlife photography, and boating, as well as seasonal/recreational settlement. Access is available via the Lake Louise Road from the Glenn Highway.

In contrast to high recreational and fish and wildlife values, the potential for commercial logging and agriculture is relatively low. This is largely attributed to past forest fires which have destroyed many of the hardwood stands and to the relatively limited, scattered amount of good agricultural soils.

Although limited placer mining occurs in the area, this unit generally is judged to have low potential for subsurface resources. Unlike most other management units in the study area, large scale agriculture, logging and mining activities are not likely to occur. Planning can enhance habitat and recreation values while providing additional opportunities for settlement.

2. Boundaries

The Lake Louise Management Unit contains approximately 270,000 acres of which 25,000 acres are comprised of Lake Louise, Susitna Lake and Tyone Lake. The management unit's northern boundary is 6 miles north of Tyone Lake, and the western border is two miles west of of Lake Louise. The southern boundary is parallel to and

slightly north of the Glenn Highway. The eastern border runs north-south approximately six miles east of Lake Louise.

3. Land Ownership

Land ownership within the Lake Louise Management Unit is primarily divided between state and federal holdings. Presently, about 65% of the land is owned or selected by the state, 30% is owned by the federal government, and the rest is in private ownership. (See management unit map.) The state is receiving priority conveyance on the lands they have selected. This includes the areas around Lake Louise, Tyone and Susitna Lakes which have been surveyed and subdivided by the federal government. When title for the surveyed lands is received by the state, some of these lands may be offered for private land sales. Almost all privately owned lands in the area are located along the shores of Lake Louise, Susitna and Tyone Lakes.

4. Access

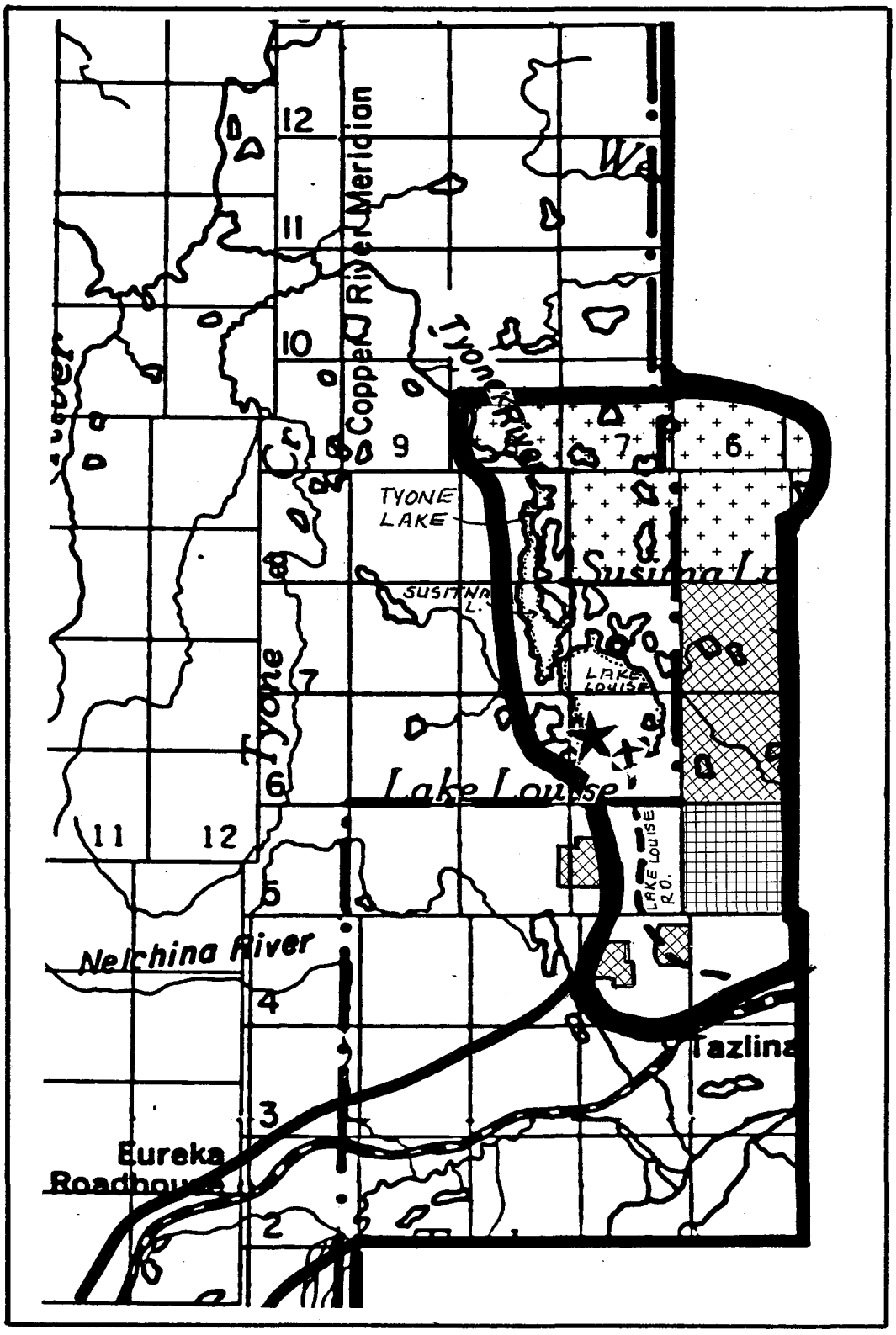
Lake Louise can be reached by the Lake Louise Road which leaves the Glenn Highway at mile 157 and travels north for 18 miles, ending at Lake Louise. Three short spur roads branch off Lake Louise Road and head east leading to several boat landing sites as well as three year-round lodges on the lake's southern shore. Additionally, there are several local roads serving a private subdivision containing 40 one acre parcels along the waterfront of Lake Louise.

