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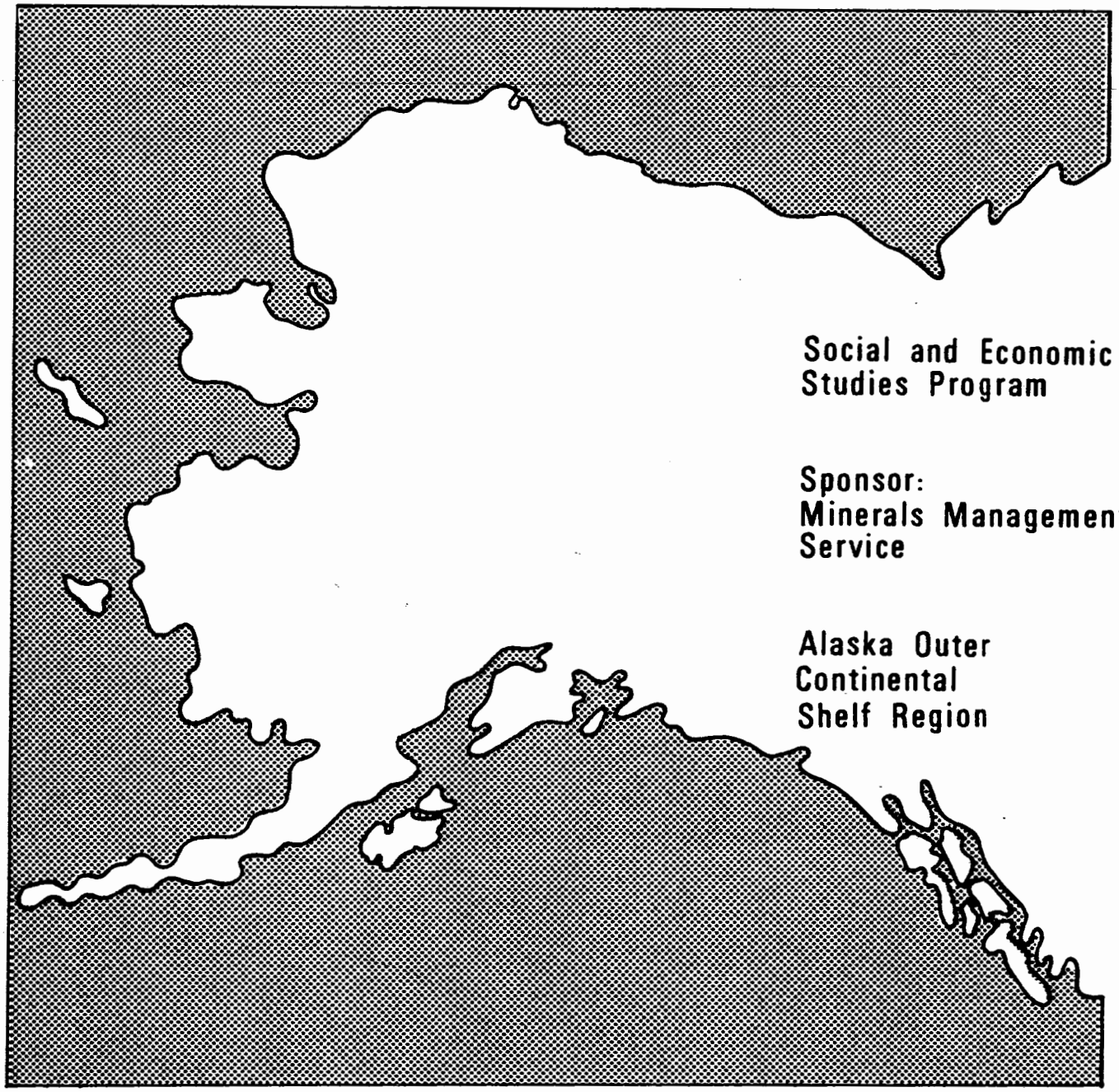

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Cold Bay: Ethnographic Study and Impact Analysis

Executive Summary

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ALASKA OCS SOCIAL AND ECONOMIC STUDIES PROGRAM

FINAL TECHNICAL REPORT

COLD BAY: ETHNOGRAPHIC STUDY AND IMPACT ANALYSIS

EXECUTIVE SUMMARY

PREPARED FOR

MINERALS MANAGEMENT SERVICE
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LEASING AND ENVIRONMENT OFFICE

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BY:

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Alaska OCS Socioeconomic Studies Program

Cold Bay: Ethnographic Study and Impact Analysis

This report was prepared with the assistance of Karen Gibson, the Contracting Officer's Representative, and George Allen, the Project Inspector. Dr. Bruce Harris conducted the two months of field research on which this report is based, and with Dr. John Petterson and Dr. Lawrence Palinkas, prepared this report.

Cold Bay Ethnographic Study and Impact Analysis: Executive Summary

Introduction:

The Cold Bay Ethnographic Study and Impact Analysis consists of three overall parts, divided according to the major components of a systems analysis. First is an analysis of input, the environment or independent variables, which includes ecological input, extrasocietal forces, intrasocietal forces, and history. Next is a discussion of the structure of the Cold Bay system, or the dependent variables, which includes the value system and organization, the latter subdivided into economic structure, social networks, political structure, religious structure, education, health care, social services, and recreation. Together these first two sections constitute an ethnography of the community of Cold Bay. The third section consists of scenarios for the future development of Cold Bay. These represent the interaction of certain projected environmental forces (provided by the MMS) and the current structure of Cold Bay. This interaction results in changes in local structures which are presented as three sceanrios. The primary scenario assumes no OCS-related development; the second considers OCS development in the region of Cold Bay, and the third considers the effects of a major oil-related facility in the community of Cold Bay itself. In this summary we will first discuss the ethnographic study of the community, then the scenarios considered for future development.

Ethnography of Cold Bay

Input

Ecological

Cold Bay is located on a bay by the same name on the south side of the western end of the Alaska Peninsula. The bay opens to the south and the North Pacific and is separated on the north from the Bering Sea by a narrow isthmus. The topography is primarily tundra with few trees and many lakes, lagoons, marshes, and swamps. Cold Bay climate is cloudy, windy and foggy, though temperatures are relatively mild due to the moderating influence of the large bodies of ocean water nearby. The area is rich in fish (particularly salmon and groundfish) and crab. Terrestrial animals include caribou, brown bear, and several smaller mammals. Bird life is abundant, particularly in the nearby Izembek National Wildlife Refuge. There are few plant resources and few (known) mineral deposits of value.

History

Cold Bay is a relatively new community. It originated in World War Two as Fort Randall Army Base, established to counter the Japanese threat to the Aleutians. Following World War Two the population dropped rapidly from several thousand to less than 100 in the fifties. The enduring facility in Cold Bay is the airport, of international class, originally constructed during the war and in continuing use today (it is an alternate for Anchorage International). It is the reason for the town's

existence and insures its survival. The town originated as a military enclave, and has remained essentially transient since that time. Population has increased dramatically at each period of American military involvement in the Far East, notably during the Korean and Viet Nam conflicts, and has dropped significantly at the conclusion of each such episode. By the 1960s Cold Bay had begun to attract a considerable civilian population, but the process of reduced government involvement was aborted by the Viet Nam War. Following that conflict Cold Bay has gradually reduced its military sector and increased its civilian sector.

The crucial elements in the history of the community include the fact that the community is dependent on the airport and its centrality as a transportation and communications nexus for the peninsula/insular region. The airport was originally a military venture and has remained under federal and state control, as has the town since it is located on airport property. The state owns virtually all local land, so little is available for private or commercial purchase. In 1979 the Department of Natural Resources held a land sale, butit was dominated by outside speculators and few residents could afford lots. Outside communications, transportation, and government corporations and agencies account for over 90% of all employment. These factors have resulted in a high degree of transience and general lack of permanent residents.

In 1982 the community incorporated as a second class city. A municipal government was established consisting of a mayor and six councilmen, all unsalaried. Since incorporation the city has faced several issues. First has been the definition of the official city limits. Second has been the attempt to free some land held by the state or federal government for private or municipal use. Third has been the beginnings of the process of municipal control of the major utilities and community facilities now operated by outside agencies (particularly the water and sewage systems and the airport and dock). Fourth, the city has been concerned to establish sources of revenue in anticipation of the time when they will have to accept responsibility for many local utilities and facilities. Finally, the city has attempted to provide adequate medical care through the construction of a modern clinic.

Extrasocietal

Extrasocietal forces include external governmental agencies, external commercial influences, and the larger sociocultural system.

External governmental agencies are powerful in Cold Bay. These can be divided into federal and state agencies. The federal government currently employs 43 people. Major federal agencies are, in order of number of people employed, the Federal Aviation Administration, the U.S. Air Force, the National Weather Service, the Fish and Wildlife Service, and the U.S. Post Office. The State of Alaska employys 19 people in the community. State employers, by number of employees, include the Department of Fish and Game, the Department of Transportation and Public Facilities, the Rural Education Attendance Area, and the Magistrate.

External commercial agencies are also important in Cold Bay. These can be divided into transportation, communications, service, and miscellaneous. By far the two largest sectors are transportation and

communications, a reflection of the centrality of Cold Bay in the region.

