APPENDIX F

Social Impact Appendices

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APPENDIX F1: GROUNDFISH COMMUNITY SOCIOECONOMIC PROFILES

This appendix contains profiles of those communities most engaged in, and substantially dependent upon, the North Pacific groundfish fishery. These are communities in three regions, the Alaska Peninsula/ Aleutian Islands region, the Kodiak region, the Washington Inland Waters region, that have ties to multiple fisheries sectors. These sectors, in turn, are either significant components of the overall fishery or of the larger economic base of the community.

The information contained in this appendix is intended to supplement the regional existing conditions information contained in Section 3.12.2 of this SEIS by describing the groundfish social or sociocultural context at the community level in detail sufficient to illustrate the range of types of engagement in, and dependence upon, the groundfish fishery. Quantitative description of baseline engagement or dependence on a regional basis is found in the discussion of Alternative 1 in Section 4.12.2 of this SEIS. This same level of quantitative description (e.g., total catcher vessel payments to labor, total shorebased processed value, etc.) cannot be presented at community level due to confidentiality restrictions associated with reporting data from individual or a small group of entities. Taken as a whole, however, the information contained in Section 3.12.2, Section 4.12.2, and this appendix provides a comprehensive treatment of the likely differential distribution of social impacts resulting from the proposed alternatives.

1.0 ALASKA PENINSULA/ALEUTIAN ISLANDS REGION COMMUNITIES: UNALASKA, AKUTAN, SAND POINT, AND KING COVE

In this section, Alaska Peninsula/Aleutian Island region communities with the strongest direct links to the North Pacific groundfish fishery are profiled in detail. These are Unalaska, Akutan, Sand Point, and King Cove. While these four primary ports are dominant in the region, there have been recent additions of list of regional communities directly engaged in the groundfish fishery. No groundfish data are yet available for False Pass, but it is known that substantial processing investment has been made in the community, and groundfish is being locally processed during 2001. Groundfish has not been a major focus of processing in St. Paul in recent years, but groundfish do appear in the processing reports for 2000. (It is worth noting that Chignik - although not geographically in the region, it is lumped analytically in regional totals for processing data - does run some groundfish as well, but as is the case for St. Paul, this is clearly not the main focus of local processing.) Additionally Adak, a former military community, has become a significant regional processor of groundfish in the recent past. Although production figures are confidential, it is common knowledge that although no groundfish were landed in the community prior to 1998, it has since become a significant and growing purchaser of groundfish, particularly cod, within the region. This community is quite different in sociocultural terms from the other communities of the region, given its recent development as an industrial site on a converted military base rather than within or adjacent to a traditional community. Because of lack of data in the case of False Pass, confidentiality concerns and the relative lack of dependency in St. Paul and Chignik, and confidentiality concerns with respect to data from Adak, the discussion in this section focuses on the four major groundfish communities in the region. (Chignik area vessels have seen increased involvement in the grounfish fishery in recent years, and because of the proposed Option 1 to Alternative 4 in this SEIS, brief additional information on these communities and vessels is provided in a note [Section 1.4] at the end of this appendix section.)

Unalaska and Akutan are located on the Bering Sea side of the Alaska Peninsula/Aleutian Island chain, while Sand Point and King Cove are on the Gulf of Alaska side. Nonetheless, a substantial portion of the groundfish processed in Sand Point and King Cove is harvested in the Bering Sea (although the American Fisheries Act [AFA] substantially changed this balance for Sand Point, as detailed in the following sections). Historically, relatively small amounts of groundfish harvested in the GOA have been delivered for processing in Dutch Harbor/Unalaska and Akutan. In general, Aleutians East Borough communities have typically accessed fishery resources in both the Bering Sea and the Gulf of Alaska, whereas the Aleutians West Census Area communities have focused more on Bering Sea (and Aleutian Islands) area fishery resources. While this gives the Aleutians East Borough communities an increased range of flexibility, in practical terms it means that these communities are also vulnerable to downturns in either major area.

At present, pollock and Pacific cod are the primary groundfish species landed and/or processed in these four ports. Alaska Department of Fish and Game fish ticket data indicate that in Dutch Harbor/Unalaska and Akutan, pollock represented 83 percent and 76 percent, respectively, of the 1997 total groundfish landings in these ports, with Pacific cod making up virtually all of the balance. In the case of Sand Point, pollock and Pacific cod, respectively, accounted for 69 percent and 29 percent of the total, with fractional percentages of other groundfish species accounting for the rest. In King Cove, this relationship was reversed, with pollock catch-share at 31 percent and Pacific cod at 69 percent of the groundfish total.

In the case of pollock, surimi is the principal product, and fillets are a distant second, although product mix has been changing recently, with at least part of the change attributed to changing conditions brought about by the AFA. Several ancillary product forms (e.g., roe), as well as byproducts (e.g., white fish meal) are derived from pollock landings. Fillets are the primary product form produced from Pacific cod landings in these ports, although several lesser product forms (e.g., H&G) and byproducts (e.g., white fish meal) are also produced. The majority of the output from the processing operations in these landings ports is exported, principally to Asian markets, although some enters the domestic market for secondary processing and/or sale.

While changes in any groundfish TAC or changes in the pattern of distribution, in either the GOA or BSAI management areas, could have indirect economic consequences for any or all of the principal ports, the impacts would be most severe and direct if pollock, and to only a lesser extent Pacific cod, TACs were in effect substantially reduced for whatever reason. Furthermore, these impacts would not be uniform in distribution across the four key Aleutian region groundfish landings ports, owing to geographic location, proximity to fishing grounds, plant capacity and capability difference, availability and variety of support facilities offered, and intermediate and final markets served.

Historically, the processors in each of these ports competed directly with the mothership and catcher/processor fleets which participate in many of these same fisheries. However, due to the inshore/offshore allocations of pollock in the BSAI, and the subsequent AFA provisions and associated co-ops, the competition for pollock occurs in seafood markets, not on the fishing grounds. Each sector has different capabilities and limitations. And, while each supplies some amount of product into common markets, each also has developed the potential to focus a portion of its operation on specific markets.

One of the major differences between the community of Unalaska/Dutch Harbor and the other regional communities profiled (Akutan, King Cove, and Sand Point) is that the City of Unalaska is a municipality outside of any organized borough, while Akutan, King Cove, and Sand Point are all communities within the Aleutians East Borough (AEB). The fact that the latter three communities are within a borough has a direct

impact on the way that fishery associated tax revenues are distributed among and between communities. While the fishery associated municipal revenues are discussed in detail in the Unalaska community profile, a summary of groundfish related tax revenues for the multiple AEB communities is presented here in this regional overview section rather than in the individual community profiles that follow, as this discussion applies to multiple communities. Further, it gives a sense of the order of magnitude of the importance of the fisheries as a revenue source for the borough and its constituent communities.

It is estimated that the AEB and the communities of Akutan, Sand Point, King Cove, and False Pass collectively will receive approximately $5.4 million in state and local fish taxes from groundfish for 2000. In addition, approximately $4.0 million will be received by the AEB and its communities from crab, salmon, other non-groundfish, and shellfish processing. The methodology used to develop this estimate is as follows:

- According to the AEB Manager (Juettner, personal communication, 2001[1]), the AEB will receive a total of $1.4 million as its share of the Fishery Business Tax (FBT) for the 2000 fishery from all species including groundfish, crab, salmon, and other fisheries processed in the AEB. The State of Alaska shares the FBT (calculated generally as 3 percent of ex-vessel value) as follows:
  - 1.5 percent goes to the state
  - 1.5 percent goes to the local governments in whose jurisdiction the processing occurs, which in turn is split 50 percent to the city and 50 percent to the borough. If processing occurs outside of any local government jurisdiction (such as with the floating processor operating in Beaver Inlet on Unalaska Island), the state shares the taxes with all communities in the 'unorganized borough' (i.e., all communities in the state outside of organized boroughs, such as Unalaska and may other communities throughout the state).
- All of the processing in the AEB takes place within cities in the Borough, and therefore the Borough shares all of the FBT 50-50 with the city in which the processing occurs. Therefore, the AEB's $1.4 million FBT revenue represents 0.75 percent of the total ex-vessel value processed in the AEB (with the other 0.75 percent [i.e., the other half of the 1.5 percent the state shares with local governments] going directly to the cities). Dividing $1.4 million by 0.0075 yields an estimated $187.7 million total ex-vessel value of processing in the AEB. Unfortunately for the purposes of further analysis, information from the AEB indicating species specific ex-vessel values are confidential and cannot be released. Therefore, the species breakdown needs to be derived from other sources, and the updated sector profiles from Appendix I of the Groundfish SEIS provides information that allows an estimate to be made. According to this source, in 2000, groundfish accounted for approximately 58 percent of the total ex-vessel value of the processing sectors contributing to AEB taxes (Bering Sea pollock shore plants, Alaska Peninsula/Aleutian Island shore plants, and floating processors), and therefore it is assumed that 58 percent of the AEB FBT is from groundfish. Utilizing this assumption, a total figure of $108.7 million of ex-vessel value can be estimated to have been generated in the AEB from groundfish in 2000.

[1] Juettner, Robert, Borough Manager, Aleutians East Borough, AK. Personal communication 7/01

- In addition to the State FBT, the AEB and each community within the AEB collect local fish taxes of 2 percent, except for Akutan, which taxes at a 1 percent rate. Thus, all processors in the AEB with the exception of Akutan pay 5.5 percent of ex-vessel value in taxes, and for Akutan the analogous figure is 4.5 percent. Assuming that roughly 50 percent of the total tax revenue was generated in Akutan and 50 percent in other communities within the AEB, the average fish tax collected in AEB communities is 5 percent of the total ex-vessel value. Multiplying the estimate of total groundfish ex-vessel value ($108.7 million) by 5 percent yields an estimated fish tax revenue of $5.4 million from groundfish for all local governments in the AEB for 2000.

It is also important to note that significant impacts through loss of fishery related revenue that could result from fishery management actions would be felt in all borough communities, not just those communities that are directly engaged in the fishery. This is the case because communities without major groundfish plants (Cold Bay, False Pass, and Nelson Lagoon) normally benefit from borough expenditures that are made possible by collection of fishery related revenue in communities with major groundfish plants (Akutan, King Cove, and Sand Point). Given that changes in tax revenue resulting from changes in groundfish landing patterns in one community within the borough is directly linked to expenditures in other communities in the borough (for example, a decline in fish tax revenue in King Cove paid to the Borough would impact Nelson Lagoon if it were large enough to necessitate reductions in school expenditures), the borough structure would serve to distribute impacts to communities in a different way than seen in the rest of the region that has no such structure. A recently released report commissioned by the AEB (McDowell Group, 2001) underscores the importance of commercial fisheries to the AEB as a whole by noting that seafood industry accounts for approximately 99 percent of the AEB's basic economic employment, 76 percent of all employment, and – through fish taxes – 40 percent of the operating budget for the AEB government.

The following subsections examine the communities of Unalaska/Dutch Harbor, Akutan, Sand Point, and King Cove. Each of these communities vary widely in their structure, history of engagement with the fishery, and contemporary engagement with the fishery, and the level of detail presented for any particular community varies roughly by the degree of complexity of the community's ties to the fishery.

1.1 UNALASKA/DUTCH HARBOR

Unalaska is located approximately 800 miles southwest of Anchorage and 1,700 miles northwest of Seattle. Unalaska is the 11th largest city in Alaska, with a reported year-round population of just over 4,000. Dutch Harbor is the official name of the city's port, and is also often applied to the portion of the City of Unalaska located on Amaknak Island, which is connected by bridge to the rest of the community on Unalaska Island. The geographic feature of Dutch Harbor itself, along with Amaknak Island, is fully contained within the municipal boundaries of the City of Unalaska, which encompasses 115.8 square miles of land and 98.6 square miles of water.

Unalaska is in a unique position with respect to the Bering Sea groundfish fishery. It is the site of both the most intense onshore and offshore sector activity. Unalaska is a community whose economy is strongly tied to Bering Sea commercial fisheries in general, and the groundfish fishery in particular. Among groundfish species, pollock plays a particularly important role in local operations.

Unalaska has been variously described as a growing, developing, and maturing community. Whatever descriptor is chosen, during the span of years since the development of the groundfish fishery, Unalaska has

seen an impressive amount of community development. The changes that have accompanied this development are both obvious and subtle.

Population

It has always been difficult to ascertain total population figures for Unalaska or, to state it more accurately, it is difficult to interpret and compare the figures given for the population of Unalaska over the years. Over the years, Unalaska has been a 'less than permanent' home to many individuals whose length of stay in the community has varied. Some individuals may stay in Unalaska only a fishing season or two; others may stay for many years before moving on. These individuals have been counted in different ways, or not counted at all, in a number of censuses. Caution must therefore be used in interpreting total population figures from various sources.

Even though the total population of Unalaska has grown, the contemporary community maintains a relatively high transient population. This transient population includes workers at shore processing plants, although this particular population segment is notably less transient as the nature of the business of the shore plants has changed. Once characterized by rapid turnover during the King crab processing boom in the late 1970s, though more-or-less year-round processing during the early years of full-scale pollock processing, the current pattern is marked with peaks and valleys coinciding primarily with the pollock and, to a lesser extent, crab seasons, by maintenance of a 'core crew' of year round individuals who process lower volume species that are harvested at other times of the year and maintain the plant. (This topic is more fully addressed in the shore plant sector description in this document.)

In addition to the shore-resident (some of whom are short-term residents) population, there are also a number of individuals who may be thought of as a "floating population" associated with the community. These individuals are from fishing fleets, floating processors, catcher/ processors, and freighters that stop at the port of Unalaska for resupply. There are no current estimates of the "floating population," though such a figure was assembled for the year 1990 and is presented in Table 1.1-1 below. Although not true residents of the community of Unalaska, this "floating population" does have an impact on the community of Unalaska. They are associated with business and revenue generated in and for the city, and with services required of the City. Unalaska is, at least briefly or occasionally, where they live and work.

Table 1.1-1 Estimates of Floating Population Community of Unalaska, 1990

Vessel Type	Estimated Vessels	Average Crew Size	Floating Population
Trawlers			
Catcher Vessels	110	5	550
Catcher/Processors	60	75	4,500
Floating Processors Only	2	160	320
Longline			
Catcher Vessels	100	6	600
Catcher/Processors	20	25	500
Floating Processors Only	16	25	400
Crab			
Catcher Vessels	225	5.5	1,238
Catcher/Processors	25	22	550
Floating Processors Only	13	70	910
Cargo Vessels	350	25	8,750
Total Floating Population			18,318

Source: American Trawlers Assoc.; Alaska Crab Coalition; State of Alaska Dept. of Fish and Game; Resource Inventory and Analysis, Volume II, Aleutians West Coastal Resource Service Area, March 1990; The In-shore/Offshore Dispute; Impact of Factory Trawlers on Fisheries in the North Pacific and Proposals to Regulate the Fleet, The North Pacific Seafood Coalition, March 1990; and subsequent consultation with on-site resource Sinclair Wilt, Supervisor, Alyeska Seafoods, Unalaska. (Cited from Professional Growth Systems, Inc. 1990:12).

It should not be assumed that the characterization of Unalaska's "non-transient" population is without its own difficulties, as the nature of the community has changed over the years. Discussion and analytical categorization of the less transient portions of the Unalaska population differ in various publications on the community. "Permanent" residents of the community have been described as those individuals for whom Unalaska is their community of orientation, independent of their employment status. "Semi-permanent" or "long-term transient" residents are those individuals for whom Unalaska is now their community of residence, but for whom residency decisions are based virtually exclusively on employment criteria. In other words, a "permanent resident," as that term is used in this document, is an individual who considers Unalaska "home" and is highly unlikely to move from the community due to termination of a particular job. These individuals tend to remain in the community and seek other employment if a specific job ends, and they also typically remain in the community after their retirement from the labor force. A "semi-permanent" or "long-term transient" resident, on the other hand, is an individual who typically has moved to Unalaska for a particular employment opportunity and is highly likely to leave the community if that specific employment opportunity is terminated for any reason. These individuals may indeed remain in the community for a number of years, but their residency decision-making process is predicated on Unalaska being first and foremost a work site. Obviously, the categories "permanent" and "semi-permanent" or "long-term transient" resident are not precise terms, nor do they necessarily correspond to administrative/regulatory decisions about 'official' residency (e.g., whether or not one is classified as an "Alaska resident" for employment statistical reporting or taxation

purposes) nor do they correspond to U.S. Census count methodology,[2] but they are analytically useful where they conform to specific orientations toward the community that serve to shape community politics, development objectives, community perception, etc.

Ethnicity

Unalaska may be described as a plural or complex community in terms of the ethnic composition of its population. Although Unalaska was traditionally an Aleut community, the ethnic composition has changed with people moving into the community on both a short-term and long-term basis. Not surprisingly, in the latter half of this century, population fluctuations have coincided with periods of resource exploitation and scarcity.[3] For example, the economic and demographic expansion associated with the King crab boom in the late 1970s and early 1980s brought many non-Aleuts to Unalaska, including Euro-North Americans, Filipinos, Vietnamese, Koreans, and Hispanics. The Euro-American population shows a distinct change over the years, comprising around 30 percent of the population in 1970, over 60 percent in 1980 and 1990, and then back to 44 percent in 2000. The growth of Asian/Pacific Islander population (over 30 percent by 2000) is closely associated with the increasingly residential nature of the seafood processing sector workforce. The ethnic composition of Unalaska's population for the census years 1970, 1980, 1990, and 2000 appears in Table 1.1-2.

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[2] The technical classification of residency has been a contentious issue in recent years specifically with respect to the fishing industry related workforce. In terms of U.S. Bureau of the Census methodology, the first U.S. decennial census in 1790 established the concept of "usual residence" as the main principle in determining where people were to be counted. This concept has been followed in all subsequent censuses. Usual residence has been defined as the place where the person lives and sleeps most of the time, and is not necessarily the same as the person's voting or legal residence. Also, noncitizens who are living in the United States are included, regardless of their immigration status. The State of Alaska uses a specific set of criteria for determining residents of the state (i.e., those who qualify for Permanent Fund dividends). According to the state publication *Nonresidents Working in Alaska* (Alaska Department of Labor, 2001), using these criteria, the highest concentration of non-Alaska resident workers are found in the southwest region of Alaska and were primarily engaged in seafood processing. According to this document, 70.9 percent of the workers in this sector in Alaska were not state residents. Of the top private sector employers of non-state resident workers within the 'manufacturing' sector, all five were seafood processing firms with ties to the Alaska Peninsula/Aleutian Islands region, if not Unalaska itself. These firms (in alphabetical order) were: Icicle Seafoods, Peter Pan Seafoods, Inc., Trident Seafoods Corporation, Unisea, Inc., and Wards Cove Packing Company, Inc. Of the combined total of 11,006 workers reported for these firms, 8,669 individuals or 78.77 percent of the total number of workers were not classified as Alaska residents. The workforce at the individual firms ranged between 71 and 86 percent non-Alaska resident. The relative importance of state resident classification has been the subject of heated debate during recent NPFMC management decision making processes (for example, during the series of Inshore/Offshore decisions), but in practical terms for the purposes of a social impact assessment, the nature of interaction and relationship between of these workers their worksite community appears to depend more on living quarters configuration (i.e., industrial enclave style or more integrated with the rest of the community), work schedules, and individual decisions regarding the allocation of personal time, among other factors, than it does on formal state residency status for originally non-local workers - whether they be from elsewhere in Alaska or from another state.

[3] The most dramatic population shift of this century, however, was brought about by World War II. The story of the War, and the implications for the Aleut population of Unalaska and the other Aleut communities of Unalaska Island, is too complex and profound for treatment in this limited community profile. It may be fairly stated, however, that the events associated with World War II, including the Aleut evacuation and the consolidation of the outlying villages, forever changed the community and Aleut sociocultural structure.

Table 1.1-2 Ethnic Composition of Population Unalaska; 1970, 1980, 1990 and 2000

Race/Ethnicity	1970		1980		1990		2000	
	N	%	N	%	N	%	N	%
White	56	31.0%	848	64.1%	1,917	62.1%	1,893	44.2%
African American	0	0.0%	19	1.5%	63	2.0%	157	3.7%
Native Amer/ Alaskan	113	63.4%	200	15.1%	259	8.4%	330	7.7%
Aleut	107	60.1%	-	-	223	7.2%	-	-
Eskimo	5	2.8%	-	-	5	0.2%	-	-
American Indian	1	0.5%	-	-	31	1.0%	-	-
Asian/Pacific Islands*	-	-	-	-	593	19.2%	1,336	31.2%
Other**	9	5.6%	255	19.3%	257	8.3%	567	13.2%
Total	178	100%	1,322	100%	3,089	100%	4,283	100%
Hispanic***	na	na	na	na	394	12.7%	551	12.9%

* In the 2000 census, this was split into Native Hawaii and Other Pacific Islander (pop 24) and Asian (pop 1,312)

** In the 2000 census, this category was Some Other Race (pop 399) and Two or more races (pop 168).

*** 'Hispanic' is an ethnic category and may include individuals of any race (and therefore is not included in the total as this would result in double counting).

Source: 1970 data, University of Alaska, 1973; 1980, 1990, and 2000 data, U.S. Bureau of Census.

Table 1.1-3 provides information on group housing and ethnicity for Unalaska. Group housing in the community is largely associated with the processing workforce. As shown, 52 percent of the population lived in group housing in 1990. (Comparable 2000 data are not yet available.) Also as shown, the total minority population proportion was substantially higher in group quarters (49 percent) than in non-group quarters (31 percent).

Table 1.1-3 Ethnicity and Group Quarters Housing Information, Unalaska, 1990

Unalaska City	Total Population		Group Quarters Population		Non-Group Quarters Population	
	Number	Percent	Number	Percent	Number	Percent
White	1917	62.06	870	53.90	1047	70.98
Black	63	2.04	55	3.41	8	0.54
American Indian, Eskimo, Aleut	259	8.38	20	1.24	239	16.20
Asian or Pacific Islander	593	19.20	434	26.89	159	10.78
Other race	257	8.32	235	14.56	22	1.49
Total Population	3089	100.00	1614	100.00	1475	100.00
Hispanic origin, any race	394	12.75	337	20.88	57	3.86
Total Minority Pop	1252	40.53	795	49.26	457	30.98
Total Non-Minority Pop (White Non-Hispanic)	1837	59.47	819	50.74	1018	69.02

Source: Census 1990 STF2

Apart from the War years, prior to the growth of the current commercial-fisheries-based economy that traces its present configuration back to 1970s, Unalaska was traditionally an Aleut community. With the growth of the non-Aleut population, Aleut representation in the political and other public social arenas declined significantly. For example, in the early 1970s, Aleut individuals were in the majority on the city council; by the early 1980s, only one city council person was Aleut (IAI 1987:65). If one looks at Aleuts (or Alaska Natives) as a percentage of the total population, the change over the period of 1970 - 1990 is striking. In 1970, Aleut individuals made up slightly over 60 percent of the total community population (and Alaska Natives accounted for a total of 63 percent of the population). In 1980, Alaska Natives, including Aleuts, accounted for 15 percent of the population; by 1990, Aleuts comprised only 7 percent of the total community population (with Alaska Natives as a whole accounting for 8 percent of the population). Overall representation was similar in 2000. This population shift is largely attributable to fisheries and fisheries-related economic development and associated immigration. The fact that there is a "core" Aleut population of the community with a historical continuity to the past also has implications for contemporary fishery management issues. These include the activities of the Unalaska Native Fisherman's Association and active local involvement in the regional CDQ program. While neither of these undertakings exclude non-Aleuts, Aleut individuals are disproportionately actively involved (relative to their overall representation in the community population).

During field interviews for this project, a number of individuals, including local governmental officials and individuals from various private sector enterprises, commented that it appeared to them that there were less people overall in the community in the 2000-2001 period than in the recent past, although there are no hard data available to verify this. Speculation included that with the apparent slow-down in the local support service economy with the AFA-related cessation of the race for fish within the pollock fishery, there has been some population loss among the permanent population, but again, there is no quantitative information available to check this speculation. Anecdotal evidence cited by interviewees include less participation in city-

sponsored recreational sports (e.g., the basketball league has seen a drop in the number of teams), and an easing of the shortage of housing (discussed below).

Age and Sex

In the recent past, and particularly with the population growth seen in association with the development of the commercial fishing industry, Unalaska's population has had more men than women. Historically, this has been attributed to the importance of the fishing industry in bringing in transient laborers, most of whom were young males. Table 1.1-4 portrays the changes in proportion of males and females in the population for the years 1970, 1980, 1990, and 2000.

Table 1.1-4 Population Composition: Age and Sex Unalaska; 1970, 1980, 1990, and 2000

	1970		1980		1990		2000	
	N	%	N	%	N	%	N	%
Male	98	55%	858	65%	2,194	71%	2,830	66%
Female	80	45%	464	35%	895	29%	1,453	34%
Total	178	100%	1,322	100%	3,089	100%	4,283	100%
Median Age	26.3 years		26.8 years		30.3 years		36.5 years	

Source: 1970 data, University of Alaska, 1973; 1980, 1990, and 2000 data, U.S. Bureau of Census.

Census data from the period 1970-1990 showed a climb in median age from 26.3 years to 30.3 years and then a further jump to 36.5 years in 2000. This is commonly attributed to the relative size of the workforce in comparison to resident families. That is, there is quite a large proportion of adult residents included in the census counts who are not raising children in the community, thereby raising the median age. On the other hand, what the median age information does not portray is that older age bracket residents (i.e., those individuals typically past their 'working years') tend to be under-represented in Unalaska compared to the general population, as few non-lifetime residents of the community chose to stay in Unalaska in their retirement years.

School district enrollment figures are presented in Table 1.1-5. This is another indicator of the changing nature of Unalaska's population over the time period portrayed. One can see in the enrollment figures, for example, the enrollment decline that followed the economic decline of the fishing industry in the early 1980s, following the crash of locally important King crab stocks. Enrollments have increased from the late 1980s onward, reflecting two trends, according to school staff. One is the overall growth of the community, and the other is the increase in the number of people who are making Unalaska home for their families. As shown, however, the growth has leveled off recently. The City is in the process of expanding the school, but the issue of whether or not to proceed with the expansion during a time of overall population decline and a leveling off of student population in particular was the subject of debate and a highly contested ballot measure in the community, with the decision to proceed with the expansion passing by a handful of votes.

Table 1.1-5 Unalaska City School District Enrollment, Fiscal Years 1978-2001

Fiscal Year	School Enrollment
FY 78	133
FY 79	140
FY 80	200
FY 81	186
FY 82	191
FY 83	151
FY 84	140
FY 85	140
FY 86	137
FY 87	159
FY 88	159
FY 89	159
FY 90	225
FY 91	256
FY 92	290
FY 93	330
FY 94	359
FY 95	356
FY 96	353
FY 97	373
FY 98	380
FY 99	353
FY 00	352
FY 01	352

Source: Unalaska City School, 2001

The link between the fisheries and school population can in part be seen through a categorization of the employment, by sector, of parents of Unalaska school children as ascertained by the Unalaska School District as of January, 2000 and shown in Table 1.1-6. As shown, the largest single sector was government/public, but fish processing and fishing support accounted for 36 percent of the total. According to school staff, the assignment of individual employers/entities to these categories (especially the "fishing support" category) is inexact, but they do give an indication of the relative strength of ties of the different sectors to the school population. One trend that senior staff did note during interviews was an increase in students for whom English is a second language. According to senior school staff, 47 percent of the 2000-2001 kindergarten class were ESL (English as a second language) students. Also, according to school staff the Unalaska City School District was recently named in a poll as one of the top 100 school districts in the country, and placed first in the state in exit exam scores, which has spurred an increase in enrollment of students from smaller

villages in the region. For the most part, these are individuals who have chosen to stay with relatives in Unalaska to take advantage of the local educational opportunities, but there is now more opportunity for families to relocate to Unalaska from other regional communities with easing of the local housing shortage.

Table 1.1-6 Parent Employment by Sector, Unalaska City School District Fiscal Year 2000

Parent Employment Sector	Percentage
Government/Public	28%
Fish Processing	18%
Fishing Support	18%
Retail/Restaurant/Services	17%
Transportation/Freight	16%
Self Employed/Unemployed	3%
Total	100%

Source: Unalaska City School District, 2001

Housing Types and Population Segments

Household types in Unalaska vary by population segment, although this has changed in recent years. In the early 1990s, it was a truism that virtually all permanent residents lived in single-family dwellings, whereas short-term workers lived in group housing at work sites. This pattern has changed somewhat over the years with the construction of a number of multi-unit complexes not associated with particular employers. It is still the case, however, that processing workers for the seafood plants tend to live in housing at the worksite and longer-term workers at the shoreplants tend to live in company housing adjacent to worksites. One seafood processor, however, owns multi-family dwellings in what is otherwise primarily a single-family residential area, so its workforce tends to be differently distributed geographically than other workforces. Some residents of the community have drawn the distinction, with respect to processing firms, that one is not 'fully' a resident of the community unless one has a private residence in the community (i.e., that the 'test' of 'real' residency is tied to whether or not one lives in company-provided housing). This distinction breaks down, however, when one examines the issue on a detailed level, as a number of companies (and not just seafood firms) provide or subsidize housing for employees in Unalaska both adjacent to and separate from their worksite locations; also, the persons living in such residences may, in fact, stay in the community for considerable lengths of time (outstaying many in 'private' residences) and become centrally involved in community life.

The housing market has also changed during the period 1998-2001. Through the mid-1980s and the 1990s, housing was at a premium in the community, with virtually zero vacancy rates and waiting lists for rental opportunities. According to city staff, as of 2000, housing and rental prices had not appreciably dropped, but demand has slackened considerably such that there are no longer waiting lists maintained by some of the larger housing owners. According to the city appraiser and planning staff, home sales are slower than in the past, and there is some concern about declines in value, but those concerns have not been realized yet. This was still the case during 2001 fieldwork. Also according to the City, although rental demand is off, rents have

not yet begun to drop in response to decrease in demand. This “softening” of the housing market is directly attributed by most to recent changes in the local fishery, including the slowing of the “race for fish” in the pollock fishery that was made possible by the AFA and the formation of co-ops, among other fishery related factors.

The most recent housing market survey conducted by the City of Unalaska was completed November, 2000 (City of Unalaska Planning Department Spreadsheet, February 2001) noted that there has been "some curiosity expressed" about how 31 new units in the community will effect the rental market. These units include 16 apartments and 15 single-family dwellings for low-income residents (with the single-family dwellings further restricted to Alaska Native/Native American residents). Until very recently, the impact of the addition of new units to the community housing stock on rental rates would not have arisen as an issue. This same survey found that "while only one participant [in the survey] acknowledged lowering rental rates, several of the others acknowledged changing some of their rental policies, e.g., no last month deposit or renting to the general public if units are not required for employees." According to interview data, some landlords are now including fuel or utilities costs in the rental price, with the owner of the largest stock in the community including utilities. The housing survey also found that the upper range for housing costs had decreased slightly between 1997 and 2000 for apartments, whereas the costs for single-family dwellings increased slightly over this same period.

Another recent change in housing mentioned in interviews is that companies (other than the major seafood processors) are less likely to supply housing for workers than was the case in the past. This is reportedly due to their being more housing available on the market now, such that companies do not feel forced to tie up housing units for the entire year to be able to meet employee housing needs during peak demand periods. While there are no systematic data available to document this common assertion, the City of Unalaska has discontinued the practice of holding long-term housing leases, which until very recently was a common practice due to the local housing shortage. According to City staff, as of early 2001, the City retained just one lease for housing, and this was on a month-to-month basis. As of fieldwork in early 2001, there were rental vacancies in the community. One long term resident noted that the local access television channel now commonly runs postings for rental opportunities whereas in the recent past virtually all rental opportunities were communicated by word of mouth and openings never had a chance to hit the open market.

Links to the Groundfish Fishery

In the late 1970s and early 1980s the community prospered significantly from the King crab fishery. The crab boom resulted in a dramatic increase in both fishing boats and processors in town. In the mid-seventies there were from 90 to 100 commercial vessels regularly fishing the Bering Sea. By 1979 the number had jumped to between 250 and 280, an increase so dramatic that it was difficult for skippers to find crew members. The King crab fishery subsequently declined precipitously and fishermen and processors alike have had to diversify their businesses in order to survive. One of the avenues of diversification was the pollock fishery, and this fishery has provided an economic mainstay for the community in subsequent years.

Table 1.1-7 shows the volume and value of fish landed at Unalaska over the period 1977-2000. This span encompasses the high year of the King crab fishery, and shows the decline of the fishery thereafter, and the growth of the pollock fishery. Average value per pound is an artificial figure in that it combines a number of different variables, but it is useful for an overall look at how volume and value have varied over the years (particularly as pollock, a relatively high volume, low value per unit species grew in importance as a

component of the community processing base). As shown, Unalaska has ranked as the number one U.S. port in volume of landings since 1992, and ranked first in value of landings from 1988 to 1999.[4] In 2000, Unalaska dropped to second in value of landings behind New Bedford, Massachusetts (where the value of landings totaled $146.3 million on a much lower volume [89.0 million pounds] than landed in Unalaska).

Table 1.1-7 Volume and Value of Fish Landed at Unalaska, 1977-2000

Year	Volume		Value		Average Value ($/lb)
	(millions of pounds)	US Ranking	(millions of dollars)	US Ranking	
1977	100.5	-	61.4	-	0.61
1978	125.8	-	99.7	-	0.79
1979	136.8	-	92.7	-	0.68
1980	136.5	3	91.3	10	0.67
1981	73.0	5	57.6	11	0.79
1982	47.0	6	47.8	14	1.02
1983	48.9	9	36.4	15	0.74
1984	46.9	20	20.3	13	0.43
1985	106.3	18	21.3	8	0.20
1986	88.3	9	37.2	10	0.42
1987	128.2	4	62.7	8	0.49
1988	337.3	3	100.9	1	0.30
1989	504.3	2	107.4	1	0.21
1990	509.9	2	126.2	1	0.25
1991	731.7	2	130.6	1	0.18
1992	736.0	1	194.0	1	0.26
1993	793.9	1	161.2	1	0.20
1994	699.6	1	224.1	1	0.32
1995	684.6	1	146.2	1	0.21
1996	579.0	1	118.7	1	0.20
1997	587.8	1	122.6	1	0.21
1998	597.1	1	110.0	1	0.18
1999	678.3	1	140.8	1	0.21
2000	699.8	1	124.9	2	0.18

Source: 1980-1996 data from National Marine Fisheries Service data cited in City of Unalaska FY 97 Annual Report (December, 1997). 1977-1979 data from NMFS data as cited in IAI 1991. 1997-2000 data from NMFS website - http://www.st.nmfs.gov/st1/commercial/landings/lport_hist.html Average value derived from volume and value data.