In addition to road access, there is a publicly owned landing strip, and a floatplane landing site (see management unit map). The other lakes also serve as landing sites for float planes. The Upper Susitna River can be reached by boat from the Tyone River.

5. Existing Use

The primary land uses within the Lake Louise Management Unit are recreation/seasonal settlement and hunting, fishing and other recreational uses. The Lake Louise State Recreation Area, located along the eastern shore of Lake Louise, is a 90-acre site reserved exclusively for recreational uses. Camping and sanitation facilities, as well as a gravel boat ramp, are provided for public use in the recreation area.

The lakes, streams, and rolling terrain provide a wide variety of receational opportunities. Susitna Lake and Tyone River provide excellent opportunities for canoeing, as do the numerous small lakes southeast of Lake Louise. The small lakes and ponds in the area are also used for early winter ice skating. Lake trout, burbot, and grayling fishing is excellent. Approximately 11,000-12,000 angler-days are expended annually along lakes and streams in the unit. Hunting, boating, wildlife viewing, and berry picking are popular recreational activities. The area near



LAKE LOUISE MANAGEMENT UNIT

LAND OWNERSHIP

STATE (includes selected land)

FEDERAL

LAND SALES

or ● EXISTING RESIDENTIAL

or ⊙ PROPOSED RESIDENTIAL

ACCESS

---- ROADS

AIRSTRIP

OTHER

LAKE LOUISE STATE RECREATION AREA

Scale - 1:500,000

Lake Louise offers an extended season for cross-country skiing. In the warmer summer months, the region provides superior dry-climate camping. In the fall, the Lake Louise Road is a favorite berry-picking area.

The entire Nelchina Basin provides important winter habitat for caribou and moose, and thus offers good opportunities to observe and photograph these animals. The area along Lake Louise Road is excellent for hunting and observing caribou. Other common recreational uses of fish and wildlife in the area include ice fishing for burbot and char in Lake Louise, and waterfowl hunting on the many lakes in the region.

With the exception of about 30 year-round residents, existing settlement is for recreational and seasonal use. According to a local survey, there are 172 cabins in the vicinity of Lake Louise, Tyone and Susitna Lakes. About 100 are on Lake Louise, and the remaining on or near Susitna and Tyone Lakes.

Private land parcels have been obtained through various means: 1) open-to-entry stakings around the lakes; 2) 8,000 acres southeast of Lake Louise opened to remote parcel staking by the state in 1981; and 3) in 1973 a 40 acre private parcel was subdivided and sold in one-acre lots.

Lake Louise East, Mendeltna View and Small Lakes are subdivisions scheduled for sale in this area in fiscal year 1984. (See management unit map.) Loon Lake Subdivision on the west edge of the management unit, is also proposed for sale in 1984. Additionally, the small lots scattered around Lake Louise, and Susitna and Tyone Lakes which have been surveyed and subdivided by the federal government are proposed for sale in fiscal year 1983.

Present forestry activity consists of local harvest of houselogs and firewood from scattered hardwood stands on the southeast corner of the management unit, east and southeast of Lake Louise and northeast of Susitna Lake.

6. Resource Base -- Potential Uses

As indicated by existing land uses, the Lake Louise Management Unit has very high fish and wildlife and recreation values. Past fires in the area have promoted regrowth of vegetation highly suitable as moose browse. Lake Louise, Susitna Lake, and Tyone Lake provide excellent waterfowl habitat. The numerous streams, lakes, and areas of high-quality upland habitat will continue to provide the many recreational opportunities described above.

Because the unit combines good accessibility with good hunting, fishing, and other attractive opportunities, future demand for public land sales is anticipated to remain throughout the unit -- particularly along waterfronts. Although demand for settlement is high throughout the area because of recreational opportunities, the physical capability of the land for supporting settlement is

generally low, due to permafrost, high or fluctuating water tables, steepness and lack of vegetative cover.

Due to past forest fires, commercial timber management is not a viable option for the near future -- despite the land's potential capability to support commercial stands. There are however, scattered hardwood stands which have survived the fires. The principal value of these stands is for firewood and houselogs for local use.

Future development potential of commercial agriculture is also relatively low. Soils with crop potential lie in small, discontinuous parcels surrounded by wetlands, streams and less productive soils. There are approximately 11,000 acres of herbaceous vegetation in the management unit suitable for domestic livestock grazing.

The mineral and energy sources within the unit are minimal, and are not regarded as having economic development potential. There is, however, a large area east of Lake Louise believed to have coal development potential.

7. Management Issues

- o State Land Sales

  The high recreational and scenic values which make this unit attractive for settlement could be adversely affected by additional state land sales. Additional land sales may also reduce the quality of moose and caribou habitats. The appropriate amount and location of future land sales must be addressed in the planning process with particular attention given to options for maintaining recreational opportunities.

- o Physical Capability of Land for Settlement

  The soil conditions and high water table in the area may limit the amount and allowable densities of additional settlement. For example, portions of the area are underlain by permafrost, or are poorly drained with high water tables, thereby making them unsuitable for septic tanks and a potential threat to water quality. Appropriate measures must be taken to avoid causing environmental degradation and creating hazardous conditions through land sales.