Transportation employs 34 people. Reeve Aleutian Airways is the largest employer, followed by Peninsula Airlines. Reeve utilizes Cold Bay as the focus of its Aleutian to Anchorage/Seattle flights. Peninsula takes both Reeve passengers and mail to those villages and communities in the region not served by Reeve.

In communications the major employer is RCA. Alascom and the Interior Telephone Company are also employers in this field. RCA operates primarily at the Air Force Base, eleven miles outside town. Most workers there are involved in maintenance, repair, and operation of the radar and related equipment. Alascom operates the satellite television service beamed into the community. Interior Telephone Company operates the local telephone system, which is advanced for a community as small as Cold Bay.

In the service area there are two major companies, one much larger than the other. The largest is the Flying Tigers Lines, which operates a complex of store, restaurant, bar, and hotel in the center of town. Flying Tigers is the only local operator offering such services, and has an exclusive lease through 1985. The second service sector employer is the Northern Power Company which provides electrical service to the community.

There are some other smaller externally controlled employers in the community. These include Northern Peninsula Fisheries, a small processor dependent on salmon flown in from the northern peninsula, and Seawest with one man in town to take delivery of salmon eggs from the northern peninsula for shipment to Japan or Anchorage/Seattle. Finally, there is one person in town employed by an Anchorage well-digging firm.

Despite the presence of all these major outside firms, Cold Bay has had little private development. This is a result of state and federal control of the land. All the agencies and businesses discussed above lease or rent land from the state, with the exception of the Fish and Wildlife Service which is on land owned by the federal government. Nonetheless, there has been some building in the community. The largest private development is the Flying Tigers complex in the heart of town. Most of the agencies and businesses operating in town have also constructed modern housing for their employees, and this is a major source of local development. The airport has also served as a focus of building activity with the control tower, the terminal, the weather station (actually in the control tower), the Department of Transportation complex, and several hangars and airport-related buildings. However, the only local business is Cold Bay Truck Rentals which employs two people.

A final aspect of extrasocietal forces is the larger sociocultural system. Cold Bay is intimately tied into this larger system. Since most residents have been sent to the community by a major outside firm and expect to remain for only a limited time they have usually come from a widely removed area of the state or nation. Most have extensive experience with that larger system, were raised in it, and expect to return to it within a relatively short peiod of time. The community is domi-

nated by Euro-Americans, as opposed to the Native communities in the surrounding region. The airport insures continuous and intimate contact with other regions and states. Since almost all residents are transient on tours of duty with major outside corporations most do not concern themselves overly with the long term prospects for Cold Bay development.

Intrasocietal

The second subcategory of input is intrasocietal forces. These are the aspects of the local system which, at least in the short to mid-term, must be taken as fixed by the local residents. These include community facilities and capabilities, private development, and demographic characteristics. There are some serious challenges concerning capacities and jurisdictions of several community facilities and utilities. There is remarkably little private development. Finally, the community presents a novel demographic profile with a very young, heavily single-male, non-Native population.

Cold Bay was not incorporated until 1982 and the city as yet owns no land and has few revenues. The sewage and water systems are operated by the Federal Aviation Administration and both are overburdened. The responsiblity for street maintenance is assumed by the state Department of Transportation. Electrical service is provided by the Northern Power Company, which has recently constructed a new powerplant following a disastrous Easter, 1982, fire which destroyed the old one. Television service is provided by Alascom and radio is by the Armed Forces Radio Network. The telephone system is maintained by the Interior Telephone Company and is adequate for future expansion, though there have been local complaints about quality of service. The airport and the dock are both operated by the State of Alaska. Fuel is brought into the community both by boat and by air, and is stored in several large tanks by Chevron and Reeve, which acts as a local distributor.

The major problem with these facilities and utilities revolves around the likelihood that the community will be asked to accept responsibility for the operation and maintenance of them in the near future. This will be discussed at more length under the Forecast Analysis section.

Private development, as we noted above, is restricted in Cold Bay as a result of the lack of available land. This has reduced levels of investment as it is nearly impossible for a company to gain control of the land on which such development will take place.

The demographic structure of Cold Bay is also somewhat unusual. There has not been a recent complete census of Cold Bay, so we have relied on our best estimates of demographic changes between 1970 and 1982 as the former is the last census for which accurate information is available.

Current estimates are that the total population of Cold Bay (in 1982) was 226. Over the decade from 1970 to 1982 demographic structure has changed considerably. Average age has become younger, and school-age children have increased. Children under 19 grew from 60 in 1970 to an estimated 72 in 1982. This reflects a growth in families in the community over the same period. This has resulted from the retrenchment of the military and governmental contingent and the growth of the

private sector. Females have increased as a percentage of the total population and the male/female ratio has improved from approximately 3:1 in 1970 to 2:1 in 1982. Women are increasing as a proportion of total population, but still are far from parity. Finally, the Native sector of the population has actually declined somewhat, despite the fact that even in 1970 it represented at most 12 to 15%. Today there are less than a dozen Natives out of a population of 226. Following are estimates of the population of Cold Bay by age and sex in 1970 and 1982.

Table 1

Cold Bay: 1970 and 1982 Population by Age and Sex

Age:	0-5	5-19	20-44	45-64	65-	Total
Sex & Year						
Male						
1970	8	26	141	18	0	193
1982	10	28	100	14	0	152
Female						
1970	10	16	25	12	0	63
1982	12	22	28	12	0	74

A final aspect of Cold Bay demography concerns demographic dynamics. The community is made up almost entirely of transients, leading to a fairly steady turnover of the population in a relatively short period of time. Most of those working in Cold Bay are residents for less than five years. Though the structure of the community remains fairly constant the personnel, the content of the structure, changes every few years. This is a clear example of repetitive change: the personnel change constantly but the structure remains fairly stable independent of those changes.

Structure

This completes the examination of Cold Bay Input. The next major section, and the second half of the Ethnography of Cold Bay, is structure. Structure is the rules and understandings according to which the community functions. It is the dependent variable in a systems analysis, that on which the environment impacts and in which adaptations and changes (output and feedback) are provoked. Structure is divided into value system and organization. Organization is subdivided into economic, social, political, and religious structure, education, health care, social services, and recreation.

Value System

Status in Cold Bay is individualistic. The low proportion of families and the transience of the residents means that status is not measured in terms of family prestige, but in pragmatic and relatively instrumental terms. Since most of the people in the community are white collar or skilled blue collar workers and the income scale is compressed, there are few distinctions which could be utilized in a status hierarchy.

The belief system of Cold Bay residents is consonant with the practical approach to status and prestige. The residents are above all pragmatists. They expect to work hard for what they get, but they also expect a fair remuneration for their efforts. They are implicated heavily in the cash economy of the greater society. Their major desire is to achieve success as defined by capital and property accumulation. Their world view is also consonant with this emphasis. They take an essentially scientific approach to reality in which the environment is seen as impersonal and one's success depends above all on correct preparation (education) and achievement (advancement in the workplace).

Reciprocity and redistribution are not highly developed in Cold Bay. By reciprocity we mean an exchange of economic items between roughly equivalent social units. By redistribution we mean the circulation of economic or social items to central places or people, from where they are redistributed among the society's members. There is little redistribution in Cold Bay, as there is no well-defined social or economic hierarchy. Reciprocity, on the other hand, is more frequent. Many people feel a certain kinship as a result of facing an objectively difficult environment. Meals are often shared with a rough equivalence established over time. Aid is generally quickly forthcoming for home improvements, repairs, and so on, generally with the understanding that the individual calling for such help has incurred a debt which can be called due when needed.

Organization

The next aspect of structure is organization, which includes the economic, social, political, religious, educational, health care, social service, and recreational subsystems.

Economic Structure

There are five specific features which distinguish the Cold Bay economic system.

First, Cold Bay is one of the few communities in the Aleutian Chain and Alaska Peninsula region not directly dependent on marine resources for economic survival. There is nobody in town who makes their living fishing. The processing sector is minimal, consisting of the Northern Peninsula Fisheries, which employs an average of only about half a dozen people during fishing season, and the single local representative of Seawest who takes delivery of salmon eggs for shipment to Japan, Seattle, or Anchorage. Cold Bay residents are overwhelmingly non-Native and were unable to take advantage of either ANCSA or limited entry, and have remained dependent on non-fisheries economic activity.

The second economic generalization about Cold Bay concerns the sectors which dominate economic activity: government (including both federal and state), transportation, and communications. The major transportation firms are Reeve Aleutian Airways and Peninsula Airlines. Major communications firms are RCA, Alascom, and the Interior Telephone Company. Among them these three sectors account for about 90% of all Cold Bay employment.

A third economic generalization about Cold Bay concerns the transience of the workforce. Most remain in Cold Bay for one to five years. This is connected to the fourth characteristic of Cold Bay, the external orientation of the major employers. Every major employer in town is a corporation or government agency based outside the community. Local entrepreneurial activity is limited to a single vehicle rental company, Cold Bay Truck Rental, employing two people. The aims of the major employers are defined externally to the community and fluctuations and changes in Cold Bay economic structure are responses to aims and goals outside the town itself.

The fifth economic characteristic of Cold Bay concerns land tenure. Originally the federal government controlled the land, but with statehood the state government, through the Department of Transportation, took control. Currently there is almost no privately held land in the community, and this scarcity has encouraged the persistence of the transient lifestyle of the bulk of residents. The Aleutians East Coastal Management and Regional Planning Program is working closely with the city to, among other things, convey land for local development.

