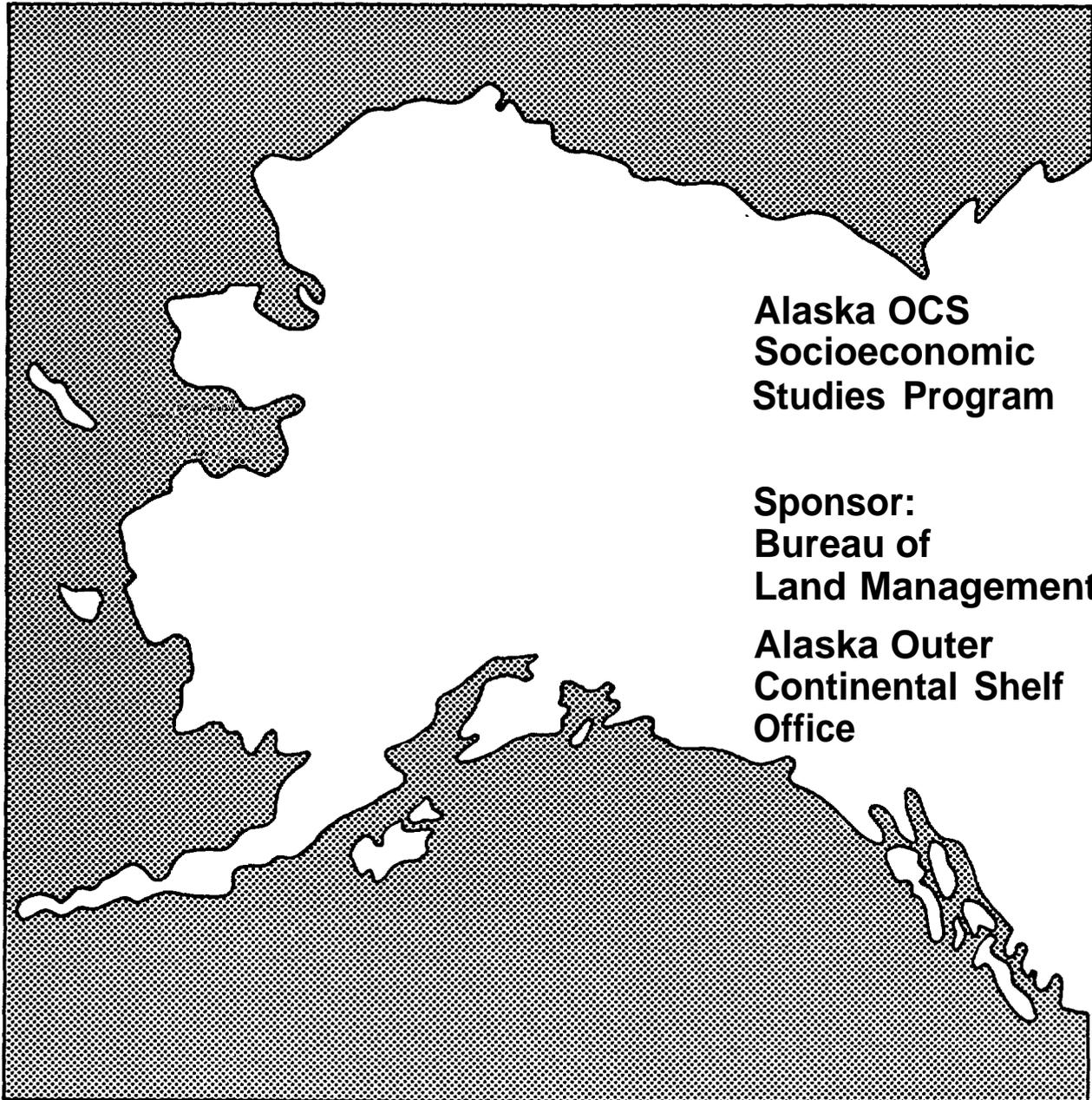


Technical Report
Number 11a



**Alaska OCS
Socioeconomic
Studies Program**

**Sponsor:
Bureau of
Land Management
Alaska Outer
Continental Shelf
Office**

Beaufort Sea Region
Socioeconomic Baseline
Executive Summary

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 various 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 Coordinator (COAR), Socioeconomic Studies Program, Alaska OCS Office, P. O. Box 1159, Anchorage, Alaska 99510.

TECHNICAL REPORT NUMBER. 11a

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ALASKA OCS SOCIOECONOMIC STUDIES PROGRAM

BEAUFORT SEA REGION
SOCIOECONOMIC BASELINE

EXECUTIVE SUMMARY

PREPARED FOR

BUREAU OF LAND MANAGEMENT
ALASKA OUTER CONTINENTAL SHELF OFFICE

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ALASKA OCS SOCIOECONOMIC STUDIES PROGRAM
BEAUFORT SEA REGION SOCIOECONOMIC BASELINE/EXECUTIVE SUMMARY

Prepared by
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This executive summary highlights key insights drawn from the Beaufort Sea Region Sociocultural Systems report. The objective of the following report is to promote an understanding of the sociocultural dynamics of the Beaufort Sea Petroleum Development Region. The report attempts to demonstrate that the social, cultural, and psychological values are as important as the economic values of the environment to the regional population.

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I. INTRODUCTION

Purpose of the Socioeconomic Studies Program

The Alaska OCS Socioeconomic Studies Program is a multi-year, multi-disciplinary research program designed to assess the social, economic and physical impacts likely to result from future offshore oil and gas development on the Alaskan Outer Continental Shelf. The Studies Program is being conducted for the Alaska OCS office of the U.S. Department of the Interior, Bureau of Land Management (BLM), which bears major responsibility for administering mineral leasing and development activity in the offshore areas of Alaska lying under federal jurisdiction.

Program products are designed to be of assistance in making federal OCS decisions; state and local governments and local communities may also find program products to be of value to them. Immediate applications include the preparation of environmental impact statements for specific OCS lease-sales, development of lease-sale stipulations and limitations, and long-range assessment of the socioeconomic effects of federal lease-sale policy. In addition the Program is to develop a better understanding of the potential consequences which OCS petroleum development may have on Alaska's unique natural endowment and culture.

Purpose of this Executive Summary

This Executive Summary is intended to highlight the major findings of the Beaufort Sea Region Socioeconomic Baseline Report. The purpose of the

Beaufort Sea Region Socioeconomic Baseline Report is to provide a basis upon **which** to project socioeconomic impacts on **the Beaufort** Sea petroleum development region, given a variety of Outer Continental **Shelf** (OCS) petroleum development scenarios. The report **is** based on four essentially concurrent investigations of the Beaufort **Sea** region conducted from 1976 to 1978. These investigations are reported in Studies Program Technical Reports:

- Number 5, "Baseline **Study--Beaufort** Sea Region--Interim Report", CCC/HOK (Crittenden, **Cassetta**, Cannon/Helmuth, Obata, **Kassabaum**)

- Number 8, "**Beaufort** Sea Region, Man-Made Environment", Alaska Consultants, Inc.