- o Development of Recreational Resources

  The substantial, diverse array of recreational opportunities within this area as well as the high existing and likely future levels of recreational use may merit development of additional recreational facilities and designation of more public land to recreation purposes.

ROAD ACCESSED MANAGEMENT UNITS: PARKS HIGHWAY, GLENN HIGHWAY, WILLOW SUB-BASIN

Information on resource opportunities and land use issues in the Parks Highway, Glenn Highway and Willow Sub-basin Management Units -- the three management units in the study area with relatively good road access and the majority of the area's private lands -- is presented in Volume 2: Goal Statements, Population Projections, Issues and Resource Inventory, Regional Settlement Patterns, prepared by the Matanuska-Susitna Borough.

The information on these three units deals with resources on state, borough, and private land. These writeups follow the same format as the management unit descriptions in this report.

CHAPTER V
EXAMPLES OF LAND MANAGEMENT POLICIES

CHAPTER V

EXAMPLES OF LAND MANAGEMENT POLICIES

This chapter presents examples of land management policies from the Willow Sub-basin Land Use Plan for public discussion. The Willow Sub-basin Area Plan was prepared jointly by the State Departments of Natural Resources and Fish and Game and the Matanuska-Susitna Borough. The plan developed land use designations and policies for public lands in the Willow Sub-basin -- a million acre area including Wasilla, Big Lake, Point MacKenzie, Willow and surrounding areas (see Map 2 for boundaries).

The example land management policies presented here are intended to allow the public and interested government agencies to review the resolution of policy issues in an area adjacent to the Matanuska-Susitna-Beluga Study Area. These policies are not being proposed for adoption by the Matanuska-Susitna-Beluga Area Plan. By presenting these policies it is hoped that constructive public policy debate can begin early in the planning process. Policies that will be prepared as part of the Matanuska-Susitna-Beluga Area Plan will not necessarily be the same as those prepared for the Willow. However, the major policy issues facing the area are very similar -- settlement, timing and location of resource development, grazing, wetlands, protection of access, etc. A review of the policies developed in the Willow Sub-basin Plan should provide a useful picture of the policy issues that will arise and require resolution over the course of the Matanuska-Susitna-Beluga Plan.

I. Settlement Patterns

a. Borough and state land sales should guide year-round settlement to areas where public services, including transportation, exist or can be provided at reasonable cost, or where development of a viable economic base is probable.

b. The borough and state recognize three general categories of public land that may be sold for settlement: land in or adjacent to community centers, rural land with road access, and remote lands with no road access. General policies for sale of public lands in each of these categories are as follows:

1. Community Centers: Public land inside or adjacent to existing or planned communities (Wasilla, Willow, Point MacKenzie, Houston, and Big Lake) should be used to facilitate the development of that community. Sale of land for residential, commercial and industrial use shall be encouraged as far as consistent with local plans. Except for Public Interest Lands, state lands within community centers are high priority for disposal.

2. Rural Areas with Road Access: In these areas settlement should be designed to maintain open space and encourage

efficient, compact residential development. Land should be offered for disposal in these areas, consistent with demand.

3. Areas without Road Access: Public lands in this category are lowest priority for settlement. This policy is aimed at minimizing service costs and protecting important resource lands. However, waterfront sites and other sites with special attraction for residential use are high priority for disposal if fly-in or boat access is available. (Public access to lakes, streams and other recreation areas shall be maintained).

II. Public Access

a. Access to important public resources should be maintained or improved during land disposals. Section line easements will not be vacated unless appropriate substitute access can be located. However, the location of realistic substitute access is encouraged. The substitution can be in the form of trail easements but in cases where heavy use is expected, access should be through publicly owned corridors. Determination of the adequacy of substitute access should involve consultation with the Division of Parks and Department of Fish and Game.

III. River and Stream Buffers

a. All rivers and streams with significant recreation value should have a publicly owned wildlife habitat/public recreation buffer surrounding the watercourse. These buffers will be designed to protect water quality and quantity, riparian vegetation, associated public uses and to provide protection from erosion. The size of the buffers will be determined on a site-specific basis.

Within river and stream buffers, negative impacts on visual character, habitat value, water quality, noise screening ability, or adverse changes in access should be avoided. Therefore, land management decisions inside the buffers will require coordination and on-site review with the Alaska Department of Fish and Game and the Division of Parks.

IV. Timber Salvage on Agricultural Lands

a. All timber having high value for commercial and personal use forest products shall be salvaged on lands to be cleared for agricultural purposes. The following are examples of implementation techniques:

1. salvage of forest products is specified at the time of disposal as part of the disposal contract;

2. the agricultural rights holder is allowed to select specified areas for non-salvage (windbreaks, headquarters

site, etc.). The state or borough contracts the remainder and the agricultural rights holder is given the right of first refusal;

3. economic incentives are created for timber salvage. These incentives should, at a minimum, specify that the value of forest products on each parcel be added to the base land price;

4. the useable forest products are sold and removed before sale of the agricultural rights.

V. Grazing on State Lands

a. All grazing lands will be managed as multiple use lands to support a variety of public benefits in addition to livestock production, including the following:

1. fish and wildlife maintenance

2. water quality maintenance

3. public recreation

4. timber management

5. soil conservation

b. Grazing lands will be managed to insure sustainable forage for domestic stock and wildlife.

c. Public access across and public use of grazing lands may not be unreasonably limited by persons holding grazing leases or permits.