Most Cold Bay economic activity is what is known as alternative employment, that is non-local and non-fisheries related. This includes government employment, state and federal, and outside commerical agencies.

Government Employment

The federal sector has traditionally dominated the Cold Bay economy. However, in the last decade this changed in response to the ending of the Viet Nam War. Currently the Federal Aviation Administration employs sixteen people. Its primary responsibility is the operation of the control tower at the airport, and maintenance of the navigation aids. The second federal agency is the National Weather Service which employs five people. The NWS has responsibility for assisting in the operation of the airport through the provision of accurate and up-to-date weather reports and forecasts. The NWS is housed in the control tower with most of the FAA personnel. The third federal agency is the Fish and Wildlife Service (Dept. of the Interior). The Service is responsible for the operation and management of the Izembek National Wildlife Refuge just to the north of town (as well as portions of two other refuges) and employs four people. The final civilian federal employer is the Post Office. The Post Office employs two people who work in an office in the Reeve Terminal. The office serves as the main distribution point for mail to and from the entire Aleutians region. There is also a federal military contingent of sixteen men in the United States Air Force stationed at Grant Point, eleven miles northwest of town.

The state sector is the other major governmental employer in Cold Bay, employing a total of nineteen people. The largest state employer is the Department of Fish and Game with seven people. The Department of Fish and Game is responsible for the monitoring of commercial fishing in the western peninsula and insular regions. The Cold Bay contingent includes several employees of the Russell Creek Fish Hatchery, located a few miles outside of town. The Department of Transportation and Public Facilities employs six workers and has responsibility for the maintenance of the airport, particularly the runways, and also maintains the roads in the community. The DOT also operates the state dock. The DOT is important as a result of its monopolization of land. With the exception of the amount alienated in the 1979 land sale by the Department of Natural Resources and the holdings of the Department of the Interior, on which the Fish and WIldlife complex is located, the DOT has jurisdiction over all land in Cold Bay. The third state employer is the R.E.A.A., which employs four teachers and a maintenance man at the Cold Bay School. The last state employee is the magistrate who lives in Cold Bay is responsible not only for the community, but for a large area of the peninsula.

The final government employer in Cold Bay is the municipality. As yet there is only a single municipal employee, a half-time clerk. This accounts for the governmental sector of the Cold Bay economic structure. Federal, state, and municipal governments employ a total of 63 people, including forty-three federal, nineteen state, and one municipal. They account for about forty percent of all Cold Bay employment.

Commercial Economy

External commercial agencies are the largest group of employers in Cold Bay. This sector is composed almost exlusively of transients working for major outside firms. It is dominated by basic industries, in particular communications and transportation, at the expense of secondary or tertiary sectors (such as retail or repair services). There is, however, a small service sector as well.

The two largest transportation firms are Reeve Aleutian Airways and Peninsula Airlines. Reeve has been in Cold Bay since World War Two and maintains the major regularly scheduled airline service into Cold Bay. Reeve has twenty two employees and maintains a terminal, a bunkhhouse, and a mess hall. Reeve has the highest proportion of "local hires" of any firm in town (that is, the highest proportion of people hired in Cold Bay, mostly spouses of people brought to Cold Bay to work for other companies or agencies). Reeve also provides diesel oil and gasoline service for most of the community. Peninsula has ten employees, and provides charter and regularly scheduled service to many of the smaller communities in the region not served by Reeve. Under contract to Reeve they fly to Nikolski, King Cove, Akutan, and False Pass. Peninsula also has several mail contracts, including those for Atka, False Pass, and King Cove.

Transportation accounts for 34 out of 154 jobs in Cold Bay (including the two employees of Cold Bay Truck Rental). This is approximately 22% of the total labor force.

In the communications sector there are three externally-based companies, RCA, Alascom, and the Interior Telephone Company. RCA is by far the largest, employing, until recently, as many as 30 people. At present RCA employs about 28 people, making it the largest employer in the community. However, RCA has plans to "remote" its Cold Bay operations out of King Salmon. When this process is completed the workforce will have been cut in half, so within about five years RCA will employ less than 15 people. RCA has primary responsibility for the operation of the facilities at the Air Force Base, under contract to the federal government.

Alascom provides satellite broadcast service to the community. Alascom was owned by RCA until the latter sold it in 1980, and employs two people. The final communications employer is the Interior Telephone Company which provides telephone service, both local and satellite, to the town. ITC only employs one person locally, as both installer and repairman. There are approximately 125 subscribers to the service, with room for expansion to approximately 400 lines.

Communications accounts, overall, for 31 of 154 jobs in Cold Bay. This is approximately 20% of all employment. However, as we will note below, this number will fall considerably in the next decade.

The last sector dominated by outside commercial firms is the small service sector. This sector is almost totally dominated by the Flying Tigers. Flying Tigers Lines owns and operates the only local hotel, bar, restaurant, store, and package store. FTL has forsaken freight operations through Cold Bay and now concentrates on its local commercial interests. FTL is particularly crucial to the character of Cold Bay and to future development possibilities because they have an exclusive lease, taken in 1960, for the operation of the facilities they currently operate as well as several additoinal facilities. They must accede before anyone else can operate a competing service. This lease expires in 1985.

The only other service sector employer is the Northern Power Company which provides the electricity for Cold Bay, and employs two people.

This completes our discussion of the Cold Bay labor force. Table 2 (see next page) shows the overall structure of that labor force.

Subsistence

In Cold Bay subsistence economic activity has little history and is relatively little practiced - beyond recreation. Cold Bay residents fish the salmon runs which occur during the summer and fall, often with set gill net subsistence permits, and hunt caribou in season. However, compared to surrounding communities Cold Bay residents participate little in subsistence activities.

Table 2

Cold Bay Labor Force by Sector/Number/Percentage of Total

Sector	Employees (% of Total)
Government	63 (40.9)
Federal	43 (27.9)
Federal Aviation Administration	16 (10.4)
National Weather Service	5 (3.2)
Fish and Wildlife Service	4 (2.6)
U.S. Post Office	2 (1.3)
Federal Military (Air Force)	16 (10.4)
State	19 (12.3)
Department of Transportation	6 (3.9)
Department of Fish and Game	7 (4.5)
R.E.A.A.	5 (3.2)
Magistrate	1 (0.7)
Municipal	1 (0.7)
Clerk	1 (0.7)
Private Employers	91 (59.1)
Transportation	34 (22.1)
Reeve Aleutian Airways	22 (14.3)
Peninsula Airlines	10 (6.5)
Cold Bay Truck Rental	2 (1.3)
Communications	31 (20.1)
R.C.A.	28 (18.2)
Alascom	2 (1.3)
Interior Telephone Company	1 (0.7)
Service	18 (11.7)
Flying Tigers Lines	16 (10.4)
Northern Power Company	2 (1.3)
Manufacturing/Processing	6 (3.9)
Northern Peninsula Fisheries	5 (3.2)
Seawest	1 (0.7)
Construction	2 (1.3)
Well Digger	1 (0.7)
Laborer	1 (0.7)
Total:154	

Non-Labor Force

Cold Bay has no non-labor force. Each household has at least one gainfully employed individual able to support the household, and many have two. There is no unemployment in Cold Bay. The town both attracts those with jobs and purges itself of those who lose their job or are unable to find one. One does not go to Cold Bay unless an employer sends him, and it is impossible to survive, even find a place to live, unless one has a job. There are extremely few instances of residents drawing AFDC, social security, or other such public expenditures.

Social Networks

There are six major social tendencies which characterize the Cold Bay system.

First, the importance of kinship is minimal and in no case that we know of does its importance extend beyond the family unit. Extended kinship networks are totally absent. This is a result of the external control of the community. Outside corporations decide when an individual will move to Cold Bay and for how long. It would be very unusual for related individuals or families to be in Cold Bay simultaneously.

Second, even familial level kinship is less important than might be expected. It is true that the family is an important locus of social action; the absence of more extended kinship networks means the family is the major operative kinship system. However, there are a disproportionate number of single people in town, and families are a minority. The most frequent occurrence in Cold Bay, from the standpoint of kinship, is the social isolate.

Third, the most important matrix for social relations in Cold Bay, in the absence of kinship, is friendship. Extra-familial relations are almost exclusively friendship relations. Fourth, friendship relations are themselves conditioned by workplace relations. This results from both working together and residence patterns since most employers provide housing for all or a major portion of their workers. One's neighbors are also one's workmates. The FAA has eleven houses on the northwest corner of town; next to these are nine homes for Department of Transportation workers; across the street are six homes for the National Weather Service. To the north of the DOT housing are three homes for the Alaska Department of Fish and Game; on the extreme northeastern corner of town are five homes for the Fish and Wildlife Service, and in the center of town is housing for the Flying Tigers and Reeve employees. Thus, geosocial position is determined almost exclusively by occupation, which means social networks are deeply influenced by workplace relations.

Fifth, the importance of friendship is enhanced by the lack of voluntary associations, itself partially a result of the transience of the population.