[4] If ports in U.S. territories are included, Unalaska/Dutch Harbor ranks second behind Pago Pago in American Samoa for at least some of these years. As the center of the U.S. flag tuna fishery, value of landings at that port in 1998 (approximately $232 million) more than doubled Unalaska/Dutch Harbor's total for that same year, the last full year for which data are available (NMFS, 2001).

Tables 1.1-8 through 1.1-11 provide detailed break-out of processed weight and value of processed fish by species group by year for Unalaska. Given that these data are from a different source as the data in Table 1.1-7, the totals do not match, but the intent of tables is to give a sense of overall effort and value of commercial fish landed in the community and changes through time.

Table 1.1-8 provides information on total processed weight by species group by year for 1993-2000, and Table 1.1-9 provides the same information by percentage for each year. Important information for recent years to note is the overall dominance of pollock and the second tier domination of other groundfish and crab in landing volumes. Second, the precipitous decline in crab landings from 1998 (easily the highest volume year over the 1993-2000 span) to 1999 (still the second highest year over this period) to 2000 (far and away the lowest volume year of this period) is readily apparent. Pollock landings, on the other hand, increased from 1998 to 1999, and then again in 2000, reaching its highest level for the 1993-2000 in 2000. Clearly, the recent increase in pollock landings in the community is related to AFA reallocation of quota to onshore processing entities (which increased the inshore component from 35 percent to 50 percent of the BSAI pollock TAC[5]) as well as increases in the overall TAC itself.

Table 1.1-8 Total Processed Weight Contributed by Various Species Groups, by Year Unalaska/Dutch Harbor

Species	1993	1994	1995	1996	1997	1998	1999	2000
Salmon	9,815,693	8,219,894	9,760,479	8,492,280	5,102,131	10,040,698	14,451,050	5,419,183
Halibut	3,530,379	2,738,901	3,048,416	1,792,292	4,244,464	2,549,776	5,152,770	See Note
Crab	57,026,545	34,058,757	28,391,316	28,436,954	39,828,000	80,217,780	56,606,628	15,507,892
Herring	2,475,156	6,504,076	5,620,267	6,333,310	1,725,481	1,489,656	1,964,630	1,386,097
Other Non-GF	448,085	605,852	126,844	812,487	700	1,950	0	0
Pollock	662,921,232	680,883,305	643,364,726	541,758,182	523,462,456	531,184,102	612,370,740	693,429,290
Other GF	29,128,471	80,987,733	105,701,161	102,457,948	109,325,165	47,665,233	42,787,186	61,501,748
Total	765,345,561	813,998,518	796,013,209	690,083,453	683,688,397	673,149,195	733,333,004	777,244,210

Note: Halibut is missing from the 2000 database
Source: Fish Ticket Data supplied by NPFMC staff

[5] Inshore/Offshore-3, passed by the NPFMC in 1998, was scheduled to take the inshore component from 35 percent to 39 percent of the BSAI pollock TAC by reallocating 4 percent away from the offshore sector (and leaving the CDQ preallocation set aside at 7.5 percent). This planned shift never took place, however, as it was superceded later that same year (before implementation) by AFA. After CDQ and incidental take allocations were 'taken off the top,' AFA allocated 50 percent of the remaining TAC to onshore sector, 40 percent to the offshore catcher processor sector, and 10 percent to newly created the mothership sector (which had previously been a part of the offshore sector along with catcher processors). AFA also increased CDQ set aside to 10 percent of the overall TAC.

Table 1.1-9 Percentage of Total Processed Weight Contributed by Various Species Groups, by Year, Unalaska/Dutch Harbor

Species	1993	1994	1995	1996	1997	1998	1999	2000
Salmon	1%	1%	1%	1%	1%	1%	2%	1%
Halibut	0%	0%	0%	0%	1%	0%	1%	See Note
Crab	7%	4%	4%	4%	6%	12%	8%	2%
Herring	0%	1%	1%	1%	0%	0%	0%	0%
Other Non-GF	0%	0%	0%	0%	0%	0%	0%	0%
Pollock	87%	84%	81%	79%	77%	79%	84%	89%
Other GF	4%	10%	13%	15%	16%	7%	6%	8%
Total	100%	100%	100%	100%	100%	100%	100%	100%

Note: Halibut is missing from the 2000 database
Source: Fish Ticket Data supplied by NPFMC staff

Table 1.1-10 presents information on the value of processed fish by species group by year for the period 1993-2000 for Unalaska. Table 1.1-11 provides the same information on a percentage basis. As shown, from 1993-1999, pollock fluctuated between 31 percent and 41 percent of total commercial fish value, and then jumped to 57 percent of the total in 2000. This sharp increase is due in large part to what happened to local crab value in 2000, going from $86 million to $43 million in processed value between 1999 and 2000 (and halibut not appearing in the data also accounts for at least a small portion of the jump). Crab declined from 51 percent of value in 1999 to 31 percent of value in 2000 (and this decrease will be greater when the halibut data are added). Pollock is easily at its highest point of total value ($80 million) of the 1993-2000 span during 2000; crab at $43 million is at its lowest point of the span in that same year. During the period 1993-2000, crab value was higher than pollock value except for 1997 (when the value of pollock surpassed crab by approximately $4 million) and 2000 (when the value of pollock was approximately $37 million greater than crab). As can be seen, the increase in value of landings in the community resulting from AFA related pollock landings increases were more than offset by the decline in crab landings in 2000.

Table 1.1-10 Value of Processed Fish by Species Group and Year for Unalaska/Dutch Harbor, 1993-2000

Species	1993	1994	1995	1996	1997	1998	1999	2000
Salmon	6,615,324	7,877,088	7,598,230	6,657,590	3,108,353	4,083,910	6,344,180	3,428,065
Halibut	4,497,715	5,271,277	5,714,417	3,528,928	8,561,085	2,307,552	9,320,086	See Note
Crab	73,104,099	69,363,848	69,248,632	55,334,010	49,420,889	64,092,959	85,615,553	42,908,899
Herring	371,273	754,995	1,188,539	2,111,846	329,564	311,338	479,371	235,637
Other Non-GF	744,782	459,663	39,239	244,984	4,885	421	0	0
Pollock	45,788,471	52,089,951	62,896,575	43,283,714	53,181,109	36,032,380	55,806,016	79,742,642
Other GF	5,570,305	11,554,074	20,320,242	17,428,653	15,569,770	8,194,740	10,715,151	12,545,008
Total	136,691,969	147,370,896	167,005,874	128,589,725	130,175,655	115,023,300	168,280,357	138,860,251

Note: Halibut is missing from the 2000 database
Source: Fish Ticket Data supplied by NPFMC staff

Table 1.1-11 Percentage of Total Processed Value Contributed by Various Species Groups, by Year, Unalaska/Dutch Harbor

Species	1993	1994	1995	1996	1997	1998	1999	2000
Salmon	5%	5%	5%	5%	2%	4%	4%	2%
Halibut	3%	4%	3%	3%	7%	2%	6%	See Note
Crab	53%	47%	41%	43%	38%	56%	51%	31%
Herring	0%	1%	1%	2%	0%	0%	0%	0%
Other Non-GF	1%	0%	0%	0%	0%	0%	0%	0%
Pollock	33%	35%	38%	34%	41%	31%	33%	57%
Other GF	4%	8%	12%	14%	12%	7%	6%	9%
Total	100%	100%	100%	100%	100%	100%	100%	100%

Note: Halibut is missing from the 2000 database
Source: Fish Ticket Data supplied by NPFMC staff

The commercial fishery provides very large component of the employment base in Unalaska. According to the City of Unalaska Comprehensive Annual Financial Report for the fiscal year ending June 30, 2000, "The Unalaska economy is driven by the seafood industry. About half of the Unalaska labor force is employed by the seafood industry, and 90 percent of the workers consider themselves dependent on the seafood industry." In a telephone survey conducted by the City an included in that same report, the top four employers in the community are seafood industry businesses (Table 1.1-12). The City is the fifth largest employer, and the next two are shipping firms that rely virtually exclusively on the seafood industry. These firms are followed by the school district, which is followed by a fuel and vessel supply firm that relies very heavily on the fishing industry. It is only at the number 10 position on the list that one comes to an employer that is not a seafood company, a direct/exclusive support firm for commercial fishing sector firms, or a government entity.

Table 1.1-12 City of Unalaska, Ten Principal Employers, June 30, 2000

Employer	Type of Business
Unisea, Inc.	Seafood, Hotel
Westward Seafoods, Inc.	Seafood
Alyeska Seafood, Inc.	Seafood
Royal Aleutian Seafoods, Inc.	Seafood
City of Unalaska	Local Government, Utilities, Port
Sealand Services, Inc.	Transportation
American President Lines, Ltd.	Transportation
Unalaska City School	Primary, Secondary Education
Western Pioneer, Inc.	Fuel, Vessel Support
Alaska Commercial Company	Grocery, Retail

Source: City of Unalaska

The following discussion of the fishing industry is divided into the harvesting and processing sectors, as each has significance for the Unalaska economy and community. A third section provides information on fishing industry support services.

Harvesting

The catcher vessel sector description of the Inshore/Offshore-3 document (NPFMC 1998) as well as the sector profile discussion in this document details patterns of geographic distribution of vessels and vessel operations. As noted in those discussions, one of the trends in recent years has been the dramatic increase in ownership and/or control (through third party entities with some type of business relationship to the processors) of harvest vessels by the shoreplants in Unalaska. Prior to this pattern of acquisition, it was accurate to say that no permanent residents of Unalaska were involved in the pollock fishery as vessel owners, nor were any vessels 'home ported' out of Unalaska in the sense of being the community of residence for the skipper and crew. With the changes in ownership patterns have come complexities for the description of the relationship of the harvest fleet to the community. While it is still true to say that no independent fishermen who are permanent residents of the community own pollock harvesting vessels, some pollock harvesting vessels are now owned (partially or wholly) by economic entities based in the community (or, given the complex nature of corporate relationships and/or restrictions on foreign ownership of the fleet, by entities with close relationships with entities based in the community). This change in ownership pattern, while it may have shifted where vessels are home ported or, perhaps more importantly from an economic perspective, spend more of the year, it is still the case that very few, if any, permanent residents of the community work on pollock harvesting vessels.

With the AFA, there have been some recent changes in ownership of catcher vessels, and the details of this shift are analyzed the Council's AFA Report to Congress (NPFMC 2001). There have been examples in Unalaska of a vessel being purchased by other vessels within a co-op and the redistribution of the purchased vessel's quota share being distributed among other vessels in the co-op, and of vessels changing ownership

and moving between co-ops that are based in different communities. Further, quota has been rented to other co-op members as well. None of these changes involved local residents, and none of the shifts of quota resulting from these actions are considered of a magnitude to have created community level impacts.

There are also indications that there are fundamental changes in relations between vessel crew and owners with the conversion of one or more vessel crew compensation structures from a share to a wage basis on vessels controlled by processing entities. This is perhaps consistent with an assigned quota system where vessel revenues are more-or-less predictable. Crew share systems are, of course, well suited for a fishing environment where the crew shares in the economic risk and benefits in the rewards of uncertain outcomes, but with what is essentially corporate ownership of a stable quota share, there are those who feel that results can be obtained from vessels without needed to utilize an share incentive system. This is consistent with the observation of one locally based skipper that with the AFA co-op quota assignment system, operating a vessel has become more like "running a combine" than hunting, as "everything is in fences now." Different AFA processors in Unalaska have very different vessel ownership/control patterns, with one processor having virtually no ownership interest (having decreased from a minor ownership share previously) while others have quite strong interests. While these specific changes may or may not be AFA influenced in their timing, clearly the trends of processor control of catch capacity leading to these logical consequences were operating in the pre-AFA environment. Further, there has been considerable speculation related to the differential economics of various price points when it comes to what plants pay for fish, given different catcher vessel ownership relations. Where plants control a large portion of the delivery fleet (and can thus decide where to take their profits in that transaction), the price paid to non-directly controlled vessels becomes a marginal cost, with different rules about what makes economic sense in comparison to a fleet not controlled by a processor. While there were numerous opinions about the logical outcome of these circumstances under an AFA driven management regime, clearly these potential changes have not yet fully played themselves out in the relatively brief time since the implementation of onshore co-ops in Unalaska.

According to interviews conducted for an AFA social impact assessment in 2001, while there has been leasing of quota between vessels that resulted in greater overall economic efficiency, there have been some cases where there has been a reluctance of vessel owners to trade the resource due to concerns or lack of trust in what NMFS or NPFMC may do in the long run. That is, despite incentives to lease quota, some owners are still protective of maintaining an ongoing history of direct participation in the pollock fishery as a hedge against possible future changes in fishery management.

Another change among catcher vessels participating in co-ops is the level of information sharing between vessels, such that vessels can coordinate catch timing and location so as to be able to optimize timing at the processing plant. In some ways, the co-ops have resulted in "absolute flexibility" from the perspective of coordination and running a processing plant. From the perspective of the catcher vessel owner, although most agree wholeheartedly that co-ops are a better management system that complete open access, the current system in some ways represents a loss of flexibility in terms of the strength of ties to a particular processor. Of course, the change with co-ops is to some degree more apparent than real, given the existing ownership/control patterns of a good proportion of the fleet and the limited number of delivery options available to vessels without a commitment to any particular plant.

Yet another change in the 1999-2001 era is the differential importance of small harvest vessels for some operations in the face Steller sea lion related harvest area restrictions. Catch and delivery by co-op member vessels that are small enough to fish inside areas closed to the larger vessel classes can be coordinated to

optimize the overall delivery schedule. This has been recognized as an important strategic approach by at least one processor to date, but clearly the utility of such an approach is enhanced or limited by the scale of the individual processing operation.

Another type of relationship change between catcher vessels and shore processors in Unalaska resulting from the implementation of co-ops is the degree of management coordination between the vessel co-op and the plant, as realized in the creation of co-op manager positions. These individuals represent the co-op in dealing with plant management and are privy to a level of detail about plant operations and economics that simply was not communicated to the catcher fleet prior to the formation of co-ops.

In terms of the role of the community of Unalaska in relation to the overall pollock harvest in the Bering Sea, Table 1.1-13 shows the relative distribution of Bering Sea pollock catch between sectors in the initial allocation for 2000. Table 1.1-14 displays information on the links between the inshore allocation and specific communities as measured by base of operations for the individual cooperatives. This, of course, is not an exact measure because there is the flexibility of delivering some catch outside the cooperative, the ability of open access quota to be delivered anywhere, and the fact that some entities have locations in more than one community, among other factors. These factors show, in at least rough terms, the relative importance of Unalaska as a base of operations for the Bering Sea inshore pollock catcher vessel activity as well as for the shore processing sector. As shown, over half of the inshore pollock co-op allocations are associated with Unalaska based entities. This likely understates the relative percentage of Unalaska as a support community for CV operations, as some logistical and other support activity for Akutan and Beaver Inlet operations takes place in Unalaska as well.

Table 1.1-13 Initial Bering Sea Pollock Allocations, 2000

Quota/Allocation	Percent of TAC	Metric Tons
TAC	100%	1,139,000
CDQ	10%	113,900
Incidental Catch Amount	5%	51,255
Offshore	40%*	389,538
Mothership	10%*	97,385
Inshore	50%*	486,923

* Amounts calculated from remaining TAC after deductions for CDQ and Incidental Catch Amounts.
Source: Ettefagh, 2001.

Table 1.1-14 Allocations to Inshore Cooperatives by Community Base of Operations, 2000

Cooperative	Percentage of Inshore Allocation
Unalaska Based	
Unisea Fleet Cooperative	24.087%
Westward Fleet Cooperative	16.824%
Unalaska Fleet Cooperative	11.655%
Subtotal, Unalaska Based Cooperatives	52.566%
Other Communities	
Akutan Catcher Vessel Association	28.257%
Arctic Enterprise Association (currently operating in Akutan)	5.466%
Northern Victor Fleet Cooperative (currently operating in Beaver Inlet [outside of municipal and organized borough boundaries])	6.837%
Peter Pan Cooperative (King Cove)	0.720%
Subtotal, Other Communities	41.280%
Non-Location Specific	
Open Access	6.154%

Source: Based on data from 2000 Final Report of Unalaska Fleet Cooperative to the NPFMC (Ettefagh, 2001)

While there is no direct participation in the pollock fishery by vessels owned or crewed by local residents, there is a local commercial catcher vessel fleet that interacts to some degree with the larger as well as the smaller processors. A portion of the fleet is represented by the Unalaska Native Fisherman Association, and according to interview data, in 1998 there are 24 boats in the association, ranging in size from 18 foot skiffs up to a 68 foot commercial vessel. This association is open to Natives and non-Natives alike, but there is a requirement that members must live in the community eight months per year. Local vessels do not participate in the pollock fishery, but do participate in the local cod, halibut, and crab fisheries on a small scale. A frequently noted problem in developing markets and long-term relationships with the larger processing entities, however, is that the locally based fleet are small vessels by Bering Sea standards. In practical terms this means that they are more weather dependent than larger vessels and have a smaller delivery capacity per trip, which makes it difficult for larger plants to accommodate what are by necessity small and sporadic deliveries. There are two smaller processing entities in the community that in addition to doing custom processing for the larger processors and serving the local charter sportfishing sector, also serve as an important market for the local small boat commercial fleet.

Between 1992 and 2000, as shown in Table 1.1-15, between 3 and 21Unalaska resident owned vessels less than 60' have had landings in targeted groundfish fisheries in any given year. Also as shown in this same table, the total value of groundfish ex-vessel revenues for the community based fleet ranged between $40,000 to $250,000 per year during this same time period, for the years that can be disclosed. A couple of trends are

apparent in this table. The number of vessels during this era peaked at 21 in 1996, and has declined every year since, with the 7 vessels fishing in 2000 representing a 67 percent reduction from the 1996 fleet size. Total Unalaska owned vessel groundfish ex-vessel revenues have declined over this same 1996-2000 period, but not quickly as the number of vessels themselves, resulting in a 50 reduction of annual revenues between 1996 and 2000. This has had the effect of raising the average revenue per vessel within the reduced fleet by 201 percent between 1996 and 2000. Among the groundfish species, Pacific cod plays a dominant role for these vessels. Between 1992 and 2000, Pacific cod accounted for between 71 and 100 percent of value of catch for this fleet in any given year, with an average of 92 percent per year over this span. Over the most recent four years, 1997 through 2000, Pacific cod accounted for 89 percent of total value of catch for the Unalaska owned under 60' fleet. There is no state water groundfish fishery in the Bering Sea near the community, so these data all refer exclusively to federal water fisheries. Two to four Unalaska resident owned vessels 60' or greater participated in the targeted groundfish fishery each year for the years 1992-1999, but none did so in 2000.

Table 1.1-15 Vessels <60' Owned by Unalaska Residents with Landings in Groundfish Target Fisheries and Groundfish Ex-vessel Revenue of Unalaska/Dutch Harbor Resident Owned Vessels, 1992-2000

Year	Number of Unalaska Owned Vessels	Unalaska Owned Vessels, Groundfish Ex-Vessel Revenue	
		Total (thousands of dollars)	Average per Vessel (dollars)
1992	6	40	$6,700
1993	3	suppressed	suppressed
1994	16	110	$6,900
1995	13	250	$19,200
1996	21	150	$7,100
1997	16	120	$7,500
1998	9	110	$12,200
1999	9	110	$12,200
2000	7	100	$14,300

Note: Includes "ghost vessels"
Source: CFEC/ADFG Fish Tickets, June 2001

Table 1.1-16 provides information on the gear types of the community under 60' groundfish target vessels in 2000. As shown, the 7 vessels participated in the 2000 fishery and all were fixed gear vessels. Two were in the 33-59' FGCV class, and three were in the less than or equal to 32' FGCV class, while the remaining two did not make enough landings to be classified into any specific gear class (i.e., they were categorized as "ghost vessels").

Table 1.1-16 Vessels <60' Owned by Unalaska/Dutch Harbor Residents with Landings in Groundfish Target Fisheries by Vessel Class, 2000

CV Sector	Number of Unalaska/Dutch Harbor Vessels
TCV Non-AFA	0
TCV <60	0
PCV	0
FGCV 33-59	2
FGCV≤32	3
Ghost	2
Total	7

Note: Includes "ghost vessels"
Source: CFEC/ADFG Fish Tickets, June 2001

Reportedly, the activities of this local fleet is effectively constrained to the west of Unalaska Bay on the north side of Unalaska Island, due to environmental as well as potential gear conflict factors. According to one local longline fisherman, if fishing is attempted to the east, currents in the major passes, especially when combined with rough weather, make for untenable conditions for small boats. Further, frequent transits of this area by the larger scale fishing fleet as well as the numerous shipping vessels that call on the Port of Dutch Harbor make gear loss to great of a risk to be conducive to fishing in the area. In contrast, the waters to the west feature less current and more sheltered or protected areas for small boats to ride out rough weather.

For the local small boat jig fleet, the most recent field interview data available suggest that none or very few of jig boat owners derive their income exclusively from commercial fishing, and that commercial fishing for small boat owners is generally one part of a (variable) multiple income source strategy of "piecing together a living." In terms of the number of participants, this fleet has seen growth and decline in recent years. According to CFEC/ADF&G fish ticket data, three Unalaska/Dutch Harbor jig vessels fished groundfish in 1992, two fished in 1993, and then there was an upsurge in participation with between 13 and 18 vessels reporting per year from 1994 to 1997, inclusive. A decline quickly followed, however, as in 1998, 1999, and 2000, there were 9, 8, and 7 vessels participating each year, respectively.

There has been a recent shift in the importance of different gear types among community vessels targeting Pacific cod. During the 1993 to 1998 period, 95 percent of Pacific cod landed by Unalaska owned vessels under 60' were caught using jig gear. In 1999 and 2000, catch by vessels using longline gear increased significantly but specific figures cannot be disclosed due to confidentiality restrictions. Table 1.1-17 presents information on number of Unalaska/Dutch Harbor vessels specifically targeting Pacific cod by gear type use. As some vessels utilize more than one type of gear, the total number of vessels that fished in any given year may be less than the sum of the counts by gear types for that year. As shown, the number of vessels using jig gear far outnumber the vessels using any other gear type for all of the years shown.

Table 1.1-17 Number of Unalaska/Dutch Harbor Vessels < 60' Targeting Pacific Cod in the Bering Sea by Gear Type Utilized, 1992-2000

Year	Number of Vessels					
	Longline	Jig	Other	Pot	Trawl	Total
1992	4	3	0	0	0	6
1993	1	2	0	0	0	3
1994	1	12	0	0	0	13
1995	3	12	0	0	0	13
1996	1	18	1	0	1	19
1997	2	13	1	1	0	15
1998	0	9	0	0	0	9
1999	2	8	1	0	0	9
2000	2	7	0	0	0	7

Source: CFEC/ADFG Fish Tickets, June 2001.

According to one local long-term local fisherman, while there has been more local groundfish activity utilizing jig gear since the development of the contemporary small boat groundfish fleet, there has been an increasing emphasis on longline gear in the past couple of years by some local residents (and this observation is consistent with the quantitative data available). In addition to these individuals, there are also individuals who, while not long term residents, fish the area on a more-or-less regular basis using small vessels and longline gear. According to this fisherman, at present (2001), there are about three small boat longline fishermen who 'live in houses' in the community, another three or so who live on their boats, and about three others who seasonally come to the area to fish, with some turnover being common in the latter group. Characterizing the level of effort of the 'local' component is problematic with currently available data. Most deliveries by these vessels has been characterized as being made at two local small processors rather than the large volume 'industrial' plants due to a typically better price structure, but a relatively small portion is reported to also be made at the largest plants in the community for a variety of reasons, including the ability to obtain different types of operational support at the larger facilities that are unavailable at the small processing operations.

It is also important to note that there are a number of vessels that are not owned by community residents in the under 60' class that deliver to Unalaska (and Beaver Inlet) processors. Table 1.1-18 provides information on ex-vessel revenues for all under 60' vessels that make local deliveries, and includes all groundfish species, including Pacific cod, sablefish, and so on. Examining the figure for the fixed gear vessel class 33-59' for 2000, it can be seen that the value for this sector alone ($1.23 million) is about 12 times higher than the total ex-vessel revenues for all Unalaska/Dutch Harbor resident owned under 60' vessel classes combined for the same year ($0.10 million, as shown in Table 1.1-15). This is an important consideration for this SEIS if Alternative 4/Option 2 (Dutch Harbor small boat exemption/limited fishing zone within the Area 9 [Bogoslof] closure) is considered. These data would seem to indicate that if historical and contemporary data are a guide, effort many times greater than that represented by the local fleet (as measured by community residence of the owner) could be directed toward that exclusion area. Further, these data suggest that

additional effort could be directed toward this area by new vessels coming to the area, given the apparent existing level of use by non-locally owned vessels. While it may be the case the Unalaska/Dutch Harbor owned small vessels do not fish far from the community, it is clear from the landings data that small vessels in these same gear classes from other communities fish far from their owner's communities (i.e., in the Unalaska/Dutch Harbor area). Additional notes on Bering Sea small boat (under 60') vessel landings volume and value data specific to the Pacific cod fishery (for both 'all' and 'fixed gear' classes) that would be useful in a more detailed analysis of Alternative 4/Option 2, Dutch Harbor/Area 9 limited fishing zone are presented in Section 1.4 below.

Table 1.1-18 Groundfish Ex-Vessel Revenue of Vessels <60' Delivering to Processors on Unalaska Island, 1992-2000

Year	Ex-Vessel Revenue by Gear Type (millions of dollars)				
	TCV < 60'	FGCV 33-59'	FGCV ≤ 32'	Ghost	Total
1992	0.14	1.75	0.11	0.01	2.01
1993	0.05	0.78	0.02	0.01	0.86
1994	0.01	0.64	0.17	0.01	0.83
1995	0.05	1.62	0.12	0.07	1.86
1996	0.02	0.93	0.10	0.03	1.08
1997	0.00	0.65	0.09	0.03	0.77
1998	0.02	0.31	0.10	0.02	0.45
1999	0.08	0.70	0.04	0.12	0.94
2000	0.03	1.23	0.02	0.03	1.31

Note: Includes landings to the Northern Victor, which operates in Beaver Inlet outside of any municipal (or borough) boundary, but not landings to the Arctic Enterprise, which operated in Beaver inlet for part of this period, but more recently has been operating in Akutan Bay. Other than the Northern Victor, all landings were made within the municipal boundaries of Unalaska.
Source: CFEC/ADFG Fish Tickets, June 2001

Unalaska did not qualify as a CDQ community, but it is an ex-officio member of the Aleutian Pribilof Island Community Development Association (APICDA). This CDQ group is partners with both an onshore and offshore entity, and offers training programs in Unalaska. Though Unalaska is not formally a CDQ community, according to interview data it is in fact where more of APICDA training and other programs are run because of the size of the population it services in the community. Although theoretically the recent increase in CDQ quota under AFA hurt the community as a non-CDQ participant, the simultaneously occurring increase in onshore quota, again in theory, more than made up the difference. The precise impacts of this shift on the community are not possible to ascertain with available data, but it is known that given CDQ partnerships with onshore and offshore sector participants that directly or indirectly benefit the community through either local economic activity or payment of taxes in one form or another, the consequences of the change are likely to be minor indeed. When queried about the impact of CDQ allocation change, a number of respondents offered the opinion that it was simply a “cost of doing business.”

Processing

The shoreplant operations themselves, and the range of variation of operations in the community, have been summarized in earlier documents (most recently in the Inshore/Offshore-3 SIA) and are described in the Sector Profile section of this document, and are not recapitulated here. Rather, this section focuses on recent changes in the sector and its relationship to the community.

In terms of links to the community, it is important to note that shoreplants have long been a part of the community. That is not to say that relationships between the plants and the community itself have been without strain at times over the years, but Unalaska is perhaps unique with respect to the AKAPAI communities included in this analysis for the degree of articulation of the plants with the local community. A number of the longer-term residents working at the plants, especially management level personnel, are actively involved in the community and serve in various elected, appointed, and volunteer capacities with the City of Unalaska and numerous community organizations.

Paradoxically, it has been the case in Unalaska that length of local residency of the workforce employed in seafood processing is inversely related to the vitality of the local industry in general. When the workforce was largest, there were virtually no local hires, particularly of long-term residents. For example, in 1982, at the height of processing capacity for King crab, there were no individuals identified as local residents working in the processing plants. There were a number of reasons cited for that fact at the time, including working conditions, pay rate, and work hours at the seafood plants that were attractive only to temporary transient workers. At that time, workers were hired out of the Pacific Northwest, typically Seattle, and were flown to Unalaska to work on a six-month contract basis. With the downturn in the crab fisheries, companies are no longer able to afford the expenses of a six-month contract system. Some have done away with such contracts and hire workers for an indefinite period of time with incentives for longevity; others hire more out of the Alaska labor pool than in the past.

Several other factors influencing local hires in periods of fluctuation should be noted. First, under "boom" conditions there is a range of available employment options for local residents outside of the less appealing processing jobs. Second, when there is a downturn in hires at the local processing plants, virtually all of the workforce at the individual plants consists of returning workers, obviating the need for new hires. Even when six-month contracts were most common, there was always a core of returning workers. Third, setting the lack of long-term resident hires aside, Unalaska is seldom the "point of hire" for processing workers for individuals who are newly arrived to the community. That is to say, people do not come to Unalaska for processing work unless they have already secured a position. It is far too expensive to fly out to the community on the off chance they might gain employment, particularly at relatively low-paying jobs, especially given the fact that there is seldom housing available in the community and that which does come available is relatively expensive. Fourth, it should be noted that a lack of local hire does not apply to all positions with the seafood companies. Management positions at nearly all of the seafood companies (as well as with the major fisheries support sector companies) are occupied by individuals who, if not originally from the community, are at least long-time residents of the community or the region. In a number of ways, the processing industry is a "small circle" in terms of managers, and individuals who have worked for more than one company and have gained ten to twenty years experience in the community and the region are not uncommon. Individual owners and, in the case of "permanently" moored floating processors, even the plants themselves may come and go, but individuals in upper level management positions tend to remain in the business and in the area.

Very few, if any, lifetime residents of the community work at the shoreplants at any one time. There are a number of reasons commonly cited for this, but the most common dynamic involves the high cost of living in the community. Costs are such that it is nearly impossible for a local resident to take an entry- level job at one of the plants, and better paying jobs at the plant are typically filled by individuals who have 'worked their way up' within the company. Further, according to interview data, local residents who have tried working at the plants have found that entry-level position work schedules are not typically compatible with an active involvement in community and family life outside of the plant.

Interviews with processing plant personnel suggest that a major operational impact experienced by the community of Unalaska since the passage of AFA and the formation of the co-op system has been the slowing down of spreading out of pollock processing activity. While some plants reported minor changes in numbers of personnel associated with pollock processing operations, for the most part levels have stayed almost the same, given the need for a full complement of staff to run the plants. What has changed is that, according to senior plant personnel, workers are working less hours per day and working for longer periods than was the case at the end of the open access era. Workers are reportedly earning perhaps slightly more than in past seasons, but it is taking them longer to do so, given the shorter workdays. This has had some impact on recruiting personnel, as there are some processing workers who want to come to the community for a relatively brief period of time and maximize the number of hours worked during the time they are in the community so that they can return to their home communities with more money in a shorter period of time. Plant personnel also note that recruiting for processing workers has been more difficult during the time that there is a strong economy in the Lower 48.

Plant personnel also note that despite co-op formation, there is still a "race" interval during pollock processing in the roe season. Roe is at optimal quality for only a relatively short period, so there is a premium placed on maximizing return within that relatively short window. Further, non-roe pollock are also harvested to target maximum returns based on quality of fish, but those windows are much larger than the roe window.

One change within shoreplants as a result of co-op/AFA related conditions has been the addition of additional pollock products to the processing mix. During open access when highest throughput was the goal, the returns on a number of specialty products were not worth the time (and opportunity costs) that such production would take. Some plants that concentrated heavily on surimi are now producing pollock fillets. Fillets are more labor intensive to produce than surimi, so theoretically would result in more employment at the plants, but in practice plant operations typically split their labor forces between a "surimi side" and a "seafood side" of operations. Producing pollock fillets means a diversion of some pollock to the "seafood side" of the operation and this has happened at the same time that the seafood side of local operations has been in decline with the shrinking of crab quotas. At least two of the major AFA plants have reported that they are not using dedicated crews for crab processing because of the sharp decline in volume in this past year, such that pollock seafood side products have picked up some of the slack, with workers switching to processing other species as they become available. In general, it is the case at all plants that "less pollock is going to fish meal" as other products are being developed and recovery rates for existing products are increased given the ability to optimize for return per unit rather than return based on volume. With the slowing of the pace of processing, at least one shoreside operation has closed a relatively inefficient but significant portion of their plant in favor of maximizing use of other portions of the plant. One operation reports more workers on site than in the recent past, but another reports labor force is down somewhat from the peak years when the crab quota was larger. The combination of balancing seafood with surimi production, and adding

fillet and other product capacity makes comparing workforces between circumstances like 'comparing apples and oranges' in the words of one plant manager.