- Number 9, "Beaufort Sea Region **Sociocultural** Systems", World Associates

- Number 10, "Beaufort Sea Region--Natural Physical Environment", Dames & Moore

Other Technical Reports related to the Beaufort Sea Region **include:**

- Number 4, "Preliminary **Report--Prudhoe** Bay Study", CCC/HOK (Crittenden, Cassetta, Cannon/Helmuth, Obata, **Kassabaum**)

- Number 6, "**Beaufort** Sea Region Petroleum **Development** Scenarios", Dames & Moore

- Number 12, "Anchorage Socioeconomic Baseline", Richard L. Ender, et al
- Number 14, "Alyeska-Fairbanks Case Study", Wordsmiths
- Number 16, "Beaufort Sea Region Governance Study", ISER (Institute for Social and Economic Research)

Detailed information and analysis of four individual Beaufort Sea Region communities (Barrow, Kaktovik, Wainwright, Nuiqsut) are reported in the latter chapters of the Beaufort Sea Region Socioeconomic Baseline Report itself.

The Concept of a Baseline

The Beaufort Sea Region Socioeconomic Baseline Report is far more than a mere compilation of quantified facts by which certain OCS-induced changes can be assessed. Many facets of the report can be used for this purpose. However, the greater proportion of the report is devoted to highlighting and analyzing the critical socioeconomic and sociocultural elements and relationships which comprise the socioeconomic environment of the Beaufort Sea region.

Baseline descriptions of a **community** or a region can exhaustively cover every observable facet of daily life. However, not every facet of **life** is likely to be significantly affected by OCS development.

Baseline descriptions can also be so narrowly focused as to miss the salient features of life as experienced by residents. **By** treating **of** communities and regions **only** as "elements", "indicators", and "subject areas", the **product of** study tends to be disintegrative. Conceptually this approach is more akin to anatomy than to physiology--it asks "what are the parts" rather than "how does it work".

It was found that a synthesis of analytic approaches to baseline study was required to meet multiple program needs. The synthesis involved the identification of critical community and regional components, the evaluation of current **endogenous** and exogenous sources of change, and the analysis of the functional organization among different sectors of community and regional life, as well as susceptible **community** relationships, values, activities, and processes.

Methodological Implications

With a general understanding of how the Beaufort Sea Region "works", it was then possible to select and measure those aspects of **community** and regional life most likely to be affected by OCS development. Each approach required a research method appropriate to the form of the existing data. In establishing change in population, for example, census data compiled using identical methods and boundaries were necessary at specific points and intervals. However, in establishing change in political and cultural systems, the baseline represents a span of time rather than a point in time. For example, where the object of study is "effective

political leadership", the baseline includes changes and trends discoverable **only** through the examination of the past decade. These trends may, in turn, form the **basis** for projections concerning leadership; in doing so, they are more useful than a **simple** listing of powerful positions and their occupants at a **single** point in time.

Many areas of social, economic, political, and cultural concern required examination with both qualitative and quantitative methods. For example, in wage and subsistence issues, it was found useful to have quantified information at specific intervals about such indicators as income levels, employment, and prices of ammunition, fuel, and food, as well as trends in who is employed and during what season, herd movement and size, wildlife regulations, participation in subsistence activities, and so on. Similarly, in health and social services, not only level of services but type, appropriateness, and adequacy were examined.

The Value of Analytic Interpretation

In order to satisfy the decision needs of BLM, the investigators expended considerable effort in analyzing their data and drawing conclusions of potential utility to ELM. They focused on long and short term trends, on the roots and dynamics of change, and on the established patterns of response to change. As a consequence of this effort, the report should have a useable life far longer than most "baseline" reports. While much basic data may become swiftly outdated (requiring renewed data collection), it is unlikely that basic regional socioeconomic and **sociocultural** dynamics

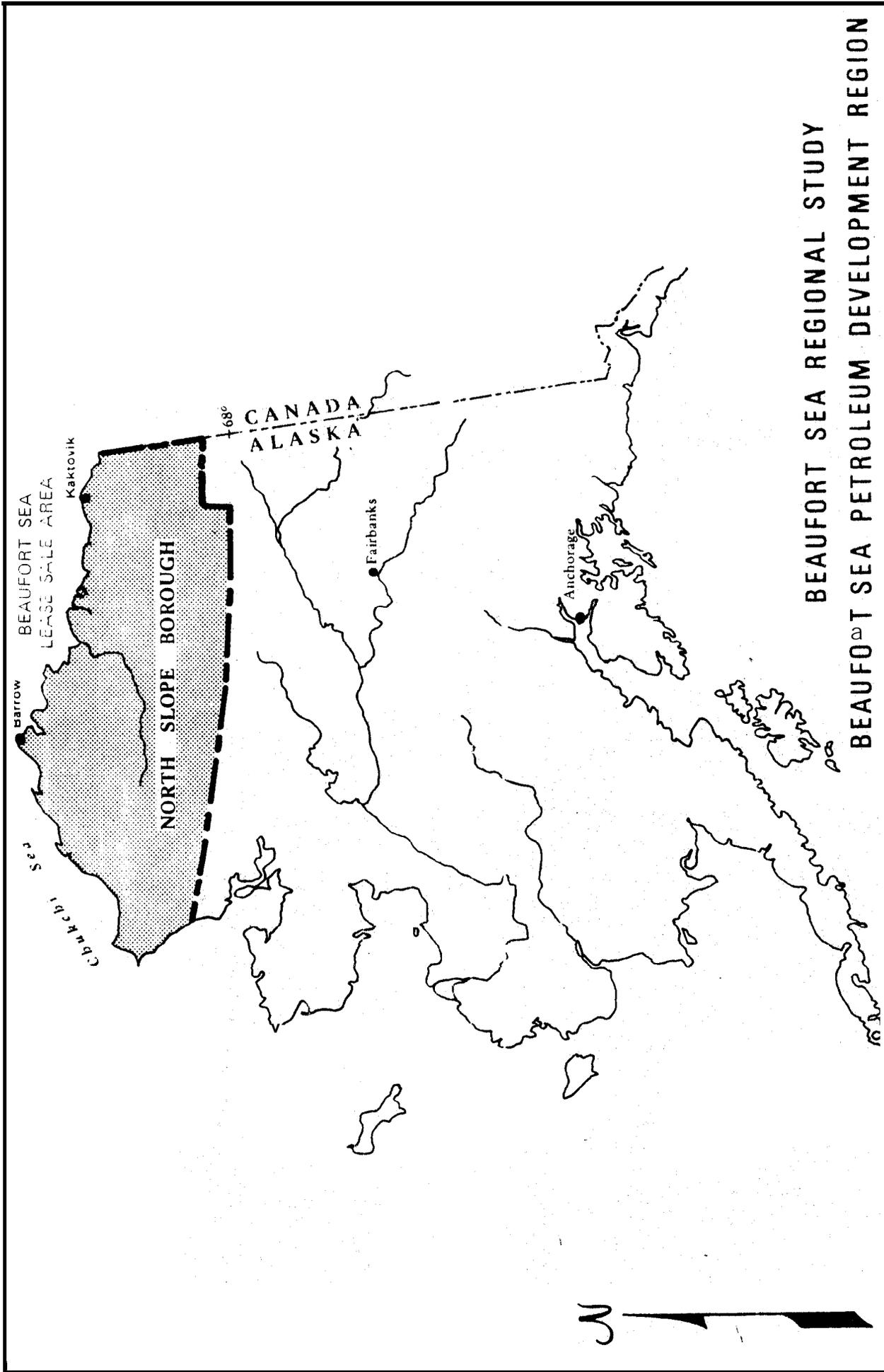
are equally mutable. Many of these dynamics are rooted in thousands of years of **social** custom and a **high** degree of social and economic **interdependence**. To **the degree** that OCS **activities** will be projected to contribute to the alteration or perpetuation of these dynamics, it can be said **that** these **activities** will have a **measureable** impact, positive or negative, on the Beaufort Sea Region socioeconomic environment.