Finally, and underlying much of the preceding, the residents of Cold Bay have unusually strong links to areas outside the community, and relatively tenuous links within the community. The long term transients

have strong interstate links, as many of them originated outside Alaska where they worked previously for the corporation or agency which sent them to Cold Bay. The short term transients have strong interregional ties, particularly to Anchorage and Fairbanks. The few permanent residents have the strongest intraregional ties as a result of having lived and worked in the region longer than the others.

Social groups are determined by the operation of the principles outlined above, and can be defined by the variable interplay of three factors: length of residence, geosocial position, and marital status. The short term transient is almost always single, or at least in town without his/her mate, lives in the heart of town in the FTL hotel or in a bunkhouse, and is in town for a short period. Therefore, these individuals tend to socialize together, primarily at the Weathered Inn, the FTL bar, since they have no means of transportation to get to the Air Force Base.

The long term transients have two kinds of social networks. When the individual arrives in town, whether married and with his family or single, his first social network consists of workmates and their families, because he works with the same people who become his neighbors. However, after the long term transient has been in town for some time, two alternative social networks emerge. For those who are married the need to share childcare responsibilities, involvement in school activities with other families, and so on, lead to social networks among families which crosscut occupational (and therefore residential) categories. For those who are single a complementary process occurs, but with other single people rather than families. Thus, over time occupation and residence come to exert less complete control over the social networks of long term transients.

Finally, permanent residents form a small social network of their own. They tend to withdraw from extensive interaction with the other groups who they see as "passing through". Some of these people own land and have houses on it so they are not subject to the determination of neighborhood by occupation, and their social networks depend less on the job and more on longterm relationships.

Political Structure

Until incorporation there was no formal internal political structure to Cold Bay. Prior to this political power was synonymous with state power, since the Department of Transportation controlled all land in the community as a part of airport property. Political power lay with airport security, which was an element of the DOT.

With incorporation this situation changed in law but less so in fact. Formal political power is vested in a six man city council and a mayor, but in fact the DOT still controls most land in Cold Bay so true political power remains in that agency. Until the city is able to gain title to land or generate substantial revenues it will remain essentially powerless.

Major political issues since incorporation have included the definition of the city limits, the attempt to gain some municipal land from either

state or federal governments, and the realization that eventually the city will have to take over operation of most local facilities and utilities from the government agencies which currently operate them.

Means of social control in Cold Bay are informal. The residents have a right to a patrolman as a second class city, but have so far resisted out of fear that such a step would prove to be a self-fulfilling prophecy, encouraging greater crime rates. Crime in Cold Bay is petty and infrequent.

Religious Structure

Religious activity is confined to a single interdenominational chapel which is lightly subscribed. Most Cold Bay residents are essentially pragmatic realists and religious activity is not intense.

Education

Cold Bay has an elementary and secondary school, housed in the same facility. The school was expanded from K through 9th to K through 12th grade in 1978, and this has encouraged families to stay in the community while their children are of high school age. The school is undergoing (1983) a $1.3 million expansion program with the construction of a multi-purpose media room.

Cold Bay students achieve at a high level. They are predominantly from white collar families and have had experience in other modern school systems throughout the United States. Most plan to go beyond secondary school, and are encouraged in this goal by their parents.

Health Care

Health care has been upgraded recently in Cold Bay with the construction, in the summer of 1982, of a modern clinic. It includes three examination rooms, an emergency room, a laboratory, a pharmacy, and a kitchen. It can accommodate approximately four to five people at a time.

The major problem in Cold Bay is the provision of adequate medical personnel. Currently EMTs are the only such personnel in town. However, the city is considering an arrangement with an outside doctor, from either Unalaska or Kodiak, for periodic visits to the community to make available quality health care.

The Cold Bay population is in very good health. The population is generally young and physically fit. Any individual who becomes so sick that he or she cannot continue working must leave the community for better care. Thus, the town itself rarely contains many individuals with serious chronic health problems, either mental or physical.

Social Services

The level of available social services in Cold Bay is low. However, social problems are not marked. This is partly because of the built-in guarantee of full employment and the relative youth of the population. Alcoholism is not a problem, nor are psychological disorders.

Recreation

We have already noted intraregional, interregional and interstate ties, which are closely linked to visiting and vacation patterns. Cold Bay residents also exploit fish and game to a modest degree. They use boats very little, primarily because of the absence of a fishing sector, and they utilize three wheelers and four wheel drive vehicles extensively.

Cold Bay residents utilize a full range of modern electronic devices. Video recorders are popular. Satellite television is beamed into the community. Stereos, tape recorders, and video games are in almost every home. Cold Bay is extremely sophisticated in the level and quality of electronic entertainment.

Forecast Scenarios

This section of the report analyzes projected levels and directions of socioeconomic and sociocultural change in the community of Cold Bay. The analysis is based on the data in the ethnographic baseline study and is predicated on a set of assumptions provided by the MMS Social and Economic Studies Program of probable effects of varying levels of oil-related development.

The scenarios consist of two parts, output and changes in structure. Output is the indices of impact from external forces which measure the level of outside influence and are analyzed according to the categories of systems analysis utilized in the structure section, including economic, social, and political activity, religion, education, social services, and recreation. Changes in structure refers to the impact changes in activities, and in the indices discussed as output, have on a community's structure and on its environment, since the latter may be altered as well as the former.

In the following discussion three scenarios are considered. The first assumes no OCS-related activity; the second assumes the construction of major oil and LNG facilities in the region of Cold Bay, though not in the community itself; and the third considers the effects of construction of such facilities in the community itself.

Primary Scenario: No OCS-related Development

The first scenario assumes no OCS-related development in the Cold Bay region. In general the changes which will occur in Cold Bay will be most dramatic in the economy, politics, and social relations. Most of these will result from a decline in employment and population. The remoting of FAA and RCA functions will reduce the labor force by one-third. Economically this will mean a decline in the relative importance of both government and communications and an ascendance of the transportation sector. Politically the major questions over the next decade concern the acceptance by the municipality of responsibility for the operation of several facilities, particularly the water and sewer systems, road maintenance, and the airport and dock, in the face of a diminished revenue base. This will lead to a difficult political de-

cision concerning the institution of a tax system. Socially the contraction of the economy and decline in population will have the paradoxical effect of increasing the sense of community as the permanent residents become a greater proportion of all residents.

Economic Activity

A combination of retrenchment by major employers, lack of a fisheries sector to take up the slack, and a lack of local entrepreneurial activity combine to present a serious threat to the future of the Cold Bay economy. The picture is worsened by the lack of available private land, though it is likely this will be ameliorated to some extent in the near future. On the positive side is the presence of a major international-class airport which will guarantee the survival, if at a reduced level of activity, of the Cold Bay economy. In this section we will consider likely patterns in income distribution/disparities, employment patterns, unemployment and non-labor force patterns, economic class distinctions, and housing and real estate.

The Cold Bay labor force is dominated by middle level white collar workers and skilled laborers. The income scale is remarkably compressed. Most of those working in Cold Bay make between twelve and thirty thousand a year. There are none who make the large incomes earned by some fishermen in surrounding villages, nor is anyone destitute. We anticipate little change in this situation. Though the Cold Bay labor force will contract, those who remain will still be primarily white collar and skilled blue collar workers, most associated with the airport and/or transportation, so the range of incomes will remain stable.

Employment patterns, however, will change radically. Currently the major employers are communications, transportation, and government. The next decade will see a drop in both communications and government, with a resultant relative increase in the importance of transportation. The workforce will shrink by approximately one-third, the contribution of transportation as a percentage of the work force will rise from 22.1% in 1982 to about 34% in 1990, and the combined contribution of communications and government will shrink from 61% in 1982 to about 37% in 1990. The FAA plans to "remote" operation of the Cold Bay Airport control tower through King Salmon and/or Bethel Airports. All landing and takeoffs currently controlled out of Cold Bay will be controlled from elsewhere, thereby reducing personnel needs to maintenance technicians. The cutbacks are scheduled to occur in three phases. The first, to be completed in 1983, will see a switchover to solid state equipment and manpower reductions from the present 16 to 13. The second, to be completed by 1986, will see all flights out of Cold Bay remoted into a "hub control center" and manpower requirements will drop to about six people. The last phase, scheduled to be completed by 1989, will see a reduction in manpower to two or three technicians to maintain the equipment.

Remoting will also cause a major reduction in manpower at the Air Force Base. There are currently 16 Air Force and about 28 RCA personnel at the base. However, all radar, DEW, and related operations are in the process of being remoted out of King Salmon, which will cause major reductions over the next few years. RCA has assumed primary responsi-

bility for the work involved in the remoting procedure, and it is expected that within two years all military personnel will have left, a reduction of 16 in the Cold Bay labor force. RCA will also cut down on personnel, as the process of remoting occurs, from the current 28 to approximately 15 within two years, and probably fewer within the next decade. Between the Air Force and RCA reductions, then, a total of at least 29 jobs will be lost over the next decade.

The other notable reduction in the labor force concerns the state Department of Fish and Game. As of the Spring of 1983 the Department had plans to close the Russell Creek Fish Hatchery, which would mean a loss of two or three of the seven Fish and Game personnel working in Cold Bay, and it also has plans to release a biologist in the Cold Bay office. Finally, it is likely, with the drop in population which will attend the loss of so many jobs, that there will be less demand for teachers and we expect the teaching staff to be reduced from four to three (thus, with the maintenance man, R.E.A.A. employment will drop from five to four). The overall effects of these cutbacks are apparent in Table 3 which details Cold Bay employment cutbacks over the next decade.