There have been disruptions to plant operations associated with recently imposed Steller sea lion protection measures. According to senior staff at the local pollock plants, there were times during the C/D season of 2000 when the individual plants ran out of fish during what would otherwise have been continuous operation periods. When plants shut down during production, there are disproportionate inefficiencies created not just by the downtime, but by required cleaning as well. Plant managers were of a common opinion that the 2000 A/B seasons were a marked success under initial co-op and AFA quota allocation conditions, but that in the C/D season, the Steller sea lion protection measures "took away" at least some of the gains realized under the new management system. On the other hand, the opinion was universally held among plant managers that the co-op structure mitigated, at least to a degree, the negative impacts to the Steller sea lion protection measures (i.e., without the co-ops, the negative impacts of the protection measures would have been much worse). In concrete terms, in addition to timing and effort inefficiencies, the sea lion protection measures hurt shoreplants in terms of fish quality and age, something that the co-op system had allowed the plants to make gains on compared to the derby system context pre-AFA.

There has been some shift in inshore pollock away from Unalaska Island with the move of the Arctic Enterprise floating processor from Beaver Inlet to Akutan (coincident with its purchase by a new owner), but this shift has not had direct consequences on the community of Unalaska. Local revenues were not effected, as Beaver Inlet is outside of the municipal boundaries of Unalaska, nor is Beaver Inlet part of an organized borough, so there were no local taxes that derived from that operation. The operation was supported logistically out of Unalaska as the closest transportation hub, but that is still the case to some degree even with the vessel operating out of Akutan.

Support Services

Unalaska is unique among Alaska coastal communities in the degree to which it provides support services for the Bering Sea groundfish fishery. As described in detail in the Inshore/Offshore-1 community profile (NPFMC 1991), Unalaska serves as an important port for several different aspects of pollock fishery. Support services include a wide range of companies, including such diverse services as accounting and bookkeeping, banking, construction and engineering, diesel sales and service, electrical and electronics services, freight forwarding, hydraulic services, logistical support, marine pilots/tugs, maritime agencies, net replacement and repair, vessel repair, stevedoring, vehicle rentals, warehousing, and welding, among others. There is no other community in the region with this type of development and capacity to support the various fishery sectors in the Bering Sea.

In general, in the way of support services, there is little direct supply of the main shoreplants in the community. This is especially true of the large pollock oriented shoreplants, by far the largest plants in the community. These are large enough entities that it is more efficient to supply most on-site needs directly from outside of the community. These plants all feature an "industrial enclave" style development to some degree, but this varies from operation to operation. Plants may purchase some regular items such as rain gear and boots for processors locally that they do not want to keep in inventory, but major purchases may be limited to fuel sales. Commonly large volume supplies, such as packaging materials and food are purchased "down south" and shipped direct. Individual processing plant workers do patronize local businesses to some extent, but this is limited by the fact that they are supplied furnished housing and meals by the processors. The

smaller operations in Unalaska have proportionally more local purchases of goods and services in the community. The major non-pollock crab processor in the community noted that because of the scale of their operation they did buy most services in town, but that with the overall decline in the support service sector of the economy they have seen "about a half dozen" of their vendors leave the community.

There are a number of businesses in Unalaska that are oriented toward supporting catcher vessels for a significant amount of their business. With a decrease in the race for fish during the locally important pollock fishery (and the coincident decline of quota in the area crab fishery), there has been a drop-off in peak demand for services. The amount of this drop-off depends on a number of different factors, including the relative reliance on crab and trawl fleet support. According to one service supply business manager who is quite heavily dependent upon trawl vessels, the co-op system in theory should help his business out in the long run, because even if overall there are less vessels with quota reassignments within co-ops, it will be the less efficient vessels that drop out, leaving more predictability and more secure players. In practice, a good portion of the support business in Unalaska has been built on inefficiencies, as according to this manager "this was Unalaska business." Like many of the support service businesses contacted, the common pattern for his business was to have a limited staff of year-round personnel and to ramp up capacity during peak periods by bringing in temporary or seasonal staff from Outside. This is true both for vessel oriented service firms that are parts of larger regional or national entities as well as for more locally based firms (and of the latter there are very few). With the conditions created by AFA (in conjunction with the fall in crab quotas), there have been employment cut backs at all of the businesses contacted in this subsector, either in the form of having fewer year-round personnel or in cutting back on the number of seasonal hires for peak demand, and in all cases a cutting back of overtime hours for staff. One electronics firm contacted is at half the level of employment that was typical in pre-co-op circumstances, and this was not an unusual case. One local business manager captured a common sentiment regarding the cutbacks and the quality of the jobs remaining in the community, however, with the observation that with the cutback "we have been trading money for sanity." In the words of another business owner, during the days of the race for fish "I didn't know I was crisis oriented" and in the time passing since crisis mode he has had to find other ways of making the business work. In this particular case of a locally owned vessel support business, survival has meant diversifying away from relying on the fishing industry nearly exclusively by performing similar services for land-based businesses (and adding new marine-oriented services) and away from relying on Unalaska as a nearly exclusive geographic base of revenue by taking his services to the region and beyond.

Another common problem with these businesses is inventory, and this has changed somewhat under co-op conditions (again, depending on how relatively dependent a business is on trawl-specific trade). Under race for fish conditions, carrying a larger than normal relative to overall volume of sales inventory was necessary due to the need to have virtually everything possible on hand instantly in case of need during the fishing season, as downtime for vessels off of the fishing grounds meant unacceptable opportunity losses, and vessels were willing to pay whatever it took to get them back on the grounds as quickly as possible - time was worth more than the cost of urgent repairs. As the race for fish went away, it was much more efficient to be able to order specialty parts expressed shipped in from the Lower 48 (typically Seattle) if needed than to try and stock everything in Unalaska.

Depending on the composition of the business base of these firms, they have been hit more or less hard by the decline in the crab quota. According to one business manager, with the loss of income to crab vessels, he has seen his crab vessel support business drop off 50 percent as owners are not spending money on preventative maintenance, and among those who are performing work, they are slower to pay their bills.

With the trawl fleet, the slowing down of the race for fish has also meant that the trawlers are spreading their business differently in the community, according to support business owners. Not only is less money being spent overall because of the relative lack of urgency, “now money managers are involved” in looking at relative value between providers and shopping work around. For a number of the support businesses that service the catcher fleet, the loss of a large portion of the catcher processor fleet was a large blow. While these large vessels did not employ the full range of services that some of the smaller catcher vessels might have employed in the community (simply due to their not being facilities able to handle all of the work), they did need specialty service work from a number of the suppliers.

Another common observation of the support sector within the community is that while the relatively longer pollock seasons are good for the community as a whole, a number of entrepreneurial businesses have folded, and the redundancy among (or the range of choices among) service providers has been reduced. The flip side of this means that, according to one fishing business manager, they can be more selective in their purchasing of services and "everything no longer needs to be at a premium price in Dutch Harbor."

Fuel sales are another type of locally provided support for the catcher vessel fleet. The Steller sea lion restrictions that went into place in the C/D seasons in 2000 have meant an increase in fuel sales due to longer vessel trips to the open fishing grounds. This, coupled with co-occurring high fuel prices has meant higher costs to the catcher vessel (and the catcher-processor) fleet. While the fuel sales businesses have benefitted (as has the municipality of Unalaska through tax on the fuel sales), the vessels and shoreplants (because of the higher cost of fuel they are purchasing) have been hurt.

There is a significant amount of support business in the community that is directly related to the offshore fleet. Catcher processors use warehousing services, and refuel and resupply when they are in the community to do a full or partial offload of product. (During the race for fish days, depending on the pace of the fishing, length of the season, capacity of the vessel, and a number of other variables, catcher processors may make a partial offload during the season [to free up capacity for finishing the season], and then do a full offload in Unalaska at the end of the season, or they may make a full offload during the season.) Additionally, catcher processors typically need a range of expediting, freight management, and logistical support services through Unalaska to keep operating in the Bering Sea. While this basic pattern has not changed in the post-AFA era, the volume of local work is down significantly due to both the reduction in the catcher processor fleet and the slackening of the pace of fishing during the 1999-2001 era.

This loss of catcher processor related business has not be evenly distributed throughout the support sector businesses in the community. For example, the OSI facilities in Captain’s Bay were disproportionately dependent on the portion of the fleet that was excluded from the fishery compared to most other large businesses in the community. As a result, demand for dockage and warehousing at the facility is down, as are associated sales of other goods and services at the facility. Loss in local support demand can also be gauged by the fact that American Seafoods itself has a much reduced direct presence in the community, going from three year-round and four seasonal employees pre-AFA, to one year-round and two employees each hired for two months under the present circumstances.

For the catcher processor business activity that remains in the community, there has also been a shift by one of the main companies away from utilizing private facilities in favor of doing a higher portion of their business

across one of the municipal docks. Clearly a rational business decision in the new environment, this has served to move some support income from the private to public sector.

Shipping seafood products is also a major business sector in the community. In addition to the two main shipping lines that serve the community, another type of support service provided in the community for both the inshore and offshore fleet is stevedoring services. While some shoreplants typically do not use stevedores in loading operations across their docks, or the demand is lower for stevedoring because of containerized product, hatch gangs are used for loading product 'over the side' to trampers for shipment from Unalaska. Stevedoring jobs are relatively high paying, and much valued in the community, though the work is not steady for the bulk of persons engaged in it. What does make this labor opportunity particularly valued is the fact that long-term locals, including lifetime residents, may qualify for, and provide a viable labor pool for, these positions without having to go through minimum-wage type of entry positions first. There are also union and non-union laborers alike who come to the community during the busy seasons to take advantage of the opportunities available in the community.

With the recent changing of the pace and structure of the fishery with co-ops, shipping business patterns have changed in the community. The largest difference is attributed to the fact that processors can now much more closely time their operations and shipping needs, and can thus optimize their range of shipping choices. This opens up a range of options not readily available under race for fish conditions. For example, processing entities can more easily arrange for scheduled transfers direct to trampers rather than having to use always available locally established shipping firms to transfer product. Of course, shipping choices ultimately depend on product mix, destination, and cost efficiencies, but clearly local shipping-related entities have felt impacts directly as a result of fishery structure changes. There are also indications that shoreside plants have shifted to a greater emphasis on tramper shipments relative to containerized shipments, but no quantitative information is available to verify this assertion.

One change seen in the community in the post-race for pollock era is the addition of two more private dock/shipping facilities in the community, one at the old East Point plant location and another in Captain's Bay. There would also appear to be proportionately more offshore related volume going across municipal docks than was the case in the past, and city revenue from dockage and wharfage in general is up. These two factors reinforce the general observation that shipping related business is becoming less concentrated among the formerly dominant local entities and more spread out among various entities.

In the 1999-2001 era, there has been a reported shift in product destination from Unalaska, with less product going to Asia and more going to domestic and European markets, due primarily to change in product mix. One of the large shipping firms in the community reports that here has been almost a 100 percent fall-off in business to his company from the offshore sector since AFA, and increases from the shoreside have not made up this differential. This is attributed to the fact that without the Olympic system, seafood companies can schedule and plan offloads, meaning that they can make their own arrangements rather than having to go through a shipping company that is always available. Similarly, the onshore sector can more easily schedule tramper loads. The situation is not straightforward, however, for the two primary shipping companies with a local presence in Unalaska. There has been some movement of market share between the two firms that, according to some, were as closely associated with ownership and corporate changes at the two firms as much as any local market forces. According to one firm, union longshoring hours were down approximately 22 percent between 1998 and 2000. The community has seen a higher proportion of work going to non-union longshoremen recently, although the non-union entities tend to have smaller workforces

(because, in part, of being able to schedule work rather than needing a large on-call labor pool). Co-op conditions have pushed inventories up because of increased recovery rates and diversification of product mix, meaning that there has been some increase in demand for cold storage, berthing, dockside services, and so on. While one senior shipping manager has reported that movement of product will become more of an issue with this trend, he also reports that there has been a tradeoff with the slowing of the peak periods post-AFA; even during the busy season, now staff are able to work more normal schedules and can be home with their families by 7:00 p.m.

There are also support service providers in Unalaska who support inshore processing entities that are operating far outside of the community. For example, the firm (Icicle Seafoods) that owns the floating processor in Beaver Inlet (Northern Victor) has a local Unalaska representative who supports that operation. (When a second floater was operating in Beaver Inlet, this entity had an office in Unalaska that, among other functions, supported that operation.) Similarly, the company that owns and operates the large shoreplant in Akutan (Trident) has a support office in Unalaska because of the logistical support needs of that plant that cannot be managed directly from Akutan.

In general, the recent changes experienced by support service sector businesses in Unalaska have gone to the heart of the paradox of the Unalaska support service economy. This portion of the local economy was historically dependent to a large degree of the economic inefficiency of the commercial fishing industry. To the extent that the co-op quota allocation system has made pollock fishing more economically efficient, it has also served to allow vessel and facility owners to not have to purchase inefficient support services. This has meant a drop in local support service activity, employment, and revenue. There are no data available to quantify the amount of the drop, but it has clearly been significant for many of the businesses in this sector. Overall, peak demand is lower, the pace of business is slower, money has become at least as important of a consideration as time, and businesses do not need the level of inventory and staff as in the past. There are, of course, exceptions to this generalization, but the pattern is apparently quite consistent over the sector as a whole.

The Municipality and Revenues

Table 1.1-19 presents a break-down of revenues by source for the City of Unalaska. This provides a sense of scale for the different revenue sources for the City's General Fund. Table 1.1-20 provides a break-out of selected fisheries-related General Fund revenue sources. These include the local raw fish sales tax, the intergovernmental fisheries business tax and the fisheries resource landing tax. As shown, the local raw fish tax increased substantially from FY99 to FY00, with the latter encompassing the first half of the 2000 calendar year, the first year of AFA onshore co-ops. Of course, a number of factors influence the volume and value of fish landed in the community which, in turn, translates into taxes paid. (The City of Unalaska does not keep a break-out of revenue generated by species or species group so information is not readily available to calculate the relative revenue contribution of individual species or species groups, but a proxy for that information for the shore based operations may be found in Tables 1.1-10 and 1.1-11.) Preliminary information for FY 2001 shows a further increase in revenues. This fiscal year covers the second half of the first full (calendar) year of onshore co-ops and the first half of the second year of onshore co-ops. It also captures the period when the more stringent Steller sea lion protection measures were put in place during 2000.

Table 1.1-19 City of Unalaska General Fund, Fiscal Years 1998-2001

Revenues	FY98 (actual)	FY99 (actual)	FY00 (actual)	FY01 (preliminary)
Real Property Tax	2,521,746	2,698,454	2,690,560	2,746,295
Personal Property Tax	1,164,363	1,120,957	1,202,265	1,116,263
Raw Fish Tax	2,641,124	2,513,500	3,410,717	2,958,360
Sales Tax	3,533,123	3,254,403	3,242,284	3,657,042
Other Taxes	439,735	516,863	509,434	524,195
State of Alaska	6,030,119	6,306,064	5,640,942	6,914,040
Charges for Services	278,703	282,778	279,159	298,409
Permits & Licenses	19,546	13,687	22,018	20,265
Miscellaneous	2,407,515	2,099,082	1,954,352	3,462,567
Other Financing Sources	386,895	273,416	461,817	19,346
Total General Revenue Funds	19,422,869	19,079,204	19,413,548	21,716,782

Source: City of Unalaska Finance Department spreadsheet, 2001

Table 1.1-20 City of Unalaska Selected Fisheries Related General Fund Revenues, Fiscal Years 1991-2001

	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01P*
Raw Fish Sales Tax	2,851,008	3,681,908	3,131,661	2,641,802	3,340,512	2,212,833	2,641,645	2,641,124	2,513,500	3,410,717	2,958,360
Fisheries Business Tax	2,067,793	2,475,197	3,581,134	2,770,321	2,364,847	2,828,570	2,071,914	2,424,747	2,424,787	2,483,670	3,249,218
Fisheries Resource Landing Tax	na	na	na	na	na	2,637,708	3,015,804	2,604,706	2,739,821	2,224,903	2,813,250
Three Source Total	4,918,801	6,157,105	6,712,795	5,412,123	5,705,359	7,679,111	7,729,363	7,670,577	7,678,108	8,119,290	9,020,828

* FY2001 is preliminary; all other years are actual.
Source: City of Unalaska Finance Department spreadsheet, 2001

One of the impacts of the AFA on the City of Unalaska revenues relates to the additional requirement that at-sea processors count landings outside of state waters as taxable events (under the fisheries resource landing tax). The particulars of that requirement are discussed in another section of this document, but as shown in Table 1.1-20, the local revenue derived from the fisheries resource landing tax increased from FY 1998 to FY 1999 (with the latter year encompassing the first half [calendar] year of offshore co-ops). Revenue from this source, however, fell over half a million dollars between FY 1999 and FY 2000 (the period covering the second half the first year of offshore co-ops and the first half of the second year of offshore co-ops) but, according to preliminary figures, rebounded in FY 2001. Looking at the three revenue source total, although there was some variation in the individual sources, the combined amount was nearly flat at $7.7 million for each year FY 1996 (the first year the fisheries resource landing tax came to the city) through FY

1999. FY 2000 combined three-source revenues rose to $8.1 million, so for the first FY that spanned both offshore co-ops and the start of on-shore co-ops, revenue sources that were directly fishery associated increased over five percent. Preliminary data have this figure increasing to $9.0 million in FY 2001.

Other Local Business Activity

Tourism continues to develop in the community, with new draws in the last few years associated with an increased local National Park Service presence, the opening of the Museum of the Aleutians, and the continued popularity of charter sport fishing. Sport charter fishing took off in the mid-1990s when world record sport halibut were caught locally in 1995 and 1996, with the latter fish, at 459 pounds, still representing the world record. Birding, hiking, kayaking, camping, and visiting the Holy Ascension Cathedral historic site are also tourism draws, but high cost and inconvenient transportation access make the development of this sector challenging for local businesses. With the slow down in the race for fish that accompanied AFA, direct fishery related passenger transportation demand also declined to some degree, although clearly demand was falling off prior to AFA. Table 1.1-21 provides information on passenger counts at the community airport for the period 1995-2000, as well as for the first half of 2001. As shown, the total number of passengers for this span of years peaked in 1996, and counts for 1999 and 2000 are the two lowest annual counts during 1995-2000. While there is considerable variation between quarters within and between years, quarterly counts for the first two quarters of 2001 are lower than either 1999 or 2000.

Table 1.1-21 City of Unalaska, Port of Dutch Harbor Airport Airport Passenger Count by Quarter, 1995-2001

Quarter	Calendar Year						
	1995	1996	1997	1998	1999	2000	2001
January-March	16,122	20,380	15,992	20,919	15,672	16,461	14,696
April-June	17,209	16,615	15,772	13,683	14,556	16,480	13,988
July-September	18,015	17,105	16,041	12,909	16,312	15,906	na
October-December	13,171	13,323	15,380	15,863	13,740	12,596	na
Total	64,517	67,423	63,185	63,374	60,280	61,443	na

Note: (1) Data from second half of 2001 not yet available. (2) Data in the table represent a total of enplaned and deplaned passengers, not "round trips" by single individuals (e.g., if 9,000 passengers got off planes in Unalaska during a particular quarter and 7,000 passengers boarded planes in Unalaska during that same quarter, the quarterly passenger count would be 16,000).
Source: Adapted from spreadsheet supplied by City of Unalaska Finance Department, 2001. Data were originally configured in fiscal year format. Data for April-June 2001 period supplied by telephone follow up.

Coupled with these conditions was a decrease in level service caused by the discontinuation of long-time air service provider Reeve Aleutian Airways and a further drop in demand related to the crab quota decline. This resulted in a situation where as of early 2001 the community was served by only one jet per day.

According to long-time community residents, this has had an impact on a range of services in the community (such as the price and availability of a variety of food at stores), as well as mail and freight.

Unalaska continues to support a much wider range of non-fisheries related businesses as well as fisheries support related businesses than any other community in the region. According to interviews conducted early in 2001, however, business conditions are changing with a general slow-down in the non-fisheries sectors of the economy, a trend at least partially related to recent structural changes in the groundfish fishery as well as the decline in the crab fishery. A number of businesses that serve the general public have gone out of business in the recent past, and examples of these businesses, including an office supply store, an auto parts store, a vehicle rental firm, and a bowling alley, were frequently cited during interviews. Also strongly marked was the reduction in number of more direct fishery support businesses that were needed for peak demand times. In this case, it is not that types of services are no longer available, it is more that there is less of a choice of providers of those services. One landlord reports having lost a net company, an electrical firm, a hydraulic firm, and a restaurant all out of a single building. While this is an unusual case, it does illustrate the range of businesses (and types of fleet support businesses) that have folded.

Table 1.1-22 provides service demand information for the period 1994 through 2000 from the Unalaska Department of Public Safety. As shown, the number of incidents/calls for service during this period peaked in 1997 and has since decreased annually. The number of investigative files/cases, typically indicative of more substantive requests for service, show an overall decline over this span, but not in a straight-line fashion. Fire responses show no clear pattern, but relatively large fluctuations from year to year are not uncommon due to the low number of responses.

Table 1.1-22 Unalaska Department of Public Safety Level of Service Indicators, 1994-2000

Indicator	Year						
	1994	1995	1996	1997	1998	1999	2000
Total Incidents/Calls	3,795	4,085	4,627	4,981	4,039	3,666	3,450
Investigative Files/Cases	993	974	944	865	787	802	834
Fire Responses	25	34	37	23	24	29	32

Source: Notes provided by City of Unalaska Department of Public Safety.

Another change in the local community context noted by multiple interviewees is an increased federal presence in the community. While having nowhere near the presence as in, for example, Kodiak, the United States Coast Guard now has a detachment in the community (after the community had lobbied for many years for an increased local presence given the importance of commercial fishing in the community and region). There are also now U.S. Customs and Immigration and Naturalization Service personnel and offices in the community.

One change in the community consistently mentioned during interviews with local business leaders (in an unrelated study) in early 2001 were the impacts associated with Steller sea lion protection measures that were in put in place during 2000. In the words of one community business leader, the issue is "hanging over the town" and people "can't do any planning" because of it. There is a recognition, however, among at least

some of the local residents that other communities in the region are even more vulnerable to community-level disruptions resulting from these measures due to a much higher reliance on a small boat fleet that cannot effectively fish outside of the protection zones. While the seasonality of the local economy has changed with AFA related co-op management/quota allocation conditions, such that peak periods are not as high or sharp, and an increased level of activity lasts longer in the community, the interruptions of the seasons related to Steller sea lion protection measures does cause stoppages and inefficiencies at the major shoreplants in the community.

The housing market of Unalaska has changed significantly in the past few years. Although there was a lull in demand following the crash of local King crab activity in the early 1980s, housing demand has been strong in the community since the development of the contemporary fishery dating back to the 1970s. There are no longer lengthy waiting lists for rental properties, and home sales are sluggish. The community has not yet seen a dramatic dip in housing costs, but there is at least some concern in the community that either investments in housing will not be realized on the sale of the property or that homes will not be able to be sold in a timely fashion if individuals chose to leave the community, which is a very different set of circumstances than have been common for many years.

1.2 AKUTAN

Akutan is located on Akutan Island in the eastern Aleutian Islands, one of the Krenitzin Islands of the Fox Island group. The community is approximately 35 miles east of Unalaska and 766 air miles southwest of Anchorage. Akutan is surrounded by steep, rugged mountains reaching over 2,000 feet in height. The village sits on a narrow bench of flat, treeless terrain. The small harbor is ice-free year-round, but frequent storms occur in winter and fog occurs in summer. Akutan began in 1878 as a fur storage and trading port for the Western Fur & Trading Company. The company's agent established a commercial cod fishing and processing business that quickly attracted nearby Aleuts to the community. A church and school were built in 1878.

The community of Akutan was previously profiled in the 1991 SIA in the Unalaska Social Impact Assessment Addendum (IAI 1991), and the details of that profile will not be recapitulated here. Akutan is the site of one of the larger shoreplant facilities that process Bering Sea pollock, and that operation is grouped with (and described with) the Unalaska/Dutch Harbor shoreplants in the inshore profile in the Sector and Community Profiles appendix to the Steller Sea Lion EIS. The purpose of this brief section is to underscore the unique aspects of Akutan with respect to potential socioeconomic assessment issues that could arise out of the groundfish management process.

Akutan is a unique community in terms of its relationship to the Bering Sea groundfish fishery. It is the site of one of the largest of the shoreplants in the region, but it is also the site of a village that is geographically and socially distinct from the shoreplant. This 'duality' of structure has had marked consequences for the relationship of Akutan to the Bering Sea groundfish fishery.

One example of this may be found in Akutan's status as a CDQ community. Initially (in 1992), Akutan was (along with Unalaska) deemed not eligible for participation in the CDQ program based upon the fact that the community was home to "previously developed harvesting or processing capability sufficient to support substantial groundfish participation in the BSAI . . ." though they met all other qualifying criteria. The Akutan Traditional Council initiated action to show that the community of Akutan, per se, was separate and distinct from the seafood processing plant some distance away from the residential concentration of the community

site, that interactions between the community and the plant were of a limited nature, and that the plant was not incorporated in the fabric of the community such that little opportunity existed for Akutan residents to participate meaningfully in the Bering Sea pollock fishery (i.e., it was argued that the plant was essentially an industrial enclave or worksite separate and distinct from the traditional community of Akutan and that few, if any, Akutan residents worked at the plant). With the support of the Aleutian Pribilof Island Community Development Association (APICDA) and others, Akutan was successful in a subsequent attempt to become a CDQ community and obtained that status in 1996.

This action highlights the fundamentally different nature of Akutan and Unalaska. Akutan, while deriving economic benefits from the presence of a large shoreplant near the community proper, has not articulated large-scale commercial fishing activity with the daily life of the community. While US Census figures show Akutan had a population of 589 in 1990 and 713 in 2000, the Traditional Council considers the "local" resident population of the community to be around 80 persons, with the balance being considered "non-resident employees" of the seafood plant. This definition, obviously, differs from census, state, and electoral definitions of residency, but is reflective of the social reality of Akutan. The residents of the village of Akutan, proper, are almost all Aleut. As shown in Table 1.2-1, less than 16 percent of the population in 2000 was Native American/Native Alaskan. Table 1.2-3 shows the population composition by sex in 1990 and 2000, and is clearly indicative of a male-dominated industrial site rather than a typical residential community.

Table 1.2-1 Ethnic Composition of Population Akutan; 1990 and 2000

	1990		2000	
Race/Ethnicity	**N**	**%**	**N**	**%**
White	227	38.5%	168	23.6%
African American	6	1.0%	15	2.2%
Native Amer/Alaskan	80	13.6%	112	15.7%
Asian/Pacific Islands*	247	41.9%	277	38.9%
Other**	29	4.9%	141	19.7%
Total	589	100%	713	100%
Hispanic***	45	7.6%	148	20.8%

Source: U.S. Bureau of Census.

* In the 2000 census, this was split into Native Hawaii and Other Pacific Islander (pop 2) and Asian (pop 275)

** In the 2000 census, this category was Some Other Race (pop 130) and Two or more races (pop11).

***' Hispanic' is an ethnic category and may include individuals of any race (and therefore is not included in the total as this would result in double counting).

Table 1.2-2 provides information on group housing and ethnicity for Akutan. Group housing in the community is almost exclusively associated with the processing workforce. As shown, 85 percent of the population lived in group housing in 1990. (Comparable 2000 data are not yet available.) Also as shown, the ethnic composition of the group and non-group housing segments were markedly different, with the non-group housing population being predominately (83%) Alaska Native, and the group housing population having almost no (1%) Alaska Native representation.

Table 1.2-2 Ethnicity and Group Quarters Housing Information, Akutan, 1990

Akutan	Total Population		Group Quarters Population		Non-Group Quarters Population	
	Number	Percent	Number	Percent	Number	Percent
White	227	37.52	212	42.32	15	17.05
Black	6	0.99	6	1.20	0	0.00
American Indian, Eskimo, Aleut	80	13.22	7	1.40	73	82.95
Asian or Pacific Islander	247	40.83	247	49.30	0	0.00
Other race	29	4.79	29	5.79	0	0.00
Total Population	589	100.00	501	100.00	88	100.00
Hispanic origin, any race	45	7.44	45	8.98	0	0.00
Total Minority Pop	342	56.53	298	59.48	73	82.95
Total Non-Minority Pop (White Non-Hispanic)	247	40.83	203	40.52	15	17.05

Source: Census 1990 STF2

Table 1.2-3 Population Composition by Sex Akutan; 1990 and 2000

	1990		2000	
	N	%	N	%
Male	449	76%	549	77%
Female	140	24%	164	23%
Total	589	100%	713	100%
Median Age	NA		40.2 years	

Source: U.S. Bureau of the Census

Akutan also differs from Unalaska in terms of opportunity to provide a support base for the commercial fishery. There is no boat harbor in the community, nor is there an airport. While there is a 'local' commercial fishery, this is pursued out of open skiff-type vessels, and participation in this type of enterprise has reportedly declined in recent years. (Through the CDQ program, however, the community does participate in the commercial fishery in other ways, including partial ownership [by APICDA] of a BSAI catcher-processor.) The Akutan village corporation does derive economic benefits from the local shoreplant through land leasing arrangements and through sales of goods and services to local seafood plant employees, including check cashing services.

As a CDQ community, the community of Akutan enjoys access to the BSAI groundfish resource independently of direct participation in the fishery. Akutan, like the other CDQ communities, has benefitted from the increase under AFA from 7.5 percent to 10 percent of each BSAI groundfish TAC (except for the fixed gear sablefish TACs, of which CDQ communities receive 20 percent for the eastern Bering Sea and the Aleutian Islands areas). The direct benefit/value of this increase, of course, depends upon the TAC itself as well the value of the resource (or value of the rent). Similarly, economic benefits the community derives from the local 1 percent raw fish tax from landings at the nearby plant are dependent on BSAI groundfish TACs and the resulting ex-vessel value of groundfish landings.

Although this conclusion pertains to the community of Akutan, implications for the groundfish landings port of Akutan are quite different. The Trident plant is the principal facility in the Akutan port and, historically, a number of smaller, mobile processing vessels have operated seasonally out of the port of Akutan. Akutan does not have a boat harbor or an airport in the community. Beyond the limited services provided by the plant, no opportunity exists in Akutan to provide a support base for other major commercial fisheries. Indeed, alternative economic opportunities of any kind are extremely limited.

While crab processing was a major source of income for the Akutan plant during the boom years of the late 1970s and early 1980s, with the economic collapse of this resource base in the early 1980s, groundfish processing became the primary source of economic activity. In 1997, for example, State of Alaska and NMFS catch records indicate that, while landings of herring and crab were reported for the Akutan plant, more than 98 percent of the total pounds landed were groundfish, and these made up more than 80 percent of the estimated total value.

With respect to groundfish fishery and related potential socioeconomic impacts to Akutan, the village is in a unique position. As a CDQ community, Akutan enjoys access to Bering Sea pollock independent of direct participation in the fishery. As home community to a shoreplant, Akutan derives considerable fiscal benefits from inshore operations. As CDQ partners with both inshore and offshore entities, they derive economic benefits from both of those sectors. A change seen in the very recent past was the purchase of the Arctic Enterprise floating processor by Trident, and the move of the Arctic Enterprise from Beaver Inlet on Unalaska Island to Akutan Bay. The move of the Arctic Enterprise, combined with the increase in CDQ quota, mean that both the industrial and village portions of the community appear to have captured more of the overall pollock quota post-AFA than was the case pre-AFA. In summary, the potential social impacts to Akutan as a result of groundfish management changes depends upon how one defines the community of Akutan. If the traditional village of Akutan is the unit of analysis, the fishery would appear to have little direct impact on the day-to-day lives of individuals in the community, as long as the structure of the sectors stays roughly the same. On the other hand, if the census/legal definition of Akutan is used, the Akutan is a community more than five times larger than its 'traditional/Aleut' population, and that large margin of difference in population is associated exclusively with the onshore processing operation.

1.3 SAND POINT AND KING COVE

Sand Point is located on Humboldt Harbor on Popof Island, off the Alaska Peninsula, 570 air miles from Anchorage. Sand Point was founded in 1898 by a San Francisco fishing company as a trading post and cod fishing station. Aleuts from surrounding villages and Scandinavian fishermen were the first residents of the community. Sand Point served as a repair and supply center for gold mining during the early 1900s, but fish processing became the dominant activity in the 1930s. Aleutian Cold Storage built a halibut plant in 1946.

Trident operates the current processing plant, which primarily processes pollock, Pacific cod and other groundfish, salmon, and halibut. Peter Pan operates a buying station in Sand Point for their processing plant in King Cove. Sand Point is home port for the largest fishing fleet in the Aleutian Chain.

King Cove is located on the south side of the Alaska Peninsula, on a sand spit fronting Deer Passage and Deer Island. It is 18 miles southeast of Cold Bay and 625 miles southwest of Anchorage. King Cove was founded in 1911 when Pacific American Fisheries built a salmon cannery. Early settlers were Scandinavian, European, and Aleut fishermen. Of the first ten founding families, five consisted of a European father and an Aleut mother. The cannery operated continuously between 1911 and 1976, when it was partially destroyed by fire. The main processor in King Cove is now Peter Pan, and processes pollock, Pacific cod and other groundfish, salmon, crab, herring, and halibut. In addition, several small operators conducted operations in King Cove in 2000 – one for salmon only, and the other for salmon and groundfish (other than pollock).

Sand Point and King Cove, like Akutan, are a part of the Aleutians East Borough. Whereas Akutan is incorporated as a Second Class City, both Sand Point and King Cove are incorporated as First Class Cities. Like Akutan, both Sand Point and King Cove are home to one shoreplant each that processes Bering Sea pollock. Unlike Akutan, however, neither Sand Point nor King Cove are CDQ communities. Two further differences are key for understanding the link between the communities and the groundfish fishery: (a) both Sand Point and King Cove are historically commercial fishing communities that have had processing facilities as part of the community for decades; and (b) both Sand Point and King Cove have resident commercial fishing fleets that deliver to the local seafood processors. With respect to the latter point, Sand Point and King Cove are different from Unalaska. Whereas Unalaska does have vessels owned and operated by 'true' local residents, none of these vessels that would fall into this category deliver pollock to local plants, nor do they typically deliver cod on a regular basis in volumes comparable to other portions of the fleet. Sand Point and King Cove resident fleets are involved with pollock (Sand Point more than King Cove), though typically the Bering Sea pollock processed at those plants comes from deliveries from larger boats home ported outside of the community.

