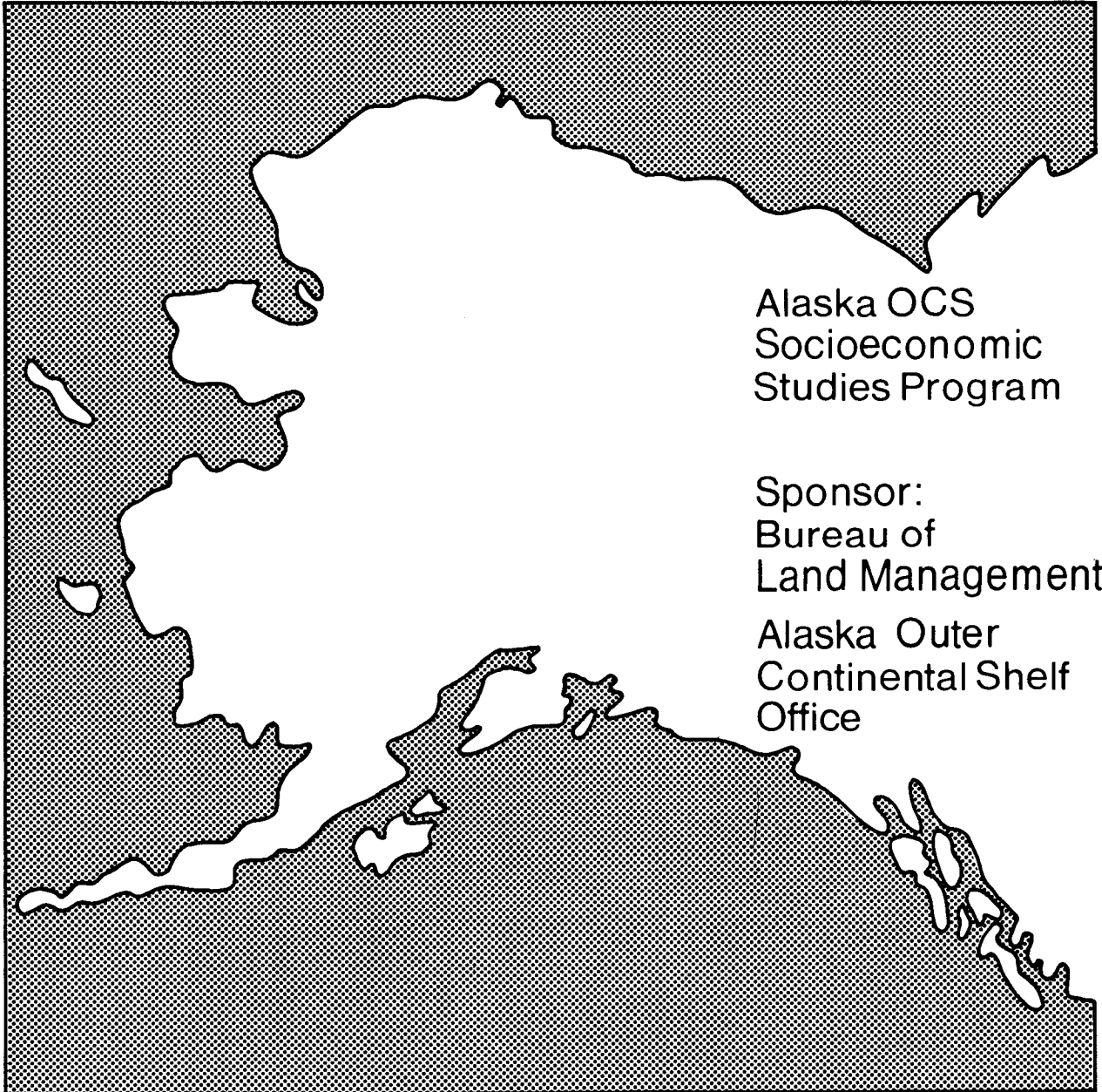


Technical Report
Number 12a



Alaska OCS
Socioeconomic
Studies Program

Sponsor:
Bureau of
Land Management
Alaska Outer
Continental Shelf
Office

**Anchorage Socioeconomic and
Physical Baseline
Executive Summary**

FOREWARD

The United States Department of the Interior was designated by the Outer Continental Shelf (OCS) Lands Act of 1953 to carry out the majority of the Act's provisions for administering the mineral leasing and development of offshore areas of the United States under federal jurisdiction. Within the Department, the Bureau of Land Management (BLM) has the responsibility to meet requirements of the National Environmental Policy Act of 1969 (NEPA) as well as other legislation and regulations dealing with the effects of offshore development. In Alaska, unique cultural differences and climatic conditions create a need for developing additional socioeconomic and environmental information to improve OCS decision making at all governmental levels. In fulfillment of its federal responsibilities and with an awareness of these additional information needs, the BLM has initiated several investigative programs, one of which is the Alaska OCS Socioeconomic Studies Program.

The Alaska OCS Socioeconomic Studies Program is a multi-year research effort which attempts to predict and evaluate the effects of Alaska OCS Petroleum Development upon the physical, social, and economic environments within the state. The analysis addresses the differing effects among various geographic units: the State of Alaska as a whole, the several regions within which oil and gas development is likely to take place, and within these regions, the local communities.

The overall research method is multidisciplinary in nature and is based on the preparation of three research components. In the first research component, the internal nature, structure, and essential processes of these various geographic units and interactions among them are documented. In the second research component, alternative sets of assumptions regarding the location, nature and timing of future OCS petroleum development events and related activities are prepared. In the third research component, future oil and gas development events are translated into quantities and forces acting on the various geographic units. The predicted consequences of these events are evaluated in relation to present goals, values, and expectations.