Table 3

Primary Scenario
Cold Bay Employment Projections: 1981 to 1990

Year	1981	1983	1986	1990
Sector				
Government				
Federal Military	16	10	0	0
Federal Civilian	27	24	17	13
State	19	18	14	14
Communications	31	24	18	12
Support Services	16	14	14	14
Transportation	32	32	32	32
Other	13	13	13	13
Totals	154	135	108	98
% Reduction from 1981		5.8	34.8	39.4

Non-Labor Force

A reduction of one-third in available jobs would be disastrous in most communities; welfare, AFDC, unemployment benefits would all rise dramatically. However, in Cold Bay these cutbacks will increase the non-labor force little if at all. Again this is because of the "self-purging" nature of the Cold Bay economy. It is impossible for the unemployed to remain in Cold Bay, even to find a house. The fact of outside control ultimately prevents the formation of a non-labor force in the community.

Housing and Real Estate

The availability of land is vital to the future of Cold Bay. The city is currently receiving the aid and advice of the Aleutians East Coastal Management and Regional Planning Program in attempts to, inter alia, gain a land conveyance from the state. The Bristol Bay Cooperative Management Plan Study Group also projects that about one thousand acres will become available from the state by the year 2000 (although this is not projected to begin until 1987).

It should be remembered that many of the purchases in the 1979 land sale by the Department of Natural Resources were speculative as indicated by the greatly inflated prices paid. These purchasers were speculating on oil or fisheries-related development coming to the region, and if it does not they will have guessed wrong. Several have already defaulted on their payments and at least two have gone into bankruptcy. This pattern will continue and increase in frequency if there is no oil-related development. Land will become increasingly available to the city and to those who choose to establish permanent residency.

Housing, too, will become increasingly available over the next decade. The cutbacks planned by the FAA, RCA, and others will not only reduce the Cold Bay workforce, but will free a good deal of local housing. The FAA housing in particular is centrally located and of excellent quality. Housing will be plentiful at the same time that the traditional equation of residence and occupation is interrupted. This latter is discussed more extensively under social structure.

Changes in Economic Structure

The trends noted above will cause some basic changes in the structure of the Cold Bay economic system over the next two decades. This will occur in two general stages.

During the first period Cold Bay's economy will contract rapidly as corporations and agencies which have retrenchment plans carry those plans out. The economy will revert to domination by the transportation sector, and the airport will exercise even more influence than it does now. At the same time, however, housing and real estate will become more available and the possibility of purchase of a land and house and permanent residence in Cold Bay will emerge.

In the next decade, the 1990s, we expect a reversal of this economic contraction. This could occur in several ways. First, the regional

groundfish industry is likely to begin to expand more rapidly in the 1990s, particularly in Unalaska and Akutan, and this would lead to more men and material in Cold Bay as the airport becomes a major staging area for the industry. Second, OCS-related development in the 90s in any of the areas around Cold Bay would also result in more demand on the community as a transportation staging area.

A final possibility for the 1990s concerns a road link between Cold Bay and King Cove. The latter is a Native fishing village some twenty-five miles (by boat, further by land) from Cold Bay. If a road link were established connecting the village directly to the airport a fresh frozen and/or fresh fish and crab capability could be developed in Cold Bay given the efficient and rapid transportation offered by the airport.

Social Cohesion

Social Networks

Kinship is unimportant in Cold Bay beyond the nuclear family level. During the first part of the projection period there will be little change in this circumstance, but toward the end of the period kinship could come to play a larger social role.

As the economy contracts over the next decade those left behind will continue to lack kinship networks. Almost all jobs will still, even with the smaller workforce, be with companies or agencies based outside the community. Therefore, it is unlikely that related individuals will be in Cold Bay simultaneously.

Over the long term, however, this could change. As land and housing become available over the next decade some will probably take advantage of the opportunity and purchase property, perhaps with a house, and establish permanent residency. During the 1990s this may lead to the establishment of kinship ties as more permanent residents put down roots.

These changes will also affect neighborhood and associational patterns. As population contracts and housing becomes available it is likely that occupation will decreasingly determine neighborhood. Associational patterns will be more heavily influenced by marital status, length of residence, and, eventually, kinship, than by occupation.

Permanent residents will become a greater proportion of the total population over the projection period. During the 1980s this will result from the decline in total population while the permanent population remains steady; in the 1990s the number of permanent residents will rise absolutely as housing and land become increasingly easier to obtain. As the permanent population increases, the chances for the formation of an integrated community increase. Cold Bay may become a community in fact as well as in name.

Finally, intraregional, interregional, and interstate networks will also change over the forecast period. As permanent residents become a greater proportion of total population intraregional networks will increase in importance. Interstate networks will decline in importance

as the number of workers for major outside corporations, national or international in scope, declines.

Demography

The labor force contraction over the next ten years will result in a decline in total population, an improvement in the male/female ratio resulting primarily from a proportional increase in the number of families, and an older average age of the population.

Total population will decline in proportion to the jobs lost. There will be a direct decline of 56 workers by 1990, and of these 16 will be single military employees. This leaves 40 workers who may have families. In our baseline study we assumed half of the non-military employees in Cold Bay had families, and that those families averaged 2.5 people. If this is accurate, then these 40 people would represent a total population loss of approximately 70. Added to the 16 military, we would have a total decline of 86. This would reduce the estimated 1982 population of 226 to between 140 and 145.

With the loss of the single men at the Air Force Base the male to female ratio should improve somewhat. Currently this ratio stands at about 2.05:1 (about 2.85:1 among adults). We project this ratio will drop to about 1.75:1, and to perhaps 2.25:1 among adults. Finally, the removal of the single men at the base will both increase the proportion of families in the population and increase the average age of the population.

Changes in Social Structure

Over the forecast period Cold Bay social structure will come to approximate more closely that of a typical small town, though this will be only a partial process. With the drop in population and the increased importance of the permanent residents a sense of community will begin to develop which has, thus far, been lacking. The availability of housing and land will begin to break down the currently rigid association of neighborhood and occupation. Kinship will slowly come to play a more important social role, beyond the nuclear family. Finally, Cold Bay will become increasingly implicated socially in the region, as more permanent residents come to reside in the community.

Political Structure

Cold Bay incorporated as a second class city in January of 1982. It has a six member city council and a mayor, all of whom are unremunerated and hold other positions in the community. We see no need for a change in this system over the forecast period. The major political issues to be confronted include the acquisition of land and the operation of the community infrastructure.

We expect efforts to to gain land to be successful, but if so it will be up to the city council and the political machinery of the municipality to insure that the land is utilized in the way residents or potential residents would like. Through careful planning, including site location, zoning, and so on, the city will have to work to insure that

speculators do not inflate the value of the land beyond the means of local residents.

The operation of local utilities and facilities presents the city with its most difficult political issues of the next decade. Both the sewage and water systems, which the FAA is anxious to relinquish, need to be upgraded, and in particular the sewage system which currently does not meet EPA operating standards. The city will also accept responsibility for the operation of the airport and the dock from the state. These are two massive facilities and the city will have to prepare early, and carefully, if it is to successfully effect the transfer of power. The city will also, in taking over the airport, accept responsibility for firefighting and road maintenance activities.

These changes in jurisdiction over the next decade will highlight the difficulties faced by the city in terms of revenue generation and this will be a focal issue. Currently the total city yearly budget is $26,000. New sources of revenue must be developed. The city can expect to realize some revenue through the operation of local facilities and utilities, and it will come under increasing pressure to institute a system of municipal taxation.

We do not expect a patrolman to be assigned over the projection period, given the decline in population. Means of social control will remain as they are today - essentially informal. Social control will rely on such mechanisms as gossip, social censure, and the like.

Changes in Political Structure

The next two decades will see a slow shift of power from the state apparatus, particularly the DOT, to the municipal government. Currently the latter governs by law but not in fact. The DOT has de facto power. However, as the major local facilities, particularly the airport and the dock, and utilities, such as water and sewage systems, are transferred to the municipality it will increase both its revenues and its power.

The greatest shift in power will occur with the transfer of title to local land to the municipality and, through it, to private individuals. This will signal the rise of the municipal government as the true power in Cold Bay and the waning of state power.

Other Subsystems

Changes in the other subsystems of Cold Bay structure will not be as dramatic as in those already discussed. The religious structure of Cold Bay is not well developed. However, as permanent residents become a larger proportion of the population the level of religious activity per capita may increase. Nonetheless, even if people begin using the church more, the drop in population will result in approximately equal levels of use as at present.

In the area of education Cold Bay is currently expanding its school facility through the addition of a $1.3 million media center/multipurpose room. The current facility has room for approximately 50 students and offers instruction from kindergarten through twelfth grade. There

will be little need for expansion of the facility.

Cold Bay is well situated with respect to health care with the recent construction of a modern clinic near the Reeve Terminal. It is expected that this facility will serve the needs of the community well throughout the projection period. One area of need is in the provision of the services of a doctor. Health issues will change slowly throughout the period. Currently there are no genuninely pressing or chronic health issues in the community as the population is remarkably young and it is impossible for someone who is seriously ill to remain in the community. However, as the permanent population grows and the average age of the population increases it is expected that more ailments and illnesses of the elderly will emerge. Second, there will be increasing problems of child development and growth as the number of children of these permanent residents also increase.