The two communities have similar histories with respect to fishing. Sand Point was founded as a trading point and cod fishing station by a San Francisco fishing company in 1898. King Cove was established in 1911 by cannery operators and commercial fishermen, many of whom were Scandinavian immigrants who married local Aleut women. King Cove is located on the south (i.e., Pacific Ocean) side of the Alaska Peninsula, while Sand Point is located on Popof Island in the Shumagin Islands group on the Pacific Ocean side of the Alaska Peninsula. Both communities then share a Gulf of Alaska orientation or GOA/BSAI orientation that the other Bering Sea pollock communities do not. Of the two, King Cove is more Bering Sea oriented, and Sand Point more Gulf of Alaska oriented.

Historically, both of these communities saw a large influx of non-resident fish tenders, seafood processing workers, fishers, and crew members each summer. For the last several decades, both communities were primarily involved in the commercial salmon fisheries of the area, but with the decline of the salmon fishery, plants in both communities have diversified into other species. The resulting ethnic diversity of population in both communities is evident in Tables 1.3-1 and 1.3-4. The predominance of males over females (Tables 1.3-3 and 1.3-6) is also an indicator of male-oriented processing employment, as well as possible differential female/male emigration from the communities.

Table 1.3-1 Ethnic Composition of Population King Cove; 1990 and 2000

Race/Ethnicity	1990		2000	
	N	%	N	%
White	127	28.2%	119	15%
African American	6	1.3%	13	1.6%
Native Amer/Alaskan	177	39.2%	370	46.7%
Asian/Pacific Islands*	125	27.7%	213	26.9%
Other**	16	3.5%	77	9.7%
Total	451	100%	792	100%
Hispanic***	53	11.8%	59	7.4%

Source: U.S. Bureau of Census.

* In the 2000 census, this was split into Native Hawaii and Other Pacific Islander (pop 1) and Asian (pop 212)

** In the 2000 census, this category was Some Other Race (pop 47) and Two or more races (pop30).

***' Hispanic' is an ethnic category and may include individuals of any race (and therefore is not included in the total as this would result in double counting).

Table 1.3-2 provides information on group housing and ethnicity for King Cove. Group housing in the community is largely associated with the processing workforce. As shown, 42 percent of the population lived in group housing in 1990. (Comparable 2000 data are not yet available.) Also as shown, ethnicity varied between the group and non-group housing, with the non-group housing population being 67 percent Alaska Native and the group housing population being 39 percent Alaska Native.

Table 1.3-2 Ethnicity and Group Quarters Housing Information, King Cove, 1990

King Cove	Total Population		Group Quarters Population		Non-Group Quarters Population	
	Number	Percent	Number	Percent	Number	Percent
White	127	28.16	57	30.16	70	26.72
Black	6	1.33	6	3.17	0	0.00
American Indian, Eskimo, Aleut	177	39.25	1	0.53	176	67.18
Asian or Pacific Islander	125	27.72	109	57.67	16	6.11
Other race	16	3.55	16	8.47	0	0.00
Total Population	451	100.00	189	100.00	262	100.00
Hispanic origin, any race	53	11.75	53	28.04	0	0.00
Total Minority Pop	331	73.39	139	73.54	192	73.28
Total Non-Minority Pop (White Non-Hispanic)	120	26.61	50	26.46	70	26.72

Source: Census 1990 STF2

Table 1.3-3 Population Composition: Age and Sex King Cove; 1990 and 2000

	1990		2000	
	N	%	N	%
Male	292	65%	472	60%
Female	159	35%	320	40%
Total	451	100%	792	100%
Median Age	NA		34.9 Years	

Source: U.S. Bureau of the Census

Table 1.3-4 Ethnic Composition of Population Sand Point; 1990 and 2000

Race/Ethnicity	1990		2000	
	N	%	N	%
White	284	32.3%	264	27.7%
African American	4	0.5%	14	1.5%
Native Amer/Alaskan	433	49.3%	403	42.3%
Asian/Pacific Islands*	87	9.9%	224	23.5%
Other**	70	8.0%	47	4.9%
Total	878	100%	952	100%
Hispanic***	78	8.9%	129	13.6%

Source: U.S. Bureau of Census.

* In the 2000 census, this was split into Native Hawaii and Other Pacific Islander (pop 3) and Asian (pop 221)

** In the 2000 census, this category was Some Other Race (pop 21) and Two or more races (pop 26).

***' Hispanic' is an ethnic category and may include individuals of any race (and therefore is not included in the total as this would result in double counting).

Table 1.3-5 provides information on group housing and ethnicity for Sand Point. Group housing in the community is largely associated with the processing workforce. As shown, 21 percent of the population lived in group housing in 1990. (Comparable 2000 data are not yet available.) The ethnic composition of the group and non-group housing segments were more similar than for the other communities profiled.

Table 1.3-5 Ethnicity and Group Quarters Housing Information, Sand Point, 1990

Sand Point	Total Population		Group Quarters Population		Non-Group Quarters Population	
	Number	Percent	Number	Percent	Number	Percent
White	284	32.35	48	25.40	236	34.25
Black	4	0.46	4	2.12	0	0.00
American Indian, Eskimo, Aleut	433	49.32	3	1.59	430	62.41
Asian or Pacific Islander	87	9.91	80	42.33	7	1.02
Other race	70	7.97	54	28.57	16	2.32
Total Population	878	100.00	189	100.00	689	100.00
Hispanic origin, any race	78	8.88	58	30.69	20	2.90
Total Minority Pop	601	68.45	146	77.24	455	66.04
Total Non-Minority Pop (White Non-Hispanic)	277	31.55	43	22.76	234	33.96

Source: Census 1990 STF2

Table 1.3-6 Population Composition: Age and Sex Sand Point; 1990 and 2000

	1990		2000	
	N	%	N	%
Male	557	63%	593	62%
Female	321	37%	359	38%
Total	878	100%	952	100%
Median Age	NA		36.5 Years	

Source: U.S. Bureau of the Census

The King Cove plant processes a good amount of crab and has developed groundfish processing capability, with Pacific cod as the predominant species, and with significant amounts of cod being supplied from both the GOA and the BSAI regions. This plant also processes a large amount of salmon, and some herring and halibut. The Sand Point plant does not process crab and has not processed herring since 1996, and in its groundfish operation has emphasized pollock over Pacific cod. It processes significantly more pollock than does the King Cove plant, but less "other groundfish" and much less Pacific cod of BSAI origin. Salmon is also processed in Sand Point, but much less than in King Cove. Through time, the King Cove plant has maintained a diversity of processing, while the Sand Point plant has become somewhat less diversified. Both plants are currently seeking new species and product opportunities. These dynamics have changed the distribution and peak of employment effort at the seafood plants, which have been further influenced by the affects of the AFA. Detailed production figures cannot be disclosed for the plants because of confidentiality restrictions. King Cove is somewhat unique among the four key regional groundfish ports insofar as it is relatively more dependent upon Pacific cod than pollock, among the groundfish species landed. Sand Point follows the more typical pattern, processing more pollock than Pacific cod. The two plants vary in their

pollock product mix, but both plants can now produce surimi as well as fillets. The relative dependence of the plants on different species has varied over time and with stock fluctuations. For instance, for both plants 1993 was clearly a very good year for salmon, while 1996 and 1997 were both poor salmon years. The pattern has been that the Sand Point plant depends more on pollock and groundfish in general, and the lesser (but significant) dependence of King Cove upon groundfish (most of which is not pollock) and its greater dependence on crab and salmon. While changes from 1999 to 2000 cannot be definitively stated to be other than statistical fluctuations, it is interesting to note that for King Cove the poundage processed and percentage of total plant dollars for crab decreased, while groundfish increased somewhat. For Sand Point, the pattern for 1999 and before had been for pollock to contribute more than non-pollock groundfish, both in terms of weight and value. This was reversed for 2000. These changes are made somewhat more tentative due to the lack of halibut data in the year 2000 data provided to us by NPFMC staff.

One of the plants obtains Bering Sea pollock in coordination with operations owned by the same company and located in one of the Bering Sea communities. This operation is unique among inshore operators for the degree of coordination across regions and for the way Bering Sea pollock processing is managed between regions. For the other plant, GOA pollock is obtained from the local small boat fleet as well as from a small number of outside boats, but BSAI pollock is obtained exclusively from larger capacity non-resident boats. Neither plant shows up in the 1991 BSAI pollock harvest data, but both appear in the 1994 data, and both increased in volume from 1994 to 1996. The trend since 1996 has been for a decline in the amount of BSAI pollock that these plants process, with a sharp decline between 1999 and 2000, which corresponds with the implementation of AFA for onshore plants.

In terms of employment, 87 percent of Sand Point's workforce is employed full time in the commercial fishery; for King Cove this figure is more than 80 percent (USACE 1998, 1997). In both cases, fishing employment is followed by local government (borough and local) and then by private businesses. Seafood processing ranks after each of these other employers, meaning that the vast majority of the workforce at the shoreplants are not counted as community residents.

In terms of articulation with the community at large, the plants in Sand Point and King Cove are quite different from those in Unalaska/Dutch Harbor or Akutan. As noted, compared to Sand Point and King Cove, the development of commercial seafood processing in Unalaska/Dutch Harbor and Akutan is a relatively recent development (at least in terms of continuity of operations at specific facilities). Both Sand Point and King Cove processors have longstanding relationships with the local catcher fleet which, in turn, is the source of most employment in the community (among permanent residents). This is a sharp contrast to Unalaska. Unalaska is the site of multiple shoreplants, and has a much more 'industrial' fishery than does either Sand Point or King Cove, but this is changing, particularly with respect to Bering Sea pollock, which is not fished by the local small boat fleet. As noted above, the boats delivering BSAI pollock to Sand Point and King Cove are 'Bering Sea' boats, of the same type delivering to the inshore sector elsewhere.

Another major difference between the fishing industry in Unalaska/Dutch Harbor and Sand Point and King Cove is the role of the support sector in the communities. Unalaska has a well developed support service sector, unlike either Sand Point or King Cove. In both Sand Point and King Cove, the lone processing plant has historically provided a variety of fleet support services that the plants in Unalaska no longer have to provide with the development of a support sector. In terms of relationships between inshore and offshore components of the groundfish fishery, Sand Point and King Cove are in quite different positions than Unalaska/Dutch Harbor or Akutan. Unlike Unalaska/Dutch Harbor, neither Sand Point nor King Cove have

enterprises related to the offshore sector or derive direct revenues from the offshore sector (although the plant in Sand Point is part of a company which also owns catcher processors). Unlike Akutan, Sand Point and King Cove are not CDQ-qualified communities, and are thus unable to directly participate in CDQ fisheries.

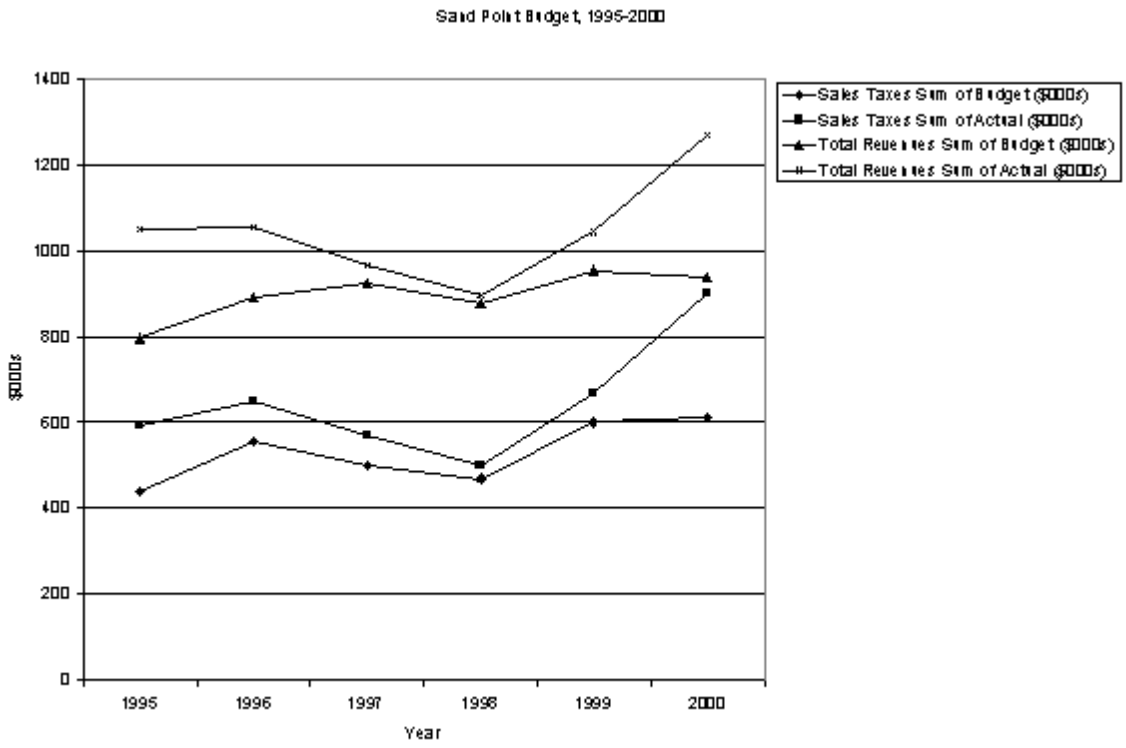
Changes associated with the recent restructuring of the groundfish fishery under AFA have been felt in both communities. The processors in both Sand Point and King Cove are qualified as AFA (BSAI pollock) processors. Of the two, however, only the King Cove plant also has a Co-op Processor Endorsement, as five CVs did deliver at least 80 percent of their inshore pollock to the King Cove plant during the AFA-qualifying period (while delivering most of their pollock offshore to a mothership owned by the same company as the shoreplant). The King Cove plant is relatively well located to process BSAI pollock, and is somewhat on the periphery of GOA pollock. The Sand Point processor does not have a Co-op Processor Endorsement, as every boat which delivered BSAI pollock to this plant delivered over 80 percent of its BSAI pollock to another plant owned by the same company in the Bering Sea. The operational pattern for the Sand Point plant was to serve as a "relief valve" for this Bering Sea plant during the open access race for fish. This maximized the amount of BSAI pollock that the parent company could process. With the implementation of the AFA and the end of the race for fish, the BSAI pollock season was lengthened and the rate of harvest (and processing) reduced. This much reduced the need to divert pollock to be processed at the Sand Point plant and seems to have confined this need to the "A" and "B" roe seasons. The reason given for this was that the need to harvest roe at its peak imposes a natural and inevitable "race for roe" that at times resulted in a harvest of more fish than could be processed by the Bering Sea plant alone. Sand Point and company managers saw little need to process "C" or "D" season BSAI pollock in the Sand Point plant. The imprecise processing figures we have for 2000, compared to 1999, seem to support this change, as the Sand Point plant processed significantly less BSAI pollock than in the year before, as well as significantly less pollock overall. Steller sea lion measures, and a shift of GOA pollock quota to the Kodiak Shelikof area, no doubt have a significant role in this change as well.

Although the King Cove plant processes significantly more BSAI cod than the Sand Point plant, its current production is less than in the past and has been declining. The Peter Pan Seafoods 2000 Co-op Report notes that the cod sideboard allocations of the five vessels delivering pollock to the King Cove plant were allocated to the mothership sector, and they report a reduction in their tendering needs for Pacific cod. More information is available from the AFA Report to Congress (NPFMC 2001) on recent operation dynamics in Sand Point than in King Cove. Volume available to the plant has decreased, for a number of reasons, low local quotas and Steller sea lion measures among them. Prices are low, with the only real "money makers" being "by-products" such as pollock roe, cod milt, and cod stomachs. They have been forced to modify their operations accordingly, primarily to scale back and economize wherever they can. Their peak labor force used to be in the summer for salmon, but is now in January and February for groundfish. There will be a secondary peak in the summer, but earnings then will not be nearly as high. They have a much reduced labor force even at their peak (about 250+), and have closed some of their bunk house facilities. Their core processing group is now perhaps 40+ processors, maintenance, and professional people. They have fewer processor foremen positions, as well as fewer office staff. They have also reduced the inventory in their store and, perhaps more significantly, have reduced the inventory of boat supplies and repair materials that they keep in stock. According to one senior manager, "For so long the idea was to work people as many hours as possible. Now that the fish are not in the pipeline, the idea is to match the workforce to the fish throughput."

There are few quantitative measures of economic activity in Sand Point which reflect the most recent dynamics. Available information on the overall budget for the City of Sand Point, and the receipt of sales taxes, indicates that these amounts have been steadily increasing (Figure 1.3-1). It should be noted that the reporting years end June 30, so that the most recent information is from June 30, 2000. The Sand Point Mayor reports that for this year (2001), sales tax receipts are significantly less than for last year, by somewhat over 20 percent(Gardener, personal communication, 2001[6]). Sales taxes are composed primarily of the raw fish tax and taxes on general retail sales, and the increase in 2000 is due primarily to the collection of significantly more fish taxes than expected. Information available on the value of processing in Sand Point is not totally consistent with this fish tax information, but is subject to estimation problems, especially for products with pricing mechanisms like that of roe. It is likely that roe prices in 1999 and 2000 account for the higher than expected tax receipts. Volume of production at both the Sand Point and King Cove plants declined significantly in 2000, after hitting peaks in 1999 that were the highest since 1993.

[6]Gardener, Glen, Mayor of Sand Point AK. In-person interview in Sand Point 03/20/01.

Figure 1.3-1. Sand Point Budget, 1995-2000



Retail and support activities in Sand Point are difficult to gauge, and company records are not available. Sales before June 30, 2000 are of course aggregated into the general sales tax information presented above. The Native Corporation started a retail grocery store, in order to provide some price competition for the long-time single grocer in the community (the processing plant also has a store, which is used mainly by its processing workers). This investment was made in 1997, when fishing conditions looked good, along with the purchase of a local NAPA store. The NAPA enterprise went out of business in 2000, but the store has been doing comparatively well. Corporation officers reported that even in these times of depressed economic activity that the store had gross sales of somewhat ahead of 2000 in the first quarter of 2001. They estimate that the more established store does approximately four times as much business as their store, and that store certainly stocks a much wider range of goods. The corporation has owned a local tavern since 1975, and it has consistently made a profit. The corporation's hotel is also successful, although it is busier in the winter than in the summer. A private bed and breakfast that was started recently has developed a strong business and tends to be full year-round. There are limited restaurants in the community, and one is currently up for sale.

Housing in Sand Point has always been in short supply, primarily because most housing is built through government agencies. There has not been any recent residential construction. Several families looking for permanent housing were staying at the corporation's hotel during the winter of 2000-2001. This is not only an indicator of a restricted housing supply, but also an indicator that the hotel has rooms available during the winter. Local residents did report that some houses are occupied only seasonally, in conjunction with the

summer fisheries, but that such houses were generally not available for rent, except perhaps to family, friends, and other "known" people.

The Sand Point and King Cove economies are still very cyclical, and tied to fishing and fish processing. In early 2001, because of expected low salmon prices, most people were expecting severe local effects from a number of fisheries related downturns as well as non-fisheries related events. For example, the failure of Reeve Aleutian Airlines has meant less travel by local residents. Several families have moved out of Sand Point and the school enrollment is significantly lower in 2001 and in 2000. Mail service is said to have been decreased in frequency. Overall retail economic activity is said to be reduced, and the corporation did not operate the lounge (bar and simple food) associated with the hotel in the winter of 2000-2001, although the tavern still did a good business. Given that many of the factors cited for these effects are regional and cumulative in nature (low fish prices, Steller sea lion measures, competition from farmed fish, Area M changes, negative impacts to Sand Point resulting from AFA-related conditions, and other management and resource concerns), it is possible that King Cove and Sand Point may grow in size because of population movement from smaller regional communities in even worse economic shape. This is not likely to strengthen the local economy, however.

The dynamics of the "available labor force" were also noted to have recently changed. Local resident wage and salary jobs have in the past been fairly well differentiated by sex – men either fished or worked at some "outside" occupation in a "land" department such as construction, maintenance, or fire and police. Women tended to fill office and service positions. Employers have started to see a change in this pattern, as more men are applying for steady (even if relatively low paying) jobs on land rather than fishing. The most commonly cited factor for this was the projected low salmon price, with the expectation that salmon members crew shares would not amount to very much. Other families have considered moving. The common pattern in the past has been for locals to graduate from high school and either go fishing or move to another community. There has been relatively little turnover in local jobs, as these jobs tend to be highly valued by those who occupy them since there are relatively few of them (and there are of course jobs that are held by more transient non-locals). Local opportunities are seen as quite constrained, and the local Native Corporations are looking more for non-local investment opportunities rather than local ones. It was pointed out by several people that development opportunities in Sand Point are quite limited. Limited air service makes the shipment of fish products very difficult, and precludes a great number of "value added" enterprises. Reeves Aleutian Airlines flew relatively large planes into Sand Point, but has been replaced by PenAir, which flies smaller planes and is more focused on passenger and mail service than on cargo.

The annual fishing and processing cycles for King Cove and Sand Point processors and communities have changed in the very recent past, and this is in good part attributable to AFA. For King Cove, crab deliveries and processing were much reduced in 2000 from those in 1999, and BSAI Pacific cod may have been similarly affected by AFA sideboard measures. The Peter Pan Seafoods 2000 Co-op Report indicates that the King Cove plant took delivery of Bering Sea pollock on four days in February, five days in March, two days in April, ten days in September, and five days in October. For Sand Point, plant managers reported less Bering Sea pollock being delivered during the "A" and "B" seasons, and very much less, if any, during the "C" and "D" seasons. This reflects the historical pattern for King Cove BSAI pollock, but a reduction for Sand Point. Crab and Pacific cod reductions were much more significant for King Cove. While the BSAI pollock reductions were significant for the Sand Point plant, it is likely that they are only part of a much larger pattern also involving Steller sea lion protective measures and the availability (or lack of it) of pollock quota

in the GOA. Similarly, community services are perceived to be in danger from decreased revenue flows resulting from reduced processing.

1.4 SUPPLEMENTAL REGIONAL PARTICIPATION NOTES: CHIGNIK AND DUTCH HARBOR

This section contains supplemental notes on the participation of the Chignik/Peninsula area communities in the North Pacific groundfish fishery, as well as some additional information on the Dutch Harbor small boat fleet participation in that fishery. These two sections provide some descriptive information that is useful as background information for the consideration of Alternative 4, Options 1 and 2, of this SSL SEIS. These options cover the Chignik/Area 4 exemption and the Dutch Harbor/Area 9 (Bogoslof) small boat exemption, respectively. Comprehensive social impact analysis was conducted for these options, but the following existing data are presented to provide a limited context description of these two issue areas.

1.4.1 Chignik/Peninsula Area Community and Groundfish Participation Notes

In addition to the communities mentioned in the above community profiles, engagement in the groundfish fishery has increased in some of the other small communities in the region in recent years. Because of the potential utility of this information for future consideration of Option 1 (Chignik/Area 4 small boat exemption) of Alternative 4 of this SEIS, some brief existing conditions information in presented here. This section draws on both standard secondary data sources and information from recent public testimony before the NPFMC. Information comparable to that developed for the other four Alaska regions in this document is not available for the Chignik region. This type of information was not specifically developed in this SEIS for these communities, due to the lack of local groundfish processing in recent years, combined with a very low participation in the federal groundfish fishery by the local catcher vessel fleet.

Population information from the 2000 U.S. Census for Chignik City (also known as Chignik Bay), Chignik Lagoon, Ivanof Bay, and Perryville is presented in Table 1.4-1. As shown, these are small communities, ranging in size from 22 to 145 residents, and all have strong majority Alaska Native populations. There is very little demographic diversity in these communities, with white and Alaska Native residents accounting for all but 8 persons in these five communities.

Table 1.4-1 Demographic Characteristics, Selected Lake and Peninsula Borough Communities, 2000

Race/Ethnicity	Chignik City		Chignik Lagoon		Chignik Lake		Ivanof Bay		Perryville	
	N	%	N	%	N	%	N	%	N	%
White	25	31.6	12	11.7	17	11.7	1	4.5	2	1.9
African American	-	-	1	1.0	-	-	-	-	-	-
Native American/Alaska Native	48	60.8	84	81.6	126	86.9	21	95.5	104	97.2
Nat. Hawaiian/Other Pac Islander	2	2.5	-	-	-	-	-	-	-	-
Asian	2	2.5	-	-	1	0.7	-	-	-	-
Some Other Race	1	1.3	-	-	-	-	-	-	-	-
Two Or More Races	1	1.3	6	5.8	1	0.7	-	-	1	0.9
Total	79	100	103	100	145	100	22	100	107	100
Hispanic*	1	1.3	-	-	2	1.4	-	-	-	-

Source: U.S. Bureau of Census.

* 'Hispanic' is an ethnic category and may include individuals of any race (and therefore is not included in the total as this would result in double counting).

\- Represents zero or rounds to zero.

Vessels from the Chigniks, Ivanof Bay and Perryville have recently (since 1997) increased their participation in groundfish fisheries. While there was reportedly substantial local groundfish harvesting and processing in the early 1990s, for several years prior to 1997 there were not enough vessels participating to allow release of value information, due to confidentiality restrictions. According to public testimony by both a local government representative and local Chignik fishermen at the October, 2001 NPFMC meetings in Seattle, the lack of groundfish landings during the mid-1990s was due to the lack of a local market (i.e., lack of an interested local processor) rather than a lack of interest on the part of the resident catcher vessel owners. Of the recent years for which data can be released, participation was highest in 1999 when 21 vessels made combined state and federal waters targeted groundfish landings generating $1.14 million in ex-vessel values with an average of $54,290 per vessel. Over 99 percent of the value was generated from Pacific cod, 95 percent of which were harvested with pots, with the remaining 5 percent harvested with jig gear. Of the local jig gear harvest, approximately 98 percent came from state water fisheries and 2 percent from federal waters. Given that Option 1 was modified between the Draft and Final SEIS to such that the Area 4 (Chignik) restriction does not apply to vessels using jig gear, there would be no impacts to this portion of the fleet resulting from the limited fishing zone. For pot gear, approximately 71 percent came from state waters and 29 percent from federal waters (see Table 2.5-11 of this SEIS). All of the vessels are in the FGCV 33-59 class or are "Ghost Vessels" (i.e., they did not have landings sufficient to meet the classification criteria for any specific groundfish gear class) and all of these vessels participate in other fisheries, particularly salmon. In terms of relative value of groundfish and non-groundfish activity for these vessels, for the years shown in the table, non-groundfish ex-vessel values were 2.7 times greater than the ex-vessel values in groundfish for these same vessels.

Table 1.4-2 Participation in State and Federal Grounfish Fisheries of Vessels from the Chigniks, 1997-2000

Year	Total Ex-vessel Value ($Millions)	Number of Vessels	Average Ex-Vessel Value (dollars per vessel)
1997	$0.35	9	$38,749
1998	$0.18	6	$29,669
1999	$1.14	21	$54,290
2000	$0.51	14	$36,209

Note: All vessels are either in the fixed gear catcher vessel 33-59' vessel class or are "ghost vessels' and are from Chignik Bay, Chignik Lagoon, Chignik Lake, Ivanof Bay, or Perryville.
Source: CFEC/ADFG Fish Tickets, June, 2001

According to public testimony given before the Advisory Panel at the October, 2001 NPFMC meetings in Seattle, by the individual fisherman involved, there is only one vessel from Chignik that is currently fishing in area federal waters rather than exclusively in state waters for groundfish. Also according to this testimony, this is a 58 foot vessel that utilizes pot gear in this fishery, and it accesses the processing market in Sand Point as there is currently no local market for groundfish in the Chigniks during the federal open season.

According to public testimony given by the Mayor of the City of Chignik before the Advisory Panel at the October, 2001 NPFMC meetings in Seattle, the groundfish fishery is an important part of economic foundation of the community, and has the potential for being much more important in the future. According to this testimony, several millions of dollars have been obtained for infrastructure improvements in Chignik Bay, including a small boat harbor, water/sewer improvements, and a new public (City) dock, and it is planned that these improvements be paid for in part through a 2 percent local groundfish landing tax instituted in 1997 and earmarked for the improvement of port facilities. The mayor also quoted language from the RIR (Appendix C to this SEIS) regarding the burdens on local social service agencies and noted that the follow statements that statements from the RIR are directly applicable to Chignik: "few, if any, viable alternative sources of economic activity exist in most of these rural coastal Alaska communities . . Fishing is the economic base in many of these communities. Moreover, these communities are generally very 'fragile,' in the sense that they do not have well-developed secondary economic sectors." The conclusion drawn in this testimony was that any adverse impacts to the local groundfish fishery, including preclusion of the potential for expansion of the portion of this fishery in federal waters over and above the level of effort seen in the recent (if not more distant) past, would have adverse impacts on the infrastructure investments and improvements that are underway. According to the mayor, these improvements to the only deep water port in the Chigniks (and the Lake and Peninsula Borough) were undertaken to induce or stimulate the local fishery economy (and particularly to attract local processing capacity and the associated market) through the availability of public sector facilities, rather than to service already existing demand. Specifically, according to the mayor's testimony, historically zero tax revenue has resulted from local groundfish activity in the federally managed fishery, as the City was not a taxing entity prior to the mid-1990s (i.e., not until after the end of the period in the late 1980s and early 1990s when there was locally significant groundfish processing activity that included groundfish from federal waters). In other words, the direct impacts of the Area 4 fishing restrictions would be minimal, with public testimony suggesting that only one vessel would be excluded from fishing as it has in

the last few years. On the other hand, the preclusion of the possibility of developing a federal waters based fishery beyond existing use levels - or, perhaps more accurately from the community perspective, the preclusion of resuming a fishery at reported historical levels - could have a substantial impact on the economy of these communities in the long term.

Concerns were also expressed by Chignik area residents at public testimony at the October 2001 NPFMC meetings in Seattle included the possibility that if nearby federal waters were closed to groundfishing, adjacent state waters where Chignik fishermen are reported to currently harvest nearly all of their groundfish take may be closed as well to create a larger and contiguous shore to deep water closure area. This would be a cumulative type of impact that could result from the proposed alternatives.

1.4.2 Supplemental Unalaska/Dutch Harbor Small Boat Fleet Notes

The Unalaska/Dutch Harbor small boat fleet participation in the groundfish fishery is described in Section 1.1, above. This section provides some additional information specific to the Bering Sea small vessel Pacific cod fishery for potential use in a consideration of Alternative 4/Option 2, the Dutch Harbor small boat exemption for the Area 9 (Bogoslof) exclusion area. (Summary impact information on this option is presented in Section 4.12.2.2.1 of the main body of this SEIS.)

The following two tables show data for the number of vessels less than 60' in length with landings in Pacific cod target fisheries in the Bering Sea FMP subarea by year for the period 1992-2000. While almost all of these landings were delivered to processors on Unalaska Island (Unalaska/Dutch Harbor and Beaver Inlet) and Akutan, there are very small amounts delivered to a limited number of other regional communities. These tables show the universe of small vessels making landings, including vessels from Unalaska/Dutch Harbor and elsewhere. Unlike the case of the Chignik area fishery, there is no state waters groundfish fishery anywhere near the community of Unalaska. Table 1.4-3 provides vessel number data for all vessels under 60' with relevant landings, while Table 1.4-4 shows vessel number data for the subset of these vessels with fixed gear Pacific cod landings.

Table 1.4-3 All Vessels < 60' with Landings in Pacific Cod Target Fisheries from the Bering Sea, 1992-2000

Year	Number of Vessels				
	TCV < 60'	FGCV 33-59'	FGCV ≤ 32'	Ghost	Total
1992	2	32	12	7	53
1993	3	9	1	3	16
1994	3	16	14	9	42
1995	5	28	18	10	61
1996	0	17	9	14	40
1997	1	11	10	3	25
1998	2	9	7	2	20
1999	1	7	5	3	16
2000	1	14	6	3	24

Source: CFEC/ADFG Fish Tickets, June 2001

Table 1.4-4 All Vessels < 60' with Fixed Gear Landings in Pacific Cod Target Fisheries from the Bering Sea, 1992-2000

Year	Number of Vessels				
	TCV < 60'	FGCV 33-59'	FGCV ≤ 32'	Ghost	Total
1992	0	31	12	7	50
1993	0	9	1	3	13
1994	3	16	14	9	42
1995	5	28	18	10	61
1996	0	17	8	14	39
1997	1	11	10	2	24
1998	0	9	6	1	16
1999	0	6	5	3	14
2000	0	14	6	3	23

Source: CFEC/ADFG Fish Tickets, June 2001

The following two tables show revenue data for vessels less than 60' in length with landings in Pacific cod target fisheries in the Bering Sea FMP subarea. As noted for the previous two tables, almost all of these landings were delivered to processors on Unalaska Island and Akutan, but there are also very small amounts delivered to a limited number of other regional communities. Table 1.4-5 provides vessel revenue data for all vessels under 60' with relevant landings, while Table 1.4-6 shows vessel revenue data for the subset of these vessels with fixed gear Pacific cod landings.