VI. Agricultural Development Adjacent to Wetlands

For purposes of these management guidelines, wetlands are divided into three classes: Class I, wetlands larger than 100 acres and all wetlands with a locatable stream outlet -- these are hydrologically the most important category; Class II, wetlands between 40 and 100 acres with no outlet; and Class III, wetlands less than 40 acres with no outlet. The term "woody vegetation" as used below refers to woody vegetation at least 18 inches high.

a. Class I wetlands and certain surrounding lands will remain in public ownership. These surrounding lands will include only soils of Class IV or lower agricultural capability (i.e., Class V, VI, etc.) or 100 feet back from the beginning of the woody vegetation -- whichever distance is greater. This distance should not exceed 300 feet from the beginning of the woody vegetation.

b. Class II wetlands, and certain surrounding lands will remain in public ownership. These surrounding lands will include only soils of Class IV or worse agricultural capability or 60 feet back from the woody vegetation -- whichever distance is greater. This distance should not exceed 300 feet.

c. Class III wetlands may be sold as part of the farmstead. Draining, clearing, or other modifications must conform to the applicable permit requirements (e.g. Corps of Engineers, etc.)

APPENDIX 1
TABLE OF CONTENTS, VOLUME TWO

APPENDIX 1

TABLE OF CONTENTS

Volume 2 - Planning Background Report

GOAL STATEMENTS, POPULATION PROJECTIONS,
ISSUES AND RESOURCE INVENTORY,
REGIONAL SETTLEMENT PATTERNS

Produced by: DOWL/Matanuska-Susitna Borough

I. Introduction

Detail purpose of plan
Describe timeline
Reference Volume 1
Outline remainder of study
Explain role of public

II. General Background Information

Map management units
Reference DNR data base
Present overall Borough goals and objectives
Present population projections

III. Resource Summmaries

Reference DNR resource summaries
What has been done
Purpose of summaries

IV. Resource Summaries and Land Use Issues by Management Unit
(Includes the three road-accessed units -- Parks Highway, Willow Sub-basin and Glenn Highway Management Units)

Introduction
Explanation of resource summaries and land use issues for each unit:

Brief Overview
Unit boundaries/size
Ownership
Access
Existing uses and settlement patterns
Resource base - potential uses
Land use issues

V. Regional Settlement Patterns

Present and define land use categories
Map existing and expected conditions
Explain affects of policy decisions for public lands
Focus on public facilities and services existing and expected demands

APPENDIX 2
DATA AREAS

APPENDIX 2

RESOURCE AND CULTURAL INFORMATION TO BE USED IN GUIDING LAND USE AND MANAGEMENT DECISIONS IN THE FORTHCOMING AREA PLAN

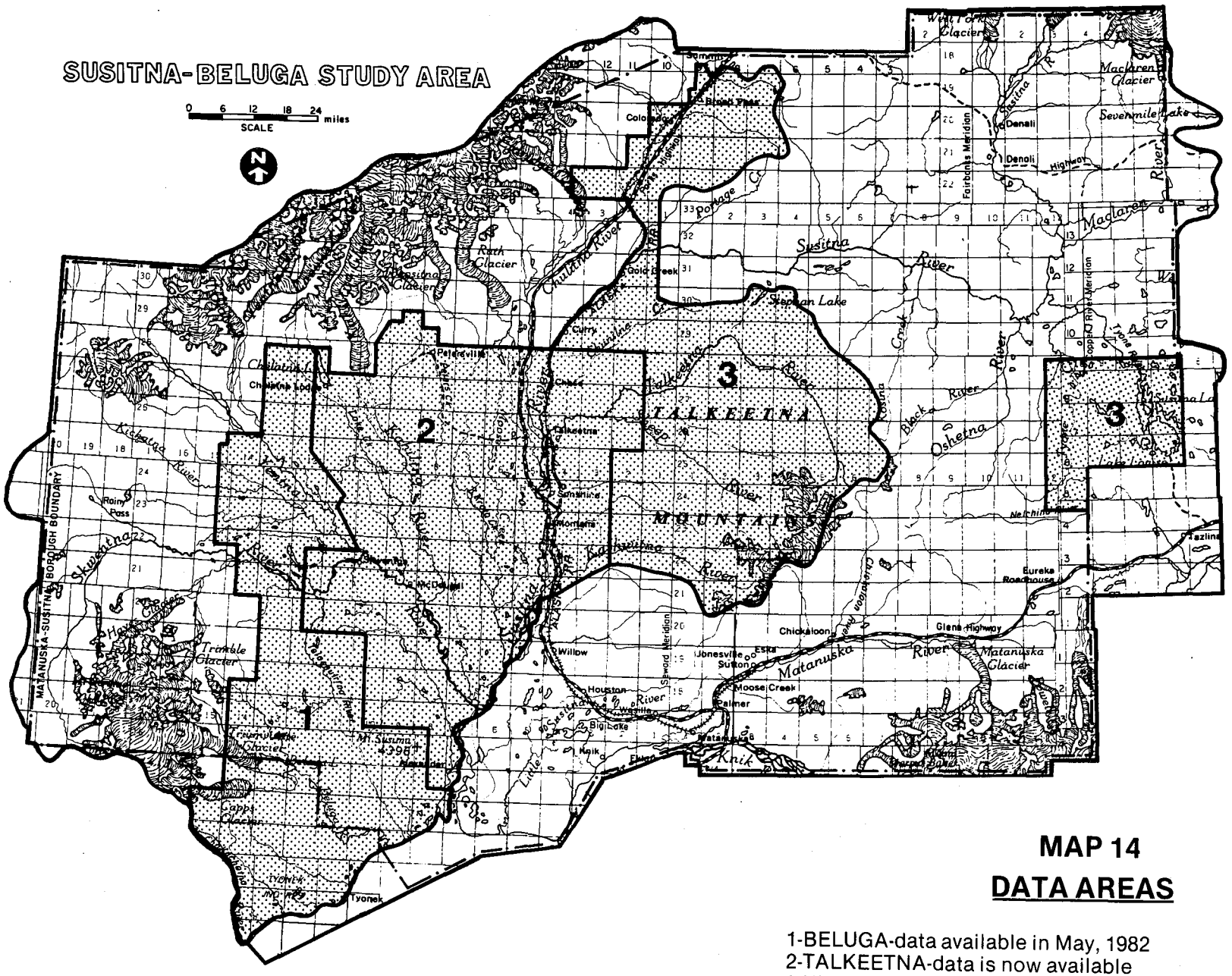
This appendix describes the detailed geographic data that are now available for much of the land within the study area. This information will be used to analyze existing and potential land uses; and will form the basis for the plan's land use designations and policies.