In general, program products are sequentially arranged in accordance with BLM's proposed OCS lease sale schedule, so that information is timely to decision making. In addition to making reports available through the National Technical Information Service, the BLM is providing an information service through the Alaska OCS Office. Inquiries for information should be directed to: Program Director, Socioeconomic Studies Program, Alaska OCS Office, Post Office Box 1159, Anchorage, Alaska, 99510.

ALASKA OCS SOCIOECONOMIC STUDIES PROGRAM

ANCHORAGE SOCIOECONOMIC AND PHYSICAL BASELINE

EXECUTIVE SUMMARY

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ALASKA OUTER CONTINENTAL SHELF OFFICE

June 1978

III

NOTICE

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Alaska OCS Socioeconomic Studies Program
Anchorage Socioeconomic and Physical Baseline

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June 1978

1. Report No. Technical Report 12	2.	3. Recipient's Accession No.	
4. Title and Subtitle Alaska OCS Socioeconomic Studies Program Anchorage Socioeconomic and Physical Baseline		5. Report Date June 1978	
7. Author(s)		6.	
9. Performing Organization Name and Address Dr. Richard L. Ender 5139 East 42nd Avenue Anchorage, AK 99504		8. Performing Organization Report No.	
12. Sponsoring Organization Name and Address Bureau of Land Management Alaska Outer Continental Shelf Office P. O. Box 1159 Anchorage, AK 99510		10. Project/Task/Work Unit No.	
15. Supplementary Notes		11. Contract or Grant No. AA550-CT6-61	
16. Abstract		13. Type of Report	
<p>This document is a community profile on the Municipality of Anchorage encompassing socio-economic and physical data. Topics include a brief history of the inception of Anchorage as a township with an overview of significant historical events; a comprehensive discussion of the Anchorage economy and current demographic information; local government revenues and expenditures; community support service sectors including health services, social services, leisure and recreational services, education, police (state and local), fire, and emergency medical services; physical characteristics of Anchorage; utilities; and transportation. Within each section, where applicable, current issues are identified and planning efforts designed to alleviate problem areas are discussed.</p>		14.	
17. Originator's Key Words		18. Availability Statement National Technical Information Service 5285 Port Royal Road Springfield, VA 22161	
19. U. S. Security Classif. of the Report Unclassified	20. U. S. Security Classif. of This Page Unclassified	21. No. of Pages	22. Price

TABLE OF CONTENTS

OVERVIEW 1

DEMOGRAPHIC CHARACTERISTICS. 2

THE ANCHORAGE ECONOMY. 3

ATTITUDES TOWARD CHANGE AND PERCEPTION OF DEVELOPMENT. 5

LOCAL GOVERNMENT REVENUES AND EXPENDITURES 5

COMMUNITY SUPPORT SERVICE SECTORS. 6

 Health. 6

 Social Services 8

 Education 10

 Anchorage Police Department/Alaska State Troopers 11

 Anchorage Fire Department and Emergency Medical Services. 13

 Leisure and Recreation. 14

PHYSICAL CHARACTERISTICS 16

 Land Use. 16

UTILITIES. 19

 Solid Waste 19

 Water 21

 Sewer 22

 Electricity 24

 Telephone 26

TRANSPORTATION 26

 Roads 26

 Mass Transit. 28

 Ports 29

 Airports. 31

CONCLUSION 32

ANCHORAGE SOCIOECONOMIC AND PHYSICAL BASELINE

EXECUTIVE SUMMARY

The purpose of this report is to examine baseline information on Anchorage designed to assess the corresponding impact of four petroleum developments proposed for the Beaufort Sea region. The baseline report is a community profile which examines historical trends and current data, identifies key issues within specified sectors of the community, and, where possible, explores planning processes designed to respond to pressing issues. Through the use of key indicators such as economic trends, manpower requirements, land use planning, social services, and physical characteristics, impact of future growth in Anchorage and of proposed development in the Beaufort Sea region can be assessed.

Overview

For documentation in the executive summary, refer to the Anchorage Socio-economic and Physical Baseline report.

Anchorage is the major metropolitan center for the State of Alaska. Since its inception in 1914 as a construction camp for the building of a major section of the Alaska Railroad, it has blossomed into a highly developed urban metropolis. Population estimates for July 1978 place Anchorage at approximately 202,000 people.

Anchorage is a vitally important economic center for the State of Alaska. Most of the goods and services imported into Alaska are funneled through

Anchorage via the major transportation network or through the intricate economy intrinsic to the community.

Much of the high level of development which currently exists in Anchorage is a direct result of petroleum development in recent years on the North Slope. Beginning in 1972, the oil companies formed a consortium designated as the Alyeska Pipeline Service Company whose sole purpose was the completion of the world's largest private enterprise project - the trans-Alaska oil pipeline.

In a very short period of time, population rapidly accelerated. The 1970 census places Anchorage at 126,333 people, and the mid-1978 population figure is currently estimated at 201,790 - an increase of 62.6 percent. The impact of this type of population growth is dramatic and creates a tremendous increase in the demand for all types of services.

In addition to the effect of the pipeline, substantial structural change in government has occurred. Statehood in 1959 and the creation of the Greater Anchorage Area Borough in 1963 led to a movement to unify local government in Anchorage. In September 1975, the Greater Anchorage Area Borough and the City of Anchorage were unified by areawide vote into one single government - the Municipality of Anchorage.

Demographic Characteristics

Today, Anchorage is characterized by a very young population with a median age of 25.0 years of which 33.4 percent are 17 years or younger. Only two

percent of the residents are 65 years and older. The trend, however, is toward a slightly older population as Anchorage stabilizes from the pipeline impact.