Table 1.4-5 Ex-Vessel Revenues of Vessels < 60' with Landings in Pacific Cod Target Fisheries from the Bering Sea, 1992-2000

Year	Ex-Vessel Revenues (Millions of Dollars)				
	TCV < 60'	FGCV 33-59'	FGCV ≤ 32'	Ghost	Total
1992	0.023	0.158	0.060	a	0.241
1993	0.056	0.098	b	a	0.154
1994	0.025	0.352	0.153	a	0.530
1995	0.026	0.686	0.122	0.005	0.839
1996	0.000	0.181	0.045	0.007	0.233
1997	0.011	0.097	0.043	a	0.151
1998	0.025	0.102	0.038	a	0.165
1999	0.002	0.088	0.033	a	0.123
2000	0.003	0.157	0.035	a	0.195

Notes:
[a] indicates that catch total was added to TCV < 60' total to comply with confidentiality restrictions.
[b] indicates that catch total was added to FGCV 33-59' total to comply with confidentiality restrictions.
Source: CFEC/ADFG Fish Tickets, June 2001

Table 1.4-6 Ex-Vessel Revenues of Vessels < 60' with Fixed Gear Landings in Pacific Cod Target Fisheries from the Bering Sea, 1992-2000

Year	Ex-Vessel Revenues (Millions of Dollars)				
	TCV < 60'	FGCV 33-59'	FGCV ≤ 32'	Ghost	Total
1992	0.000	0.158	0.060	0.004	0.222
1993	0.000	0.095	0.004	b	0.099
1994	a	0.373	0.153	0.004	0.530
1995	0.026	0.686	0.122	0.005	0.839
1996	0.000	0.181	0.040	0.005	0.226
1997	a	0.106	0.043	b	0.149
1998	0.000	0.102	0.039	b	0.141
1999	0.000	0.079	0.033	b	0.112
2000	0.000	0.157	0.036	b	0.193

Notes:
[a] indicates that catch total was added to FGCV 33-59' total to comply with confidentiality restrictions.
[b] indicates that catch total was added to FGCV ≤ 32' total to comply with confidentiality restrictions.
Source: CFEC/ADFG Fish Tickets, June 2001

2.0 KODIAK REGION COMMUNITIES

Within the Kodiak region, the City of Kodiak is the location of virtually all of the direct links with the groundfish fishery, so it will be the only regional community discussed in detail. (Processing data does show that groundfish are also run at Atilak, but this is a relatively specialized operation and very small relative to the aggregated operations associated with the City of Kodiak.) This section will draw upon previous profiles (IAI 1991, Northern Economics 1994, IAI 1994) as well as more current information from the Groundfish SEIS and field interviews conducted for AFA and SSL analysis.

2.1 KODIAK

Kodiak's identity is that of a fishing community. Through time, both its fishermen and processors have developed a dependency upon groundfish (summarized below), but a singular characteristic of both sectors is the participation in many different fisheries. That is, many participants display a wide diversification in their fishery operations. This section will focus on their participation in the groundfish fishery, and on linkages between the community and the groundfish fishery.

Commercial fish processing in the Kodiak region began on the Karluk spit in 1882. Not long after that, canneries were established in the community of Kodiak. While the quantity and form of shore processing plants in Kodiak has changed, this sector remains an influential component of the fishing industry that is, in turn, fundamental to the community and its economy.

Shore processing facilities or "canneries" in the Kodiak region concentrated primarily on salmon and herring prior to 1950, although there was a cold storage facility at Port Williams where halibut was frequently landed. As their common name suggests, the product produced was most often canned fish. Cannery operations expanded in the 1950s to accommodate King crab processing. Thirty-two processors processed 90 million pounds of crab in 1966. In the following years, there was some growth within the sector; for example, one new shore plant was built in Kodiak in 1968. Declining harvest levels, however, prompted several shore plants to move their operations during the late 1960s and early 1970s to Unalaska/Dutch Harbor in the Aleutian Islands, closer to the larger supply of Bering Sea-Aleutian Island King crab. This move also diverted some of the crab which had previously been taken to Kodiak for processing, and the number of shore plants in Kodiak declined by more than half. A temporary resurgence in the Kodiak red King crab stocks in the mid-to-late 1970s instigated expansion of existing plants once again, and fostered the building of two new plants in Kodiak. Larger freezing capacity was a notable addition to most of the shore plants. This allowed flexibility in storing larger volumes and processing more species into more diversified products. Larger docks also became important to the processors so that they could unload more boats in a given amount of time. With a larger overall capacity to process fish, competition by the plants for the fish resource increased, and the rate of return for individual shore plants declined. Diminishing crab stocks as the fishery entered the 1980s compounded this problem. After a record catch in 1980, the Kodiak King crab stocks crashed. Several factors, including over harvesting and natural conditions, have been cited by fishermen and scientific sources as contributors to this collapse. There has not been a red King crab opening in the Gulf of Alaska since 1982. Waters around Kodiak still produce tanner and Dungeness crab fisheries, and Kodiak shore plants process these species in addition to the few deliveries of crab they receive from boats returning from the Bering Sea fishery.

When King crab stocks started to crash in the late 1960s, some of the Kodiak plants sought to diversify. At least one plant added facilities to separate the previously dominant crab line; and the main plant was then converted into a shrimp plant. Other plants report they "evolved into shrimp" to augment their crab production. Kodiak shrimp landings peaked in 1971, and stocks crashed in the late 1970s. The reason, while not definitive, may have been related to predation by large stocks of cod and pollock. Between 1978 and 1981, several Kodiak processing plants stopped shrimp production.

Efforts to fish Dungeness crab along the Kodiak coastline were slower to intensify, and landings peaked in 1981. At about the time when the Kodiak shore plants started processing shrimp, the bairdi tanner crab fishery "started to become a reality," but the tanner crab seasons, like the seasons of other crab species, soon became shorter and less productive. Many of the plants maintained halibut production lines while they were processing crab, shrimp, and salmon. At that time, halibut processing was not the intense activity it was to become under the Olympic open access system. The season was open most of the year and there were relatively few boats fishing it. As the crab and shrimp faded as viable resources to maintain shore-plant production, salmon became much more important to the processing companies in Kodiak, as they continued looking for products to fill the gaps in their production.

The provisions of the Magnuson Act of 1976 gradually expelled the foreign fleets capitalizing on the groundfish fishery within the Gulf of Alaska EEZ, while American boats and processors entered the fishery. By the late 1970s a few Kodiak shore plants, according to one plant manager, started experimenting with groundfish resources "because there wasn't much crab to do." However, the majority of the groundfish caught prior to 1988 was processed aboard foreign vessels, first by wholly foreign operations, and then by joint ventures where American boats delivered to floating foreign processors. One informant described the late 1970s and 1980s as years of "forced" diversification:

> In that same time period [late 70s-early 80s] we started playing around with halibut and black cod, and very early playing around with other groundfish, and then in the mid-80s we got a lot more serious, and then in 1988 we built the new factory for surimi. It's pretty easy to see that we were kind of just forced into it. I mean, if you wanted to stay in the fish business you got into groundfish because that is all there was. And of course during that whole period, we continued to process salmon and herring and other products that were available to us.

Plant and dock expansions fostered their ability to further utilize groundfish resources. The first surimi production in Alaska took place in Kodiak in 1985 with the aid of an Alaska Fisheries Development Foundation Saltonstall-Kennedy grant. Also in the mid-80s, "the State of Alaska came out with their tax credit program for getting into the groundfish, and so we fully utilized that," according to one plant operator, and his was not the only plant to do so. In 1987, a single plant processed about one-third of all the pollock that was taken out of the Gulf, but tax credits and other incentives contributed to additional effort and capitalization in the processing sector. This had limiting effects on large volumes being received by any one plant. The growth of the shore-based groundfish fishery in the Gulf of Alaska provided most Kodiak processors with products needed to keep their plants running nearly year round. Large capital investments made the capacity to process groundfish resources greater than the total amount delivered, but a number of factors have converged to change operations significantly. Changing seasons have forestalled the opportunity to run plant operations year-round or at maximum capacity for extended periods of time, and competition for the "race for fish" stimulated overcapitalization in both the harvesting and processing sectors. Inshore/Offshore-1 management measures provided protection to GOA onshore processors and the harvesters who deliver to

them from preemption by the offshore sector, but even with license limitation the GOA fishery is still characterized by overcapitalization. The derby-style fishing tactics and, in particular, the large volumes of pollock that can be caught in a short amount of time with contemporary equipment and technology can effectively "plug" the shore plants. If plants increase their capacity to handle these peak demands, they are essentially "capitalizing for inefficiency" as much of this capacity will be idle for most of the year. After the implementation of the AFA in the Bering Sea, some Kodiak processors also cite the "race for history" in GOA fisheries (and especially pollock) as an additional pressure towards inefficiency in local groundfish fisheries, in anticipation of eventual groundfish rationalization of some sort in the GOA.

The development or evolution of the Kodiak harvesting fleet has essentially paralleled that of the processors to which they deliver (along with the development of a fleet component that in part or in whole participates in Bering Sea fisheries). The details and dynamics are somewhat complex, but have resulted in a fleet of multi-species, multi-gear boats (although trawlers may be somewhat more specialized, they can also switch gear or work as tenders). This versatility is especially important to harvesters as seasons have become more compressed and competition to harvest the resources has increased, although management restrictions such as license limitations or IFQs have increased the cost and perhaps reduced the possibility for such versatility. Kodiak fishermen greatly value having options and making their own decisions. Thus, both the potential benefits (generally increased stability of access and amount harvested for those who can fish) and the potential costs (increased cost for entry into fisheries and reduced flexibility) of any proposed management alternatives are generally quite clear to them.

Kodiak's economy has become increasingly diversified. The Coast Guard base, although relatively self-sufficient, contributes a great deal to the local economy. Housing has been relatively scarce since the 1980s and new house construction has been constant since that time, both to meet this demand as well as in a response to increased population and more Coast Guard personnel living off-base. The housing market is currently softer than it has been in the collective memory of most Kodiak residents, due to the problems of the fishing industry. The service sector, and especially the retail sector, has continued to grow and has become increasingly important. Fishing support services have been affected by the downturn in the fishing industry. The local timber industry is at a relative low point currently, but has been significant in the past. Education is an important economic and social component, represented by the facilities of Kodiak College and The Fishery Industrial Technology Center. The aerospace industry has the potential, through the rocket launch facility, to contribute to the economy both directly as well as more indirectly through support services and facilities provided to outside specialists who work at the launches.

Population

Table 2.1-1 provides sufficient detail to discuss Kodiak's gross population dynamics. The Russian history of Kodiak will not be discussed here. The City of Kodiak did not attain the status of the largest community on the island until about 1920 or so, and has grown steadily since then. The KIB was formed much later, and numbers for the borough are not available until 1960 when 7,174 people were enumerated. Named places within KIB only totaled 3,320 people however (mostly in the City of Kodiak). Based on present conditions, it can be assumed that most of the difference (whatever its "true" value) represented people living in the area of, but outside of the city limits of, the City of Kodiak (Linda Freed, personal communication 2001[7]). This

[7]Freed, Linda, Director of Community Development, Kodiak Island Borough, AK 6/00

would account for a good deal of the sudden increase between 1950 and 1960 of the population of the "Greater City of Kodiak" (Table 2.1-1).

Table 2.1-1 Kodiak Island Region Population 1880-2000

Year	KIB	Greater City of Kodiak[1]	City of Kodiak	Total Hinterland[2]
1880	NA	0	0	694
1890	NA	495	495	1,334
1900	NA	341	341	623
1910	NA	438	438	655
1920	NA	374	374	343
1930	NA	442	442	444
1940	NA	864	864	589
1950	NA	1,710	1,710	567
1960	7,174	6,482	2,628	692
1970	6,357	5,358	3,798	999
1980	9,939	8,842	4,756	1,097
1990	13,309	11,610	6,365	1,699
1999	13,989	12,185	6,893	1,804
2000	13,913	12,211	6,334	1,702

[1] "Greater City of Kodiak" encompasses the City of Kodiak, Kodiak Station, and the derived unincorporated population – see text

[2] "Total Hinterland" is the total population of all named places on Kodiak Island, other than the City of Kodiak and Kodiak Station

Source: DCED for named places; 'Greater City of Kodiak' and 'Total Hinterland' are derived values - see text.

The 2000 "unincorporated population" is 4,037 and is generally believed to approximate the population that could be considered part of the "greater City of Kodiak" area but not within its incorporated city limits. This "unincorporated" population is thus equal to about 64 percent of the city's 2000 incorporated population of 6,334. This is a dramatic relative increase, from only 50 percent in 1999, and reflects a slight increase in the "unincorporated" population and a decrease in the City of Kodiak population. An additional 1,840 people live on the Coast Guard base, which most people also consider as part of the "greater City of Kodiak" area. Together these three populations include 12,211 of the KIB's total 2000 population of 13,913, or about 86 percent. Note that this does not include Chiniak or Women's Bay (about 5 percent of the KIB's population) as part of the "Greater City of Kodiak," although it could be argued that they should be. This calculated percentage has varied from 84 to 90 percent since the formation of the KIB. Prior to that time (1880-1950) the City of Kodiak had been increasing in size relative to the other named places on the island (Table 2.1-1).

A common dynamic in fish processing towns is that the population increases seasonally, during peak harvest and processing periods. In Kodiak, this has historically occurred in summer (July and August). With the development of groundfish processing, Kodiak processors have increasingly tried to operate year-round with

an increasingly resident labor force. The strong national economy has also decreased the number of people willing to come to Kodiak to work seasonally, and the cost of transporting and training such temporary employees has also increased. While such transient workers are still part of Kodiak, they had not been as significant as in the past, due to the development of a more resident processing work force. Recent trends may be for the increased employment of more transient workers. These dynamics are discussed below in terms of the processing and harvesting labor force.

Ethnicity

Kodiak is a complex community in terms of the ethnic composition of its population. Sugpiaqs (Koniags) were the original inhabitants of Kodiak Island. In the late 1700s Russian contact and their sea otter operations had devastating effects on the Native population and culture. Alutiiq is the present-day Native language. Alaska (and Kodiak) became a U.S. Territory in 1867, and a cannery opened on Karluk spit in 1867. This marked the start of the development of commercial fishing on Kodiak, although Karluk remained the largest community on the island until about 1920. Fishing and military buildup associated with WWII brought many non-Natives to Kodiak, primarily Caucasians but also a substantial number of other minorities, at least initially associated primarily with fish processing employment.

Tables 2.1-2 through 2.1-4 below present some basic time series information on ethnicity. While the information is not all directly comparable due to changing definitions and different sources, certain conclusions are fairly clear. Most Filipino or Asian and Pacific Islanders live in the City of Kodiak. Nearly all can be assumed to live in the immediate area of that city. They are the segment of the KIB population that is most rapidly increasing, from an unknown population in 1970 (but no more than 3 percent) to 6+ percent in 1980 to 11+ percent in 1990 to 17 percent in 2000. This supports the common community perception, and plant manager reports, that fish processing workers are more of a resident work force than in the past. The Alaskan Native population has stayed at approximately the same percentage through time, but is clearly a smaller percentage of the City of Kodiak population than it is of the KIB as a whole. The Caucasian population has declined in terms of percentage over time. Overall, there has thus been a gradual, long-term shift in ethnic composition, with Asian and Pacific Islanders increasing in percentage and Caucasians declining in percentage. Native Americans and African Americans have shown relatively little change. The U.S. Census Bureau also has collected information on people of "Hispanic Origin" and it is potentially useful as an indicator of population dynamics. Plant managers have reported that they are hiring more Hispanics than in the past, and the limited census information available supports the anecdotal information that the Hispanic population is increasing, located primarily in the City of Kodiak (KIB website). This is the same pattern and dynamic described in IAI 1991.

Table 2.1-2 Ethnic Composition of Population Kodiak Island Borough; 1970, 1980, 1990, and 2000

Race/Ethnicity	1970		1980		1990		2000	
	N	%	N	%	N	%	N	%
White	NA	-	7,046	71%	9,289	70%	8,304	59.7%
African American	NA	-	72	0%	135	1%	134	1%
Native Amer/Alaskan	NA	-	1,710	17%	1,723	13%	2,028	14.6%
Asian/Pacific Islands*	NA	-	624	6%	1,492	11%	2,342	16.8%
Other**	NA	-	283	3%	670	5%	1,105	8%
Total	6,357	-	9,939	100%	13,309	100%	13,913	100%
Hispanic***	NA	-	204	2%	669	5%	848	6.1%

Source: U.S. Bureau of Census.

* In the 2000 census, this was split into Native Hawaii and Other Pacific Islander (pop 110) and Asian (pop 2,232).

** In the 2000 census, this category was Some Other Race (pop 387) and Two or more races (pop 718).

*** Hispanic' is an ethnic category and may include individuals of any race (and therefore is not included in the total as this would result in double counting).

Table 2.1-3 Ethnic Composition of Population Kodiak City; 1970, 1980, 1990, and 2000

Race/Ethnicity	1970		1980		1990		2000	
	N	%	N	%	N	%	N	%
White	3,094	81%	3,337	71%	4,028	63%	2,939	46.4%
African American	44	1%	26	1%	47	1%	44	0.7%
Native Amer/Alaskan	479	13%	573	12%	629	10%	663	10.5%
Asian/Pacific Islands*	NA	-	554	12%	1,282	20%	2,069	32.6%
Other**	116	3%	-	-	379	6%	619	9.8%
Total	3,798	100%	4,686	100%	6,365	100%	6,334	100%
Hispanic***	NA	-	196	4%	403	6%	541	8.5%

Source: U.S. Bureau of Census.

* In the 2000 census, this was split into Native Hawaii and Other Pacific Islander (pop 59) and Asian (pop 2,010)

** In the 2000 census, this category was Some Other Race (pop 276) and Two or more races (pop 343).

***' Hispanic' is an ethnic category and may include individuals of any race (and therefore is not included in the total as this would result in double counting).

Table 2.1-4 provides information on group housing and ethnicity for Kodiak. Group housing in the community is largely associated with the processing workforce. As shown, only six percent of the population lived in group housing in 1990. (Comparable 2000 data are not yet available.) This is a much lower percentage of population in group quarters than in the other communities profiled.

Table 2.1-4 Ethnicity and Group Quarters Housing Information, Kodiak, 1990

Kodiak City	Total Population		Group Quarters Population		Non-Group Quarters Population	
	Number	Percent	Number	Percent	Number	Percent
White	4028	63.28	192	53.93	3836	63.84
Black	29	0.46	3	0.84	26	0.43
American Indian, Eskimo, Aleut	811	12.74	21	5.90	790	13.15
Asian or Pacific Islander	1282	20.14	118	33.15	1164	19.37
Other race	197	3.10	22	6.18	175	2.91
Total Population	6365	100.00	356	100.00	6009	100.00
Hispanic origin, any race	407	6.39	42	11.80	365	6.07
Total Minority Pop	2429	38.16	181	50.84	2248	37.41
Total Non-Minority Pop (White Non-Hispanic)	3936	61.84	175	49.16	3761	62.59

Source: Census 1990 STF2

Age and Sex

The KIB is unbalanced in terms of ratios of males to females (Table 2.1-5). The City of Kodiak shows a similar imbalance, and has been relatively stable in this regard for the period 1970-2000 (Table 2.1-6). This is characteristic of communities where at least one major economic sector disproportionately employs single members of one sex. The fishing industry has historically employed many single males, both as harvesters and processors. Although this population has apparently become more resident (rather than transient) than in the past, evidently this has not greatly affected the overall population's sex composition. Single males are still disproportionately attracted to Kodiak, and females may tend to migrate out more than do males. IAI 1991 indicates that the male/female ratio for the Native population was approximately equal, as would be expected from a resident population. The sex ratio for Caucasians was somewhat skewed (54/46), and for Filipinos was even more skewed. This was interpreted as evidence for a relatively resident Native population, with a predominately resident Caucasian population somewhat more prone to movement in and out, and a much more mobile "other minority" population which contained a smaller percentage of family units with children. This interpretation seems to continue to apply.

Table 2.1-5 Population by Sex, Kodiak Island Borough; 1990 and 2000

	1990		2000	
	N	%	N	%
Male	7,395	56%	7,362	53%
Female	5,914	44%	6,551	47%
Total	13,309	100%	13,913	100%
Median Age	NA		31.6 Years	

Source: U.S. Bureau of the Census

Table 2.1-6 Population by Sex, Kodiak City; 1970, 1980, 1990, and 2000

	1970		1980		1990		2000	
	N	%	N	%	N	%	N	%
Male	2,055	54%	2,498	53%	3,496	55%	3379	53%
Female	1,743	46%	2,188	47%	2,869	45%	2955	47%
Total	3,798	100%	4,686	100%	6,363	100%	6334	100%
Median Age	NA		NA		NA		33.5 years	

Source: U.S. Bureau of the Census

Housing Types and Population Segments

Household type in Kodiak varies by population segment, although information is far from systematic in this regard. In the 1980s housing was in very short supply, and it was not unusual for complete strangers to be more than willing to share space in a marginal housing unit. Sales of houses and the rental of apartments was almost totally through word of mouth and almost instantaneous. This has changed to the point where houses are now on the market for a period of time more typical of other Alaskan urban communities before selling, although apartment vacancy rates are still lower than are private housing vacancies. Average rent for apartments is higher or equal to rent in other Alaskan urban communities, although the vacancy rate for units is higher than in places such as Anchorage, Juneau, and the Matanuska-Susitna Borough (AHFC 2001). Construction of new housing to meet the local demand has continued through the present, although it may have slowed somewhat in the recent past, and contractors are building few or no new houses on speculation. There are incentives which have encouraged the building of new housing outside of Kodiak city limits. The state will subsidize the mortgage rate one full percentage point for housing outside of the City of Kodiak. Further, undeveloped land within the current city limits is somewhat scarce.

It is recognized that fish processors tend to live in smaller structures and/or with more household members, than do people with other employment. There are sections of town or developments where certain ethnic

groups or socioeconomic classes of people are concentrated. However, there are also members of these same groups scattered throughout Kodiak.

One housing dynamic that had been operating until the recent past, already mentioned above, has been that of the development of a resident processing force. Kodiak processors had been able to close down bunk houses as those attracted to Kodiak by fairly steady processing work preferred more private housing in the community. With the more recent contraction of fishing seasons and processor operating days, the processing labor force has once again become somewhat transient. Processors report that they can maintain only a smaller "core" group of employees than has been the case in the past, and several have reopened or even constructed bunkhouses of sufficient size to handle their transient peak labor needs. There are still local people who work in the processing plants on a less than full-time basis, but the pay scale associated with most processing work requires a large number of hours to support a local resident. Other than for peak processing periods most labor is still local and has some sort of local housing arrangement. Systematic information is lacking, but anecdotally the same mechanism by which people are recruited to Kodiak to work in fish processing also allows them to find a place to live. Many such workers come because they have a relative or friend who is already working in Kodiak. This person then becomes a resource to locate housing. This is also one reason that household size and household structure tends to be different for different ethnic groups in Kodiak, and is especially fluid for fish processor workers.

The Coast Guard base also affects the local housing supply in that it is "home" to close to 2,000 people. The base is reported to have been built in the 1930s as a temporary facility, and so had a large supply of substandard housing. Much of this has since been dismantled, with a substantial but not equivalent amount of new and better housing being erected on-base. Most Coast Guard personnel have the option of living off-base if they prefer, so this has increased the local demand for housing.

Seasonality of the Kodiak Economy

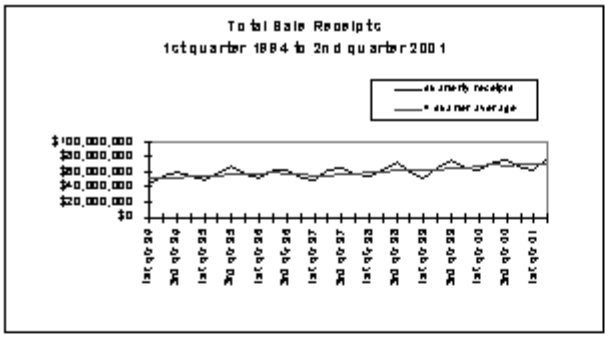
The regular and cyclical annual variation endemic to the Kodiak Island region's fishing economy was introduced in the general regional employment discussion above. This section merely wishes to reinforce this point, using the City of Kodiak as a focused example. The Kodiak Chamber of Commerce has provided city sales tax receipt information in spreadsheet format for the first quarter of 1994 through the second quarter of 2001 (Figure 2.1-1). Graphs of tax receipts over this period, by quarter, are presented for total sales receipts and selected economic sectors. The comparison of these graphs is the basis for the following brief discussion.

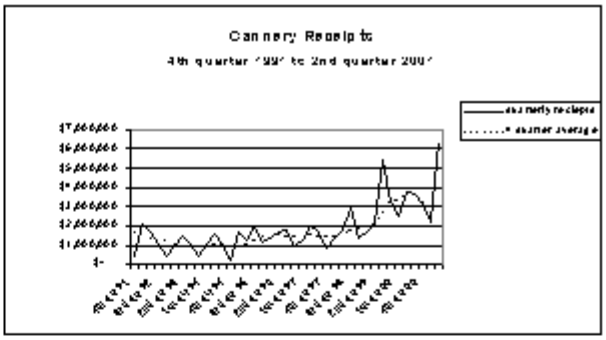
Total sales tax receipts are variable in a regular, cyclical way – but within a relatively well-defined range (the high point is generally no more than 1.5 times the low point, although that range seems to be increasing through time). Cannery receipts can be seen to vary in the same way as do total sales receipts, but the fluctuation between high and low points is much more extreme (the high point is over two times the low point). City boat harbor revenues are even more extreme, but this is an artificial variation, as most long-term moorage fees and such are billed and paid on an annual basis. On the other hand, charter boat revenues are perhaps the most extreme case of true extreme seasonal variation in economic activity, from zero in the winter to a peak in the summer. As this industry also depends on fish (primarily salmon and halibut), it has the same seasonal variation pattern as does the commercial processing sector. Retail sales, on the other hand, while showing some seasonal variation in response to the variation in many of primary economic sectors, exhibits a much narrower range of variation than does total sale receipts. This is what would be expected, as a

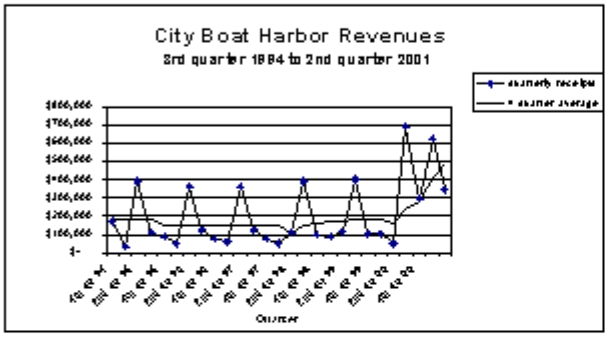
certain level of sales has to be maintained year-round to support the resident population. Sales would increase during peaks of economic activity, in proportion to the size of the peak in relation to the "base" level of sales. The city utilities graph is especially telling in this regard. The variation is less cyclical, but does exhibit some seasonality confounded by an overall trend towards increased revenues (increased use of utilities). This is an indicator that Kodiak has been experiencing consistent growth, both in population, housing supply, and general infrastructure. The last graph can be no more than suggestive, but the decline in revenues for artists and photographers may suggest that there is less discretionary income in the community, or that such expenditures for luxury or specialty items are increasingly being spent outside of the region.

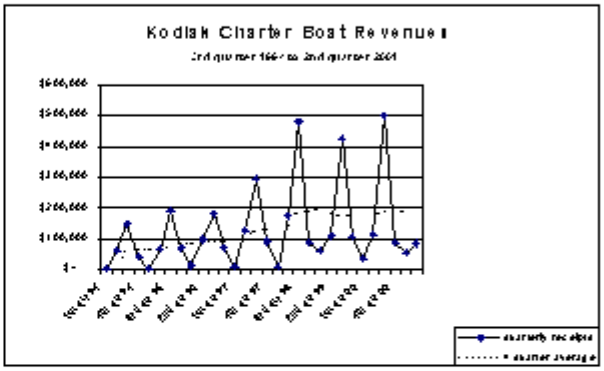
As for Sand Point, this pattern may mask some of the indications of a local economic downturn by reporting only through June of 2000. Also, Kodiak has a more robust and diversified economy than does Sand Point, and sales tax receipts are an overall economic indicator, and do not necessarily reflect the contraction of one economic sector which is countered by the expansion of another. While both Kodiak and Sand Point are the regional centers for government for their respective regions, that of Kodiak is much larger. Kodiak also has a much larger school system as well as a branch of the University of Alaska system.

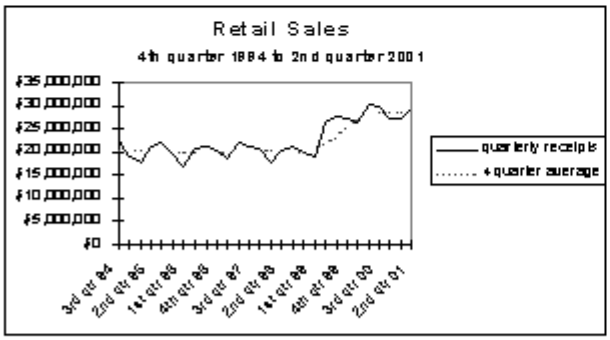
Figure 2.1-1. Kodiak Seasonal Economic Fluctuations

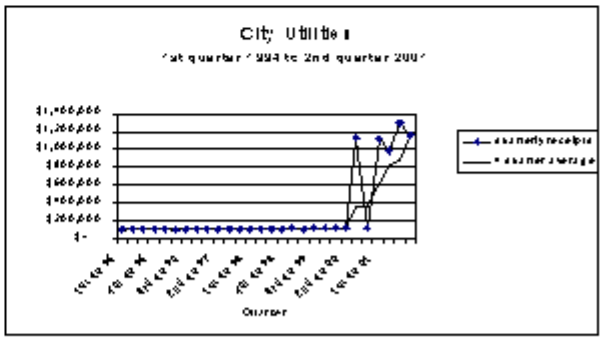


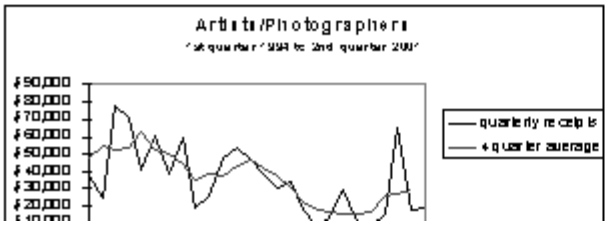












Despite the relative diversification of Kodiak's economy compared to the Alaska Peninsula/Aleutian Islands groundfish communities profiled, fishery related employment is still a very large part of the local employment pool. Excluding the U.S. Coast Guard, 4 of the 5 top employers in Kodiak in 2000 were fish processors, and three more were listed in the top 20 employers (Table 2.1-7).

Table 2.1-7 Top 20 Kodiak Employers, 2000

Rank	Employer	Employment
1	Kodiak Island Borough School District	402
2	Ocean Beauty Seafoods	338
3	Trident Seafood Group	240
4	Polar Equipment (Cook Inlet Processing)	227
5	North Pacific Processors (APS)	198
6	Providence Kodiak Island Medical Center	177
7	City of Kodiak	173
8	Wal-Mart Associates	147
9	International Seafoods of Alaska	146
10	Safeway, Inc.	142
11	Global Seafoods	136
12	Western Alaska Fisheries	108
13	Kodiak Area Native Association	108
14	Space Mark International	108
15	U.S. Department of Transportation	99
16	Alaska Department of Fish and Game	77
17	Ki Enterprises (McDonald's)	66
18	University of Alaska	54
19	Kodiak Island Housing Authority	51
20	Kodiak Electric Association	51

Source: Kodiak Chamber of Commerce, provided by Alaska Groundfish Data Bank via public comment letter (Comment 0762), October, 2001.

Links to the Groundfish Fishery

The development of commercial fishing in Kodiak was summarized above. Table 2.1-8 below displays the total volume of fish landed at Kodiak for 1984 through 2000. Kodiak has consistently ranked in the top three U.S. ports in terms of value of fish landings and in the top seven in terms of volume of landings.

Table 2.1-8 Volume and Value of Fish Landed at Kodiak, 1984-2000

Year	Pounds (millions)	U.S. Ranking	Value (millions)	U.S. Ranking
1984	69.9	7	113.6	2
1985	65.8	6	96.1	3
1986	141.2	7	89.8	3
1987	204.1	3	132.1	2
1988	304.6	3	166.3	1
1989	213.2	6	100.2	3
1990	272.5	3	101.7	3
1991	287.3	4	96.9	3
1992	274.0	3	90.0	3
1993	374.2	2	81.5	3
1994	307.7	2	107.6	2
1995	362.4	2	105.4	2
1996	202.7	5	82.3	3
1997	267.5	6	88.6	3
1998	357.6	5	78.7	3
1999	331.6	6	100.8	3
2000	289.6	6	94.7	3

Source: Personal communication from the National Marine Fisheries Service, Fisheries Statistics and Economics Division, Silver Spring, MD (accessed through NMFS Website).

Table 2.1-9 lists detailed information on total volume and value of fish landings for Kodiak for 2000 by species or species group. As shown, value of landings are dominated by Pacific cod, halibut, and salmon, which together account for 72.5 percent of the total value of all species landed. These three species account for between 23 and 25 percent of total value each, while no other species accounts for more than about 9 percent of the total. Pollock and sablefish, the next two most important species after Pacific cod, halibut, and salmon, account for 9 percent and 7 percent of the overall total, respectively. No other species accounts for more than about 2 percent of the total. Pollock, by far, accounts for the greatest volume of fish landed, with Pacific cod and salmon being quite close to each other as the second and third highest volume species (or species complex), respectively. As shown, several other groundfish species are relatively high volume species locally, but account for a relatively small proportion of the total value landed, due to relatively low values per pound.