The investigation of socioeconomic impacts flowing **from OCS** events and activities is not unique to the Beaufort Sea region. The Socioeconomic Studies Program will be engaging in similar studies in other regions adjacent to potential OCS lease sale basins as the lease sale schedule indicates federal lease sale intentions.

Definition of the Beaufort Sea Region

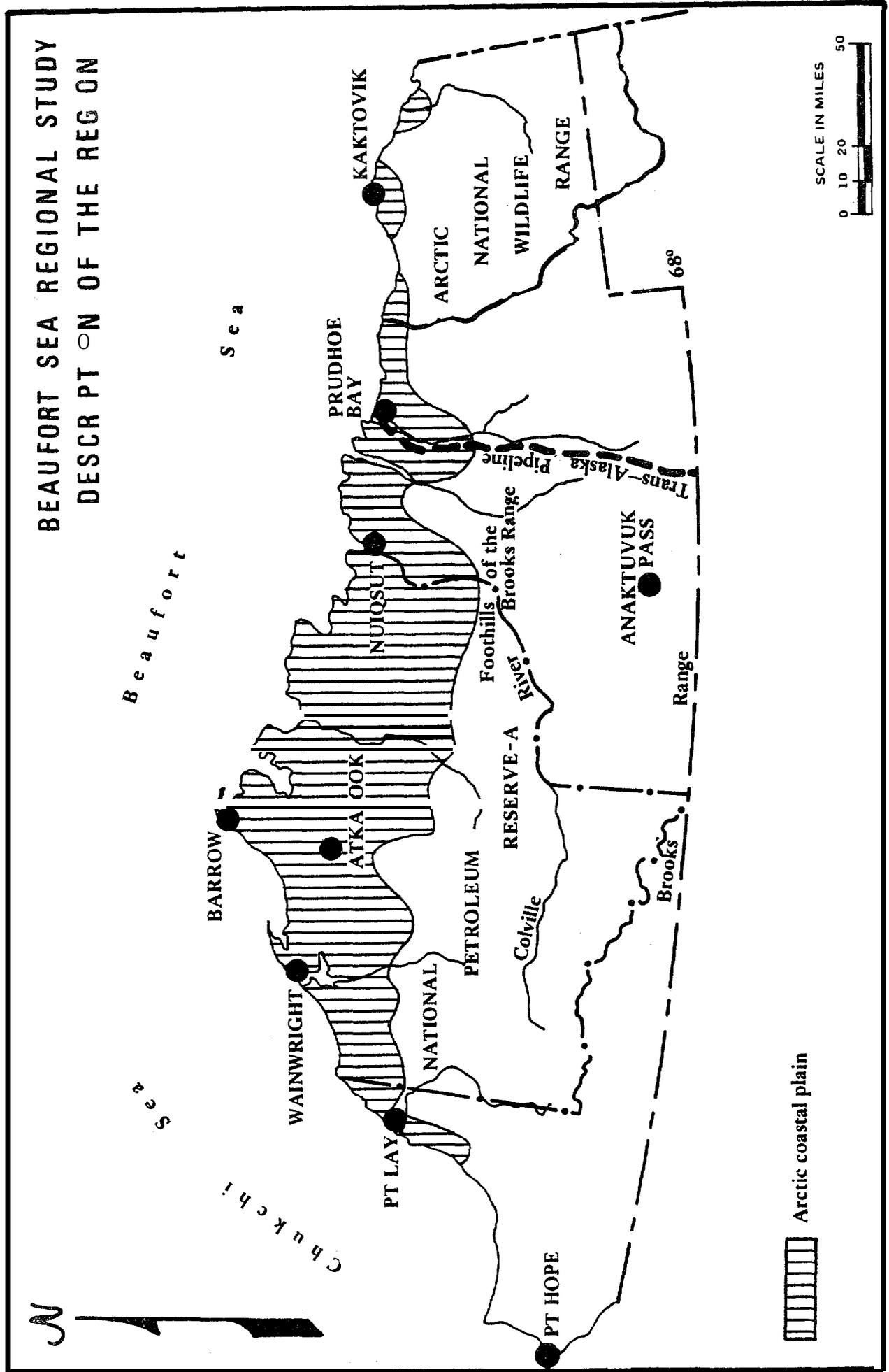
For analytic convenience, the geographic boundaries of the Beaufort Sea region are identical with those of the North Slope Borough (see Figures 1 and 2). The North Slope Borough covers a 228,648 square kilometer (88,281 square **mile**) area across the extreme north of Alaska. It extends from near Point Hope on the **Chukchi Sea** **approximately** 1,040 kilometers (650 miles) east to the Canadian border, and from Point Barrow in the north to 68 degrees latitude in the Brooks Range, a distance of about 360 kilometers (225 miles). The Borough's estimated 9,643 permanent and temporary residents in July 1977 lived primarily in the **Prudhoe** Bay area (which, including pipeline camps, accounted for 55.5 percent of the Borough's 1977 population) or in eight widely separated traditional Eskimo

FIGURE 1



BEAUFORT SEA REGIONAL STUDY
BEAUFORT SEA PETROLEUM DEVELOPMENT REGION

FIGURE 2



communities--Anaktuvuk Pass, Atkasook, Barrow, Kaktovik, Nuiqsut, Point Hope, Point Lay and Wainwright.

The remoteness of this region from major centers of population and commerce, the low population density, the harsh climate, the forbidding terrain, and the hazardous transportation conjure in most minds an image of Arctic Alaska as a frontier. However, the report highlights the modern reality of Arctic Alaska as created by those who know it not as a frontier but as their home.

II. SOCIOCULTURAL FINDINGS

Economic Development and Adaptation

Investigation of the **sociocultural** development of the Beaufort Sea Region permanent resident population began with an analysis of the traditional economy and social organization of the Inupiat (or Eastern) Eskimo. These traditions are part of a 10,000 year history of Inupiat settlement in and use of Arctic Alaska and determine, in part, the Inupiat response to exogenous change.