In addition, the population is characterized by a high degree of transiency with the theoretical possibility of the population completely turning over every three and one-half years. Fifty percent of the residents have resided in Anchorage six years or less while only eight percent are 25-year plus residents.

The racial composition is predominately white, 90.6 percent, with minorities (black, Alaska native, oriental, Asian, and Spanish American) constituting the remaining 9.4 percent.

The Anchorage Economy

Historically, unemployment in Anchorage has been high. This has been the result of several factors: high seasonal variation in certain employment categories, employment expansion unable to keep up with the increase in the work force, and the inability to match skill needs in employment openings with the available labor pool. The 1977 annual unemployment rate was 8.6 percent. This figure is adjusted to remove seasonal unemployment. Approximately two percent of the average unemployment rate is due to seasonal unemployment with the largest contributor being construction and the associated trades.

Although government employment has decreased in recent years (49.8 percent

in 1970 to 34 percent in 1977), it is still the largest single employer in Anchorage. Government plays a major factor in the economic stability of the southcentral region of Alaska, specifically as a result of the two large military installations - Elmendorf Air Force Base and Fort Richardson Army Base.

Recently, the big gain in the employment sector has been in the category of services. Contract construction and transportation also experienced rapid growth in 1975 and 1976. These growth factors were largely attributable to the trans-Alaska pipeline impact. However, in 1977 and 1978 they slowed down considerably.

With respect to occupational patterns, clerical and sales constitute the largest occupational category for Anchorage.

Income and cost of living have experienced dramatic alterations in recent years. In 1969 the median family income was \$13,590. In 1976 the total household median income was estimated at \$30,115. Per capita income in 1976 was estimated at \$10,377. General inflationary pressure and high wages from pipeline construction activity spilled over into other industrial sectors to generally push wages up. Between 1974 and 1976 income rose twice the rate of the cost of living.

During the 1970's the Anchorage consumer price index has risen at about the same rate as the national average. The real difference lies in the relative buying power of the Anchorage dollar. Using the U. S. urban average as a 100 base, Anchorage stands at about 131. As of 1976 the

adjusted per capita income would have had to have been \$8,438 to equal the United States average. Actual per capita income was \$1,939 above this base indicating strong gains in Anchorage income over general inflationary trends.

Attitudes Toward Change and Perception of Development

Aggregate opinions are an important barometer of a community's level of receptivity or rejection of future types of change and development. Public opinion indicates that Anchorage citizens are very concerned with population growth and the resulting urban problems. However, the Anchorage citizens face a dilemma in limiting population growth and in encouraging economic development. An attitude survey conducted by the Anchorage Urban Observatory, University of Alaska, Anchorage, indicates that a majority of respondents strongly encourage (over 70 percent) seven out of 12 economic and development options. These include transport and storage, the port, trade and tourism, education, health, and light manufacturing. A clear, but smaller majority, encourage petrochemical development, finance, banking and real estate, and hard refining industries. With reference to petrochemical development, the industry is supported by 59.2 percent of the respondents and is discouraged by 34.8 percent. Comparative analysis in other areas of Alaska, specifically the Kenai Peninsula, indicates that this level of support classifies Anchorage as an oil oriented town.

Local Government Revenues and Expenditures

Local government in Anchorage is just completing a transitional period resulting from unification of the Greater Anchorage Area Borough (GAAB)

and the incorporated City of Anchorage. The 1978 budget is the first unified budget for the Municipality.

Expenditures of \$89,551,710 are authorized for 1978 and revenues for the same amount are projected. The traditional services of police, fire, and road maintenance make up the largest expenditure categories. Revenues are predominately generated by local property taxes (56 percent), but state and federal sources are an increasingly important component (29 percent). Under the present system, the real property tax has the best chance of expanding to produce sufficient local tax revenue in the future. The long term limit on property tax is the finite amount of land available for development in Anchorage. At such time that real property taxes can no longer maintain this relative level of support, other options will have to be explored. Local sales tax is one alternative that has been proposed. However, public opinion surveying indicates that there are about as many opponents as backers of this option.

Community Support Services Sector

HEALTH

Because of Anchorage's centralized location in relation to the rest of Alaska, all phases of health care are available. The range is from routine to acute critical care as well as specialized highly technical care. Historically, critical care needs have been administered by relocating patients to Seattle, Washington. Seattle continues today to play a support role to the Anchorage health care system especially in certain treatment specialities.

There are currently 699 licensed beds available in Anchorage of which 125 are military. Present usage rates indicate 560 inpatient days per year are generated per 1,000 in the population. Average length of stay is less than five days at an average cost of \$455 per day.

The number one health and safety problem for Anchorage lies in alcoholism. The Municipal Department of Health and Environmental Protection currently estimates that there are approximately 2,000 habitual public inebriates of which 400 are "street" residents. There are service providers for this health care problem; however, Anchorage residents as well as the alcohol service providers believe that present treatment modalities are insufficient. At present, the Municipal Health Commission and the Department of Health and Environmental Protection are in the process of developing a comprehensive treatment program based upon education, prevention, and treatment activities.

A second issue under social and health care is the presence of drug abuse. Estimates on the number of abusers indicate that Anchorage greatly exceeds the national average for a city of this size. The facilities offered for alcohol abuse can be utilized by drug abusers with orientation predominately on outpatient care and treatment.

In addition to the above, social and health care services are available for abused persons and to meet mental health needs in the community.

An issue of considerable concern in Anchorage is the cost of health care. Health care is a nonmarket allocation phenomena. An increased availability

of services does not necessarily result in a decreased cost to consumers. Anchorage currently has 470 acute care beds available, which is an excess of 167 beyond that required by the current population. Currently attempts are being made to construct an additional 125-bed facility. The net effect of a reduction in occupancy rates is a proportionate increase in real cost of care.