Data Base

Over a three year period, the Soil Conservation Service has been collecting land-related information in the Susitna Region as part of the Cooperative River Basin Program. A series of maps showing soils, vegetation, slope and other basic information have been assembled over approximately 9,500 square miles of the Matanuska-Susitna-Beluga study area (see Map 14). Through a coordinated resource mapping effort, the maps have been made consistent in scale (1:63360), coverage, and classification schemes. The basic geographic information available is summarized below:

Natural Resource Information

Soils	-	the physical and chemical properties of soils which determine their ability to support various activities. Soils were mapped at a scale of 1:24,000.
Slope	-	the average degree of steepness of a given area. Data collected at 1:63,360. Minimum mapping unit is 5 acres.
Vegetation	-	the plant type(s) that cover a certain area. A total of 34 different vegetative types have been mapped. The vegetation classification used was developed specifically for the Susitna River Basin by the Forest Service, the Soil Conservation Service, Fish and Wildlife Service, and the Alaska Division of Lands. Vegetation was mapped at 1:63,360 off CIR photos. Forestry information was mapped at 10 acres resolution, and range information was mapped at 40 acre resolution.
Landform	-	single topographic features or geologic structures which result from physical changes of the earth's surface. For example, a delta is a landform resulting from stream erosion.
Geology	-	existing physical structures of the earth. Mapped at 1:250,000.



MAP 14
DATA AREAS

1-BELUGA-data available in May, 1982
2-TALKEETNA-data is now available
3-UPPER SUSITNA/LAKE LOUISE-data available August, 1982

Surficial Geology - the physical structures of the earth's surface. Mapped at 1:250,000.

Bedrock Geology - the physical structures underlying the earth's surface. Mapped at 1:250,000.

Economic Geology - very generalized locations of minerals of economic significance (eg., silver, gold, platinum, coal, etc.). Mapped at 1:250,000.

Material Sites - specific areas containing deposits of sand and gravel. Mapped at 1:250,000.

Stream Order - the ranking of streams based on the size drainage basin they flow into. For example, whether or not the stream is single and unbranched, or if it joins into another stream creating tributaries, creeks, etc. Lower ranking streams typically empty into larger drainage basins. Information was obtained from 1:63,360 quads and updated to 1976-77 photos.

Stream Profile - a plot or graph indicating a water surface elevation in relation to the distance along the stream. This information may be used in determining potential flood plains in the event of a 50 year flood.

Cultural Information:

Land Status - land ownership patterns. (i.e. federal, state, borough, Native, or privately owned lands). Land status information is presently being gathered and will be mapped at 1:63,360.

Land Use - various activities the land is currently used for.

Data Analysis:

To increase the ease of using this information, this mapped information or "data base" has been digitized (entered) into a modern high speed computer. Entering this information into a computer makes it easier to work with in several ways. For example, the number of acres in each map categroy can be listed, and maps of any topic in the data base can be printed at any desired scale.

Computerizing these maps also facilitates the manipulation of this geographic data to generate "new" informatin -- a process known as "modeling."

In the forthcoming Susitna-Beluga Plan, preparing map models is one of several ways that the varied potentials of land will be assessed. For example, it is possible to overlay two existing maps, such as soils and slope, to help locate areas suitable for road construction or unsuitable for agriculture. In an areas as large as the Susitna-Beluga region, computerized maps can greatly speed and enhance flexibility in the process of analyzing geographic information. The new maps developed in such a process can give an initial indication of the capability of lands regions-wide to support different land uses.

Listed below are the land use models presently available for land within much of the study area. As was stated above, other models to indicate the location and quality of various characteristics of the land can be generated as the need arises.

MODELS		RESOURCE INFORMATION USED IN DEVELOPING MODELS
Important Farmlands Map	-	interpretation of soil type information to show areas that have the ability to support crop production. (Class II, III and IV cultivable soils.)
Timber Map	-	shows areas with potential for commercial timber production derived from data on location and quality of existing timber stands
Existing Grazing Map	-	based on areas where the existing vegetation (herbaceous species such as bluejoint reedgrass) is generally suitable for domestic livestock grazing.
Potential Grazing Map	-	shows areas with soils which are capable of supporting herbaceous species suitable for domestic livestock grazing.
Soil Erosion Map	-	developed from slope information and potential soil loss for a given area. Soil loss was determined by the Universal Soil Loss Equation*.