Traditionally this Inupiat population was dependent on a rich marine mammal and caribou harvest. The types of human settlements were determined largely by the availability of the wildlife resources. Most settlements tended to be quite restricted in size, with the exception of summer trading sites.

Inupiat social organization has traditionally been closely tied to the subsistence (renewable natural resource) economy. Many **cultural** phenomena (sense of space, **development** of identity, religion, and so on) are intimately tied to the subsistence economy. The family has been the key social unit, economically self-sufficient, cooperatively and collectively undertaking **economic** activities such as whaling, hunting, and fishing. Economic activities have traditional age and sex differentiations. successful dependence on variable resources was possible only by thorough social organization, cooperation among non-kin groups, extensive sharing, and total use of the resource.

Since initial contact with Western society in the early 1800's, the Inupiat have experienced significant changes in their technology and their available resource base. The Inupiat have also experienced a number of economic booms and **busts**, based on Western exploitation of **renewable** and nonrenewable resources; each bust resulted **in** a return to **reliance** on traditional subsistence activities, supplemented by **Western** tools and foodstuffs. Each cycle of development and decline resulted in decreasing subsistence autonomy.

The first major development was in **commercial** whaling in **the mid-1800's**. The whaling period was marked by the introduction of alcohol and disease. In addition, there was a considerable decline in the marine and land **mammal** resource due to increasing hunting pressure. As a consequence of disease and starvation, there was a massive decline in the Inupiat population. This period made the Eskimo into a wage-earner, provided him with a new and more effective technology, created a dependence on external sources for tools and staples, but did not significantly alter the socioeconomic system.

The second development was the introduction of reindeer herding in the early 1900's. This was a transitory adaptation by the Inupiat, without lasting socioeconomic change. The industry declined in response to government regulations on corporate ownership, the foreign **concept of** individual ownership of a biological resource, and environmental factors.

The third development was the introduction of **fur** trapping in the early 1900's. Trapping patterns altered some traditional caribou hunting and

sealing patterns and led to less migration from permanent settlements. Trading provided trappers with traditional whale and walrus products. The decline in fur trapping resulted in a return to traditional subsistence activity but with less autonomy from a cash economy due to increased dependence on imported **tools**, staples, and other goods.

The fourth major development was petroleum exploration and development in the mid-1900's. This resulted in increasing but still limited participation in wage activities. Researchers point out that while wage-earning created a reliance on a cash economy, wages also were used in support of greater participation in subsistence activities.

Development of Government

A large number of forces unrelated to OCS development are, singly and in various combinations, rapidly altering **Beaufort** Sea communities and the region as a whole. The rapidly increasing rate and magnitude of mid-20th century change is directly attributable to specific exogenous and **endogenous** sources.

A new source of economic and social change occurred in the late 1960's and early 1970's. From the American purchase of Alaska from Russia in 1867 until the 1970's, the United States has exercised dominion over the land of all Alaska Natives without a **treaty** compensating them for loss of their rights over land. In 1971, following the discovery of oil at **Prudhoe Bay**, Congress passed the Alaska Native Claims Settlement Act

(ANCSA) which conveyed millions of acres of land back to Alaska Natives and compensated them in cash for the remainder of their land claims.

ANCSA contributed to the development of new forms of political organization--centralized in authority, regional in scope, based on formal geographic boundaries and non-kin relationships. These new forms contributed to both major rapid socioeconomic change and **sociocultural** integrity.

ANCSA resulted in the creation of the Arctic **Slope** Regional Corporation (**ASRC**) as the profit-making institution responsible for substantial Inupiat cash and land holdings. ASRC made shareholders and landholders of Inupiat. In the management of lands, the ASRC must deal with the potential conflict between modern land development and traditional land use.

The Inupiat responded to massive changes by creating the North Slope Borough (**NSB**) and investing it with extensive areawide powers and responsibilities. Using the Prudhoe Bay oil fields as its major revenue base, NSB became the major employer in traditional communities and initiated a massive capital improvements program which is altering the everyday life of community residents. By providing basic utilities (power, water, sewage) the Capital Improvements Program not only reduced health and safety hazards but eliminated the traditional and arduous tasks which occupy much of daily life (chopping and hauling ice, and so on).

The resources available to the Inupiat enabled them to reestablish traditional villages, to sponsor an international (Canada, Greenland, Iceland,

Alaska) Inupiat conference on circumpolar affairs, and to pursue legislation on remaining land status and land use issues, access to subsistence areas, and wildlife management. Meanwhile, the Alaska Statehood Act and ANCSA contributed to more formal village government. Village councils have a wide variety of concerns, powers, and methods beyond those formally invested; for example, they continue to provide the traditional mechanism to the solution of individual, family, and social problems. They successfully incorporate traditional values, activities, leadership patterns, and decisionmaking methods into the council form of government.

Subsistence Concerns

Subsistence was found to be a major issue to Beaufort Sea residents. The issue is one of law, regulation, wage dependence, and sociocultural loss. Investigation disclosed that modern subsistence is not substantially different from traditional subsistence. It is still based on a socioeconomic unit engaging in a variety of harvests and an exchange and reciprocity system.

The Inupiat residing along the American and Canadian portions of the Beaufort Sea feel themselves threatened by changes to subsistence. Almost all subsistence resources are closely regulated and many are possibly depleted. Since there is an annual subsistence resource cycle, the piecemeal alteration of each resource may seriously diminish the traditional complex social, cultural, and subsistence interdependency.

There is **also** a great concern about the potential effects of OCS petroleum development and pipelines on the wildlife resource. Residents fear that industrial activities will **negatively affect wildlife** habitat and migration, that petroleum discharges will kill fish and marine mammals, and that increased economic development will result **in** increased numbers of sport hunters utilizing the subsistence resource.

Past and current economic development has led to populations and settlements of a size unable to be supported by purely subsistence means. If onshore and offshore petroleum development, like previous economic booms, is a brief moment in the history of the Inupiat, the Inupiat **feel** that there may be, unlike prior bust periods, an insufficient and heavily regulated subsistence resource to which they may **return**.

Interethnic Relations

The history of contact among whites and Inupiat has been an unhappy one. Early commercial ventures were hampered by language problems, taboos and customs, religious differences, habits, and denigrating perceptions of each group by **the** other. The Inupiat system of traditional laws was threatened when outsiders entered the society with their own imported laws and practices. Other important change agents were the churches, hospitals, and schools. The rate and pattern of current change has not yet been clarified, given the transitional nature of current developments. For example, the development of local **control over** basic social institutions (health, education, **public** works) by the North Slope Borough is too

recent a phenomenon to assess resulting changes in residents' perceptions and attitudes towards themselves and others. The ability of governmental and corporate institutions to isolate ethnic groups may contribute to long-term cultural integrity and homogeneity.