In April 1977 the Department of Health, Education, and Welfare officially designated Anchorage as a medically underserved area qualifying the community for receipt of special federal assistance programs. The predominant issue is a health manpower shortage which varies within specialities. Specifically, the significantly high birth rate has resulted in a serious shortage of pediatricians and obstetricians.

Health demographics indicate that the crude birth rate for local residents is 18.3 per 1,000 in the population compared to the national rate of 14.8. The crude death rate is 3.1 deaths per 1,000 in the population compared to the national rate of 9.0. Leading causes of death have consistently been 1) accidents, 2) heart disease, and 3) cancer, which reflect the prevalence of youth in the general population.

SOCIAL SERVICES

Social service delivery in the Anchorage area is predominately provided by state and federal government field offices. Information and referral services and child and adult protective services are available to Alaskans without regard to income. Individual and family counseling services are

available on the basis of available staff. The programs, however, are generally targeted to low income populations.

Regarding local service availability, Anchorage provides assistance in six areas:

- 1. Children's services
- 2. Senior citizens' assistance
- 3. Employment assistance
- 4. Income assistance
- 5. Housing assistance
- 6. Youth services

To date, there exists no unified planning effort for the coordination of social services delivery for the Municipality of Anchorage. The State of Alaska, Department of Health and Social Services, Division of Social Services has produced the Proposed Comprehensive Annual Social Services Plan: Plan Year 1979. Major constraints impacting the development and implementation of the plan are 1) unsuccessful attempts to synchronize plan development with the state budget process and 2) insufficient personnel and dollar resources to address identified needs, such as adult foster care.

The Municipal Planning Department is in the initial stages of developing a local plan for social service delivery, coordinating efforts of state, federal, local governmental, and private providers in the Anchorage area.

EDUCATION

The majority of kindergarten through twelfth grade students attend public schools under the jurisdiction of the Anchorage School District with a minority attending private educational facilities.

The 1977-1978 enrollment for the Anchorage Public School District is 39,509. By 1984, the Anchorage School District is projecting the student enrollment to increase to 42,867 pupils.

To meet the educational needs of its students, the school district endeavors to maintain a student teacher ratio of 26 students per elementary teacher and 30 students per secondary teacher. For the previous ten years, this goal has been maintained.

To accommodate student enrollment, the Anchorage School District maintains 53 elementary schools, seven junior high schools, six high schools, one special education facility, and one career education center.

One issue of importance is the cost per student. In the past ten years, the cost per student has quadrupled (\$791 for 1967-1968 to \$2,335 for 1976-1977). Salaries account for 70 percent of the total expenditures of the school district. New programs, especially in the area of special education, require more support staff and more specialized learning materials and equipment. Likewise, the trend for smaller class size has created a need for more teachers resulting in increased costs. Inflationary pressures have accentuated all of the above. To offset the

expenditures, the largest single source of revenue comes from state aid.

Higher education, postsecondary, and career and vocational-technical (both public and private) training are available in Anchorage. Public institutions include Anchorage Community College and the University of Alaska which offer a variety of degrees from Associate of Arts through Master's programs.

The 1978 headcount indicates that Anchorage Community College has 8,168 students and the University of Alaska has 3,938. It is important to note that recent surveys indicate that 73 percent of the high school students in Anchorage who intend to go on for higher education plan to go outside of Alaska.

ANCHORAGE POLICE DEPARTMENT/ALASKA STATE TROOPERS

Law enforcement activity and traffic control encompass two primary governmental bodies - the Municipal Police Department and the Alaska State Troopers.

Currently, the Anchorage Police Department maintains a ratio of 1.52 sworn officers per 1,000 in the population. At a minimum, this is a standard which the department would like to maintain in relation to future population growth.

The Anchorage Police Department (APD) is currently undergoing some dramatic changes. Prior to October 1977, the APD's jurisdiction was limited

to the old city limits of Anchorage and one adjacent community, Spenard. The Alaska State Troopers were responsible for the remaining area within the municipal boundaries. On October 4, 1977, areawide vote placed a large portion of the Municipality previously serviced by the Alaska State Troopers under the jurisdiction of the Anchorage Municipal Police Department. This has prompted an increase in training programs to expand the force in order to handle the additional areas.

One issue of concern is the crime clearance for Anchorage. Anchorage clears less Part 1 crimes (murder, rape, robbery, aggravated assault, burglary, larceny, and auto theft) when compared to the national average. The problem is multifaceted. First, there is no forensic lab facility in Alaska. Second, the officers assigned to investigative units have little or no professional training other than that received on the job. Third, the public is generally unwilling to become involved. Remedies for the above are currently being examined.

Alaska State Troopers will be impacted in a beneficial manner with the APD acquiring much of their service area within the Municipality of Anchorage. The troopers maintain a .06 to .09 ratio of officers per 1,000 in the population. The ratio of troopers to the population when compared with the ratio maintained by the APD seems low. However, statistics indicate that crime is not as prevalent in the less densely populated regions of Anchorage which characterizes the area under Alaska State Troopers' jurisdiction.

With the deemphasis on law enforcement activities due to the areawide

expansion of the APD, the troopers plan an expansion in their traffic enforcement program.

ANCHORAGE FIRE DEPARTMENT AND EMERGENCY MEDICAL SERVICES

The Anchorage Fire Department services the Anchorage Bowl and north to Eagle River. The area north of the Eagle River Service District is served by the Chugiak Volunteer Fire Department. To the south, Girdwood and Alyeska are served by the Girdwood Volunteer Fire Department. Both volunteer fire departments are under the administrative supervision of the municipal fire chief.