*The soil loss equation computes soil loss per unit area (tons per acre). Total loss is determined by six factors: rainfall; soil-erodibility; slope gradient; cropping management; and the erosion-control practice of a given area -- if any.

MODELS (cont.)		RESOURCE INFORMATION USED IN DEVELOPING MODELS (cont.)
Wetlands Map	-	based on areas supporting certain vegetation types -- specifically hydrophytes, or those plants growing in water or on a substrata that is at least periodically deficient in oxygen due to excessive water content. Various landforms such as active floodplains, active water channels and river bars were also incorporated in identifying wetlands.
Habitat Maps		
a) Moose	-	based on the quality and quantity of vegetation types utilized by moose for winter, spring, summer and fall range.
b) Diversified Species	-	categorizes the study area based on the ability of vegetation to support varying numbers of species (i.e., ratings for species diversity.)
Settlement Capability Maps		
a) Land capability for Moderate/High Density Residential Development and	-	Large lot capatility and Moderate/High Density residential development capability were determined by: (1) soil limitations suitable for supporting heavy loads,
b) Large Lot Capability	-	building foundations and septic tanks; (2) slope gradient; (3) water availability
(1 unit per 1-2 acres -- settlement that typically occurs in the area at present)		(4) drainage; and (5) potential geologic hazards such as flood plains, avalanches, etc., and various land forms such as sand dunes, beaches, tidal flats, etc.
c) Capabiliity for Low Density Remote Residential Development (remote "self-sufficient" residential use)	-	was based on (1) soil capability for supporting dwellings without foundations; (2) slope gradient, (3) water availability; (4) drainage; (5) geologic hazards and land forms; (6) vegetative cover (areas with firewood and houselogs were given high values);
Road Suitability Map	-	was based on: (1) land forms (areas containing gravel rated best, and glaciers and tidal flats worst;) (2) slope gradient; (3) geologic hazards; (4) soil characteristics such as drainage, load bearing capacity and shrink-swell potential; (5) vegetative cover (less coverage enables cheaper and easier land clearing); and (6) water bodies.

APPENDIX 3
AGENCY ORGANIZATION FOR BELUGA COAL DEVELOPMENT

APPENDIX 3

ORGANIZATION OF STATE AND OTHER GOVERNMENT AGENCIES BELUGA COAL DEVELOPMENT

A. BACKGROUND

The increasing pace of activities leading to development of Beluga coal creates a growing need for the participation of state, federal and local government agencies. (See Figure 3 for proposed coal development schedule). These government agencies share responsibility for reviewing and issuing the required environmental permits and providing much of the land necessary for coal development. Approvals required prior to coal mining include the surface mining permit; permits for wastewater discharge, anadromous fish, dredge and fill, and air quality; approval of the use of land for a port/industrial site, rights-of-way, townsite, material sites, utility sites; and an environmental impact statement.

This packet of figures and written material was prepared to help coordinate the work of the various agencies involved in Beluga coal development. It was prepared by the Alaska Departments of Natural Resources (ADNR), Fish and Game, Environmental Conservation, and Commerce and Economic Development. Although it is primarily oriented towards the organization of state agencies, possible roles for federal and local governments are also described.

The purpose of this coordination effort is to assign responsibility to certain agencies and individuals for different aspects of government involvement in the coal development process. This has been done principally because many of the tasks that must be done by state agencies in response to coal development are shared by two or more departments.

The coordinated approach described here is necessary to avoid unnecessary and expensive duplicaiton of effort by participating agencies, to reduce the time required for permitting and review activities and to insure that all important environmental and socioeconomic issues are adequately addressed.

B. STATE INVOLVEMENT IN THE COAL DEVELOPMENT PROCESS

The state is responsible to review and, if appropriate, approve the permits and land use requests necessary for coal development. The state also participates in the environmental impact statement process and comments on federal permits. The majority of the baseline data collection necessary to make these decisions is carried out by the coal operators. Details of the state's involvement in this process (and the reasons for the development of this coordinated administrative structure) are described below:

1. Agreement on Major Approval Mechanisms. Basic decisions need to be made between the state and federal governments and the coal operators regarding the methods for reviewing/

FIGURE 1 ORGANIZATION OF STATE AND OTHER GOVERNMENT AGENCIES - BELUGA COAL DEVELOPMENT

The Beluga Interagency team determines state coal policy and coordinates state involvement in the process of developing Beluga coal.

The primary mechanisms for state involvement are the environmental permits, surface mining permit, land use planning & environmental impact statement.

Working subgroups provide required information related to permits, land use decisions and the environmental impact statement.

Shown below the subgroups are the permits and/or issues the groups will address.