Table 2.1-9 Volume and Value of Fish Landed at the Port of Kodiak, by Species, 2000

Species	Pounds (thousands)	% of Total Pounds	Ex-vessel Value (dollars)	% of Total Value
Pacific Cod	64,936,708	22.4	24,030,302	25.37
Halibut	9,258,799	3.2	23,146,998	24.44
Salmon	61,800,000	21.3	21,500,000	22.70
Pollock	102,229,713	35.3	8,720,096	9.21
Sablefish	3,377,355	1.2	6,957,351	7.35
Rock Sole	10,191,805	3.5	2,061,818	2.18
Bristol Bay Red King Crab	900,536	0.3	1,707,901	1.80
Weathervane Scallops	280,568	0.1	1,662,575	1.76
Bearing Sea Snow Crab	1,451,842	0.5	1,277,621	1.35
Pacific Ocean Perch	9,008,682	3.1	729,051	0.77
Herring	2,740,000	0.9	685,400	0.72
Rockfish	9,229,389	3.2	611,210	0.64
Dungeness Crab	236,921	0.1	390,920	0.41
Flatfish	1,847,248	0.7	252,530	0.27
Flathead Sole	1,676,648	0.6	234,642	0.25
Sea Cucumbers	116,152	0.0	174,228	0.18
Rex and Dover Sole	1,167,310	0.4	132,387	0.14
Black Rockfish	251,520	0.1	108,373	0.11
Octopus	181,993	0.1	90,997	0.10
Miscellaneous/other/ unspecified (inc. shrimp and sea urchins)*	8,716,811*	3.6*	225,600*	2.01*
Total	289,600,000	100	$94,700,000	100

*Note: Figures in this row provided to make totals for known and unspecified species sum to reported port totals and are adjusted to account for rounding errors and species that are not reported individually due to confidentiality restrictions. Values should be taken as approximations and should not be used for comparative purposes.
Source: Adapted from Kodiak Chamber of Commerce, provided by Alaska Groundfish Data Bank via public comment letter (Comment 0762), October, 2001.

The following discussion of the fishing industry is divided into the harvesting and processing sectors, as each is extremely important for the Kodiak economy and community. A third section provides some general contextual information on fishery industry support services.

Harvesting

The enumeration and geographic distribution of the groundfish catcher vessel sector is detailed in previous documents and abstracted for communities of interest for this document. The most important point in regard to the Kodiak component of this fleet is that most are multi-gear and multi-species boats. The majority of boats harvesting groundfish and crab for deliveries to Kodiak shore processors are Kodiak-based boats. Non-local boats from Newport or Seattle augment the trawl and longline fleets. One recent development, with the shift of GOA pollock quota from areas 610 and 620 to the Shelikof Area has been the temporary transfer of some boats from the Trident plant in Sand Point to the Trident plant in Kodiak.

Vessels in this fleet usually have a handshake agreement with a shore processor for the delivery of fish. The vessel is said to "work for" the shore plant and sometimes the plant operators refer to "their boats" meaning those with which working relationships exist. These vessels deliver to that plant on a regular basis. The size and composition of processor fleets vary, depending on the plant's capacity and product mix. Most of the boats that deliver to Kodiak processors are multi-purpose vessels that can change fisheries to meet the current market and fishing circumstances. For example, some vessels will switch between crab, halibut, and cod or crab, halibut, and pollock. One vessel reported that he fished for in excess of 20 species with three different types of gear. The size of a processor's fleet depends on what season it is and what they are targeting at the time. It is not uncommon, however, for a plant to have a fleet of 8 to 16 boats fishing groundfish and crab. Among plants that run pollock, there is a bimodal distribution of trawl fishing power. The larger plants typically have 8 to 10 trawlers working with them, whereas the smaller plants typically have 4 or fewer trawlers in their pollock fleet. Most plants also have 6 to 10 fixed-gear vessels in their fleet. Most of the fixed gear boats are pot boats fishing for Pacific cod and/or tanner crab. There is a small fleet that fishes for Dungeness crab as well.

Fleet sizes are smaller now than they were when shellfish was a larger part of production. Prior to the implementation of the AFA in the Bering Sea, we were told that the GOA pollock (and flatfish) fleet tended to cooperate in an effort to balance deliveries to maintain high levels of production. This was a somewhat unique relationship to develop in an open access fishery, but was a form of industry-developed "rationalization" to counter some of the inherent inefficiencies of a high volume/low value fishery with excess capacity. Ideally, the plants want just the right amount of boats to keep production lines busy all of the time, but with a trawl fleet's capacity to catch groundfish, its harvest can easily exceed its processor's capacity. After the implementation of AFA in the Bering Sea, Kodiak processors have reported that this arrangement is, in essence, no longer in effect. With the anticipation of eventual pollock (and other groundfish) rationalization in the GOA, a "race for history" in the GOA has resulted, with at least one new processing entrant and a host of wasteful and inefficient practices (see processing discussion below).

The exchange of product between fishermen and processors continues to be largely dependant upon what kind of relationship the boat operator has with the plant. According to one plant staffer, when a fisherman comes to talk to a processor, he has several main concerns. He wants to know how he's going to get in to make deliveries and if he is going to be able to deliver all the fish that he can catch. He does not want to have to wait to deliver fish because the processor has too many other boats delivering as well.

A reliance on flexibility and adaptability in the fishing industry has caused boats to become very good at converting from one gear type to another, if they have the gear available. In the mid-1980s this did not happen frequently, but it is easier and more common now (subject to license limitation and other management

measures). While boats may switch from one gear-type to another, operators usually deliver to the same processor. If a new operator comes aboard, the vessel may or may not change delivery sites, depending on the established relationships of the vessel owner/operator to processor.

Within the trawl fleet, there are conversions too. There is a switch in nets for midwater or pelagic trawling to bottom trawling when going from pollock to cod. Almost everybody who trawls has both types of nets. Medium-sized and the small trawlers (usually those less than 70 feet in length) will make a conversion as soon as tanner season is closed, but the bigger Kodiak trawlers, those in the 80-120-foot range, will usually leave their trawl gear on and not make any conversions, unless they are going tendering for salmon or herring. It wasn't that long ago that they could trawl the better part of the year, so a number of them sold their pots and abandoned the fixed-gear fishery. Also, The Kodiak area tanner quota has been so small in recent years that the bigger boats can't justify going out.

Generally speaking, fishermen stay with one company although there is no formal (written) contract to bind this relationship. Boats will usually try to set up some sort of a market before they leave the dock, although that depends, somewhat, on who's operating the boat and what kind of relationship he has with the plant. Often a plant will help find a market for a load it cannot use from one of its "regular" boats, especially for a high volume/low value species like pollock, or one that requires more time to process, such as flatfish.

Shore plants also provide certain services as inducement to do business. In general, the production capacity in Kodiak to process fish far exceeds the amount of product currently available, so all the processors in town are in competition with each other for available product. As a result, things like being able to provide a tendering contract serve as incentives for fishermen to do business with a certain plant. Providing gear storage for fishermen is an incentive. Providing a line of credit – if a fisherman's short on funds and needs to buy gear or equipment – is another inducement the local processors sometimes offer to a fisherman.

For some vessel operators, these tendering contracts are not only lucrative, but they become an important part of the total yearly income for vessels. Consequently, maintaining the handshake agreement to deliver groundfish when the processors need it most can be rewarded with a tendering contract that is important to the fishermen.

Most of the Kodiak CV fleet is overwhelmingly GOA-oriented. While Kodiak CVs have more of a presence in the BSAI pollock fishery than for the other species (in terms of pounds harvested and dollars earned), the GOA is still clearly where most Kodiak boats fish. It is this orientation, and their position as harvesters of the GOA, that Kodiak fishermen wish to protect, and which they fear may be adversely affected by the changes in the fishery associated with ongoing adaptations to AFA related management.

Processing

In 2000, seven plants processing groundfish in Kodiak. Of those plants, one was a new entrant that processed fish from the beginning of 2000 through mid-2001. According to the Alaska Groundfish Data Bank (Bonney, personal communication, 2001[8]), this processor stopped buying after the 2001 A/B pollock fishery and has

[8] Bonnie, Julie, Director, Alaska Groundfish Data Bank. Comment letter to NMFS on Steller Sea Lion Protection Measures Draft SEIS (Comment Letter 0762), October 15, 2001.

offered to sell some of their assets to other local processors. Other non-groundfish processors also exist. While capable of continuously processing large volumes, actual production, of course, varies during the year. Plants will add a shift, hire additional employees, and maximize processing and freezing capabilities during various seasons and season overlaps; various species require separate processing lines, machinery, and crews. At other times, especially during the later months of the year, the plants have little, if anything, to process, so they must layoff employees and attempt to minimize their overhead costs. Tables 2.1-10 and 2.1-11 show the aggregated volume and value, respectively, of the species processed in Kodiak by year for the period 1993-2000. With the exception of salmon, which is processed at several different locations within the KIB, nearly all of this activity takes place within the City of Kodiak.

Table 2.1-10 Volume of Groundfish Processed by Kodiak Shoreplants, by Species Group and Year, 1993-2000

Species	1993	1994	1995	1996	1997	1998	1999	2000
Salmon	105,954,109	42,512,087	150,212,021	38,480,944	47,096,755	85,182,682	63,097,929	60,096,447
Halibut	9,886,361	8,959,621	7,345,008	7,396,190	10,673,472	8,398,551	8,269,475	See Note
Crab	5,110,307	2,863,187	1,832,762	1,675,086	1,164,703	1,148,083	1,284,728	2,504,560
Herring	8,886,771	5,845,320	4,998,580	5,868,669	5,336,494	2,482,571	1,985,822	2,080,860
Other Non-GF	106,458	384,948	168,940	206,174	175,448	181,668	137,575	116,912
Pollock	155,412,622	163,440,241	65,393,556	45,996,042	83,781,584	164,936,160	129,788,161	106,386,467
Other GF	75,932,965	57,408,356	92,397,635	90,887,954	113,031,829	105,863,668	112,819,856	114,519,388
Total	361,289,593	281,413,760	322,348,502	190,511,059	261,260,285	368,193,383	317,383,546	285,704,634

Note: Halibut numbers not available for 2000
Source: State of Alaska Fish Ticket information supplied by NPFMC staff

Table 2.1-11 Value of Groundfish Processed by Kodiak Shoreplants, by Species Group and Year, 1993-2000

Species	1993	1994	1995	1996	1997	1998	1999	2000
Salmon	$30,919,937	$19,837,476	$41,353,791	$21,319,667	$16,552,661	$26,327,348	$28,587,045	$18,448,920
Halibut	$11,705,472	$16,874,425	$14,228,126	$16,144,982	$22,115,588	$10,254,625	$17,374,278	See Note
Crab	$8,840,233	$7,149,258	$4,124,565	$3,463,420	$2,775,965	$1,704,518	$4,414,024	$7,026,046
Herring	$2,583,290	$1,614,485	$2,815,598	$4,595,484	$941,584	$517,132	$608,933	$566,940
Other Non-GF	$83,036	$415,673	$143,154	$246,052	$193,067	$190,220	$146,081	$174,606
Pollock	$11,501,119	$12,625,509	$6,670,763	$4,369,377	$8,625,741	$11,190,308	$12,311,467	$12,255,024
Other GF	$18,421,120	$17,180,178	$25,630,081	$24,708,464	$28,861,917	$21,660,833	$32,556,598	$28,857,786
Total	$84,054,207	$75,697,004	$94,966,078	$74,847,446	$80,066,523	$71,844,984	$95,998,426	$67,329,322

Note: Halibut Numbers are not available for 2000.
Source: State of Alaska Fish Ticket information supplied by NPFMC staff.

In the words of one long-time Kodiak fisherman, "Our key is to be able to diversify, but it is still tough to make it." This ability to diversify has become paramount to both the fishermen and the processors of Kodiak. Shore-based plants have added crews, space, freezers, equipment, and searched for new markets as fishermen have been seeking, entering, and participating in pulse fisheries that feature wildly variable deliveries. Occasionally when open fisheries are exploited by new entrants, new products emerge. While this includes previously unexploited resources such as sea cucumbers or snails, it also includes variations of existing resources. Pacific cod harvested in pot gear is such an example.

Processors differ in the degree to which they actually do diversify their operations, but all those plants which process groundfish agree that it is essential for their plants. It is the highest volume component and provides essential employment for their work crews. Without groundfish these plants could not provide enough work to support their crews as Kodiak residents. Several plant managers made the same point about the other species they processed as well, although groundfish was perhaps considered a fundamental base of operations (up to 80 percent of most operations). Similarly, most processors consider their plant as only one component of an integrated system that requires a healthy harvesting sector, a stable and reliable processing labor force and an efficient plant, and capable management and adequate financial backing.

The general sector description contained in IAI 1994 is still generally valid, with a few caveats. Less halibut is delivered and processed in Kodiak than in previous years, as one result of the IFQ system has been to reduce the processors margin on halibut to very little. Harvesters can receive a higher price in Homer or Seward than in Kodiak, and both of those ports receive more halibut than does Kodiak. Most processors are also very uncertain as to how they will meet their future labor requirements. At present most retain a “core” crew of Kodiak residents, which they supplement as necessary with additional resident labor, and transient labor housed in a bunkhouse for peak demand periods. Processors seldom wish to bring labor in for any period shorter than the summer, due to the need to train and house such labor, but at least one plant was forced to do so the last couple of years. They constructed a forty-person bunkhouse to accommodate them. Other plants that are part of companies with several processing facilities will transfer labor from one to another as labor needs change in the various locations. Labor costs are reported to have increased, due to the strong national economy as well as the increase in locally available entry-level jobs in the retail and service sectors. Plant managers also report that many fewer college students approach them (either remotely or by simply appearing in Kodiak) than in years past.

Support Services

The full spectrum of services for the fishing industry is present in Kodiak, as described in detail in IAI 1991. Support services include a wide range of companies, including such diverse services as accounting and bookkeeping, banking, construction and engineering, diesel sales and service, electrical and electronics services, freight forwarding, hydraulic services, logistical support, marine pilots/tugs, maritime agencies, ship repair facilities (recently enlarged), stevedoring and shipping, and vehicle rentals, among others. There is no other community in the area with this type of development and capacity to support the GOA (and some Bering Sea) fisheries.

The Port of Kodiak is home to Alaska's largest and most diverse fishing fleet. It has more than 650 boat slips and 3 commercial piers that can handle vessels up to 1,000 feet long. Kodiak is also a vital link in the regional transportation network. As the hub of the Gulf of Alaska container logistics system, Kodiak serves Southwestern Alaska communities with consumer goods and provides outbound access to world fish markets.

LASH Marine Terminal, in Women's Bay, provides service to several freight carriers, freight forwarders and consolidators, construction contractors, and Kodiak's diverse fishing fleet. Regularly scheduled container ships operate between Kodiak and the Pacific Northwest, and between Kodiak and the Far East. Kodiak is a key link for Alaskan Coastal communities.

No systematic information exists on how support services have been affected by changes in the local economy in general. However, as for other communities, certain less systematic indicators are available. The loss of population in the City of Kodiak relative to outlying regions may reflect a weakening economy. Interviews with such primary fisheries support services such as the boat yard and the hydraulics shops indicated that fishermen were deferring more regular maintenance, and even canceling upgrades that had been scheduled in the past but which now, in the light of adverse fishing conditions, do not appear to be prudent investments. Several such jobs were said to have been canceled the day after the Steller sea lion RPAs were announced. These operations also note that the number of their uncollected bills has increased.

3.0 WASHINGTON INLAND WATERS REGION

There are a number of communities in the Washington Inland Waters region that have important links to the North Pacific groundfish fishery. However, none of these communities have the breadth and depth of ties found in the greater Seattle metropolitan area. Natural Resource Consultants (1999) note that the "Alaska groundfish and halibut fisheries conducted by Washington-based fleets are presently the most important engine of this region's fishing industry." They continue in their report to document how these fleets are, in fact, based mostly in the Port of Seattle.

3.1 SEATTLE

NRC enumerates the Washington State-based fleet and describes the fisheries in which they participate. They divide the 2,800 total vessels into the 1,450 vessels distant water fleet (most of which clearly do not fish for groundfish) and the 1,350 vessels in the local fleet. They report that the distant water fleet accounts for 95 percent of the catch and revenue, compared to 5 percent for the local fleet. They do not specifically focus on individual fisheries (although some information is provided in terms of graphs and diagrams), but it is evident that a number of Alaskan fisheries contribute to this pattern – salmon, halibut, sablefish, herring, crab, and of course groundfish (Natural Resource Consultants 1999:4, 50-76 with associated table). They also describe the currently dismal condition of local Washington State fisheries (Natural Resource Consultants 1999:77-88, with associated tables).

There is relatively little information which deals specifically with the Alaskan groundfish distant water fleet, or with those geographical areas of Seattle most identifiable with fishing and perhaps characterizable as "fishing communities." Past documents produced for the NPFMC have contained profiles of the Port of Seattle, Ballard, and the Ballard/Interbay/Northend Manufacturing Center (BINMIC) planning area, as potential types of (or proxies for) Seattle "fishing communities." Information for these areas is abstracted from those documents and presented in the appropriate sections below. For the most part, no additional information relevant to the Alaskan groundfish fisheries has been developed for those areas since the earlier documents were produced. The current status of whatever recent information is available is discussed in the relevant section.

Overview: Greater Seattle Area

"Seattle" as used in this section refers to the greater Seattle metropolitan area, and is not confined to the port or municipality of Seattle, except where specifically noted. As is clear from a consideration of the individual sector profiles, Seattle, in one way or another, is engaged in all aspects of the North Pacific groundfish fishery. While Seattle itself is quite distant in geographic terms from the harvest areas of the fishery, it is the organizational center of much of the industrial activity that comprises the human components of this fishery. More accurately, specific industry sectors based in and/or linked to Seattle (or, in some cases, specific geographic subareas within Seattle), are "substantially engaged in" or "substantially dependent upon" the North Pacific groundfish fishery.

What makes Seattle an analytic challenge, in terms of a socioeconomic assessment directly related to the Alaska groundfish fishery, is its scale and diversity. Seattle's relationship to the Alaska groundfish fishery is a paradox. When examined from a number of different perspectives, Seattle is arguably more involved in the Alaska groundfish fishery in general, and the Bering Sea pollock fishery in particular, than any other community. One example is the large absolute number of "Seattle" jobs within the Alaska groundfish fishery compared to all other communities, whether counted in terms of current residence, community of origin, or community of original hire - setting aside, for the moment, where the jobs are actually located. On the other hand, when examined from a comparative and relativistic perspective, it could be argued that the fishery is less important or vital for Seattle than for the other communities considered. Using the same example, the total number of Alaska groundfish fishery-related jobs in greater Seattle compared to the overall number of jobs in Seattle is quite small, in contrast with the same type of comparison for the much smaller Alaska coastal communities. The sheer size of Seattle dilutes the overall impact of the Alaska groundfish fishery jobs, whereas in Alaskan communities such jobs represent a much greater proportion of the total employment in the community setting aside, for the moment, the consideration of whether those jobs are filled by 'residents.'

As is also clear from earlier compiled sector descriptions, while all sectors are tied to Seattle in one way or another, the magnitude and nature of these ties varies considerably between sectors. It is through these ties, and how they are manifested in Seattle, that the role of the community in the Alaska groundfish fishery can be seen. While it was possible, and desirable for analytic purposes, to include some brief community level description for a few of the Alaska coastal communities in this document to show the relative 'engagement' or 'dependence' on the fishery, for Seattle this type of comparison tends to understate the importance of the Alaska groundfish fishery for particular sectors or subareas, losing the importance of the fishery in the 'noise' of the greater Seattle area.

The precise nature of the relationship between a given sector and the Seattle area varies from sector to sector, in terms of employment patterns, expenditure patterns, and concentration or localization in the Seattle area. While local experts and industry participants are well aware of these patterns, systematic quantitative information to describe these patterns was not available at the time of this study. We have used the limited information that is available and supplemented it with information garnered from field interviews to provide a community context characterization.

There are (at least) two ways to approach a discussion of the localization of fishing activity in general, and Alaska groundfish fishery activity in particular, within the Seattle area. The focus could be on port activity and economic organization, or on a more general historical/geographical (neighborhood or community) focus centered around fishermen, fishing activities, and marine support businesses. The first has the advantage of

being well-defined, but is totally industry focused, and fishing-related activities comprise only a small portion of total activity and are not an easily 'isolatable' component using existing information. The second, generally corresponding to the common identification of Ballard and its environs with Seattle's fishing community, would incorporate much more of the overall social organization of fishing activity, but is very difficult to define and characterize within an overall economic and social context as large as Seattle's. Either approach would be a huge task for which available information is limited. A compromise has been reached in this document by briefly discussing the Port of Seattle in regard to the Alaska groundfish fishery and a cursory history and characterization of Ballard within the context of greater Seattle. This section first overviews the fishery from the community context, and then focuses on fishery-related industrial areas. The conclusion includes a discussion of the issue from the perspective of the 'community side' of the links.

The Seattle 'Geography' of the Alaska Groundfish Fishery

In this section, locational issues are discussed with respect to the Seattle area and the Alaska groundfish fishery. Here, the discussion is divided into two components: the Port of Seattle and the community of Ballard. Each provides a different and useful perspective on the Seattle social/socioeconomic ties to the fishery. The Port of Seattle is one of the more obvious ways to discuss the localization of the fishing economy in Seattle and the concentration of potential socioeconomic impacts of fishery management upon Seattle. Ballard is another locally recognized and labeled area with a fishing identity. The characterization of neither is a straightforward task, but the first is much more possible than the second. There are practical limitations on the availability of data attributable specifically to the Alaska groundfish fishery. Further, the port is well defined as an institutional entity, whereas Ballard as a community is not.

The Port of Seattle

Martin Associates (2000) provides an overall assessment of the economic impact of fishing activity based at Port of Seattle facilities. They conclude that such activity generates $400 million in wages (direct, indirect, and induced), $315 million in business revenues, $42 million in local purchases, and $48 million in state and local taxes. There is no way to desegregate the Alaskan distant water fleet from this overall impact, so the utility of the information for our purposes is limited. They do provide estimates for the annual expenditures in Seattle of the various fishing vessels home ported there, and as might be expected, those for the larger vessels, such as participate in the Alaskan groundfish fisheries, are the highest in terms of expenditures per vessel – $250,000 for catcher trawlers, $900,000 for factory trawlers, and $1.7 million for motherships. Most of the vessels in these classes home ported in Seattle probably participate in the Alaskan groundfish fisheries, but also participate in other fisheries. There are also many vessels in the Seattle distant water fleet that do not participate in the Alaskan groundfish fisheries. The Port itself does not have information on moorage fees received and other such information readily available, but conversations with Port of Seattle officials has indicated that moorage fees from the Alaskan groundfish fleet have declined in the past two years for two principal reasons – there are fewer vessels (the retirement/scrapping of catcher processors) and vessels are spending more time at sea and less time in port. Both of these are directly attributable to AFA. While it would appear to be a negative effect, this was in fact explained as a positive indicator for the economy of the region as a whole, as a smaller number of profitable vessels is more of an economic driver than is a larger number of marginally viable vessels. The "loss" of Port of Seattle moorage fees is merely one of the more noticeable effects of this change, but not necessarily one of the more significant ones.

The Port of Seattle is separate from the Municipality of Seattle and is an economically self-supporting entity. Besides its direct revenues, it receives 1 percent of the property tax collected in King County, but with a cap on funding not to exceed $33 million a year. In turn, all port revenues are charged a 12.4 percent tax, which is split between the city of Seattle and the state of Washington (in lieu of property tax). The Port's charge is the development of infrastructure that will support local and regional economic activities, especially in cases where the rate of return on investment in that infrastructure may be too low (although still positive) for the private investor. Such development contributes to the overall economy of the region through synergistic and multiplier effects.

The Port of Seattle includes not only marine facilities but the airport as well. The port publishes various reports on their activities, but most are either too general or far too specific for the purposes of this study. The Marine Division of the port tracks economic activity by general service area - container terminal, cargo piers and industrial properties, central waterfront piers and property, warehouse and distribution operations, Shishole Bay Marina (recreational moorage), and Fishermen's Terminal Pier and property. None of this information is organized so that expenses and revenues attributable to fishing activity (let alone specific fisheries such as the Alaska groundfish fishery) can be aggregated and assessed - although projects now underway will, in the future, provide such information to a greater degree than at present. Given this lack of breakout documentation, most of the information on the nature and magnitude of the importance of the Alaska groundfish fishery for the Port of Seattle came from talks with the Director of Marine Operations for the port.

The Port's marine facilities occupy an extensive area, but can generally be characterized as the Ship Canal-Elliott Bay areas. The Director of Marine Operations estimated that Alaska-related fishing activity generates port revenues of $1 million to $2 million a year. Facilities, and the degree to which they are connected with fishery activities, were identified as follows:

- Fishermen's Terminal (Ship Canal) - an estimated 10 percent of its revenues (roughly $2 million for all fisheries per year) were judged to result from catcher processor operations and an additional 10 percent from catcher vessel activity associated with Alaska fisheries (not just groundfish);
- Pier and Terminal 91 (North Elliott Bay) - used extensively by catcher processor fleet and provides the bulk of the Port's revenue derived from the Alaska groundfish fishery, through moorage and other fees. This facility also caters to ferries, a tug and barge company, an auto importer, apple exports, and cold storage facilities;
- Central waterfront (mid-Elliott Bay) piers –not so fishery related, although they are sometimes used by larger vessels (Pier 48, Pier 66, Pier 69);
- Pier 25 (East Duwamish Waterway, south Elliott Bay) - permanent moorage for one of the mothership operations, but also used for catcher processor offloading, has cold storage facilities to hold product for transhipping, and a small surimi plant is located there;
- South end in general (Duwamish manufacturing and industrial center) - has some fisheries-related activities (such as cold storage facilities) but is more oriented to cargo operations and other industrial activities.

The summary conclusion for port-focused analysis is that fishing-related activities take place throughout the Port, but are concentrated in the Fishermen's Terminal and Pier 90/91 areas. Of primary importance for fishing activity, and especially for larger vessels, is the availability of suitable moorage. Much of this moorage is supplied by the port, in an aggressive response to the demand from the fishing fleet.

The initial development of Fishermen's Terminal in the 1980s was because of the perceived need for more moorage for larger vessels involved in the distant water fisheries. The current redevelopment of Fishermen's Terminal will likely increase this emphasis through the conversion of smaller moorage stalls to facilities more suitable for vessels 50 feet and longer (NRC 1999). This is in response to the drastic downturn in the economic viability of the local fishing fleet, especially the local salmon fleet which had been historically based at Fishermen's Terminal, and the increasing importance of Alaskan distant water fisheries for Seattle-based boats. These vessels tend to be 50 feet in length or more.

Ballard

When looked at on a neighborhood basis, one of more obvious foci of the distant water fishery in the greater Seattle area is the community of Ballard. Today the term 'Ballard' represents a loosely defined geographical neighborhood of northwest Seattle. There is no geographically standard area for which various types of comparable information exists. Nonetheless, the area does have a geographical identity in peoples' minds and, together with Magnolia and Queen Anne, has its own yellow pages telephone directory (published by the Ballard and Magnolia Chambers of Commerce). The following brief section is based predominately on information from the Ballard Chamber of Commerce (1998), Reinartz (1988a, 1988b, 1988c, 1988d), Hennig and Tripp (1988), and McRae (1988).

Fishermen's Terminal on Salmon Bay is recognized as the home of the Pacific fishing fleet and has been characterized as the West Coast's 'premier home port.' Fishermen's Terminal (Salmon Bay Terminal) in turn has often been identified with Ballard - formerly a separate city (incorporated 1890) annexed by Seattle in 1907. Until the construction of the Chittenden Locks and the Lake Washington Ship Canal, opened in 1917, Salmon Bay Terminal was confined to relatively small vessels, but was the focus of a developing fishing fleet. Once the area was platted and incorporated it quickly attracted settlers and industries desiring or dependent upon access to Puget Sound. The timber industry was the first to develop, due to the need to clear land as well as the value of the timber that was available. By the end of the 1890s Ballard was a well established community with the world's largest shingle manufacturing industry, as well as developing boat building and fishing industries. By 1900 Ballard was the largest area of concentrated employment north of San Francisco.

Ballard effectively blocked the expansion of Seattle to the north, and court decisions had given Seattle control over Ballard's fresh water supply, with the result that Ballard became part of Seattle in 1907. At that time the community had 17 shingle mills, 3 banks, 3 saw mills, 3 iron foundries, 3 shipyards, and approximately 300 wholesale and retail establishments. The Scandinavian identity of Ballard developed at or somewhat before this time. In 1910, first and second generation Scandinavian-Americans accounted for 34 percent of Ballard's population, and almost half of Ballard's population was foreign-born. Currently, less than 12 percent of the population is of Scandinavian descent, but the cultural association remains pervasive.

Ballard's economy continued to develop and diversify, but remained fundamentally dependent on natural resources, and especially timber and fishing. In 1930 the *Seattle Weekly News* reported that 200 of the 300 schooners of the North Pacific halibut fleet were home ported in Ballard, demonstrating not only the centrality of Ballard but the long-term importance of distant water fisheries to Seattle fishermen. In 1936 the Port of Seattle built a new wharf at the Salmon Bay terminal, and in 1937 a large net and gear warehouse was scheduled for construction there. Over the years, Seattle-based vessels were central to the evolution of a number of North Pacific fisheries.

Thus in some ways Ballard is considered a 'fishing community within' Seattle. While this has historically been the case, when examined with specific respect to the Alaska groundfish fishery, the area cannot cleanly be considered a 'village within a city.' While there is a concentration of multigenerational fishing families within the area, the 'industrialization' of the Alaska groundfish fishery has tended to disperse the ties and relationships of the fishery. While support service businesses remain localized to a degree (as discussed in another section below), there would not appear to be a continuity of residential location that is applicable to the Alaska groundfish fishery that is consistent with, for example, the historic halibut fishery. This is due to the many changes within the cluster of individual species fisheries that make up the overall Alaska groundfish fishery, and particularly the relatively recent development of one of the more dominant components of the fishery, the pollock fishery. In summary then, this 'community within the community' issue is not straightforward due to the complex nature of historical ties, continuity of fishing support sector location through time, changes in the technology and methods of fishing, and industrialization of the fishery. Clearly, Seattle represents a different pattern of co-location of residence and industry with respect to the Alaska groundfish fishery than that seen in the relevant Alaska communities.

General Community Links

The focus of the analysis in this section is the contribution of the Alaska groundfish fishery to Seattle. This section will examine the issue from the 'other side of the equation' - from the community 'side' of the sector-community links (and on a topical rather than a geographic focus). Unfortunately, most of the information available does not facilitate focusing on this issue with a fine resolution. Different sources address different partial aspects of this comprehensive question. Some discuss different scales of detail - local versus distant fisheries, groundfish versus other fisheries (crab, salmon, and so on), or fishing as a whole versus other maritime activity (shipping, for example). Some discuss different components of commercial fishing activity - harvest versus production, or one particular type of operation versus all others. Some concentrated on more confined, or more broadly regional, geographical areas. By collecting some of this material and piecing it together, however, some sort of understanding of the overall contribution of commercial fishing to Seattle should be possible.

Natural Resource Consultants (NRC 1986, 1999) have compiled quite comprehensive accounts of commercial fishing activity by the Seattle and Washington State fleet. They provide a brief historical narrative on the development of the various fisheries and then a more detailed summary of the status of fish stocks and historical harvest information. In 1986, the estimated ex-vessel value of the grand total of all seafood taken from local waters by Washington's local fleet was about $93 million (NRC 1986:18,19). Distant water fisheries, primarily in the Gulf of Alaska and the Bering Sea, yielded an estimated grand total of $290 million by 1,371 vessels with an aggregate crew of 6,088 (NRC 1986:28,33). The joint- venture fleet accounted for about $80 million (ex-vessel) of this, with about 81 vessels and 405 crew, with an additional 11 catcher processors accounting for another $25 million (ex-vessel) and about 330 jobs. In terms of weight or volume, 92 percent of the seafood harvested by Washington fishermen came from Alaskan waters, and only 7 percent from local waters. In terms of ex-vessel value, the Alaskan harvest was worth $283 million and local harvest $110 million (and other harvest $8 million). None of these general statements has changed to any appreciable degree in 1998/99. Alaskan distant waters fisheries still provide 95 percent of the harvest for the Washington state fishing fleet (NRC 1999).

Most of the Alaskan catch was processed to some extent in Alaska by a processor based in Seattle (mobile facilities, or on shore facilities owned by Seattle-based entities). NRC states that there were about 130

seafood processing/wholesaling and 33 wholesale/cold storage companies in Washington in 1985, operating 250 primary processing and wholesale plants in Washington and 120 shore based or at sea in Alaska. Washington processing employment was 4,000 seasonally and in Alaska was 8,000, with half coming from Washington (NRC 1986:35-39).

A similar NRC study in 1988 found that Washington fishermen harvested about 80 percent (ex-vessel value) of their catch in distant waters, with 98 percent of that coming from Alaskan waters. About 72 Washington state vessels participated in the joint venture trawl fishery, directly employing about 360 people. There were also 43 catcher processors employing about 2,200 people, and 26 shore-based trawlers, employing about 130 people.

NRC's summary of the contribution of commercial fishing to Washington State's economy in 1988 is shown in Table 3.1-1. Local water harvest and processing accounted for about 19 percent of this, distant water fisheries and processing about 57 percent, and other processing activities by Washington companies for about 24 percent. Of the estimated 36,608 FTEs associated with this economic activity, 39 percent were attributed to the distant water fishing fleet and 40 percent to out-of-Washington-state processing. The $1.794 billion of direct and indirect benefits associated with the activities of the distant water fleet was also estimated to generate an additional $795 million of induced benefits. Similar numbers are difficult to generate from their 1999 report, which was written with a different focus, but the general relative relationships between the value of various fisheries for the fleet should remain much the same (except perhaps for crab, which may have declined in terms of economic return).

Table 3.1-1 Estimated Volume and Value of Washington Distant Water Commercial Fish Harvest, 1985 and 1988

Fishery	Harvest Volume (000 mt)		Harvest Value (million $)		Wholesale Value (million $)	
	1985	1988	1985	1988	1985	1988
Salmon	80.3	66.8	106.1	240.0	238.0	525.6
King and Tanner Crab	26.4	51.7	42.2	129.4	54.9	191.5
Longline Halibut and Blackcod	12.1	19.8	20.9	40.7	34.8	63.1
JV Trawl	720.8	802.8	78.3	120.4	78.3	120.4
Catcher Processor	111.6	546.0	24.6	103.7	61.6	334.1
Roe Herring	12.6	5.9	8.5	5.9	18.7	10.8
TOTAL	963.8	1493.0	280.6	640.1	486.3	1245.5

Note: Shore-based trawl landings are not included. Dungeness crab landings have been excluded. Volume and value estimates for salmon landings may be as much as 5 percent too high, but are retained for consistency with earlier work.
Source: NRC 1988:10

Table 3.1-2 provides summary information on economic contributions of local and distant water landings.