III. POPULATION AND ECONOMY FINDINGS

Population'

Due to petroleum **development** since 1970, the population within the NSB more than doubled due to the transient workers in the industrial enclaves in Prudhoe Bay and NPR-A (see Table 1). Petroleum development in general has led to larger settlements involved in a wage economy and functioning as government service centers. The population of the region's traditional communities rose approximately one-fifth from 1970 to 1976 (3,075 to 3,535). During the same period of time, the petroleum development population increased from 282 to 8,856. The NSB has a predominantly Native population, exclusive of the Prudhoe Bay workers. Counting Prudhoe, however, Natives are a minority population in NSB. There is little direct population impact on NSB traditional **communities** from Prudhoe, although as NSB tax revenues from Prudhoe allow expansion of NSB services, more whites as service providers in health and education are drawn to traditional communities. The petroleum related population does not, in the **main**, participate in the social, political, or service areas of everyday NSB life. The petroleum related population **has** fluctuated markedly, rising sharply during the construction of the **trans-Alaska** pipeline and declining **sharply** at its completion in 1977. Expanded petroleum **explora-**tion activities within the Borough only somewhat offset this decline in overall population. The NSB levies a \$1,500 per capita tax on all petroleum related employment. As the petroleum population declines, there is a major concurrent decline in NSB revenues which support NSB service and capital programs.

TABLE 1
POPULATION ESTIMATES
NORTH SLOPE BOROUGH REGION
1939 - 1977

Community	1939	1950	1960	1970	Jan. 1974	Jan. 1975	July 1975	Dec. 1975	July 1976	Jan. 1977	July 1977
<u>Traditional Communities a/</u>											
Anaktuvuk Pass	---	66	35	99	134	134	129	129	150	150	151
Atkasook (Meade River)	78	49	30	---	---	---	---	---	---	---	86
Barrow	363	951	1,314	2,152	2,163	2,163	2,141	2,107	2,294	2,294	2,220
Kaktovik	13	46	120	123	141	141	119	119	123	123	134
Nuiqsut	89	---	---	---	145	145	149	149	152	152	157
Point Hope	257	264	324	386	404	404	384	403	408	408	412
Point Lay	117	75	---	---	27	27	48	48	51	51	54
Wainwright	341	227	253	315	354	354	341	344	3	5 397	398
	<u>1,258</u>	<u>1,678</u>	<u>2,076</u>	<u>3,075</u>	<u>3,368</u>	<u>3,368</u>	<u>3,311</u>	<u>3,299</u>	<u>3,535</u>	<u>3,572</u>	<u>3,612</u>
<u>Oil & Gas/Pipeline Camps b/</u>											
Prudhoe Bay/Deadhorse Area	NA	NA	NA	279	927	3,158	5,022	5,531	8,801	7,765	5,318
NPR-A	NA	NA	NA	3	5	5	5	---	55	505	33
				<u>282</u>	<u>932</u>	<u>3,163</u>	<u>5,027</u>	5,531	<u>8,856</u>	<u>8,270</u>	<u>5,351</u>
<u>Military Stations c/</u>											
Cape Lisburne	---	---	NA	83	112	112	112	112	112	112	92
DEW Line	---	---	NA	111	111	111	111	111	111	111	108
				<u>194</u>	<u>223</u>	<u>223</u>	<u>223</u>	<u>223</u>	<u>223</u>	<u>223</u>	<u>200</u>
<u>TOTAL</u>				<u>3,551</u>	<u>4,523</u>	<u>6,754</u>	<u>8,561</u>	<u>9,058</u>	<u>12,614</u>	<u>12,065</u>	<u>9,163</u>

a/ population for traditional communities since 1970 based on actual counts or Borough Planning Department estimates. The estimates for Barrow appear low. In the opinion of Alaska Consultants, Inc., the community's 1977 population was at least 2,700 persons.

b/ Population for oil/gas and Pipeline camps since 1970 provided to the North Slope Borough by industry groups. Estimates for NPR-A from January 1974 through December 1975 provided by the U.S. Geological Survey.

c/ Population for Cape Lisburne since 1970 provided to the North Slope Borough by the U.S. Air Force. Population for DEW Line stations (excluding POW-Main) provided to the North Slope Borough by FELEC Services, Inc. for the period December 1975 through July 1977. DEW Line populations back through 1970 assumed by Alaska Consultants, Inc. to be at December 1975 level.

Sources: U.S. Census.
North Slope Borough

Traditional communities are overwhelmingly Inupiat in origin. The growth rate of these communities is basically stable and directly related to local NSB expenditures and employment. NSB employment in local communities has tended to limit the outmigration rate from traditional communities, resulting in a higher growth rate. For example, NSB and ASRC employment created over 400 new jobs in Barrow alone. In addition, this support has allowed the re-establishment of three of the region's traditional communities.

In the future, the North Slope Borough region as a whole is likely to continue its recently established uneven pattern of population growth. Populations related to oil and gas exploration and development are likely to continue to fluctuate depending on the scale and type of activity underway at a given time. The region's total population has dropped following completion of construction on the trans-Alaska pipeline. However, construction of a planned major gas line and the scheduled Beaufort Sea state and federal offshore lease sales will bring a new influx of workers into the Borough. Once the gas line is completed, the construction workers associated with it will leave the region. The number of workers associated with offshore exploration activity will depend on the stage of development and, ultimately, on the exploration program's degree of success. There is also a potential for oil and gas discoveries in other areas of the Borough which, if realized, would certainly influence population growth. In addition, future decisions as to the development of NPR-A could have a direct impact on the number of people living within the North Slope Borough's boundaries.

While there are a wide range of possibilities influencing future population growth in the North Slope Borough as a whole, the growth prospects of **the** region's traditional communities **are** much more **easily** defined. Excluding Barrow, growth in the villages **is** expected **to** be related primarily to rates of natural increase and out-migration. **No** significant in-migration to any of these communities is anticipated. **It** is assumed that rates of natural increase **will** continue to decline so that rates of out-migration are the key element **in** determining how much these *villages* will grow.

A very significant factor influencing migration rates from the North Slope's villages has been the Borough capital improvements program which has permitted a higher level of living in these communities **as** well as providing increased local employment opportunities. The establishment of village corporations under the terms of the Alaska Native Claims Settlement Act has also been a factor. In the future, the ability of the North Slope Borough to sustain its program of **community** improvements in these villages will be a major determinant in their rates of growth. Another very significant factor will be the continued access of these people to the range of subsistence resources.

Economy

EMPLOYMENT

The composition of employment in the North **Slope** region has undergone a fundamental change during the past ten years. Four main events

precipitated this change. These are the discovery of a major oilfield in the Prudhoe Bay area which was announced in 1968; the passage of the Alaska Native Claims Settlement Act in 1971; the formation of the North Slope Borough as an areawide unit of local government in 1972; and the construction of the trans-Alaska pipeline between 1974 and 1977. Because of severe limitations in available data, figures measuring trends in employment caused by these events are generally incomplete. However, within these limitations, the following trends and changes have been noted.