Note: Lead Agencies shown with parenthesis( )

BELUGA INTERAGENCY POLICY & MANAGEMENT TEAM

ENVIRONMENTAL PERMITS	SURFACE MINING PERMIT	LAND USE PLANNING	ENVIRONMENTAL IMPACT STATEMENT
		A. Land needed for coal development B. Comprehensive "Area Plan"	

AIR

(EPA)

Air quality permit (pollution source discharge) (EPA)

Surface Mining Permit (State/Fed)

New Source Performance standards (EPA)

HYDROLOGIC SYSTEM

(DEPT. OF ENVIRONMENTAL CONSERVATION)

NPDES(EPA)
TITLE 16(DF&G)
Water Quality(DEC (wastewater discharge-201)
Water Rights(DNR)
Domestic Water(DEC)
Wetlands 401,404 (U.S.Army Corps)
Surface Mining Permit (State/Fed)
New Source Performance Standards (EPA)
In Stream Flow (DNR/DF&G)

FISH & WILDLIFE

(DEPT. OF FISH & GAME)

Title 16-Anadromous Fish (DF&G)

Fishways Passage (DF&G)

Instream Flow (DNR/DF&G)

Surface Mining Permit (State/Fed.)

LAND USE/ TRANSPORTATION

(DNR-DIV. OF RESEARCH & DEVELOPMENT)

A. Land needed for coal development
Transport coal from mine to port (R.O.W.)
Port/Industrial Area(Lease)
Townsite(Lease/Sale)
Power Generation/Utility Sites
Material Sites

B. "Area Plan" Development/conservation of other existing or possible uses including Forestry, Ag., Settlement, Rec., Hunting/Fishing, Minerals other than coal

SOCIO-ECONOMIC

(DEPT. OF COMMUNITY & REGIONAL AFFAIRS)

Effects on existing residents

Service and facility requirements

Distribution & timing of payment for services & facilities

ARCH. & HISTORICAL RESOURCES

(DNR-DIV OF PARKS)

Archeological / Historical Resources Protection (DNR-Div. of Parks/Fed.)

approving planned coal operations. Decisions to be made include determination of the relationship of the surface mining permit to other state/federal environmental permits and of the responsibility for developing an Environmental Impact Statement (Federal/State vs. Third Party). In addition, the coal operators have the option to propose use of the master permit process.

2. Coordination between Government Agencies - Data Collection, Identification of Permit Standards, Other Issues. The requirement for an environmental impact statement, a surface mining permit and other environmental permits will necessitate collection and analysis of detailed information on hydrology, fish and wildlife, land uses, socioeconomic conditions and other factors potentially affected by coal development. Coordination of effort between the departments issuing various permits and the coal operators is necessary to define exactly what data is needed and determine what, if any, portion of data should be collected by government agencies.

   The need for hydrological data provides a good example of the need for coordination between agencies. Hydrological information is being collected by the coal operators, ADNR Division of Geological and Geophysical Surveys and U.S. Geological Survey (USGS). This information will ultimately be used by the coal operators and by the agencies responsible for issuing permits and water rights: Alaska Departments of Fish and Game, Environmental Conservation and Natural Resources; U.S. Environmental Protection Agency (EPA); U.S. Fish and Wildlife Service; the U.S. Army Corps of Engineers; and the agency responsible for the surface mining permit. Because in most cases responsibilities for collection, analysis and environmental protection overlap, it is essential these groups work closely together at each step in the process.

3. Coordination of Public Involvement. The general public, the news media, and the people who live in, use, or own land in the area will want information on all aspects of the project. The use of a coordinated structure such as the one described here can allow questions to be directed to the responsible agency/individual. This structure can also help coordinate the numerous public hearings that will be required to issue permits, make land use decisions, develop and review an impact statement, etc.

4. Coordination with Coal Operators. In addition to the three specific concerns mentioned above, there will be ongoing requirements for coordination between the government agencies and the coal operators. A formalized assignment of responsibilities within participating agencies should help speed resolution of issues that may arise over the course of the project.

FIGURE 2 INVOLVEMENT OF GOVERNMENT AGENCIES & OTHER GROUPS IN BELUGA COAL DEVELOPMENT

COAL TASK FORCE
(Dick Eakins - DCED)

The Interagency Management Team is composed of the commissioners of DEC, DF&G, and DNR and their upper level staffs. This team will be responsible for setting coal policy, guiding its implementation and directing the activities of the subgroups.

BELUGA INTERAGENCY POLICY & MGT. TEAM

ENVIRONMENTAL PERMITS
(Bob Martin-DEC)

SURFACE MINING PERMIT
(Laurel Murphy-DMEM)

LAND USE PLANNING
A. Land needed for coal development
B. Comprehensive "Area Plan"
(Reed StoopSDRD)

ENVIRONMENTAL IMPACT STATEMENT
(EPA-Ron Krisenbeck)

Each subgroup will be lead by a single agency and individual. The agencies and groups shown beneath each subgroup will be involved in decisions as needed

( ) parenthesis indicates lead agency, lead individual

AIR

(EPA)
Dave Estes-State Coordinator (DEC)

EPA
DEC
COAL OPERATORS
DMEM

HYDROLOGIC SYSTEM

(DEC-Dan Wilkerson)

DEC
DNR
-Water
-DGGS
DG&G
COAL OPERATORS
ARMY CORP
EPA
USGS
USFWS
AK. POWER AUTHORITY
DIV. OF ENERGY & POWER DEVELOPMENT
DMEM

FISH & WILDLIFE

(DF&G-Kim Sundberg)

DF&G
USFWS
COAL OPERATORS
USERS
-Local (Tyonek Village)
-Outside
DEPT. of COMM. & ECON. DEV. (DCED)
DNR-DMEM, DRD

LAND USE/ TRANSPORTATION

(DNR-Chris Beck)