There will be little change in recreational activities over the projection period. With the drop in population the frequency of such activities will drop somewhat. However, this will be offset by the increase in permanent population in the second decade of the period. Permanent residents tend to take greater advantage of the subsistence activities available in the area. Thus, the level of such activity will remain approximately constant but the amount per capita will increase. Visiting and vacations will continue to be taken to fairly distant locales, generally out of state and often out of the country.

Second Scenario: Regional Facility

The second scenario for Cold Bay assumes construction of a major gas and oil facility on the south Peninsula with no direct road link to Cold Bay. This will result in effects considerably different from those we discussed in the first scenario.

The community will grow substantially under this scenario. The most dramtic changes will occur in the areas of economic activity, political structure, and social structure. Economically the community will become dominated by terminal and refinery, that is oil-related, activity. Support and service sector activity will also increase dramatically while government, communications, and transportation become proportionally less important. Politically the rapid growth of the Cold Bay economy and population will provoke several difficult issues including the takeover, and expansion, by the city of several utilities and facilities, problems of revenue generation, and the need to rapidly expand and completely overhaul municipal government itself. Socially the consequences will be a strengthening of the transient nature of the community, a further submergence of permanent residents, and a formalization of means of social control.

Economic Activity

The major economic effects of an oil and gas facility in the region of Cold Bay will be the emergence of income distribution disparities, a

shift in employment patterns from a nearly equal division among government, transportation, and communications to dominance by refinery and terminal workers with a large expansion of the labor force, and a large growth in population in general.

Income disparities will increase as the community grows rapidly with the influx of oil-related personnel. The refinery and terminal will attract upper management personnel as well as a large population of laborers. Enough of these will make Cold Bay their residence to affect the current egalitarian structure of income. This will be particularly true as the social venues available in Cold Bay expand.

Employment and population patterns will also change radically. Several assumptions concerning these changes were provided by the MMS Office. We assume that of the direct employees of the facility ten percent will live in Cold Bay, and of these fifty percent will have families. We assume that of the support service personnel fifty percent will live in Cold Bay, and of these fifty percent will have families. We assume that one hundred percent of the US Coast Guard personnel will live in Cold Bay, fifty percent of whom will have families. We further assume that the average family will consist of 2.5 people. With these assumptions we can estimate employment and population levels for the community over the projection period.

Table 4

Employment in Cold Bay Region: Regional Facility, Years 1 to 6

Year	Oil Terminal	LNG Refinery	Support Services	USCG	Total
	Construction				
1	940 (235)	3200 (800)	196 (49)	200 (50)	4340 (1085)
2	940 (235)	3200 (800)	196 (49)	200 (50)	4340 (1085)
	Operations				
3	100 (25)	200 (50)	50 (12)	50 (12)	400 (99)
4	150 (38)	300 (75)	75 (19)	50 (12)	575 (144)
5	200 (50)	400 (100)	100 (25)	50 (12)	750 (187)
6	200 (50)	400 (100)	100 (25)	50 (12)	750 (187)

Note: the numbers in parentheses indicate the number of employees on shift at any time. This is one quarter of the total labor force on the assumption that one half of the force is off rotation for a set period and of the half remaining only one half are at the site at any one time.

Based on these figures and the assumptions concerning residence and families noted earlier, the effects on Cold Bay population will be as follows.

Table 5

Cold Bay Population: Regional Facility, Years 0 through 5

Year	Population	% Population Growth
0 (baseline)	226	
Construction		
1	245	8.4%
2	245	0.0%
Operation		
3	442	80.4%
4	499	12.9%
5	563	12.8%

At the start of the first year of construction there will be a small increase in population as some support and direct personnel locate in Cold Bay. The next jump is major and occurs with the onset of operations at the start of the third year. Subsequent to this there will be only gradual growth. Ultimately population increase will once again tend toward zero as the operational phase is brought fully on line. Total population will eventually stabilize at approximately 600 to 700 people by the end of the century.

The economic effects of these changes will revolve around two elements. First, the balance among Cold Bay economic sectors will change greatly. Second, the position of Cold Bay as the regional transportation and communications center will be enhanced as a result of the oil and LNG facility.

Table 6 (next page) indicates the changes which will occur in the Cold Bay labor force from year 0 (the current baseline) through the third year of operations (year 5).

Table 6

Second Scenario

Cold Bay Labor Force: Years 0 through 5, Regional Facility

Year	0	1	2	3	4	5
Employer						
Government (Total)	63	52	41	45	45	45
Federal	43	31	17	17	17	17
State	19	17	18	20	20	20
Municipal	1	4	6	8	8	8
Communications	31	26	20	20	20	20
Support/Service	18	28	28	43	55	68
Transportation	34	36	40	42	42	42
Manu./Processing	6	6	6	6	6	6
Construction (non-oil)	2	2	2	2	2	2
Refinery/Terminal	0	0	0	30	45	60
Coast Guard	0	0	0	50	50	50
Totals	154	150	137	238	265	293

Major expansion will occur in the areas of oil-related workers and support and service functions. The Cold Bay economy will shift from government-dominated to a private sector-dominated system. The drop in employment during the first two years is a result of the retrenchment plans of several firms and agencies, particularly federal government and communications (RCA). Municipal government will also increase as the needs of a medium-size city force expansion of several bureaucracies, discussed at length below. The transportation sector is projected to increase gradually as the presence of a major facility in the region increases the importance of Cold Bay as a transportation and staging area, perhaps resulting in the initiation of at least one more local charter service and a modest expansion in the Reeve and Peninsula work-forces.

The expansion of the support sector could result in alteration of the apparent plans of Flying Tigers to pull out of the community. If FTL does leave, then another, or several other companies will likely replace Tigers and increase employment considerably. We consider the most likely course to be the continuation of the FTL operation and the addi-

tion of several competitors once the exclusive lease expires in 1985.

Unemployment Patterns

The construction of a major regional facility should not alter the full employment nature of the community. This will be insured if the community takes the precautionary step of requesting that the companies working on the construction phase of the oil or LNG facility do their hiring in Anchorage rather than in Cold Bay or one of the surrounding communities. The citizens of Valdez found that the most visible, and one of the most troublesome, contingents was those who came to the community hoping to find a job but without work guaranteed.

Housing, Utilities and Real Estate

Housing will be a major concern of the community, particularly during the operational period when the most people will reside in the community. The first group which must be housed is the Coast Guard. We assume a total of fifty personnel, half of whom will have families, for a total of 88 people. Housing will be provided by the Coast Guard and will consist of approximately 24 family units in fourplexes (six buildings), 1 single family dwelling (for the commander of the base) and twelve apartment units in a single apartment building housing two enlisted personnel per unit.

Housing for support and direct service personnel in Cold Bay will be provided by the company which employs them. This includes, by the fifth year, fifty-five single individuals and fifty-five with families, for a total of 193 people. For families we assume housing will consist of ten duplexes, five single family units, and five sixplexes, housing a total of 138 people. For single employees housing will consist of three ten unit apartment buildings and one bunkhouse with common dining for twenty-five people, housing a total of fifty-five people.

The basic problem with housing will revolve around the availability of land. It appears now that the city will be successful in gaining some land from the state, and if this occurs then the city may sell or lease land to the companies coming into the community. There is also a fair amount of privately held land in the area alienated during the DNR sale of 1979, and it is possible that some of this land may also be available for purchase and development (indeed, it is likely that much of this land was purchased with just such an eventuality in mind).

Utilities will also pose serious problems for the municipality. Development of a major facility and the associated growth in Cold Bay population will put an even greater demand on the already overextended infrastructure. The city is fortunate that there will be little population increase during the construction period. This will create a lag time of two years during which preparations can be made for the population increase which will occur from the third year on. The sewage system will have to be upgraded, as will the water system. The city has to develop the capability to operate the systems efficiently once they are transferred to municipal control. The city will have to either raise rates for delivery of water and/or sewage service or introduce a taxation system to generate enough revenue to operate these systems.

Changes in Economic Structure

The changes noted above will fundamentally alter the Cold Bay economic system. First, the kind of economic activity will shift from heavily government, particularly federal civilian, to a mix of refinery/terminal, transportation, and support/service workers. Second, there will be a strong expansion of the local support/service sector. For the first time the possibility of significant local entreprenurial activity will exist. Third, Cold Bay will begin to display economic class distinctions as a large population of laborers and a smaller population of managerial workers begin to settle in Cold Bay. In spite of these changes the quality of Cold Bay economic activity will remain unchanged in some important ways. The community will remain in an instrumental relationship to the surrounding region, will continue to depend above all on the airport and its direct air links to Anchorage and other major urban areas, and will continue to be dominated by transients.

Social Cohesion

Cold Bay social structure is centrifugal; the residents are as closely linked socially with people outside the community as they are to those within the community. Community ties are relatively weak. In general the development of a regional facility will serve to maintain the outline of Cold Bay social structure. Most workers will remain transient and the community will enlarge its role as a staging and transportation center.

There should be few changes in the area of kin-related behavior. At present there are no kinship links beyound the nuclear family, and the transience of the oil-related workers will insure that situation persists.