Table 3.1-2 Total Economic Contribution to the Washington State Commercial Fishing Industry in 1988

	(Millions of $ to Washington Economy)		
Locally landed	Landed Value	137	269
	Value added by processing	171	320
Subtotal		308	589
Distant Water	Landed Value	639	1,257
	Value added by processing	288	537
Subtotal		927	1,794
Non-State Landings: Washington State share of value added		405	756
TOTAL		1,640	3,139

Source: NRC 1988:16

Turning to relatively more recent data, Chase and Pascall (1996) focus on the importance of Alaska as a market for Seattle region (Puget Sound) produced goods and services. They do so by identifying particular industrial sectors that generate the bulk of these economic impacts, but they do not locate these industrial sectors in terms of particular geographic locations within the region. In their discussion of the fisheries sector, Chase and Pascall indicate that only a fraction of the regional economy is based on fishing and seafood processing industries, but that these industry sectors are concentrated in several communities and rely heavily on North Pacific (Alaskan) resources. The communities that they single out are Bellingham, Anacortes, and the Ballard neighborhood of Seattle. They say that Seattle is the major base for vessels for various fisheries – groundfish (catcher vessels, catcher processors, motherships), halibut, crab, salmon, and others. There are numerous secondary processing plants in the region, and about 60 percent of the seafood harvested and shipped south for processing moves through the Port of Tacoma (Chase and Pascall 1996:23).

The relative value of Alaskan groundfish (cod, pollock, sablefish, flounder, and other bottom fish aggregated together) for the Seattle fleet varies from year to year, but in 1994 was about 17 percent of the ex-vessel value of the Alaska/North Pacific commercial fishing harvest (Chase and Pascall 1996:26), which represented about 75 percent by harvest value, and 92 percent by weight, of all fish harvested by the Puget Sound fishing fleet (Chase and Pascall 1996:23 - citing ADF&G, NPFMC, NMFS).

Other relatively recent work (Martin O'Connell Associates 1994) indicates the wide range of activities that the Port of Seattle supports and the web of support services which commercial fishing helps support, but provides no measure of the contribution of the Alaska groundfish fishery to this support. Fishing activities are included in this study only to the extent that they are reflected in activities at Fishermen's Terminal. This may reflect some Bering Sea and Gulf of Alaska catcher vessel activity, but would greatly underestimate catcher processor, mothership, and secondary processing activities. By their estimation, fishing activity at Fishermen's

Terminal in 1993 generated 4007 direct jobs (the majority of them crew positions), earning an average of $48,690 per direct job (total $195 million). Also, an additional 2,765 induced and indirect jobs were created. Fishing businesses also expended $145 million on local purchases of goods and services (Martin O'Connell Associates 1994:45-49). Again, this does not indicate the contribution of the Alaska groundfish fishery so much as it establishes that the local fishing/processing economy is densely developed. Also, if the estimates or models of vessel expenditures developed for operations using Fishermen's Terminal can be extrapolated to other vessels based in Seattle, an estimate of the contribution of the Alaska groundfish fishery may be possible. The estimate for annual expenditures in Seattle for a factory trawler using Fishermen's Terminal was about $2 million in 1993. Miller et al. (1994) indicate that for a model surimi vessel, 1993 operating expenditures other than for crew had been in the range of $10 million annually. These would have been distributed among all the places where the vessel fished, as well as its Seattle (or Tacoma) home port, but still indicates that there is a large contribution to the regional economy from the presence of these vessels. Each vessel also represents more than 100 direct jobs and a payroll of $3 to $5 million (Miller et al. 1994:1,23).

A summary profile of the Puget Sound maritime industry, which includes commercial fishing, is included in Economic Development Council of Seattle and King County 1995 (Appendix A:39-49). Pertinent information has been abstracted here. The list of included businesses is quite long and is a good indicator of how far indirect benefits can spread:

> . . . cargo shipping, tugs and barges, commercial fishing and supply; sip and boat building; cruise ships; vessel design and repair; fueling; moorage; the fabrication and sale of marine gear such as electronics; refrigeration, hydraulics, and propulsion equipment; the operation of marinas, dry docks and boat yards; services provided by customs and insurance brokers and shipping agents; and maritime professional services including admittedly law, marine surveying and naval architecture (Appendix A:39).

It was estimated that in 1992 there were 30,000 jobs in the maritime sector within the four-county region, including: 10,000 in commercial fishing, 7,000 in fish processing, 5,000 in marine recreation, and 3,900 in boat building and repair. Average wages were estimated at $24,000 for fish processors; $32,000 for ship and boat building and repair; and $50,000 to $80,000 for commercial fishing. The sector is one noted for providing entry-level positions for those with limited education and job skills, so that they can learn a high-wage job. Each job in this sector creates or supports one to two other jobs in the regional economy, and each dollar of sector output generates about one additional dollar in output from the rest of the economy.

Seattle offers the maritime sector, and the distant water fleet in particular, a "critical mass" of businesses that allows vessel owners and other buyers a competitive choice of goods and services. The same is true to a lesser extent of other regional ports, such as Tacoma. Efficient land transportation systems are also critical, and Seattle has good rail and truck linkages (and the Port of Seattle is working to improve them).

Although the maritime sector is an important one for the region, some of its components are currently experiencing some difficult times. Other regional communities (Anacortes, Bellingham, Port Townsend) as well as locations in Alaska (closer to the distant fishing waters) are working to develop port facilities to lure vessels so that they may gain the economic benefits of the associated support and supply business. Common sorts of projects are the improvement of shoreside access, building additional moorage, or work and storage capacity.

Natural Resource Consultants revised some of their earlier work and added additional analysis focused specifically on the contributions of inshore Washington State (but also Alaska) processing plants to the Washington State economy (NRC nd, 1997). The Washington inshore seafood processing industry purchased $859.5 million of raw material in 1991, $720.1 million from Alaska and $139.4 million from Washington waters. Salmon accounted for 46 percent of the total value of these purchases, while groundfish accounted for 19 percent. The total finished product from all this raw material was worth $2.1 billion ($1.8 billion from the Alaskan raw material). Salmon accounted for $780 million of the final product's value, while groundfish accounted for $482 million. "... inshore processors operating in Alaska and Washington account for more than 50 percent of the value of U.S. seafood exports" (NRC nd:4).

Expenditure patterns for Washington (and Washington-owned Alaskan) inshore plants were modeled in these NRC documents. Inshore plants expenditures average 46 percent for their raw materials (fish and shellfish), 16 percent for wages and benefits, 9 percent for processing materials, and 7 percent for tendering and other transportation costs. About 55 percent of these expenditures were made in Washington, 43 percent in Alaska, and 2 percent from other states. This is stated to include fish and shellfish purchased in Alaska from fishermen who home port in Washington (NRC nd:9), and economic benefits were produced from these expenditures in direct proportion to their magnitude.

The estimated total economic output from primary and secondary processing activities for all seafood to the Washington state economy in 1991 was calculated to be $1.865 billion. This was the result of three main factors:

- A substantial portion of expenditures for raw material (fish) in Alaska are made to fishermen whose home ports are in Washington.
- The majority of administrative and sales functions of processing companies are carried out in Washington.
- A major portion of support industries (equipment and packaging manufacturing) are located in Washington.

That is also the order of their significance in terms of contributions to economic benefits.

In addition, a substantial amount of secondary processing takes place in Washington. This produces additional benefits to that of primary processing of about 3,635 FTEs, earnings of $81 million, and indirect benefits of $287 million. The report also points out that the Washington inshore processing sector is the second highest value food product contributor to the Washington state economy, being topped only by the apple.

NRC updated this report in 1997 and reached essentially the same conclusions. In 1996 the Washington inshore seafood industry generated 32,837 FTEs (21,308 in Washington and 11,529 in Alaska) and $791 million of earnings impacts ($532 million in Washington and $259 million in Alaska). In terms of economic output, it contributed $1.9 billion to the Washington state economy and $1.2 billion to the state of Alaska economy (NRC 1997).

As noted earlier, these data underscore the interrelatedness of the economies of Alaska and Washington and, as has been seen through the sector profiles and the ties to particular communities, the ties between Seattle and specific Alaska communities. Companies based in Washington depend on Alaska fisheries for the great bulk of the raw materials processed in Washington, and residents of both states harvest Bering Sea resources.

Also, as noted earlier, the corporate offices and sales outlets of the processing companies are located in Washington, as are most of the suppliers and support services for the industry. The following section looks at the localization of the fishing industry within the waterfront area of Seattle.

The Ballard Interbay Northend Manufacturing Industrial Center

With previous discussion as a regional context, an attempt to more closely associate a specific area of Seattle with commercial fishing (and other associated) activities now can be examined. One of the fundamental purposes for the establishment of the Ballard/Interbay/Northend Manufacturing and Industrial Center (BINMIC) Planning Committee was the recognition that this area provided a configuration of goods and services that supported the historical, industrial, and maritime character. At the same time, developmental regional dynamics are promoting changes within the BINMIC area which may threaten the continued vitality of its maritime orientation. Among other objectives, the BINMIC final plan states:

> The fishing and maritime industry depends upon the BINMIC as its primary Seattle home port. To maintain and preserve this vital sector of our economy, scarce waterfront industrial land shale be preserved for water-dependent industrial uses and adequate uplands parcels shall be provided to sufficiently accommodate marine-related services and industries (BINMIC Planning Committee 1998:6).

Previous documents produced for the NPFMC have discussed the BINMIC area, and some of this information is abstracted below, for the sake of completeness. It is not vital to this discussion, however, as the BINMIC planning document has remained in the form in which it was "finalized" and the City of Seattle does not collect comparable time series measures for the BINMIC area.

As previously noted, Ballard, in northwest Seattle, is commonly identified as the center of Seattle's fishing community. This may be true in an historical residential sense, but commercial fishing-related suppliers and offices are spread along both sides of Salmon Bay-Lake Washington Ship Canal, around Lake Union, along 15th Avenue West through Queen Anne, and then spread along the shores of Elliot Bay on both sides of Pier 91. Not surprisingly, this is also the rough outline of the formal BINMIC boundaries, which is bordered by the Ballard, Fremont, Queen Anne, Magnolia, and Interbay neighborhoods. It is defined so as to exclude most residential areas, but to include manufacturing, wholesale trade, and transportation-related businesses. It includes rail transportation, ocean and fresh-water freight facilities, fishing and tug terminals, moorage for commercial and recreational boats, warehouses, manufacturing and retail uses, and various port facilities (Terminal 86, Piers 90 and 91).

The BINMIC "Economic Analysis" document (Economic Consulting Services 1997) uses much of the same information as was reviewed above, in combination with an economic characterization of the BINMIC area, to establish that certain economic activities are especially important for that area. One of these activities is commercial fishing - although again the connection to the Alaska groundfish fishery in particular is somewhat difficult to establish concretely.

The BINMIC area is a relatively small one, but contributes disproportionately to the city and regional economy (Table 3.1-3). Again, those characteristics are part of what determined its borders. The BINMIC resident population is only 1,120 (1990 census), but there are 1,048 businesses in the area and 16,093 employees. The great majority of business firms are small - 85 percent have fewer than 26 employees, but accounted for only

30 percent of total BINMIC employment. Self-employed individuals (i.e. fishermen) are probably not included in these numbers. Employment by industry sector is displayed in Table 3.1-4.

Table 3.1-3 Relationship of Estimated BINMIC Population and Employment to Local, Regional, and State Population and Employment

Area	1990 Population	BINMIC as % of Total	1994 Employment	BINMIC as % of Total
BINMIC	1,120	100	16,093	100
City of Seattle	516,259	0	490,632	3
King County	1,507,319	0	912,038	2
Puget Sound	2,748,895	0	1,363,226	1
Washington State	4,866,692	0	2,212,594	1

Note: Percent of total reflects BINMIC's share of each area's total population and employment
Source: Economic Consulting Services 1997:14

Table 3.1-4 BINMIC Employment by Industry Sector

Industry Sector	Units	Employees	Percent of Total
Agriculture, Forestry, & Fishing	129	750	5
Mining & Construction	83	1169	7
Manufacturing	216	5322	33
Transportation & Utilities	35	1608	10
Wholesale Trade	178	2239	14
Retail Trade	121	1606	10
Finance, Insurance, & Real Estate	43	306	2
Services	233	2604	16
Government	10	489	3
TOTAL	1048	16093	100

Source: Economic Consulting Services 1997:29

An important indicator of the importance of commercial fishing and other maritime activities is the availability of commercial moorage. As of 1994, more than 50 percent of all commercial moorage available in Puget Sound was located in Seattle, and of that, more than 50 percent was in the BINMIC area (representing 30 percent of all commercial moorage in the Puget Sound area). Thus, the BINMIC area is clearly important in terms of being an area where vessels (especially larger commercial vessels) are concentrated. The Port of Seattle has concluded that only the ports of Olympia and Tacoma at present provide a significant source of moorage in Puget Sound outside of Seattle. Port Angeles may build additional capacity at some point in the future. Olympia's facility was rebuilt in 1988. Some older moorage constructed of timber piling prior to

1950 is nearing the end of its useful life and will need to be replaced. On the other hand, it is expected that much of the private old timber moorage will not be replaced, so that overall moorage capacity will decline. In the Seattle area, there has also been a dynamic whereby commercial moorage had been converted to recreational moorage. Within the BINMIC area, recreational moorage within the UI Shoreline is prohibited altogether, because of the importance of commercial activity and the danger of interference from recreational moorage. The Port has concluded that it is unlikely that any new private commercial moorage will be developed (because of cost and regulatory regime) and is examining their options (Port of Seattle 1994). As previously mentioned, the Port is pursuing a program of repairing its facilities where economically feasible (when it can be fairly well assured of a steady tenant).

The BINMIC area is fairly well "built out." The BINMIC area contains 971 acres, divided into 806 parcels with an average size of 1.043 acres, but a median size of .207 acres. Thus there are many small parcels. Public entities of one sort or another own 574.8 acres (59 percent). The Port of Seattle is the largest landowner with 166 acres, while the city has 109 acres. Private land holders own 396 acres, of which only 19.45 acres were classified as vacant - 19.27 acres in 81 parcels as vacant industrial land and .18 acres in 2 parcels as vacant commercial land. An additional 200.76 acres were classified as "underutilized," meaning that it had few buildings or other improvements on it. This classification does not mean that the land may not be in use in a fruitful way (for instance, storage of gear or other use that is not capital intensive).

Economic Consulting Services (1997) lists 85 companies that have a processing presence in Washington state (Appendix C). Of these, over half (47) are located in Seattle, with many in the surrounding communities (Bellevue, Kirkland, Redmond). Of these 47, at least 18 are located within the BINMIC, and the rest are located very near the boundaries of the BINMIC. Some examples of fairly large fishing entities that are located within BINMIC (as well as elsewhere) are Trident Seafoods, Icicle Seafoods, Ocean Beauty Seafoods, Peter Pan, Alaska Fresh Seafood, and NorQuest Seafoods. All demonstrate some degree of integration of various fishing industry enterprises.

The BINMIC area of Seattle displays the following characteristics which indicate its important economic roles:

- it is a significant component of, and plays a vital role in, the greater Seattle economy;
- it is integrated into local, regional, national, and multinational markets;
- it is a key port for trade with Alaskan and the West Coast, Pacific, and Alaska fishing industries - and the Alaskan fishery is especially significant;
- Salmon Bay, Ship Canal, and Ballard function as a small port of its own, but also support fishing and a wide range of other maritime activities - including recreation and tourist vessels and activities; and
- it is, and has been, an area of concentration of businesses, corporations, organizations, institutions, and agencies that participate in, regulate, supply, service, administer, and finance the fishing industry.

Summary: Seattle and North Pacific/Groundfish Socioeconomic Issues

As noted in the introduction to this section, Seattle is an analytic challenge, in terms of a socioeconomic description and a social impact assessment directly related to the Alaska groundfish fishery, because of its scale and diversity. Seattle is arguably more involved in the Alaska groundfish fishery than any other community, but from a comparative perspective, Seattle is arguably among the least involved of the communities considered. The sheer size of Seattle dilutes the overall impact of the Alaska groundfish fishery

jobs and general economic contributions when viewed on a community scale, in contrast to Alaskan communities where such jobs and revenues are a much greater proportion of the total economic base of the community. This section has attempted to portray the complexities of the ties of the Alaska groundfish fishery to Seattle in terms of sectors, specific portions of the economy, and on a geographically localized basis.

All of the Alaska groundfish fishery sectors are tied to Seattle in one way or another, although the magnitude and nature of these ties varies considerably between sectors. It is clear that Seattle, as a community is, from a number of different perspectives encompassing specific sector structures and geographically attributable industrial areas, engaged in and dependent upon the Alaska groundfish fishery. To avoid losing the importance of the fishery in the 'noise' of the greater Seattle area, the association will be described in terms of Alaska groundfish fishery industry sectors and their linkages to Seattle, as described in this section, rather than attempting an overall contextualization of the fishery and impact analysis within the metropolitan area.

Links to Specific Groundfishing Sectors

In addition to looking at port-focused and neighborhood-focused activities, a relevant way to examine the nature of Seattle's involvement with the Alaska groundfish fishery is to look at the nature of the links between Seattle as a community and the relevant individual sectors of the Alaska groundfish fishery. This type of information is specifically intended to provide a general level overview of dynamic relationships of Seattle to all of the relevant sectors, and discuss the nature and degree of variation between sectors.

Inshore Processing

The Inshore/Offshore-3 analysis (NPFMC 1998) found that all of the larger floating processors with a continuity of participation in the Bering Sea pollock fishery during the 1990s were managed and operated out of Seattle. While moveable in theory, Alaska groundfish floating processors tend to operate in relatively fixed locations in Alaskan State waters, outside of incorporated city and organized Borough boundaries. Thus, they have minimal interaction with local Alaskan communities and can be characterized as true industrial enclaves. They employ relatively few Alaska residents, another potential measure of local community or at least state labor force interaction. This, along with the fact that these operations are supported out of the Seattle area (with some logistical support in Unalaska/Dutch Harbor, and marked reliance on air transportation links to that community), would appear to reinforce the overall ties of this subsector to Seattle as opposed to the Alaskan communities closer to their areas of operation.

As noted in earlier NPFMC documents, while the larger shoreplants which process Alaska groundfish are located in Alaska, all have multi-level ties to Seattle. All are administered from corporate headquarters in Seattle, which is the center for corporate and financial services. Thus, Seattle is the community where business decisions are made, or at least deliberated, for the Alaska shore plants (setting aside, as for other sectors, the complicating issue of degrees foreign ownership that vary by entity). This distinction should not be carried too far, however, as plant managers resident in the communities clearly have a role in corporate decision making, and executives based in Seattle also spend time in the Alaskan communities where their plants are located. Nonetheless, the role of 'Seattle' in the decision-making process, and the profound influence that process has in the Alaska shoreplant communities, is well recognized in the communities themselves.

In terms of the links between Seattle and the important inshore processing community of Unalaska/Dutch Harbor, specifically with the maturing of the fishing industry, the growth of local infrastructure and support services, and the overall changes in Unalaska/Dutch Harbor, the relationship between the communities has changed somewhat. It is no longer common to hear people express their recognition of the strong industry ties between Unalaska/Dutch Harbor and Seattle by saying that in some respects Unalaska is a 'suburb of Seattle,' as was not uncommon in the mid-1980s. The center-periphery relationship is perhaps more complex than ever for this sector. For the Bering Sea portion of the fishery, Seattle is the center of corporate operations; Unalaska/Dutch Harbor is the center of processing operations and the interdependencies are many and complex. A similar pattern applies to Kodiak for the Gulf of Alaska component of the fishery. Further, while there is some variation in this pattern with smaller inshore groundfish processors in other communities, plants in the other three of the top five Alaskan groundfish ports (Akutan, King Cove, and Sand Point) are all operated by firms managed out of Seattle.

In addition to being a decision-making and important administrative support community for the shoreplants, Seattle is also the location of some direct employment associated with the shore plant companies. While administrative shore plant sector employment in Seattle consists of relatively few jobs compared with positions at the plants themselves, the Seattle component has a greater proportion of jobs within the upper compensation range. Physical plants for secondary processing are located elsewhere in the Pacific Northwest, Alaska, other parts of the country, and overseas. Some have direct business operation connections with primary processors (both onshore and offshore).

The day-to-day management of the labor force of shore plants in Unalaska/Dutch Harbor tends to consist of year-round community residents (though these individuals were initially recruited from elsewhere). Managers of other shore plants tend to maintain homes outside of Alaska (many in the Seattle area), even though most spend most of their time in Alaska and may well qualify as Alaskan residents. The bulk of the labor force for shore plants consists of the maintenance/support and the processing crews (although the two may well overlap). The former tends to be employed on a more year-round basis, and thus tends to be more of an Alaska resident labor force. The latter tends to have a higher turnover and, with a significant percentage of the workforce still coming from the PNW and the greater Seattle area in particular, employment ties to Seattle are still important for Bering Sea and Gulf of Alaska community-based operations. As discussed in the 1998 Inshore/Offshore-3 document (NPFMC 1998), for the inshore pollock processing sector as a whole in 1996, non-Alaskan employees accounted for approximately 80 percent of the total workforce, but this figure varies widely by plant, with the range encompassing less than 10 percent to almost 40 percent of the workforce being Alaska residents of any one operation. A similar pattern is assumed to hold for all large groundfish plants. While it is important to recall that there are significant differences between 'residence' and the location of jobs, as discussed in earlier documents, there are impacts derived from the physical location of jobs more or less independent of the formal residency status of the workforce. While specific break-outs are not available, based on interviews with plant managers, it may be safely assumed that the bulk of the non-Alaska jobs come from the PNW region, and a disproportional number of those from Washington State and the greater Seattle area.

Interviews with processing personnel conducted for the 1994 SIA (IAI 1994) would indicate that a not insignificant portion of the wages paid to workers in Alaskan plants were used to help support extended families outside of the region. While quantitative data does not exist regarding this type of wage flow, it is one more indication (particularly given a general knowledge of the industry) of the ties between the shoreplants and Seattle (and the greater West Coast area).

In terms of support services for the shore plants, Seattle would appear to play a similar role for the shoreplant sector as it does for several of the other sectors, in nature if not in relative magnitude. Shoreplants do purchase goods and services in their 'host communities' but this is highly variable by plant and community. Among the major plant sites, Unalaska/Dutch Harbor and Kodiak have the highest degree of development of local support services, but it is still the case for these communities that materials and supplies needed for the operation of the plants are not manufactured locally, and a great deal of these are shipped out of the Seattle area, given that Seattle is both the headquarters of the individual companies and the nearest major port in the Lower-48.

In terms of expenditure patterns for the shore plant sector in relation to the Seattle area, there are several main areas to consider. First, the shore plants buy fish from the catcher vessel fleet and, as detailed in the sector profile for the catcher vessel fleet, the inshore delivering fleet is primarily based in Seattle and the Washington Inland Waters region. While there has been a considerable shift in recent years in ownership patterns with respect to shore plants as a sector, with processing entities coming to own and/or control a considerable percentage of their delivering fleets, interview data would suggest that there has not been a dramatic shift in employment patterns for crew members. That is, while the locus of ownership may have changed, the patterns of employment have not appeared to do so, with most of the crew members and skippers coming out of the Seattle and Washington Inland Waters region and Oregon coastal areas. This being the case, crew compensation as a function of shore plant expenditures for Alaska groundfish disproportionately accrue to Seattle and the Pacific Northwest as a region. Second, expenditures for support services would appear to be primarily directed toward the Seattle/Pacific Northwest area. Third, corporate finances would appear to flow through Seattle, so the community would derive economic benefits from these transactions. In short, shoreplant expenditures are important to Seattle when examined on a sector basis. The localization of such expenditures within Seattle, however, is less clear.

In terms of fiscal impacts to Seattle, clearly the differences of scale between Seattle and the Alaska shoreplant communities make a great difference in relative significance of the sector. Beyond this, there are different types of fiscal inputs/taxation relationships between the companies and communities based on where the actual 'work' or 'industry' of processing takes place. In the shore plant communities themselves, the plants, as described in the Alaska communities discussion, provide a basic fiscal underpinning for local government in the form various business, property, sales, and fish taxes. Seattle, not being the 'industrial' center of the processing, has a different relationship to the industry.

Motherships

Motherships, as a sector, have strong ties to the Seattle area. All three Bering Sea pollock mothership operations are headquartered in Seattle, and the motherships themselves are managed and supported principally out of Seattle. Hiring is done from Seattle and, while we have no statistical breakdown of the mothership labor force, many come from the Lower-48 and most are reportedly from the Pacific Northwest. All, and especially the mothership with a CDQ group partner and partial CDQ group ownership, have strong initiatives to hire Alaskans, and especially Alaskans from Western Alaska.

Given that the operations are headquartered in Seattle, the community acts as a corporate center for this industry sector, in terms of corporate and financial services support. There are a few administrative/office positions for each company in Seattle, but these account for less than 10 percent of the workforce in every case, even at the low end of operational range staffing aboard the vessels.

In terms of fiscal impacts to communities, like catcher processors, motherships are subject to the resource landing tax in Alaska, so they developed a different fiscal relationship to Alaska communities. Individual operations varied the location and number of offloads, so there was variability between operations in this regard, but motherships in general appeared to offload fewer times in Alaskan communities than did catcher processors. At least one was reported to sometimes take a product directly to Japan, and all reported taking their 'last load' to a non-Alaskan port.

The catcher vessel fleet for motherships tends to have Seattle owners and to be maintained in the Seattle/Pacific northwest region. Some vessels have California or Alaska owners, or may have some connections with Oregon. Regardless of ownership or "home port" designation, many of these catcher vessels normally remain in Alaskan waters between the last pollock season of the year and the first pollock season of the following year, unless there is a compelling reason for them to go to Seattle. Those mothership catcher vessels with Pacific whiting permits have an incentive to go south after the first pollock season, and those from that region are most likely to have such permits. They will normally schedule maintenance calls in Seattle during this period. Mothership catcher vessels do participate in more fisheries than do motherships themselves itself, but Alaska groundfish (specifically pollock) is their most important fishery.

Mothership labor forces are predominately Seattle-based. Offices are maintained in Seattle, one in conjunction with its pollock CDQ partner and its parent onshore processing company. Workforces range from 80 to 140 persons on the two smaller operations to 190 to 220 persons on the larger operation. An increasing number of these employees are reported to be from Western Alaska, especially on the CDQ partner vessel. The larger operation employs a crew of 40 to 60 people to maintain the vessel and thus work 6 to 7 months a year. Office staff work year-round, and the rest of the crew works only while the vessel is actively fishing or in transit (estimated at approximately 90 days).

All mothership operations report using Seattle as their primary logistical base. That is, they will leave Seattle with as many of the supplies that they will need for the fishing season as possible. All mothership operations contrasted this with the pattern of their catcher vessel fleet, which obtains most of its logistical support from Alaskan ports. The mothership reportedly does not carry supplies for its catcher vessel fleet (citing lack of storage capacity aboard their vessels). Motherships have a limited number of opportunities to take on additional supplies in Alaskan ports, since they normally do not have many offloads in Alaskan ports. Linkages to Alaskan communities are thus mostly through the resource landing tax paid on offloaded product and the activities of their catcher vessel fleet. Most mothership community linkages are with Seattle.

Catcher-Processor Sector

Corporate management and operations of the catcher-processor fleet is concentrated in the Seattle and Puget Sound area, as is ownership. These vessels are typically not present in Alaska when not working, although there have been a number of exceptions for ship work in Alaskan ports. Even these vessels for the most part use Seattle or Pacific Northwest facilities for regular maintenance and support. This pattern has been modified in recent years by the investment of five of the six CDQ groups in the offshore sector. These ownership shifts have affected some aspects of the operations of these vessels, but not the centralization of management and support services for them in Seattle. The sector industry association has established its headquarters in Alaska, and has made targeted hiring efforts in Anchorage as well as the CDQ regions, although employment continues to be predominately from Washington state.

Catcher-processors harvest and process Alaska groundfish in Alaskan waters and, although Seattle based, have fiscal ties to Alaska through the payment of a resource landing tax on the product they offload in taxable jurisdiction areas. For example, as noted in the discussion of Alaskan communities, the resource landing tax is a significant source of income to the community of Unalaska/Dutch Harbor. Some catcher processors will land their last load in Seattle, since many must make the trip anyway, but this varies by operation, and depends on a number of variables such as ultimate market, shipping costs, timing with respect to participation in other fisheries, and so on. Those catcher processors which participate in other fisheries (after pollock) producing fillets may tend to land more of their total pollock production in Alaska.

Catcher processor vessels are moored and maintained in the Seattle/Pacific Northwest area. The Port of Seattle has made a sizeable investment in renovating part of Pier 91, partly in response to the need of the largest catcher processor company for moorage and other workspace for its operations. The ability and desire of this company to sign a long-term lease enabled the Port of Seattle to finance these renovations, so there is a direct link seen between the Alaska groundfish fishery and port development. The Puget Sound area, and the Port of Seattle within the Puget Sound area, provides the majority of moorage available for the Alaska groundfish fishery fleet (and especially so for catcher processors).

Hiring for employment within the fleet occurs both in Alaska and the Lower-48. Turnover varies from year-to-year and is highly dependent on levels of compensation. Some people make careers of working on catcher processors, while others treat it as a seasonal activity or a "stage of life" activity. The one group of employees that was readily identifiable were those Alaskans hired from western Alaskan villages, primarily by fishing operations with CDQ partnerships. At least a limited number of individuals have relocated to Seattle, based on catcher processor employment, although interview data would indicate that they maintain contacts with relatives and return to the village at frequent intervals. Management and the vessel maintenance labor force, to the degree that such work does not require work in a shipyard, is clearly concentrated in Seattle. Interview information from the 1998 Inshore/Offshore-3 SIA (NPFMC 1998), derived from contact with five companies with 27 vessels, supported this general picture. Most employees are from Washington or other western states, with Seattle being the major (or only) point of hire. For those operations with CDQ partners, this was generally modified by an effort to incorporate CDQ group residents into the fishing (and other) operations through entry level positions and intern training programs.

Available information on expenditure patterns of the catcher processor fleet is fairly sketchy. Prior to the formation of co-ops, the catcher-processor sector fleet, on average, purchased 10 percent of its open-access pollock from the catcher vessel sector fleet, which is itself predominately Seattle based. Under the co-op system, however, there has been a fundamental change in this pattern, with additional catch capacity becoming much less important. Some drydock work has recently been done in Alaskan ports, specifically in Ketchikan, and in-season work also takes place in Alaska. Seattle is the only locale with a concentration of facilities that can provide these services for a large number of vessels, with the possibility for competitive bidding. Interviews with most firms for the 1998 Inshore/Offshore-3 SIA (NPFMC 1998) resulted largely in general level information; however the overall pattern was clear. Catcher processor operators consistently indicated that most expenditures were made in or through Seattle or the Puget Sound area - with in-season support from Alaskan sources as required. They were quick to point out that they needed to purchase large amounts of fuel in Unalaska/Dutch Harbor, paid a great amount of dock fees and resource landing taxes there, and in general provided a good deal of support for that community, both through fees and taxes and direct expenditures. At the same time, like all other businesses, their operations are managed to minimize expenses, in most cases entailing supplying the vessel as much as possible from Seattle.

The community economic/fiscal links of the catcher/processor sector can be summarized by the overall dichotomy or comparison of (Seattle) financial, most maintenance, and initial supply costs as opposed to (Alaskan and especially Unalaska) in-season operational costs. The majority of the labor force is in some way linked to Washington State or the Pacific Northwest. Thus, in terms of absolute value, the sector expends a great deal more, to a much wider economic network, in Seattle than it does in Alaska. The difference in the scales of the economies in Seattle and Alaska (especially for the community of Unalaska/Dutch Harbor), however, make the catcher processor sector economically important in Alaska in general, and the community of Unalaska/Dutch Harbor in particular. While also important in Seattle, the overall community effects of changes in the operations of this sector are less because of the sheer size of the Seattle economy. There may be identifiable effects on subsections of Seattle's economy, such as the Port, shipyards, or other services concentrated in Ballard.

The catcher-processor sector felt significant impacts as a result of AFA, but employment recruitment patterns have not changed a great deal from pre-AFA operations. Total employment has of course decreased, but those still working are working more hours and thus earning a higher yearly total than before. This, of course, does not minimize the impact on individuals and families of the loss of employment for an estimated 1,500 to 2,000 individuals as an early and direct result of AFA.

Catcher Vessels

Aside from the ownership-related ties already discussed, many of the larger class groundfish catcher vessels have other ties to the greater Seattle area. Patterns for smaller vessels are much more variable and Alaska focused, as shown in the ownership information previously discussed. Most of the vessels in the larger classes of catcher vessels will have overhauls and other major work done in Seattle (or an alternate port in Washington, or Portland, Readsport, or Newport in Oregon), but may make the trip only every two years if they do not usually participate in PNW coast fisheries on a regular basis. This is also a tendency which seems to accompany shore plant acquisition of more pollock-specialized catcher vessels. This, and the decreasing fishing opportunities in Pacific coast fisheries, are also factors in this trend. Depending on the degree of shelter provided by moorage at the different plant locations, the pollock-focused catcher vessels may tend to tie up at Alaskan shore plants between seasons. Limited moorage for catcher vessels participating in the Alaska groundfish fishery exists in other Alaskan ports (Kodiak, Sand Point), but only to a very limited extent. Catcher vessels delivering to motherships or offshore tend to go to Seattle every year if they participate in the Pacific coast hake fishery. Otherwise, they also tend to stay in Alaskan waters when they do not need major shipyard work and will look for Alaskan fisheries to 'fill in' their annual harvest cycle. This trend has the effect of increasing the use of air flights to connect crew with vessels, so that an indirect effect is to increase the availability of and support for transportation links for various Alaskan fishery communities (a trend also seen to a much larger degree with the 'transient' components of the shore plant workforces).