The Fire and Rescue Operations Division within the Anchorage Fire Department mans eleven fire stations and fifteen fire companies in the Anchorage Bowl and the Eagle River Service District. The main function is to extinguish fires and to undertake emergency rescue operations. Leading causes of fires in 1977 were careless smoking - 265 incidences, suspicious arson - 181 incidences, children playing with fire - 116 incidences, and arson - 113 incidences.

The Emergency Medical Services Division within the Anchorage Fire Department maintains five active paramedic units within the Anchorage municipal boundaries. The most frequent types of calls the medics responded to in 1977 were general illness - 3,184 incidences (13.7 percent were cardiac problems), auto accidents - 786 incidences, and assaults - 360 incidences.

The Anchorage Fire Department also maintains two other divisions: Fire

Prevention and Support Services.

Two current issues exist in the area of fire protection in Anchorage. First, the upper Hillside area is very vulnerable to fire loss due to the lack of available water resources in the area. No water mains exist in this area and consequently no fire hydrants. Until water mains are extended into this area, it will continue to remain highly vulnerable to fire loss. A second issue of concern is the amount of arson or suspicious arson occurring in Anchorage. Anchorage experienced \$8,600 loss per capita versus the national figure of \$4,500. Even considering the cost of living differential, Anchorage is above the national average.

LEISURE AND RECREATION

Leisure and recreation activities in Anchorage are provided by agencies and organizations in both the public and private sector. The majority of the recreational facilities, programs, and activities are provided by the Municipal Department of Cultural and Recreational Services. The department is divided into three major divisions: 1) the Parks and Recreation Division is responsible in parkland and facilities maintenance, special recreation which includes coordinating activities for senior citizens and handicapped, community programs which include directing community schools and community centers, and completing specifications and plans for parkland acquisition and development; 2) the Museum Division is responsible for the operation of the Municipal Historical and Fine Arts Museum; and 3) the Library Division is responsible for the coordination of activities within the six-facility municipal library system.

State and federal support of leisure and recreational activities comes largely in the form of grants to the Municipality and as grants and endowments to private nonprofit agencies and organizations. State of Alaska and the federal government also provide and maintain parkland, trails, and paths.

Over 200 private organizations, agencies, and clubs operate to provide leisure needs in the Anchorage community. Most of these organizations are largely self-supporting.

Within the Anchorage Bowl, there are 1,503 hectares (3,710.36 acres) of parkland. There are approximately 322 kilometers (200 miles) of ski/bike paths in the Anchorage Bowl with an additional 161 kilometers (100 miles) projected for construction by 1982.

Most of the existing recreational facilities are owned and operated by the Municipality. Such facilities include hockey rinks, ski hills, public ice rinks, baseball diamonds, tennis courts, golf courts, football fields, swimming facilities, and tracks.

Through the objectives stipulated under the Anchorage Comprehensive Plan as adopted into ordinance, leisure and recreation programs have been translated into departmental and divisional work programs for implementation. Planning is handled through the Capital Improvements Program - a six-year plan updated annually to reflect needs, interests, and expenditures on a realistic level. Improvements projected for the Department of Cultural and Recreational Services currently include a new library

headquarters, expansion of bike trails, acquisition of 271 hectares (670 acres) of parkland as well as development of existing parkland.

Physical Characteristics

LAND USE

The Municipality of Anchorage is located in the southcentral portion of Alaska at the head of Cook Inlet on a roughly triangular piece of land between two estuarine drainages, Knik and Turnagain Arms. The Municipality covers a land area of approximately 4,403 square kilometers (1,700 square miles) of which only 621.6 square kilometers (240 square miles) are suitable for human habitation. The remaining area is comprised of the Chugach Mountains and glaciated regions unsuitable for human development. Metropolitan Anchorage is located at the western side of the Municipality on a lowland plain that slopes gently away from the mountain front toward Cook Inlet.

Serious attempts to plan the nature of growth within the Municipality began in August 1961 with the Wilson, Ham and Blair 1980 Plan which was adopted by the City Planning Commission. The plan, in actuality, had a minimal effect. In 1969 a new zoning ordinance was adopted and an area-wide rezoning program was initiated to zone areas outside the corporate city limits of Anchorage within the Greater Anchorage Area Borough. As of 1978, urban sprawl has consumed the majority of land suitable for development in a leapfrog pattern which has outstripped the extension of utilities and other community services.

The most visible impact of rapid growth has been the availability and cost of housing. Rapid expansion of the population in the 1970's occurred in response to the economic boom of the trans-Alaska pipeline. Currently, the housing market is characterized by an oversupply of multifamily dwellings and a tight market for single family households.

About 40 percent of the developed land in Anchorage is devoted to residential uses. Because of continued multiresidential construction after the pipeline completion, vacancy rates were over ten percent by January 1978 and have continued to remain high.

Future residential land use will develop with a high density urban profile in those communities which currently house older single family residences. By 1995, it is expected that those areas will experience urban renewal with multifamily dwellings replacing the older single family homes. The communities located in the more peripheral areas of the Anchorage Bowl will probably continue to develop along a low density urban profile with a predominance of single family dwellings.

The most serious issue is the planning of future land use in the Anchorage Comprehensive Plan. The plan seriously underestimates the need for residential land in the coming years. The problem lies in the 20-year period between 1975 and 1995 where Anchorage would only realize the addition of 1,473 hectares (3,639 acres) allocated for residential development. A conservative estimate of the land developed during the first three years of this period is 766 hectares (1,893 acres). This is 52 percent of the projected amount of land allocated for the entire 20 years.

It is very probably that more land will be allocated for development by 1995 with a trend towards increased density.

The 1970's produced an abundance of commercial centers throughout the Anchorage Bowl. However, commercial activity is predominate in two areas: the strip development along Northern Lights Boulevard and the development in the central business district. It is expected that the trend in future land use will be the continued development of Northern Lights commercial strip which will ultimately exceed the central business district in traffic volume by 1995. Projections in commercial land use call for 3,055 hectares (7,546 acres) to be developed by 1995.