Nonagricultural wage and salary employment in the North Slope Borough averaged 6,932 jobs in 1976 (see Table 2). The three largest employment sectors were contract construction, mining and government. Contract construction alone accounted for over half of the Borough's nonagricultural wage and salary employment but a large share of jobs in this sector have now ended as they were associated with the trans-Alaska pipeline. Mining jobs made up close to 20 percent of the Borough's nonagricultural wage and salary employment and were mainly located in the Prudhoe Bay area, although some were associated with exploration activities in National Petroleum Reserve-Alaska (NPR-A). It is significant that these two sectors, which accounted for almost three-quarters (72.2 percent) of the jobs in the Borough in 1976, employ people in areas remote from the region's traditional communities. Furthermore, most employees in these sectors are whites who are only temporary Borough residents.

By contrast, almost all jobs in government, the third largest sector with 12.9 percent of the region's nonagricultural wage and salary employment

TABLE 2
 NONAGRICULTURAL WAGE AND SALARY EMPLOYMENT DISTRIBUTION
 NORTH SLOPE BOROUGH
 1976

<u>Industry Classification</u>	<u>Number</u>	<u>Percent of Total</u> %
Mining	1,271	18.3
Contract Construction	3,738	53.9
Manufacturing	<u>a/</u>	
Transportation, Communications and Public Utilities	316	4.6
Trade	a/	
Finance, Insurance and Real Estate	<u>a/</u>	
Service	445	6.4
Miscellaneous	0	---
Government	892	12.9
Federal	(239)	(3.4)
State	()	()
Local	{652}	{9.4}
<u>TOTAL</u>	<u>6,932</u>	

a/ Employment figures withheld to comply with disclosure regulations.

Source: Alaska Department of Labor.

in 1976, are located within the Borough's permanent communities. Most of these jobs are in the State and local government category, principally the North Slope Borough.

There is little economic activity between oil field enclaves and the traditional communities. It was found that oil development operates in the region as if it were not part of the region. Each work camp appeared to be a self-contained enclave. A typical camp might contain:

- Personnel quarters for 150
- Office space
- Shops
- Warehouses
- Kitchen/dining facilities
- Recreation facilities
- Storage buildings
- Airfields

Being self-contained, these camps may considerably reduce their direct impact on the socioeconomic environment. In addition, when oil operations utilize already existing facilities, they may continue to limit both physical and socioeconomic impacts. For example, it was found that oil operations used, when possible, infrequently-used or abandoned airstrips, DEW Line stations, and other government facilities as staging areas and coastal logistics bases.

UNEMPLOYMENT

According to statistics published by the Alaska Department of Labor, the Barrow-North Slope division had an unemployment rate of 3.7 percent in 1976, the **lowest** in the state and well below the 8.2 percent statewide average. However, while this unemployment figure may be reasonably accurate for the region as **a whole**, it does not represent conditions in all areas of the Borough. In July 1976, 71.1 percent of the Borough's population lived outside traditional communities, **mainly** in the **Prudhoe Bay/Deadhorse** area and in pipeline camps. All of these people were employed and, when their jobs ended, they simply left the region. One can therefore conclude that within some of the Borough's traditional **communi-**ties, unemployment rates are relatively high.

There is no published information available which indicates trends in employment in individual communities of the North Slope region. However, it can be said that the incorporation of the North Slope Borough and the formation of Native village corporations and the Arctic Slope Regional Corporation have had a major impact on the number of jobs available to the region's permanent residents. Before the Borough and the corporations existed, the employment pattern in the region's traditional communities was probably typical of most rural areas in the state. That is, a highly skilled group of people, almost exclusively white, providing services such as health and education to a largely unskilled and unemployed group of people, almost exclusively Alaska Native. Today, however, Eskimos in this region **have many** more opportunities for employment in their home towns.

New employment opportunities outside the region's traditional communities have also been available to Borough residents during the past few years as a result of the development of the Prudhoe Bay field and the construction of the trans-Alaska pipeline. It should be noted, however, that relatively few Natives presently work in permanent jobs in the Prudhoe Bay area. By contrast, a large number of Alaska Natives from the North Slope region and elsewhere in the state worked at least temporarily on the construction of the trans-Alaska pipeline. Regional employment is highly seasonal, given the weather constraints on construction capability. However, government employment is considerably more stable on an annual basis.

INCOME

There is a wide disparity in the low incomes received by people who live and work in traditional communities of the North Slope Borough and the high incomes received by people who are based in camps along the pipeline, in the Prudhoe Bay area, in National Petroleum Reserve-Alaska or other isolated locations in the region. However, since the population of the region in 1975 and 1976 was dominated by people who lived outside the region's villages, the incomes of permanent residents are difficult to determine from regionwide figures.

A factor which must be considered in a review of income levels in North Slope villages is the region's extremely high cost of living. According to the Alaska Department of Administration, food costs in Barrow in

December 1976 were the highest in the **State** and averaged 73.6 percent above those in Anchorage. The same **survey** by the Department of Administration indicated that **Barrow** residents paid less **for** housing than did people in Anchorage. **However**, the cost of standard housing in Barrow is so high that, unless it is subsidized, **it** is beyond the reach of most **local** residents.

Income levels in traditional **communities** of the North Slope region have improved significantly since 1970. However, they remain, on the average, well below State levels. When other factors such as high **living** costs and large family sizes are taken into consideration, it is apparent that a share of the population in this region **is still** living in conditions of extreme poverty and that, for many, subsistence hunting and fishing is an act of economic necessity. By contrast, persons employed in isolated enclaves associated with the pipeline and oil and gas activities have extremely high incomes. **Furthermore**, these incomes are not diminished by the North Slope's high living costs since the families of almost all of these people are located outside the region.

SECTOR ANALYSIS

The impact of oil and gas exploration and development activity on **traditional** communities in the North Slope **region** has generally been an indirect one although it has provided jobs for a number of **local** residents from time to time. The Prudhoe Bay area is remote from traditional settlements and exploration activities in NPR-A to date have not impacted on

established communities (except Barrow to a very **minor** degree). However, the indirect impact of the oil and gas industry on the region's permanent settlements has been enormous as the industry provides the tax base upon which the North Slope Borough depends to undertake its capital improvements program designed to bring the quality of life **of** its residents up to an acceptable standard.

Government was the third largest employer in the North Slope Borough in 1976 (after "contract construction and mining). However, **it** was the major source of employment within all traditional communities of the region. Government jobs accounted for 56.6 percent of average annual full-time employment in Barrow in 1977 and for a **higher** proportion in each of the other communities studied.

The impact of the formation of the North Slope Borough on Barrow's economy has been even more dramatic than its impact on the smaller villages since a very large number of administrative jobs **has** been added here as well as those in the construction, maintenance and operation of facilities. More than any other single factor, the North Slope Borough has been responsible for the major improvement in the living standard of Barrow's Eskimo residents which has taken place since 1970.