In the area of non-kin behavior the major elements are neighborhood and associational patterns. The strict association of occupation and neighborhood will, in general, remain in force. However, as the FAA housing, in particular, is opened up there may be room for some people not working for the FAA to move into some of those homes, thereby weakening the determination of neighborhood, and associational networks, by occupation. However, all the new housing constructed will be segregated according to occupation, maintaining the traditional Cold Bay structure.

Associational networks, then, will remain heavily influenced by occupation. However, the introduction of income disparities and the addition of several social venues, which will occur during the operational period, will encourage the beginnings of a social class structure. Those in the managerial class, or earning equivalent or greater incomes, will tend to gather at one or several social venues while those in the laboring class will begin to frequent other locations. Income will join neighborhood and marital status as a determinant of social networks.

Intraregional, interregional, and interstate networks will also be altered under this scenario. Intraregional networks will become more intense as a result of the implication of the entire region in refinery and terminal operations which will draw the region closer together.

Interregional networks will also be strengthened and expanded as a result of the establishment of the oil facilities, since many of the workers will be Alaskans who gained experience in Valdez. As the increased demand for supplies and services is felt in the region Cold Bay will find itself in more intense interaction with Anchorage and other regions of Alaska through transportation and communications activities. Interstate networks, however, will decline in importance. Those currently working in Cold Bay have interstate networks of some strength, but those who will be arriving with oil development will have much stronger intrastate networks, and the interstate networks will decline as a proportion of all social links.

Changes in Social Structure

The effects of these changes on Cold Bay social structure will be important but not pervasive. Overall it is expected that only some ten percent of the workers associated with the operational phase will live in Cold Bay. Nonetheless, there will be important changes over the next decade.

First, the traditional determination of residence by occupation will begin to break down to some extent. Second, economic class distinctions will begin to operate as major determiners of social networks. However, this will not be rigid or pervasive, but will join other elements as aspects of Cold Bay social networks.

Political Effects

Political effects of the development of a major oil-related facility in the region of Cold Bay will involve changes in the structure of municipal government, emergence of several major political issues (including taxation, the acquisition of land, and assumption of responsibility for services, utilities, and facilities), and changes in the mechanisms of social control.

The major political process will be the rapid expansion of municipal government. The forces of change will be too great and rapid to be met by a cadre of part-time municipal functionaries. The city council and mayor will inevitably relinquish a good deal of daily control to professional outsiders, such as a city manager and his staff. Several new bureaucracies will emerge with responsibility for operation of the airport, the dock, utilities, and for municipal planning. There will be a need for a formal law enforcement capability which will also call for salaried municipal employees.

These changes could lead to political conflict if the process is not managed adroitly. The presence of outsiders in control of local government presents the danger that the community might be tied to long term debt as a means of meeting short term problems, a pitfall noted repeatedly in our discussions with Valdez officials and citizens. This situation will have to be carefully monitored by the municipal government.

The other major political issues to be faced during the projection period include the operation of community facilities and utilities, the

maintenance of social control, and the management of development in general.

Over the next decade municipal government will be asked to assume control of the sewage system, the water system, road maintenance, the airport, and the dock. We have noted the economic difficulties involved. Politically the major problem will be negotiation of responsibility for upgrading and expansion of the systems. The city will be eager to have the FAA at least upgrade the systems, if not expand them, and the FAA will of course be eager for the city to assume that responsibility. Much the same situation obtains in the areas of the airport, the dock, and street maintenance, all of which are now under the aegis of the Department of Transportation. The city will have to negotiate carefully to insure that too great a burden is not placed on the municipal structure too soon. Handled correctly these major facilities can be valuable sources of revenue; handled incorrectly they could place an intolerable fiscal burden on the community.

Revenue generation will be a major issue in the projection period. It is likely that a system of local taxation will be introduced, and that the city will attempt to generate revenue from the operation of local utilities, such as water and sewage, and facilities, such as the airport and dock.

Finally, the means of social control will inevitably change from informal to formal. Currently social control is primarily maintained through informal mechanisms such as censure, gossip, and the like. With the growth in population and activity, however, it is likely that a formal police force will be introduced. This will probably consist of only one or two officers.

Changes in Political Structure

The changes noted above will call for a reorientation of the political structure of the community. The municipal government will be greatly expanded, and its major preoccupation during the period will be the management of the diverse elements of change and growth which will occur. Through this process the city will come to define itself as a major local entity. In the process of negotiation and acceptance of responsibility for local services the city will find it necessary to expand the structure of municipal government. The city itself will become a viable local entity which will be able, for the first time, to represent local interests and desires in negotiation with major outside companies and/or agencies.

Other Subsystems

We expect the level of religious activity to increase somewhat, though not as rapidly as population. Most of those working at the refinery and terminal will be transient and will tend not to become involved in religious activity in Cold Bay.

The most pressing need in the area of education will be for an expansion of the physical facilities and the hiring of some additional personnel. However, this will not be necessary until the latter half of the projec-

tion period when the permanent residents begin to arrive in larger numbers.

Health care needs can probably be met through the clinic recently constructed in Cold Bay. However, it will be necessary for the community to come to some arrangement concerning provision of the services of a medical doctor, on at least an itinerant basis. In the 1990s some expansion of the clinic facilities may become necessary. The kinds of health issues facing the population of Cold Bay may change somewhat during the forecast period. During construction accidental injury rates will be high. Alcoholism and stress related illnesses will also increase at this time. In the 1990s issues of aging and childhood may both become more prevalent than is currently the case.

Recreational activities will also change little over the projection period. We have already discussed changes in intraregional, interregional and interstate networks, and these will have a direct effect on visiting and vacation patterns. The increases in population will lead to increased utilization of the subsistence resources in the region. The most serious potential problem is not a depletion of the resources, which are considerable, but the physical abuse which may be done the land itself. This is a concern of the Fish and Wildlife Service which may be forced to consider a permit system for use of certain areas. However, Cold Bay residents will retain the pattern of relatively light utilization of subsistence resources and heavy dependence on modern technological means of recreation, including four wheel drive vehicles, three wheelers, and electronic systems such as television, videotape, tape recorders and the like.

Third Scenario: Local Facility

The final scenario to be considered in the Cold Bay case assumes the establishment of a major gas and oil facility at Cold Bay itself. This scenario would result in the most pervasive and largescale changes of any of the scenarios discussed here. To gauge the effects of such development we have made several assumptions.

First, we have researched the effects of the construction of a similar facility in Valdez in order to gain an idea of the scale and scope of the changes which will affect Cold Bay and the problems likely to be encountered. Second, we have assumed that all development occurring as a result of oil-related activity will take place in Cold Bay itself, and therefore have a direct impact on the community.

Economic Activity: Cold Bay and the Lessons of Valdez

A major oil facility in Cold Bay will have effects on the economy in the areas of income distribution/disparities, population size, employment patterns, and housing, utilities, and real estate.

Income disparities will be introduced as a result of the influx of a

large number of workers for the oil-related facilities. Most will live in Cold Bay, and this will introduce widely divergent levels of income to the community. The managerial class will make much more than the laboring class, and this will result in the emergence of income-based distinctions. In general these will be limited to those who come into the community. Most of those already in Cold Bay are in a middle to upper middle income range already.

Population and employment patterns will also be fundamentally altered under this scenario. Many of our population estimates are based on the experience of Valdez, although Cold Bay will start out and end up as a smaller community than Valdez. During the pre-construction period, when the decision has been made to construct a facility but before construction begins, the community will experience an influx of surveyors, architects, planners and others associated with the planning of the facility. In Valdez this resulted in over 300 people coming into the community in two years, and if this is replicated in Cold Bay we would see population grow from 226 to approximately 500-550 people. Once construction begins we expect an accelerated immigration which will consist of approximately 5,000 additional people. Cold Bay's population will therefore peak at approximately 5,500 people during construction. Following construction there will be a precipitous drop in the number of residents.

Table 7

Cold Bay Population with Oil Facilities in Town

Scenario Three

Year	Population	% Change
-1 (Baseline)	226	
0	500	112%
1	4206	741%
2	4193	-0.3%
3	610	-86.7%
4	774	+26.9%
5	939	+21.3%

Note: These figures are based on the assumption that all workers not "on rotation" will in fact leave Cold Bay until their rotation comes. As we noted, it is our feeling that this will not occur, and that as many as fifty percent of those who are not working at any time will probably remain in Cold Bay itself. If this is the case, almost fifty percent should be added to the figures above.

These population changes are closely connected to employment levels. During the first two years, that is during construction, the Cold Bay economy will be stretched to its limits as the workforce is increased almost twenty-fold. The areas of most dramatic increase, of course, will be oil and gas related workers. This group will grow from none in 1981 to 300 within five years, representing a total of almost 60% of all local employment. The other sector which will grow rapidly during the projection period is the support and service sector which will begin the period as 11.8% of all employment and end it as 13.4%, representing an absolute growth from 18 positions to 68. The most significant drop will occur in communications and government. The federal military will drop from 16 jobs to none, and government overall will drop from 57 to 35. Communications will drop from 31 jobs to 22 at the end of five years. Transportation will remain fairly steady and actually increase slightly (absolutely) during the period as the community solidifies its position as the transportation hub of the region (see Table 8, next page).