Industrial/wholesale activity in Anchorage occurs in three distinct areas: the Ship Creek Port-Merrill Field area, the area surrounding Anchorage International Airport, and the land bordering the Alaska Railroad south to International Airport Road. The Anchorage Comprehensive Plan projects that 399 hectares (986 acres) will be required by 1995. This is below the national average for comparable urban centers; however, there is minimal manufacturing activity occurring in Anchorage. It is likely that industrial development inside the municipal boundaries will continue to be modest, though its encouragement is important for the development of a diversified and healthy economic base.

Public and semi-public lands account for 1,021 hectares (2,523 acres) in 1975. In addition to the above, over half of all the land available for development is military. Military land use constitutes a substantial issue in future land availability in Anchorage.

Land availability is perhaps the key issue in land use. The Anchorage Municipal Planning Department estimates that the Anchorage Bowl will reach capacity by the end of the century. As noted above, the character of land use has been development in a leapfrog manner. If present development patterns persist, the growth will be characterized by incompatible land uses existing side by side.

Utilities

SOLID WASTE

The Municipality of Anchorage currently employs sanitary landfills as the method of solid waste management. There are three landfill sites within the municipal boundaries of which two are for military use only. For the majority of citizens in the Municipality, the landfill located adjacent to the Merrill Field General Aviation Airport is the only landfill available for solid waste disposal. The landfill is operated by the Department of Public Works.

Solid waste collection is mandatory within the old corporate city limits of Anchorage. Refuse collection vehicles for the old city area are municipally owned and operated. Outside the old city limits, refuse collection is handled on a subscription basis by private enterprises.

The Eagle River area, north of the Anchorage Bowl, has been transporting refuse to the Merrill Field landfill. More recently, the Department of Public Works has been examining the economic feasibility of establishing a second sanitary landfill for the area. However, preliminary analysis

indicates that the cost of transporting solid waste to the Merrill Field site is about equal to the development and maintenance of a second fill.

The communities located at the south end of Turnagain Arm subscribe to a private service for solid waste disposal. The solid waste is transported to either the Merrill Field landfill or a sanitary landfill on the Kenai Peninsula.

Preliminary 1975 reports projected the Merrill Field site life expectancy to be about 1991. With the rapid rise in population within the Municipality in recent years and the closing of several other landfills, this life expectancy has been substantially shortened to 1982. Very shortly, the Department of Public Works will begin formal procedures to obtain a new sanitary landfill location. Preliminary investigations indicate that the most plausible location in the Anchorage Bowl is the gravel pits in the Sand Lake area.

In addition, under the Capital Improvements Program, the Department of Public Works is proposing a milling operation for the shredding of solid waste. This procedure has several distinct advantages: 1) shredded waste is more aesthetically pleasing and produces a nondescript odor and 2) reduction in the volume of solid waste is a substantial 30 percent, thus extending the life expectancy of any sanitary landfill. The shredding facility is due to become operational in May 1979.

The plant will be designed to separate combustibles from noncombustibles and recover ferrous materials for further resource utilization. Investi-

gation between the Municipality of Anchorage and the military of utilizing the combustibles as a fuel source in power generation has been jointly examined. Burning of combustibles would reduce the volume in the sanitary landfills by 60 percent to 65 percent.

By implementing milling operations and thermal reduction, the Department of Public Works is in hopes of less opposition in securing a new sanitary landfill location within the Anchorage Bowl.

WATER

Anchorage has an abundant water resource potential, much of which is untapped, and the water quality is very good.

Water resources are currently tapped and distributed by three separate utilities. The Municipality of Anchorage Water Utility (AWU) is the largest of the providers obtaining one-half of its water supply from Ship Creek and the balance from ground water sources (wells). The military is the second provider and uses Ship Creek as its main source of water. Central Alaska Utility (CAU), a private corporation, provides its customers through a series of wells located in the southern portion of the Anchorage Bowl. Those not served by the above utilize private ground water resources.

Due to rapid growth in recent years, a tremendous strain has resulted on the current water resources in use and, in effect, has created a water shortage for the Anchorage Bowl residents. The status of the Anchorage

water supply is characterized as inadequate and undependable with the summer season being the most critical time.

In addition, there is a serious problem with line loss leakage in the distribution system. The system is primarily unmetered making isolation of extreme leakage areas difficult to detect. However, there is a movement toward metering in multifamily structures and commercial industrial complexes as well as an examination of the feasibility of metering all new residences.

Short-term plans have been implemented to alleviate the summer shortages, but long-term planning is mandatory in order to handle the increasing growth in the Anchorage area. Currently, the utilities are awaiting the outcome of a comprehensive document being generated by the U. S. Army Corps of Engineers entitled the Metropolitan Anchorage Urban Study (MAUS) which examines water resources and alternatives of development. Preliminary reports recommend that further development of Ship Creek is the best course of action.

SEWER

Wastewater disposal in Anchorage is handled in one of two ways - either on-site septic disposal or through an extensive sewer system under the jurisdiction of the Department of Enterprise Activities within the municipal government of Anchorage.

Wastewaters within the Anchorage Bowl that are intertwined with the Anchorage

sewer system are deposited in two primary lift stations. From there, they are pumped to Point Woronzof primary sewage treatment plant. The facility is sized to handle a peak flow capacity of 128.7 million liters per day (34 million gallons per day), and average outfall from the Point Woronzof plant is currently at capacity. However, during spring breakup, infiltration/inflow problems occur in the distribution system, and the wastewater flow ultimately exceeds plant capacity. The excess wastewater must bypass primary treatment and is currently dumped directly into Cook Inlet.