DNR
Ag.
Rec.
Forestry
Lands
Minerals
DF&G
KENAI & MAT/SU BOROS
COAL OPERATORS
DCED
DOT/PF
USFWS
US ARMY CORP
NATIVE CORP:
Cook Inlet Reg. Corp.
Tyonek Village Corp.
VILLAGE COUNCIL

SOCIO-ECONOMIC

(DCRA-

DCRA
KENAI & MAT/SU BOROS
DNR
DOT/PF
COAL OPERATORS
VILLAGE COUNCIL
NATIVE CORP:
Tyonek Village Corp.
Cook Inlet Reg. Corp
DF&G
DCED

ARCH. & HISTORICAL RESOURCES

(DNR-Ty Dilliplane)

DNR
FEDERAL GOV.
VILLAGE COUNCIL
COAL OPERATORS

C. COORDINATED ORGANIZATIONAL STRUCTURE

The following is a proposed structure whereby industry, government and public can coordinate their coal related work. Two figures describe the major aspects of this organizational structure -- the first figure shows the overall organization and responsibilities of state agencies involved in coal development, the second provides an expanded description of the various agencies and groups that will be involved in the review and approval process.

Figure 1 describes the organization and the division of responsibilities among state agencies involved in Beluga coal development. It is structured around the requirement for environmental permits, surface mining permits, land use planning and an environmental impact statement. The figure is set up in two tiers. The first tier shows the Beluga interagency policy and management team and the four major categories of approval mechanisms associated with coal mining. The second tier shows six subgroups, organized by resource or land use, that will coordinate the collection and review of information required to make the approval decisions mentioned in the first tier.

The interagency policy and management team is responsible for setting coal policy and the overall coordination of the state's involvment in Beluga coal development. A primary responsibility of this group is to work with the coal operators to determine the preferred methods for reviewing and approving planned coal development. (See Section B, No. 1 for more discussion). The subgroups intended to work under the direction of the interagency team will coordinate data collection, set standards for permits, review land use needs related to coal development and other uses of the area, coordinate involvement with the public, etc. More details of issues to be addressed by the subgroups are shown on the figure.

Figure 2 describes the agencies and other groups who will lead or participate in this coordinated administrative organization. The interagency policy and management team is divided into two groups. The policy group is composed of the Commissioners of the Departments of Natural Resources, Environmental Conservation, Fish and Game, and Commerce and Economic Development. It is primarily responsible for setting state policy to guide development of Beluga coal. This group will meet on a regularly scheduled basis and, working with the coal operators, resolve whatever issues need to be addressed.

The management group is composed of the upper level staff of respective commissioners. The group is primarily responsible for implementing policy and determining tasks for and managing the subgroups.

Representatives of the interagency management team will continue to use the coal task force as a forum for communication and coordination with the coal operators, other government agencies, the public, and other parties interested in Beluga coal development.

FIGURE 3

DIAMOND-ALASKA

INITIAL SEQUENCE FOR COAL DEVELOPMENT OF THE BELUGA RESERVES

MARKETING GOAL	FACILITIES & SITE DEVELOPMENT	COMPLETION OF FEASIBILITY STUDIES, INCLUDING ENVIRONMENTAL ASSESSMENT & PERMITTING REQUIREMENTS	ORGANIZATIONAL COORDINATION
1985-86	1983-84	1981-1983-84	Ongoing
Active mining Processing & Shipment of Coal from Beluga Fields.	Construction of infrastructure: Coal Transport System Camps Port Access & Haul roads Mine Site Staging Areas & auxiliary facilities, e.g. Dewatering & waste control	Mining Requirements: Mining Plan Annual Strip Handling of over-burden Processing & transportation of coal Reclamation Data Collection: In-stream flow Hydrology Habitat Biota Land Use Water Quality Permitting: Air Quality (DEC & EPA) Anadromous Fish Protection (F & G) Game Refuge (F & G) Drinking Water (DEC) Dredge & Fill (COE-404) Fishways Passage (F & G & DEC) Land Use Leasing or Disposal (DNR) Navigation (COE-USCG) New Source Perf. Stnd. & NPDES (EPA) Herbicide Use (DEC) Oil & Hazardous Substances (DEC, EPA, USCG) Rights-of-Way (DNR & BIA) Surface Mine & Reclamation (DNR, OSM) Wastewater Disposal (DEC-201) Water Rights (DNR) Wetlands (COE-401)	Governor's Office Coal Task Force Agencies State: Commerce & Economic Development Community & Regional Affairs Environmental Conservation Fish & Game Natural Resources Transportation & Public Facilities Federal: Corps of Engineers Environmental Protection Agency Fish & Wildlife Service National Marine Fisheries Service Office of Surface Mining U.S. Geological Survey Soil Conservation Service Advisory: Alaska Water Resources Board Native Village & Regional Corporation Other Interested Groups

Lead agencies for the six subgroups are shown on the figure. The agencies, landowners and other groups listed under each subgroup are the people who will be involved in the subgroups' activities. Some or all of these listed groups will be contacted as needed by the subgroup lead agency to address specific issues.

D. RESPONSIBILITIES OF INDIVIDUAL GOVERNMENT AGENCIES

In addition to the information on agency organization provided here, each involved state department, as well as the U.S. Fish and Wildlife Service has prepared a summary of their anticipated role in development of Beluga coal. These writeups are available from the ADNR Division of Research and Development. These brief discussions include a description of major issues as seen by the agencies, and where appropriate, a description of the permitting process necessary for coal mining, townsite development, etc.



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