Non-Labor Force

We have noted the "self-purging" nature of Cold Bay with respect to the non-labor force several times. We expect this to continue to be the case and for there to be little change in the present absence of a non-labor force. However, it is important that the municipal government assure that hiring for the construction phase in particular be done outside of Cold Bay in order to avoid the creation of a group of job-seekers with no means of income in the local area.

Housing, Utilities and Real Estate

The rapid expansion of the economic base of Cold Bay will create a need for adequate housing and lodging, adequate utilities and adequate amounts of private and municipal land. These will be major issues during the projection period.

Housing construction will be a major activity during the period. During construction, barracks-like housing will probably suffice, but during the operational period additional quality housing will become a priority. This is tied to the availability of private land for construction. Coast Guard housing will be constructed by the Coast Guard itself, while the oil and refinery companies will take responsibility for housing their employees. To effect this rapid increase in housing with a minimum of disruption to the community the city should plan well in advance which areas should be utilized for different purposes. Zoning will be a major concern. Utilities must be upgraded and expanded considerably. The major constraint under which the city will have to operate concerns available revenue. If handled properly the expansion of utilities and facilities can serve as a substantial generator of municipal revenue which will allow the gradual upgrading and expansion of the infrastructure. If handled incorrectly the results could be disastrous as local facilities prove inadequate and revenues generated are insufficient for expansion.

Table 8

Employees by Sector, Years 0 Through 5, Cold Bay

Scenario Three

Year	0	1	2	3	4	5
Sector						
Government						
Federal Civilian	27	25	24	24	24	24
Federal Military	16	8	0	0	0	0
State	14	11	11	11	11	11
Municipal	1	3	6	8	12	12
Communications	31	25	22	22	22	22
Transportation	34	40	40	40	40	40
Service/Support	18	116	116	43	55	68
Oil Terminal	0	470	470	50	75	100
LNG Refinery	0	1600	1600	100	150	200
Other (Including Induced Employment)	12	12	12	30	37	44
Totals	152	2310	2301	328	426	521

The major lesson to be learned from Valdez concerning housing and infrastructural improvements is that this must be approached from a long term perspective. Short term demand should not be taken as an indicator of the permanent needs of the population since the post-construction population will be considerably reduced from the construction peak. Therefore, any temporary housing, sewage, power, transportation or other facilities required, incidental to construction of the facility, should be properly assigned to the contracting firms.

Changes in Economic Structure

The economic problems posed by major development in Cold Bay revolve around three major elements. First, there will be pressure on an already overburdened infrastructure and the expansion and updating of those systems will be necessary. Second, the expansion in housing will have to be rapid if it is to accommodate the influx of construction personnel and it must consist of a proper mix of permanent and temporary housing. Third, the expansion of support services will also be a major concern. In this process Cold Bay will find itself transformed from a community depending almost exclusively on transportation and communications to one dependent on refinery employment. This will also encourage, for the first time, the development of a local economic sector.

Social Cohesion

The social effects of large scale development in Cold Bay will be less disruptive than would be the case in many other communities because the members of Cold Bay society are virtually all outsiders to begin with. The residents are generally positive toward the possibility of oil development in the region and such development would be welcomed. Problems of ethnicity and ethnic relations would be essentially nonexistent. However, the one group which would view such development in a negative light may be the permanent residents. This small segment of the population may feel overwhelmed by the influx of additional outsiders and could react by withdrawing even more into isolation.

In terms of kin behavior we expect there to be some changes over the projection period, although they will be minimal. It is possible that as the permanent population grows during the operational period families and individuals related by blood may come to reside in the community, giving the town a rudimentary kinship network for the first time. However, this will remain a secondary basis for social networks.

Non-kinship relations will remain the major basis of social relations. The major changes will be twofold. First, the almost uniform equation of neighborhood and workplace which presently characterizes Cold Bay may break down to a certain extent as FAA and other housing becomes available with the retrenchment of some major local employers. Second, and much more pervasive, will be the emergence of social groups based on income levels. As we noted in the economic section, income disparities will increase throughout the projection period, and this, along with the increase in social venues available, will encourage the growth of several distinct social networks. At a minimum we expect the managerial and white collar class to frequent certain social locations, such as restaurants and bars, while the laboring and blue collar class begins to

frequent other venues. This will also encourage the establishment of social networks cross-cutting occupation as the white collar and upper level management employees of several different companies and agencies begin to interact with one another while the same process is occurring among the laborers. Social classes will emerge in full form.

Intraregional, interregional and interstate networks will also shift over the projection period. The major shift will involve the relative importance of interstate and interregional ties. Currently interstate ties are the strongest of all social ties, but the development of oil-related facilities in the community will increase the importance of interregional ties as many workers come from other parts of Alaska with experience gained in Valdez during the seventies. Intraregional networks will probably suffer as few of the people in the immediate region of Cold Bay have oil-related experience and they will therefore represent a small proportion of the total growth in employment.

Changes in Social Structure

The major structural change in the social system will be the emergence of social classes based on income disparities. Nonetheless, the essential centrifugal nature of the community will remain, the community will remain transient, and it will remain under the influence of outside corporations. This means the continued defeat of a sense of community and continued difficulties for the permanent residents and those others committed to Cold Bay as a home.

Political Effects

The major political effect of large scale development in the community will be the need for a complete reorganization of municipal government. With the growth of the community and the inevitably greater demand on time and resources which operation of the city will entail, the daily operation of the city will have to be turned over to professionals. This means the city council will take a much less direct hand in the running of the city. A city manager will have to be appointed who will then establish the outlines of the necessary city bureaucracies such as a zoning and planning commission, public safety commission, utiliities and public service agencies, police and fire departments, and so on. This process must be handled carefully in order to insure that the city is not committed to too much long term debt in order to finance "apparent" needs at the beginning of the period, particularly during the construction period.

Another major political issue facing the community will be taxation. There will be a good deal of pressure to institute a system of property and/or sales taxation. The city will need to generate revenues in order to upgrade public facilities and utilities and as the assessed values of local property rise a property tax will be enticing as a means of revenue generation. Zoning and land use will also be an issue and should be planned for well in advance by the municipal authorities.

External political relations will also be altered under this scenario. With the explosion in population Cold Bay will come to rival Unalaska and Dillingham as the largest community in the Bristol Bay/Peninsula/

Aleutians region. This will assure additional access to funds and political power at the state level, but may have some negative consequences as well as the community might become more attractive to outside investors and speculators as a result of the massive levels of development occuring there. A decision will have to be made eventually concerning whether or not to incorporate as a first class city as population grows rapidly.

Finally, means of social control will inevitably change from informal to formal over the projection period. With the explosion in population crime levels will rise and, for the first time, there will be the likelihood of serious crime in the community. Problems of social control will be particularly acute during the construction period as alcohol and drug related misdemeanors and felonies become more commonplace.. There will be a temporary need for a fairly large police force which will probably be reduced in size once the operational period begins.

Changes in Political Structure

The Cold Bay political system will mature over the next two decades. The period will be a time of political expansion, development of the apparati of municipal government and administration, expansion of local responsibility for utilities and facilities, and expansion in revenues and levels of spending. If the process is planned for well in advance the 1990s could see Cold Bay with sufficient funds, a modernized infrastructure, an efficient municipal government, and improved access to private land.

Other Subsystems

It is not expected that religious activity will differ significantly in kind from that currently characterizing the community. However, the presence of a large number of blue collar workers, traditionally more religious than white collar workers, will increase demand to some extent. The sheer number of people in the community will force an expansion of the religious facilities now available and it is expected that several additional churches will open to augment the current single chapel in town. Overall, however, we expect Cold Bay residents to remain relatively little implicated in a religious belief system.

Educational facilities will come under increasing pressure throughout the projection period and will have to be expanded considerably to accommodate the additional demand. We expect Cold Bay demand for school facilities to rise to as much as 250 during the construction phase, and to drop back to a stable enrollment of about 150 to 200 during the operational phase. This means the REAA should plan for some temporary facilities during the construction period and plan permanent construction on the basis of somewhat fewer students than are present during construction. This growth will clearly require a completely new school facility. We expect few changes in curriculum or achievement levels which will remain high.

In the area of health care, the clinic recently constructed in Cold Bay is a modern and, at present, sufficient facility for the community.

However, if population increases at the rates projected here there will inevitably be a need for an expansion of health facilities. The city should attempt to guarantee that during the construction phase, when there will be most demand for medical facilities, the construction companies themselves provide medical care for their employees. Following construction it should be possible to make the same arrangement with those responsible for operating the oil and gas facilities. If this is done the clinic should be able to handle the residual medical needs of the community through a modest expansion of the present facility.

The major change in recreational patterns will not be in kind as much as in quantity. The great population increase will put much more strain on the land in the Cold Bay area, particularly from the perspective of subsistence. It will probably prove necessary for the Fish and Wildlife Service, and perhaps state agencies as well, to resort to a permit system to determine use of certain sensitive areas, most notably the Izembek Refuge. Both the terrain and the wildlife resources themselves would otherwise be threatened. Visiting and vacation patterns will shift toward trips to other areas of the state rather than interstate as a result of the arrival of a large number of Alaskans to work at the oil and LNG facilities. Cold Bay residents will continue to use three wheelers, four wheel drive vehicles, and electronic devices, for their recreational activities.