The extent to which the North Slope Borough can continue to contribute to the economic wellbeing of people from Barrow and elsewhere in the region during the next twenty years will be **affected** by decisions rendered as to its taxing abilities. However, it is **assumed** that the Borough will

continue **to** be the key element in bringing living " standards of all people in the region up to a standard comparable **to** that **now** enjoyed **in** most other areas of the state.

IV. LAND STATUS

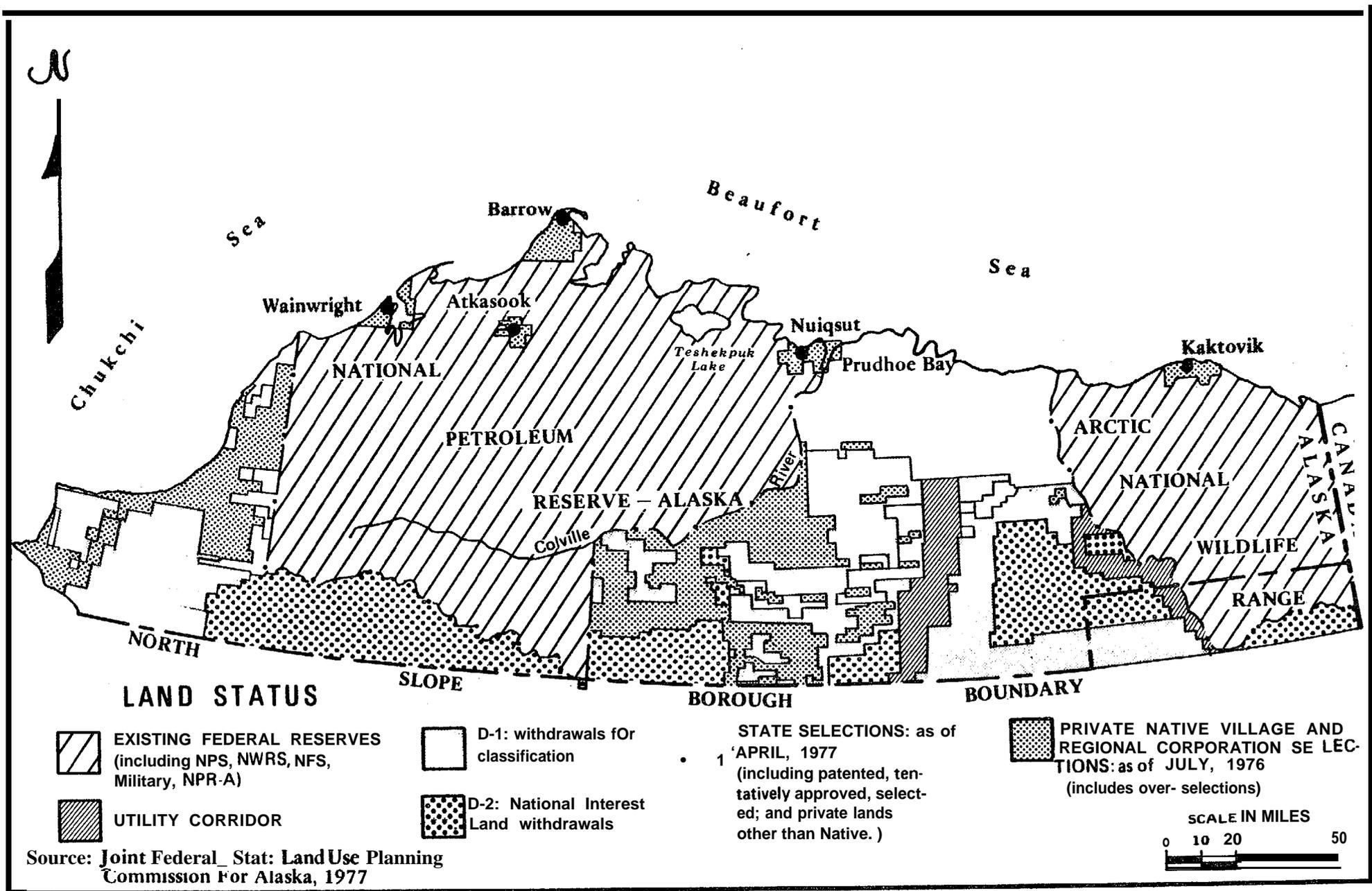
Land tenure in the Arctic is divided between areas of fixed ownership and areas in a state of flux. Most of the land in the Arctic is owned by the federal government (see Figure 3). Of the approximately 20 million hectares (50 million acres) in the region, one half is in the NPR-A and the Arctic National Wildlife Range. The State owns approximately 1.4 million hectares (3.5 million acres) between the Colville and Canning Rivers, centered on oil development in the vicinity of Prudhoe Bay. An additional 1.4 million hectares (3.5 million acres) of land are owned by nine Native village corporations comprised of the communities of Barrow, Kaktovik, Nuiqsut, Wainwright, Atkasook, Point Lay, Point Hope, and Anaktuvuk Pass and the regional corporation. Approximately 0.6 million hectares (1.4 million acres) in the region are part of the State's trans-Alaska pipeline utility corridor.

Arctic National Wildlife Range

The Arctic National Wildlife Range extends from the Canning River at Camden Bay to the Canadian border and south across the Brooks Range, approximately 240 kilometers (150 miles) from the Beaufort Sea. An estimated 3.6 million hectares (8.9 million acres), or two thirds of its entire area, is included within the borough boundaries.

As part of the federal national interest parkland selections under provisions of Section 17(d) (2) of ANCSA, the Department of Interior in October 1974 proposed an expansion to include an additional 1.5 million

FIGURE 3



hectares (3.7 million acres) south and west of the range. Along with portions of the proposed Gates of the Arctic National Park in the central Brooks Range, these (d) (2) lands in the borough comprise approximately 1.1 million hectares (2.8 million acres). A final decision on (d) (2) recommendations by **Contrass** is expected no later than December 17, 1978.

State Lands

The State has 1,364,680 hectares (3,411,700 acres) of patented land in the region and an additional 0.4 million hectares (1 million acres) pending or tentatively approved along the eastern bank of the Colville River and in the vicinity of Point Lay, Point Hope, and other Native villages. Additional selections are expected with boundary resolution of (d) (1) and (d) (2) withdrawals.

North Slope Borough

When the legislature authorized the creation of organized borough in 1963, it permitted each borough to select 10 percent of the State's general grant lands conferred under the Statehood Act. The North Slope Borough has applied for nearly all of its 10 percent allotment of state patented land, or 13,330 hectares (33,324 acres). The State, however, has rejected these applications, maintaining that the lands are unavailable for selection because of prior state commitments in the form of oil and gas and other leases and permits. Because there is no precedent for this state action, the issue is in litigation.