The Point Woronzof plant, under the Capital Improvements Program, is due for expansion in 1979 and 1980. By 1985, depending on the development in the Anchorage Bowl, further expansion or a second alternative will be necessary.

Effluent characteristics are currently established by the National Pollution Discharge Elimination System Permit. This permit is issued by the Environmental Protection Agency under the authority of Public Law 92-500 for the operation of the Asplund Water Pollution Control Facility (Point Woronzof plant). Public Law 92-500 is mandating the installation of secondary sewage treatment facilities throughout the United States. However, provisions have been made which should permanently exempt Anchorage from such a costly installation. Primary treatment is considered sufficient due to the fast and turbulent tides of Cook Inlet, creating rapid disbursement of wastewater.

In respect to rapid development in recent years, the Anchorage Sewer Utility

has contracted with Bomhoff and Associates to devise a master plan. The task is to examine the current conditions and recommend line extensions throughout the Anchorage Bowl based on a 1995 population projection of 376,000 people. This will definitely interrelate with land use planning and future types of development in Anchorage.

Eagle River has a small secondary sewage treatment facility which was operating at capacity in 1977. The facility is to be expanded and due for completion in 1979. The plant should again reach saturation in 1990 based on a projected population for the community of 17,000. At that time, expansion would be necessary. The surrounding communities adjacent to Eagle River are currently using on-site septic systems as a means of wastewater disposal.

Past wastewater disposal for the community of Girdwood at the south end of Turnagain Arm was exclusively on-site. Plans for a secondary sewage treatment plant is scheduled for completion in 1978. The life expectancy of the plant is 1997 based on a population for the service area of 10,000 people.

ELECTRICITY

The Municipality of Anchorage receives electrical generation and distribution from several utilities. The Anchorage Bowl obtains power from Chugach Electric Association, a cooperative, and Anchorage Municipal Light and Power. The communities of Eagle River-Chugiak obtain power from Matanuska Electric Association, a cooperative, which purchases much of

its power from Chugach Electric Association. South and east of the Anchorage Bowl, power is supplied by Chugach Electric Association. The military bases, Fort Richardson and Elmendorf Air Force Base, provide their own generation needs.

Chugach Electric Association services 46,000 customers. Total generation capabilities for this utility is 340.59 megawatts (MW). The predominate fuel source used in power generation is natural gas.

Municipal Light and Power is a government operated utility serving approximately 15,737 customers. The predominate fuel source is natural gas. Total peak generation capacity is 146 MW.

With the imminent shortage of fossil fuels, specifically natural gas, pressure is being placed on utilities across the country to develop alternative methods of power generation. The Natural Gas and Petroleum Conservation and Coal Utilization Policy Act, HR 5146, if enacted, would prohibit the use of gas fired turbines by 1990. However, there are provisions to exempt both Alaska and Hawaii.

Due to rapid growth in recent years, the utilities are currently facing power shortages during the winter months. However, Municipal Light and Power has major plans on board for a 100 MW coal fired plant due to become operational by 1983. Chugach Electric's long-term plans include the addition of seven turbines between 1979 and 1983 estimated at 70 MW each. Plans for Chugach Electric also include a new two phase coal fired plant due to become fully operational by 1986 adding 400 MW to their

generation capacity.

TELEPHONE

The telephone system for the Anchorage Bowl functions as a utility under the Department of Enterprise Activities within the Municipality of Anchorage. The Eagle River-Chugiak area receives telephone service from Matanuska Telephone, a cooperative. Alyeska-Girdwood at the south end of Turnagain Arm utilizes GAB Telecommunications, a private utility.

The Anchorage Telephone Utility is involved in a long-term process of installing solid state switching equipment. About 25 percent of the existing switching equipment is solid state; and as older equipment becomes too expensive to maintain, it will be replaced with newer technology.

One distinct advantage which the telephone utility has over other utilities in meeting service demands is in lead time. Lead time required to expand their system is minimal compared to water, sewer, electricity, and solid waste.

Transportation

ROADS

Transportation planning efforts for roads in Anchorage began in 1938 with the Traffic Circulation Plan and culminated in 1972 with the ongoing Anchorage Metropolitan Area Transportation Study (AMATS) Ten Year Plan.

Currently, parts of the Anchorage Bowl are plagued with heavy traffic congestion, particularly the central business district and the industrial areas of Ship Creek. The corridors providing access to this area are presently at capacity.

The commercial development along other major arterials have produced problems with transportation accessibility due to inadequate streets and unlimited access to commercial establishments. In part, traffic congestion in the Anchorage Bowl is the result of land use outpacing transportation improvements.

Another issue of community concern is the problem of auto emissions and air quality control. Fifteen areas within the Anchorage Bowl are potentials for exceeding the National Ambient Air Quality standards.

AMATS has proposed both short- and long-range plans to accommodate transportation problems and remedy current conditions.

The short-range plan proposes expanding, widening, and improving the road network in Anchorage for calendar years 1977 through 1982 and is noted as the Transportation Improvements Program.

The recommended long-range AMATS plan, 1978-1995, proposes facilities to improve the overall roadway network, extend existing streets into newly developing areas, and link primary employment centers to residential areas. There is a minimal amount of new roadway construction under this recommended plan.

It should be noted that projects such as road construction are conducive to time slippage. If proposed plans face no obstacles in implementation and incurs relatively few delays, the future of Anchorage's road network should function smoothly. However, if time delays are continually encountered, Anchorage with its present conditions could be playing catchup in the transportation arena for the rest of the century.

MASS TRANSIT

The AMATS plan has incorporated mass transit into the planning process. The short-term plan is entitled the Transit Development Program (TIP 1978-1982), and the long-range element has included mass transit in the recommended long-range plan (1977-1995). The transit goal is to accommodate public needs, reduce auto dependency, and develop a multimodal transportation system.

Current data on the People Mover Bus System indicate a point six percent ridership, and studies point to the fact that most of the people utilizing the system are the young and elderly who essentially have no other means of transportation.

The short-range plan calls for restructuring existing routing to more closely follow the desires of the community. The system will acquire 62 new buses during the TIP time frame and nine buses will be retired.

The long-range plan is projecting a 14.4 percent ridership, and a fleet of 540 buses is planned for 1995. The increase in ridership will hopefully

be accomplished by increasing service on existing routes and expanding service to encompass outlying residential and commercial areas.

One issue affecting both the recommended plan for the road network and mass transit is a result of deficit spending. Alternative sources of revenue will have to be examined to offset the cost of road expansion and proposed increases in the transit system.

The combination of expanding the mass transit system in the AMATS plan and the proposed minimal amount of new road construction in the recommended plan are complimentary. The minimal amount of road construction should assist the transit system in attaining a higher ridership.

In addition, new construction and road expansion plans are geared toward population growth and future land use plans indicating that planning is being handled in an ubiquitous nature.

PORTS

The Port of Anchorage is owned and operated by the Municipality of Anchorage. The Army Corps of Engineers has responsibility for maintaining navigable waterways. In addition, the U. S. Coast Guard installs and maintains navigational aids and sets safety standards for maintaining waterways and ship operations.

The high tides and concomitant currents help break up winter ice flows in Cook Inlet to allow year-round traffic at the port.

The Port of Anchorage dock area consists of a petroleum-oil-lubricant terminal and three general cargo terminals. The two largest carriers using the port are Sea-Land Service Inc. and Totem Ocean Trailer Express Inc. (TOTE).

The ability of the Port to accommodate several large vessels simultaneously is limited by the available general cargo dock area. TOTE introduced two new vessels which are the world's largest roll-on/roll-off trailer vessels. These vessels each occupy one and one-half berths when docked. Consequently, it is difficult to offload other vessels at the same time.

To remedy this problem, the Port has begun constructing an extension of one of the terminals. This will solve the berth-space problem for TOTE as well as freeing the other two terminals for simultaneous use by smaller vessels.

The Port's 1979 and 1980 Capital Improvements Program calls for development of a new staging area, Transit Area D. Completion of this project would enable the Port to meet anticipated demand through 1990.

Once Transit Area D is developed and a fourth terminal constructed, the Port of Anchorage will have exhausted the supply of available land within its boundaries.

Once the Port hits saturation, other ports such as Seward and Whittier will absorb some demand. However, it is likely that a new port location will have to be developed. A site located across Knik Arm has received

frequent mention.

AIRPORTS

Anchorage is frequently sloganed the crossroads of the airworld. Within 12 air miles, there are five controlled airports: two military airports, Merrill Field General Aviation Airport, Lake Hood Float Plane Base, and Anchorage International Airport. In addition, there are an abundance of private uncontrolled airstrips in the Anchorage Bowl with some having as many as 100 aircraft tied down.

One obvious issue regarding aviation conditions in Anchorage is the severe airspace problem. Because the Anchorage Bowl is delineated by 1,524 to 2,438.4 meter (5,000 to 8,000 foot) mountains and the waters of Cook Inlet, airspace and land space are limited.

The Federal Aviation Administration recommends that the Anchorage area can safely handle 825,000 operations per year. Total operations from four of the five controlled airports for 1977 was over 800,000. Adding in all of the private airstrips as well as operations from the fifth controlled airport (figures unavailable) place yearly operation estimates at well over one million per year.

With the lack of available roads for access into Alaska's vast interior, small plane aviation, especially in the summer months, is big business. As the population in the Anchorage area continues to increase, there is an ever increasing propensity to own and operate one's own aircraft. This

has resulted in the problem of air traffic safety as well as lack of available tie down space. For example, Lake Hood has an approximate two year waiting list for aircraft parking space.

Plans are on board for the expansion of Merrill Field. Expansion of Birchwood Airport, north of Anchorage, will help alleviate some congestion presently plaguing Merrill Field. Expansion of Anchorage International Airport includes the construction of a new north-south runway. However, construction of this new addition is currently at a standstill due to court injunctions over the future impact of the runway.

In long-term planning, reference has been made to relocating Anchorage International Airport across Knik Arm if the Knik Arm road crossing is ever constructed. This would definitely relieve air traffic congestion currently characterizing the Anchorage Bowl.

Conclusion

Anchorage has evolved into a major metropolitan crossroads with many of the resultant benefits and problems.

Economically, Anchorage appears to be riding the crest of prosperity generated primarily by the oil and gas development in the state. However, the pipeline related boom has begun to plateau. There has been an impressive but more normal economic growth in 1977 and 1978 which has been sufficient to cope with unemployment caused by the completion of the pipeline.

With a population that is expected to exceed 200,000 in 1978, local government is now called upon to deliver an increasing number of costly services. Problems are increasingly complex, and service costs are escalating rapidly.

One may conclude that continuing population growth and any major expansion due to OCS development are going to impact municipal services in the following manner:

- Increasing diversity of service demands;
- Increasing extension of urban services to the less populated areas of the basin;
- Increasing demand for major capital expenditures for facilities usually found in large urban centers;
- Increasing incidence of public safety, social services, transportation, health, and other service problems generally endemic to large areas

It is difficult to determine whether the increased fiscal benefits of growth and development will compensate for the increased costs in services to the community. It appears that the cost of government will rise faster than the corresponding increase in the tax base. If this is true, then even the indirect impacts of development would have a deleterious and expansive affect on government.