Native Regional and Village Corporations

The Arctic Slope Regional Corporation recently became the first **Native** regional corporation in the state to **receive interim** conveyance of nearly all the land it is entitled to under **ANCSA**. On June 3, 1977 the ASRC received its last conveyance from the Bureau of Land Management, bringing its total of surface and subsurface **lands** to **1.16** million hectares (2.9 million acres), with an additional 88,630 hectares (221,575 acres) near **Anaktuvuk** Pass pending. Although the lands will not be fully conveyed until they are surveyed, the corporation now has all the privileges and rights of ownership.

Regional Corporation Conveyances

Lands yet to be conveyed under **ANCSA** to the corporation include "in lieu" and "dual withdrawal" lands. The in lieu lands consists of subsurface rights that normally would have been requested in conjunction with village-selected surface lands at Barrow, **Wainwright**, **Nuiqsut**, and Kakto-vik but were unavailable because of prior subsurface rights of the **NPR-A** and the Arctic National Wildlife Range. Dual withdrawal lands include areas selected by the ASRC but which are **also** identified for inclusion **in** the proposed (d) (2) lands.

Village Corporation Conveyances

Villages in the region have obtained **interim** conveyance for lands totaling more than 280,000 hectares (700,000 acres). **Wainwright** was the second

community in the state to receive its full conveyance of 42,125 hectares (105,312 acres). Barrow received most of its remaining allotment 80,493 hectares (201,232 acres) at the same time.

Native Allotments

The Alaska Native Allotment Act of May 17, 1906 authorized the Secretary of the Interior to grant up to 64 hectares (160 acres) of land to Native Alaskans. Although the act was terminated by the passage of ANCSA in 1971, applications filed before that date are still being processed and honored. About 250 parcels, totaling 15,000 hectares (37,500 acres) were applied for in the Arctic Region, most of them along the coastal zone from Harrison Bay to Kaktovik, from Harrison Bay west to Cape Lisburne, and along inland rivers.

Land Status Issues

The Alaska Native Claims Settlement Act set the stage for the complex land status and ownership issue in the region.

Land status issues are tied to the final selection of federal, state, and Native lands under the Alaska Native Claims Settlement Act and the Alaska Statehood Act. Among the issues to be resolved are:

- The potential growth of Native **communities** and their access to existing natural (e.g. gravel, water, hunting areas) and man-made (airstrips) resources.

- Determination of allowable and encouraged **uses** in National Petroleum Reserve-Alaska and the Arctic National Wildlife Range (which together comprise one-half of the area of the Region).
- Determination of uses assigned under land conveyed to federal, state, and **Native** institutions, particularly the kind and amount **of** mineral extraction allowed, potential conflicts between subsistence activities and increased recreational opportunities, the location of easements for transportation and pipeline routing, and the use of the trans-Alaska pipeline haul road from **Fairbanks** to **Prudhoe**.

v. FACILITIES AND SERVICES FINDINGS

Basic utilities service in the Arctic is extremely limited. With the exception of base camps at Prudhoe Bay, specialized military installations, and a few public facilities in the larger communities, piped water supply and water-borne sewage disposal systems are not presently in use. Electrical generation and distribution systems are found in most communities, but are often unreliable. Gas distribution systems, where they exist, are poorly designed and maintained. Most fuel for heating is costly, and fuel storage facilities are typically inadequate. Solid waste and sewage containers are disposed of at community dumps too infrequently to keep pace with demand. As a result, refuse and garbage remains around most houses, creating unsanitary conditions detrimental to community health.

Despite the inadequacy of existing systems, basic utility services are of critical importance to life safety in the Arctic. In recognition of this fact, the North Slope Borough has given highest priority to their development. In addition to its areawide powers to assess and collect taxes, provide for education, and conduct planning and zoning, the NSB has also assumed responsibility for services in traditional communities including:

- Sewer and sewage treatment facilities
- Water and flood control facilities
- Health services and hospital facilities
- Telephone systems

- Light, power, and heat
- Water
- Transportation systems, including airport and aviation systems, streets, and sidewalks
- Libraries
- Garbage and solid waste collection and disposal
- Housing and urban renewal, rehabilitation and development
- Preservation, maintenance and protection of historic sites, buildings, and monuments
- Police protection

Each of these responsibilities has placed a major planning **and** financial burden on **the** capacity of the NSB and required considerable coordination with state and federal agencies, particularly in the capital improvements program. The initial emphasis of the Borough capital improvements program has been to provide each community in the region with **basic** life, health and safety support. As a result, projects designed to provide electric power generation, health clinics, sewage disposal and safe water sources received first priority for funds.

Next priority for capital improvements has generally been concentrated on housing, schools and community service **centers**. The Borough is currently engaged in building or planning new school facilities in all traditional communities of the region, while new housing has also been or is being built in these towns. Programs determined to be of lower priority, such as libraries and museums, will be undertaken when the range of basic facilities and services has been provided.

Including its most recent bond sale (1977) the North Slope Borough has sold a total of \$85,100,000 in general obligation bonds since its incorporation in 1972. However, the **total** amount of bonds authorized for all purposes for the capital improvements program ending FY 1982-83 amounts to \$131,577,000. The largest single sale took place in 1977 when \$51,100,000 in **general obligation bonds were sold by the** Borough. This issue included \$23,000,000 for school facilities, \$7,600,000 for housing, \$7,800,000 for roads, \$5,500,000 for light, power and heating systems, \$5,500,000 for sanitary facilities at Deadhorse and lesser amounts for water facilities, sewer facilities and sanitary facilities.

Each change accomplished by the Borough, from direct services (health, education, police) to capital improvements has a direct effect on the socioeconomic life of the communities. For example, increased government employment in local communities slows the rate of the **outmigration** of young people. The construction and operation of local high schools helps retain young people in the population. Similarly, both seasonal and nonseasonal employment provide the cash wages necessary to partially underwrite the subsistence and other social activities which sustain **sociocultural** integrity. Thus, the critical relationships among **traditional** lifestyles, population, petroleum development, and the taxation, employment, and capital improvements policies of the NSB have been clearly drawn.

VI. NATURAL PHYSICAL ENVIRONMENT FINDINGS

Continuation of the viability of the permanent resident population of the North Slope is dependent on a healthy natural physical environment. Investigation of the North Slope natural physical environment focused on those environmental factors which are directly related to socioeconomic infrastructure in the regions including:

- Subsistence resources
- Wildlife habitat
- Fresh water resources
- Sand and gravel resources

The availability, quality, and use of water were found to be of critical concern. Water in the region is limited, frozen for great periods of the year, and necessary to overwintering fish. While per capita consumption is now low, due to hauling problems, demand may increase to serve both increased domestic and industrial demands. Contamination from waste disposal remains a serious health hazard.

Gravel and sand are scarce materials necessary to construct Arctic roads, airstrips, work pads, foundations, causeways, and artificial islands. They are costly to haul; location and quantity are major economic considerations while extraction and erosion constitute serious environmental concerns affecting fresh water availability and the viability of fish and whales. Data unavailability continues to be a limiting factor in analyzing these resources.