No systematic information on the geographic origin of overall sector employment is available, but interview information developed for the Inshore/Offshore-3 SIA (NPFMC 1998) indicates that for the larger classes of catcher vessels, most of the crew is from the Washington/Oregon area, with a concentration in Seattle. This was true even though many catcher vessels apparently spent most of their time in Alaskan waters and may tie up in Alaskan ports more than in Washington or Oregon. This may reflect an historical situation, before Alaskan moorage was available and boats did return to Seattle every year, combined with continued Washington/Oregon ownership.

Catcher vessel expenditure patterns are difficult to generalize. For the smaller vessel classes that tend to be Alaskan in ownership, Alaska-based expenditures are the norm. For the larger classes, in-season operational expenditures are made in Alaskan ports. Catcher vessels tend to tie up in Alaskan waters when possible, but maintenance requiring shipyard work and overhauls tend to take place in or near the owner's physical residence, which in most cases is the Pacific Northwest. Crew tends to reflect the boat's "community of origin" as well, so that the overall revenue flow for most larger catcher vessels is oriented to the Washington/Oregon area, and for the Alaska groundfish fishery, more specifically to Washington. These economic effects are distributed more widely, and to a wider range of communities, than for the processing sectors considered above.

Summary: Seattle and North Pacific/Groundfish Socioeconomic Issues

As noted in the introduction to this section, Seattle is an analytic challenge, in terms of a socioeconomic description and a social impact assessment directly related to the Alaska groundfish fishery, because of its scale and diversity. Seattle is arguably more involved in the Alaska groundfish fishery than any other community, but from a comparative perspective, Seattle is arguably among the least involved of the communities considered. The sheer size of Seattle dilutes the overall impact of the Alaska groundfish fishery jobs and general economic contributions when viewed on a community scale, in contrast to Alaskan communities where such jobs and revenues are a much greater proportion of the total economic base of the community. This section has attempted to portray the complexities of the ties of the Alaska groundfish fishery to Seattle in terms of sectors, specific portions of the economy, and on a geographically localized basis.

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APPENDIX F2: REGIONAL ECONOMIC INDICATORS 1975-1999

Table 1 Total Employment for Alaska Peninsula/Aleutian Islands Region, 1975-1999

Sector	No. of Persons Employed by Year					
	1975	1980	1985	1990	1995	1999
Agricultural Services, Forestry, Fishing, and Other	392	497	545	325a	63a	a
Construction	250	125	182	200	119a	a
Federal, Civilian	535	667	685	772	223	53
Finance, Insurance, and Real Estate	a	a	176	157	202	305
Manufacturing	754	1,816	928	1,499a	3,566	2,958
Military	3,330	2,410	2,505	2,897	1,073	68
Mining	35	0	a	a	a	a
Retail Trade	a	130	161	483	533	72a
Service	77	236	408	358	90a	635a
State and Local	263	376	590	690	691	640
Transportation and Public Utilities	a	134	250	576	463	334
Wholesale Trade	a	a	a	72a	47a	84a

Note: Where "a" appears in the table, the data is suppressed due to confidentiality reasons, or because there were fewer than ten jobs in that sector during the year indicated. Where an "a" follows a numerical value, one or more of the underlying statistical areas faced disclosure or other limitations. Although the data do not appear in the table, the totals shown in the summary table reflect all available information, which might include estimates of employment and income for unusually small sectors.

Table 2 Personal Income and Earnings for Alaska Peninsula/Aleutian Islands Region, 1975-1999

Sector	Earnings by Year ($Millions)					
	1975	1980	1985	1990	1995	1999
Agricultural Services, Forestry, Fishing, and Other	4.0	5.5	8.4	5.8a	0.4a	a
Construction	8.8	6.8	11.8	15.3	6.2a	a
Federal, Civilian	6.3	14.2	15.2	21.7	9.4	3.1
Finance, Insurance, and Real Estate	a	a	3.1	3.2	3.8	4.8
Manufacturing	9.4	35.8	22.9	48.9a	108.4	114.2
Military	43.7	44.0	70.6	91.2	40.3	1.9
Mining	1.2	a	a	0.1	0.0	0.0
Retail Trade	a	2.1	3.1	10.9	12.4	1.6a
Service	0.2	2.8	5.6	5.8	2.2a	22.0a
State and Local	4.1	9.3	19.2	22.9	27.8	26.7
Transportation and Public Utilities	a	2.5	9.0	15.8	13.0	12.1
Wholesale Trade	a	a	a	4.4a	2.6a	4.0

Note: Where "a" appears in the table, the data is suppressed due to confidentiality reasons, or because there were fewer than ten jobs in that sector during the year indicated. Where an "a" follows a numerical value, one or more of the underlying statistical areas faced disclosure or other limitations. Although the data do not appear in the table, the totals shown in the summary table reflect all available information, which might include estimates of employment and income for unusually small sectors.

Table 3 Per Capita Income and Total Employment for Alaska Peninsula/Aleutian Islands Region, 1975-1999

Indicator	Indicator Data by Year					
	1975	1980	1985	1990	1995	1999
Personal Income ($Millions)	77.5	110.7	155.4	246.3	215.4	187.6
Population (No. of Persons)	8,523	7,813	9,734	11,974	7,195	6,092
Per Capita Personal Income ($)	$9,089	$14,170	$15,968	$20,568	$29,943	$30,802
Total Full- and Part-Time Employment (No. of Persons)	6,035	6,572	6,494	9,202	8,313	6,378

Table 4 Total Employment for Kodiak Island Region, 1975-1999

Sector	No. of Persons Employed by Year					
	1975	1980	1985	1990	1995	1999
Agricultural Services, Forestry, Fishing, and Other	1,347	1,642	1,572	1,238	1,026	1,237
Construction	309	148	407	326	321	271
Federal, Civilian	318	282	239	164	161	179
Finance, Insurance, and Real Estate	101	114	180	294	323	311
Manufacturing	1,178	2,060	1,473	2,209	2,437	1,855
Military	1,894	1,387	1,122	1,181	1,143	1,019
Mining	0	0	13	a	a	a
Retail Trade	525	711	887	1,093	1,128	1,206
Service	567	858	1,036	1,615	1,593	1,934
State and Local	663	745	907	937	922	933
Transportation and Public Utilities	260	404	284	399	431	382
Wholesale Trade	47	49	54	50	111	65

Note: Where "a" appears in the table, the data is suppressed due to confidentiality reasons, or because there were fewer than ten jobs in that sector during the year indicated. Although the data do not appear in the table, the totals shown in the summary table reflect all available information, which might include estimates of employment and income for unusually small sectors.

Table 5 Personal Income and Earnings for Kodiak Island Region, 1975-1999

Sector	Earnings by Year ($Millions)					
	1975	1980	1985	1990	1995	1999
Agricultural Services, Forestry, Fishing, and Other	12.9	18.5	13.9	47.3	32.9	28.4
Construction	8.4	5.2	18.4	11.3	14.1	13.5
Federal, Civilian	7.2	10.4	11.5	8.2	10.2	11.8
Finance, Insurance, and Real Estate	1.5	2.7	3.2	3.2	5.3	7.0
Manufacturing	15.5	37.5	21.4	51.1	64.1	59.5
Military	24.7	26.3	37.4	38.5	48.0	51.6
Mining	a	0.6	0.6	a	0.1	0.1
Retail Trade	6.4	11.1	16.7	19.0	20.2	21.6
Service	5.3	12.5	19.3	31.1	31.2	43.7
State and Local	10.6	18.0	31.1	34.5	38.4	36.1
Transportation and Public Utilities	3.7	10.5	11.0	12.8	14.2	12.9
Wholesale Trade	0.7	0.9	1.3	1.2	4.6	2.8

Note: Where "a" appears in the table, the data is suppressed due to confidentiality reasons, or because there were fewer than ten jobs in that sector during the year indicated. Although the data do not appear in the table, the totals shown in the summary table reflect all available information, which might include estimates of employment and income for unusually small sectors.

Table 6 Per Capita Income and Total Employment for Kodiak Island Region, 1975-1999

Indicator	Indicator Data by Year					
	1975	1980	1985	1990	1995	1999
Personal Income ($Millions)	102.0	153.0	200.0	289.9	331.7	361.7
Population (No. of Persons)	9,153	10,004	12,243	13,400	14,883	14,350
Per Capita Personal Income ($)	$11,142	$15,298	$16,340	$21,637	$22,290	$25,204
Total Full- and Part-Time Employment (No. of Persons)	7,209	8,400	8,174	9,509	9,603	9,398

Table 7 Total Employment for Southcentral Region, 1975-1999

Sector	No. of Persons Employed by Year					
	1975	1980	1985	1990	1995	1999
Agricultural Services, Forestry, Fishing, and Other	1,445a	3,479	6,037	5,940	5,236	6,510
Construction	12,041	8,307	15,858	10,295	12,251	13,882
Federal, Civilian	11,113	9,909	10,097	11,003	10,993	10,350
Finance, Insurance, and Real Estate	12,497	16,593	18,078	14,567	14,789	16,604
Manufacturing	3,267	4,448	5,273	6,118	6,210	5,697
Military	14,439	13,286	13,467	14,382	12,749	11,547
Mining	2,240a	3,859a	6,004	7,241	5,894a	5,398
Retail Trade	14,520	17,690	28,516	30,205	36,681	39,518
Service	22,878	28,473	43,548	51,785	60,670	69,445
State and Local	13,723	15,976	21,699	22,564	24,805	25,342
Transportation and Public Utilities	9,347	10,582	12,786	15,817	17,398	19,798
Wholesale Trade	4,599a	4,702a	7,490	6,862	7,791a	8,203

Note: Where "a" appears in the table, the data is suppressed due to confidentiality reasons, or because there were fewer than ten jobs in that sector during the year indicated. Where an "a" follows a numerical value, one or more of the underlying statistical areas faced disclosure or other limitations. Although the data do not appear in the table, the totals shown in the summary table reflect all available information, which might include estimates of employment and income for unusually small sectors.

Table 8 Personal Income and Earnings for Southcentral Alaska Region, 1975-1999

Sector	Earnings by Year ($Millions)					
	1975	1980	1985	1990	1995	1999
Agricultural Services, Forestry, Fishing, and Other	10.0a	38.5	86.7	146.7	84.8	88.4
Construction	438.7	383.1	763.8	470.4	607.0	676.5
Federal, Civilian	211.4	292.4	387.0	513.6	646.9	715.3
Finance, Insurance, and Real Estate	75.3	139.7	282.4	222.9	329.3	405.6
Manufacturing	52.1	106.3	142.5	177.8	217.1	197.5
Military	167.7	229.7	357.3	439.4	454.4	484.6
Mining	65.1a	159.9a	340.6a	531.0	463.1a	441.9
Retail Trade	176.5	273.6	580.6	588.6	710.5	831.1
Service	336.0	525.4	1,013.8	1,258.8	1,565.7	1,965.0
State and Local	240.8	467.7	881.1	931.6	1,168.5	1,151.7
Transportation and Public Utilities	219.7	345.1	514.1	620.8	794.8	918.1
Wholesale Trade	92.7a	134.7a	256.6	237.4	271.8a	304.5

Note: Where "a" appears in the table, the data is suppressed due to confidentiality reasons, or because there were fewer than ten jobs in that sector during the year indicated. Where an "a" follows a numerical value, one or more of the underlying statistical areas faced disclosure or other limitations. Although the data do not appear in the table, the totals shown in the summary table reflect all available information, which might include estimates of employment and income for unusually small sectors.

Table 9 Per Capita Income and Total Employment for Southcentral Alaska Region, 1975-1999

Indicator	Indicator Data by Year					
	1975	1980	1985	1990	1995	1999
Personal Income ($Millions)	2,157.7	3,555.0	6,814.9	7,748.5	9,701.8	11,332.7
Population (No. of Persons)	200,595	227,962	311,610	318,861	357,565	374,975
Per Capita Personal Income ($)	$10,756	$15,595	$21,870	$24,301	$27,133	$30,222
Total Full- and Part-Time Employment (No. of Persons)	123,047	137,944	189,391	197,286	216,092	232,770

Table 10 Total Employment for Southeast Alaska Region, 1975-1999

Sector	No. of Persons Employed by Year					
	1975	1980	1985	1990	1995	1999
Agricultural Services, Forestry, Fishing, and Other	974a	2,262	3,120	3,357	3,047	2,187a
Construction	1217a	1,677	2,729	1,914	2,663a	2,788a
Federal, Civilian	2,064a	2,466a	2,040a	2,102a	1,924	1,760
Finance, Insurance, and Real Estate	1,170a	1,808a	1,702a	2,303	2,442a	2,120a
Manufacturing	3,828a	4,797	3,500	5,711	4,566	3,494a
Military	1,365a	1,183	1,010	1,315	1,261a	1,147a
Mining	39a	23a	54a	131a	269a	36a
Retail Trade	3,330a	4,023	5,101	6,357	7,935	7,576
Service	3,615a	5,002a	6,900a	9,267a	11,401	13,245
State and Local	6,751	7,746	9,687	9,890	10,008	10,233
Transportation and Public Utilities	2,122a	2,604	2,174a	2,911a	3,361	3,141
Wholesale Trade	373a	327a	398a	683a	629a	733a

Note: Where "a" appears in the table, the data is suppressed due to confidentiality reasons, or because there were fewer than ten jobs in that sector during the year indicated. Where an "a" follows a numerical value, one or more of the underlying statistical areas faced disclosure or other limitations. Although the data do not appear in the table, the totals shown in the summary table reflect all available information, which might include estimates of employment and income for unusually small sectors.

Table 11 Personal Income and Earnings for Southeast Alaska Region, 1975-1999

Sector	Earnings by Year ($Millions)					
	1975	1980	1985	1990	1995	1999
Agricultural Services, Forestry, Fishing, and Other	8.3a	26.6	59.2	77.4	61.2	33.6a
Construction	30.9a	59.8	102.6	69.7	110.9a	115.2a
Federal, Civilian	38.0	67.7	82.5	105.8	122.0	124.1
Finance, Insurance, and Real Estate	10.6a	25.2a	31.9a	38.3	51.3a	51.1a
Manufacturing	69.6a	137.7	119.3	219.5	179.9	121.4a
Military	11.1a	16.3	28.3	33.9	42.4	44.9
Mining	0.8a	1.6a	5.3a	4.0a	15.8a	0.7a
Retail Trade	36.6	56.0	94.8	108.2	151.8	149.5
Service	36.4a	79.7a	131.0a	156.0a	228.4	282.7
State and Local	117.9	218.9	359.4	389.2	445.6	443.8
Transportation and Public Utilities	33.0a	63.4	70.2a	92.2a	116.3	110.7
Wholesale Trade	7.3a	8.6a	12.9a	22.3a	20.7a	22.1a

Note: Where "a" appears in the table, the data is suppressed due to confidentiality reasons, or because there were fewer than ten jobs in that sector during the year indicated. Where an "a" follows a numerical value, one or more of the underlying statistical areas faced disclosure or other limitations. Although the data do not appear in the table, the totals shown in the summary table reflect all available information, which might include estimates of employment and income for unusually small sectors.

Table 12 Per Capita Income and Total Employment for Southeast Alaska Region, 1975-1999

Indicator	Indicator Data by Year					
	1975	1980	1985	1990	1995	1999
Personal Income ($Millions)	467.9	878.3	1,362.6	1,746.5	2,073.5	2,225.5
Population (No. of Persons)	51,907	54,385	67,562	69,490	73,401	72,525
Per Capita Personal Income ($)	$9,014	$16,149	$20,168	$25,133	$28,248	$30,686
Total Full- and Part-Time Employment (No. of Persons)	27,336	34,087	38,927	46,731	49,748	50,891

Table 13 Total Employment for Washington Inland Waters Region, 1975-1999

Sector	No. of Persons Employed by Year					
	1975	1980	1985	1990	1995	1999
Agricultural Services, Forestry, Fishing, and Other	11,491	19,632	22,928	29,237	31,156	34,894
Construction	48,344	75,435	83,680	119,877	122,075	152,873
Federal, Civilian	46,549	51,601	53,838	57,862	53,753	51,375
Finance, Insurance, and Real Estate	93,062	123,356	135,175	171,918	172,389	201,593
Manufacturing	170,353	225,326	214,140	281,795	249,824	279,737
Military	58,660	58,860	66,846	68,930	65,028	61,984
Mining	807a	1,689	2,101a	2,401	2,610	2,358a
Retail Trade	166,371	229,285	262,242	334,652	377,391	412,301
Service	219,444	309,057	401,585	550,024	644,900	771,417
State and Local	151,864	167,992	177,954	217,910	250,270	271,223
Transportation and Public Utilities	54,781	72,418	76,759	96,327	102,339	116,516
Wholesale Trade	55,782	73,016	79,190	103,100	114,285	123,083a

Note: Where "a" appears in the table, the data is suppressed due to confidentiality reasons, or because there were fewer than ten jobs in that sector during the year indicated. Where an "a" follows a numerical value, one or more of the underlying statistical areas faced disclosure or other limitations. Although the data do not appear in the table, the totals shown in the summary table reflect all available information, which might include estimates of employment and income for unusually small sectors.

Table 14 Personal Income and Earnings for Washington Inland Waters Region, 1975-1999

Sector	Earnings by Year ($Millions)					
	1975	1980	1985	1990	1995	1999
Agricultural Services, Forestry, Fishing, and Other	105.5	247.2	356.8	921.9	771.9	995.2
Construction	751.0	1,705.2	2,112.7	3,765.5	4,223.6	6,352.6
Federal, Civilian	808.1	1,341.2	1,843.8	2,395.6	2,883.9	3,222.8
Finance, Insurance, and Real Estate	609.2	1,353.2	1,862.0	3,152.4	4,647.8	6,811.5
Manufacturing	2,645.4	5,544.1	6,693.7	10,530.3	11,380.9	14,784.8
Military	607.8	877.5	1,654.8	1,932.6	2,249.8	2,523.1
Mining	28.9	95.4	91.5	47.4	68.0	90.9a
Retail Trade	1,316.5	2,431.3	3,544.4	5,086.6	6,397.9	8,867.1
Service	1,834.2	4,015.4	6,642.8	12,234.7	18,129.9	34,205.4
State and Local	1,635.6	2,906.2	4,183.5	6,165.4	8,676.6	10,647.0
Transportation and Public Utilities	878.9	1,728.2	2,355.0	3,522.1	5,164.1	6,040.6
Wholesale Trade	832.8	1,620.9	2,136.4	3,369.7	4,509.5	5,760.1a

Note: Where "a" appears in the table, the data is suppressed due to confidentiality reasons, or because there were fewer than ten jobs in that sector during the year indicated. Where an "a" follows a numerical value, one or more of the underlying statistical areas faced disclosure or other limitations. Although the data do not appear in the table, the totals shown in the summary table reflect all available information, which might include estimates of employment and income for unusually small sectors.

Table 15 Per Capita Income and Total Employment for Washington Inland Waters Region, 1975-1999

Indicator	Indicator Data by Year					
	1975	1980	1985	1990	1995	1999
Personal Income ($Millions)	15,806.6	31,216.0	46,122.0	72,336.7	94,592.5	131,449.0
Population (No. of Persons)	2,342,398	2,703,026	2,903,105	3,328,588	3,651,912	3,881,943
Per Capita Personal Income ($)	$6,748	$11,549	$15,887	$21,732	$25,902	$33,862
Total Full- and Part-Time Employment (No. of Persons)	1,094,198	1,426,707	1,594,370	2,050,879	2,201,894	2,497,196

Table 16 Total Employment for Oregon Coast Region, 1975-1999

Sector	No. of Persons Employed by Year					
	1975	1980	1985	1990	1995	1999
Agricultural Services, Forestry, Fishing, and Other	1,234	3,418	3,256	2,608	2076a	2,612
Construction	1,192	2,039	1,874	2,310	2,899	3,618
Federal, Civilian	534	564	507	611	517	564
Finance, Insurance, and Real Estate	2,026	2,819	2,268	2,449	3,098	3,841
Manufacturing	6,164	7,255	6,426	6,375	6,280	6,005
Military	1,022	986	877	892	892	794
Mining	76a	95a	151a	91a	31a	29a
Retail Trade	6,498	8,472	8,588	11,209	13,015	13,252
Service	6,216	8,484	10,161	12,205	14,590	16,971
State and Local	5,290	5,616	5,762	6,301	6,794	7,127
Transportation and Public Utilities	1,428	1,557	1,651	1,560	1,657	1,707
Wholesale Trade	390a	417a	652	881	701a	683a

Note: Where "a" appears in the table, the data is suppressed due to confidentiality reasons, or because there were fewer than ten jobs in that sector during the year indicated. Where an "a" follows a numerical value, one or more of the underlying statistical areas faced disclosure or other limitations. Although the data do not appear in the table, the totals shown in the summary table reflect all available information, which might include estimates of employment and income for unusually small sectors.

Table 17 Total Non-Farm Earnings for Oregon Coast Region, 1975-1999

Sector	Earnings by Year ($Millions)					
	1975	1980	1985	1990	1995	1999
Agricultural Services, Forestry, Fishing, and Other	8.6	26.1	28.8	45.1	29.9a	40.0
Construction	16.3	37.3	33.0	59.4	69.4	102.8
Federal, Civilian	7.9	13.1	16.4	21.7	25.0	30.6
Finance, Insurance, and Real Estate	6.3	14.2	11.1	21.5	39.3	55.2
Manufacturing	80.9	149.2	165.5	199.1	201.7	218.4
Military	8.5	12.7	16.4	17.3	22.5	23.0
Mining	1.0a	2.7a	3.9	1.6a	a	a
Retail Trade	42.8	75.7	95.2	139.8	178.0	206.4
Service	38.2	79.4	113.3	177.7	248.5	329.9
State and Local	47.6	80.8	110.8	153.9	209.5	244.2
Transportation and Public Utilities	23.5	32.6	38.0	42.5	53.0	58.0
Wholesale Trade	4.8a	6.5a	11.5	18.3	15.9a	18.6a

Note: Where "a" appears in the table, the data is suppressed due to confidentiality reasons, or because there were fewer than ten jobs in that sector during the year indicated. Where an "a" follows a numerical value, one or more of the underlying statistical areas faced disclosure or other limitations. Although the data do not appear in the table, the totals shown in the summary table reflect all available information, which might include estimates of employment and income for unusually small sectors.

Table 18 Per Capita Income and Total Employment for Oregon Coast Region, 1975-1999

Indicator	Indicator Data by Year					
	1975	1980	1985	1990	1995	1999
Personal Income ($Millions)	437.7	853.2	1,126.0	1,535.5	1,986.6	2,388.0
Population (No. of Persons)	76,666	89,215	89,453	94,151	103,150	104,728
Per Capita Personal Income ($)	$5,709	$9,564	$12,588	$16,309	$19,260	$22,802
Total Full- and Part-Time Employment (No. of Persons)	33,770	43,745	43,831	49,194	54,953	59,008

APPENDIX F3: EFFECTS OF THE PROPOSED ALTERNATIVES ON SUBSISTENCE USE OF RESOURCES

This appendix addresses the potential effects of the proposed alternatives on subsistence use of natural resources. For the purposes of this analysis, the discussion is split into three sections: subsistence use of groundfish, subsistence use of Steller sea lions, and indirect impacts on other subsistence activities.

Conclusions about effects on these areas are summarized briefly below. As the summary indicates, detailed analysis of effects on groundfish subsistence was deemed unnecessary. With regard to Steller sea lions, subsequent sections describe documented historical subsistence use of the resource and summarize the potential effects of the proposed alternatives on such use. Finally, a summary discussion is presented on the potential indirect impacts of the alternatives on other subsistence resource use.

- **Potential effects on groundfish subsistence use**. There is a relatively low level of subsistence activity associated with groundfish species targeted for commercial harvest. There are no indications that commercial harvest activity is adversely affecting groundfish-specific subsistence activities that do occur. Further, none of the alternatives restrict subsistence fishing directly. Given this current pattern, and the relationship of harvest levels proposed under the various alternatives to those allowed under baseline conditions, the potential direct and indirect (bycatch) effects of any of the proposed alternatives on subsistence use of groundfish resources will not be significant.

- **Potential effects of commercial groundfish fisheries on subsistence use of Steller sea lions.** Impacts to Steller sea lion subsistence use are less straightforward than is the case for groundfish subsistence use. The subsistence harvest of Steller sea lions has declined steadily and substantially since 1992, at the same time that the overall population of Steller sea lions was also declining. However, the relationship between the two is not clear. Furthermore, the complex connections between commercial groundfish fisheries and the decline in Steller sea lion population, discussed elsewhere in this document, render the analysis of impacts of commercial fishing on Steller sea lion based subsistence problematic. It is evident though, that both of these relationships are important for assessing the potential effects of the proposed alternatives on the subsistence use of Steller sea lions. If current levels of groundfish fishing are causing a decline in Steller sea lion population, the fisheries could be contributing indirectly to, if not causing, the declining trend in subsistence harvest and use of the Steller sea lion that has occurred in recent years. The magnitude of this contribution would then depend on the relationship between the population of Steller sea lions and the subsistence harvest of that population. Thus, to the extent that the alternatives achieve their intended protection of Steller sea lion populations, they will have neutral to positive effects on the subsistence use of that resource. The magnitude of the effects would depend on the increase in the Steller sea lion population and the strength of the relationship between the overall Steller sea lion population and the subsistence harvest from that population. More precise judgments are not possible, given the quality and quantity of information available, although qualitatively it is probable that subsistence harvest levels will not be significantly changed by the projected potential changes in the Steller sea lion population resulting from the proposed alternatives. This rather complex argument is presented in somewhat more detail below.

- **Indirect Impacts on Other Subsistence Activities.** Indirect impacts to other subsistence activities could occur through loss of income that would otherwise be directed toward subsistence pursuits, or an effective loss of access to commercial fishing activities and gear that would otherwise be used in a form of joint production of commercial and subsistence harvests. The variables that influence these indirect impacts are numerous and complex. Although some impacts are likely to accrue to a limited number of communities that participate directly in the fishery, quantification of these impacts is problematic. Impacts to subsistence in communities that participate in the fishery primarily through investment and control of quota (the CDQ communities) could occur through loss of income that would be directed toward subsistence pursuits, but quantification of these impacts is also problematic.

It should also be noted that subsistence is not the only "use" of Steller sea lions. As noted in Section 1.3.2.2 of the RIR (Appendix C of this SEIS), eco-tourism values are a set of non-consumptive use values that derive or benefit from the existence of Steller sea lions. The levels of both subsistence and eco-tourism use of Steller sea lions vary more-or-less independently from community to community, and each tends to vary with the intensity of local commercial fishery development. In terms of a social impact analysis, it is important to note that the set of communities that would be most heavily impacted (in terms of direct impacts on locally based fishery efforts and economic activity) by more restrictive alternatives are not the same set of communities that are most heavily involved in Steller sea lion subsistence, although there is some overlap. For some communities, it would appear that subsistence is relatively important to household economies at least in part due to limited commercial economic development, including commercial fisheries development. Further, it is important to note that the set of communities most likely to benefit from eco-tourism related to Steller sea lions is not the same set of communities most engaged in and dependent upon the groundfish fishery (i.e., those communities most likely to experience the greatest impacts under the more restrictive alternatives). While systematic analysis was not performed, it would appear that there is closer to an inverse relationship than a direct relationship between the two factors. For example, eco-tourism is highly developed in Southeast Alaska, and little developed in Aleutians, while reliance on fisheries most directly effected by the alternatives is high in the Aleutians and relatively low in Southeast. Eco-tourism potential appears to be effectively limited by access to major passenger transportation systems (with notable exceptions for some specialty or niche markets); commercial fisheries development, on the other hand, has occurred in areas that are relatively underserved by major passenger transportation links as well as those on more central routes. In sum, the relationship between cost of commercial fishery alternative impacts and the benefits of 'existence' or 'use' values is not straightforward, and those communities that experience adverse impacts that derive from management actions are frequently not the same communities that would experience beneficial impacts from those same actions. On the community level, a loss in commercial fishing is very unlikely to be offset by gains in either subsistence or eco-tourism, cost and benefit measurement issues aside, simply because the population experiencing the loss is not the same population as that experiencing the benefit.

1.0 POTENTIAL EFFECTS ON SUBSISTENCE GROUNDFISH USE: SUBSISTENCE SUMMARY BY REGION

The following sections provide a region-by-region summary of subsistence activity levels in each of the four Alaska regions analyzed. These summaries focus on the regionally important groundfish communities identified in the main body of this document and place the role of groundfish in the context of overall subsistence activities. (Levels of marine mammal harvest are discussed, but the detailed discussion of Steller

sea lion use is presented in its own section.) Analysis of how much of the groundfish utilized for subsistence is effectively retained from what are otherwise commercial catches in contrast to how much of the groundfish utilized for subsistence results from 'purely subsistence' activities or efforts is not possible with the available data, but in practical terms the lack of ability to make such a differentiation does not present difficulties for this analysis. Given the relatively low level of direct subsistence groundfish dependency, and the fact none of the alternatives would restrict subsistence groundfish take nor cause an increase of commercial utilization of groundfish stocks, the potential impacts of any of the alternatives on subsistence uses of groundfish are not considered to be significant.

1.1 Subsistence in the Alaska Peninsula and Aleutian Islands Region

Subsistence resource utilization for residents of the regionally important groundfish communities of Unalaska, Akutan, Sand Point, and King Cove are presented in this section. All of these communities feature subsistence activity, with consumption ranging from about 200 pounds per capita to over 450 pounds per capita. Within this overall consumption, groundfish specifically ranges from four to nine percent of the total.

Residents of Unalaska are reported to harvest and consume about 195 pounds of subsistence resource per capita, based on a 1994 survey of an estimated 700 year round households for a total ADF&G effective population of 1,825 individuals (ADF&G 2000). Of the subsistence total, 28 percent was salmon, 42 percent was non-salmon fish, 5 percent was land mammals, 5 percent was marine mammals, 1 percent was birds and eggs, 14 percent was marine invertebrates, and 6 percent was vegetation. Various groundfish are a component of the non-salmon fish, and average about 7 percent of the total (14 pounds per capita). The major contributors to this component are cod (8 pounds) and rockfish (5 pounds).

Residents of Akutan are reported to harvest and consume about 466 pounds of subsistence resource per capita, based on a 1990 survey of an estimated 31 year round households for a total ADF&G effective population of 102 individuals (ADF&G 2000). Of the subsistence total, 26 percent was salmon, 31 percent was non-salmon fish, 6 percent was land mammals, 23 percent was marine mammals, 6 percent was birds and eggs, 6 percent was marine invertebrates, and 2 percent was vegetation. Various groundfish are a component of the non-salmon fish, and average about 9 percent of the total (43 pounds per capita). The major contributors to this component are cod (29 pounds) and rockfish (11 pounds).

Residents of Sand Point are reported to harvest and consume about 256 pounds of subsistence resource per capita, based on a 1992 survey of an estimated 204 year round households for a total ADF&G effective population of 606 individuals (ADF&G 2000). Of the subsistence total, 54 percent was salmon, 21 percent was non-salmon fish, 11 percent was land mammals, 2 percent was marine mammals, 2 percent was birds and eggs, 7 percent was marine invertebrates, and 3 percent was vegetation. Various groundfish are a component of the non-salmon fish, and average about 9 percent of the total (22 pounds per capita). The major contributors to this component are cod (12 pounds) and rockfish (8 pounds).

Residents of King Cove are reported to harvest and consume about 256 pounds of subsistence resource per capita, based on a 1992 survey of an estimated 158 year round households for a total ADF&G effective population of 560 individuals (ADF&G 2000). Of the subsistence total, 53 percent was salmon, 17 percent was non-salmon fish, 15 percent was land mammals, 1 percent was marine mammals, 4 percent was birds and eggs, 7 percent was marine invertebrates, and 3 percent was vegetation. Various groundfish are a

component of the non-salmon fish, and average about 4 percent of the total (10 pounds per capita). The major contributors to this component are cod (6 pounds) and rockfish (2.5 pounds).

1.2 Subsistence in the Kodiak Island Region

As noted, Kodiak is the single regionally important groundfish community. Residents of the City of Kodiak are reported to harvest and consume about 151 pounds of subsistence resource per capita, based on a 1993 survey of an estimated 1994 year round households for a total ADF&G effective population of 6,058 individuals (ADF&G 2000). Of the consumption total, 32 percent was salmon, 40 percent was non-salmon fish, 15 percent was land mammals, 6 percent was marine invertebrates, and 7 percent was vegetation. Various groundfish are a component of the non-salmon fish and average about 8 percent of the total (12 pounds per capita). The major contributors to this component are cod (4.8 pounds), rockfish (3.6 pounds), and greenling (2.4 pounds).

1.3 Subsistence in the South Central Alaska Region

As noted, Cordova, Homer, Nikiski, Seward, and Anchorage are the regionally important groundfish communities in the South Central region. Subsistence in each of these communities is described in this section. Subsistence data for groundfish for these communities, where known, shows a much lower level of use than is the case for the Aleutian and Kodiak Island regions.

Residents of Cordova are reported to harvest and consume about 179 pounds of subsistence resource per capita, based on a 1997 survey of an estimated 830 year round households for a total ADF&G effective population of 2,507 individuals (ADF&G 2000). Of the total of subsistence resources, 35 percent was salmon, 24 percent was non-salmon fish, 30 percent was land mammals, 2 percent was marine mammals, 1 percent was birds and eggs, 3 percent was marine invertebrates, and 5 percent was vegetation. Various groundfish are a component of the non-salmon fish and average about 4 percent of the total (7 pounds per capita). The major contributors to this component are rockfish (5 pounds) and cod (1 pound).

Homer was designated a "rural" community in May 2000. Prior to that time Homer residents had not been federally qualified subsistence users, so no data has been collected in recent years. Hence, the only available information on Homer's community pattern of subsistence use is fairly old. Residents of Homer are reported to harvest and consume about 94 pounds of subsistence resource per capita, based on a 1982 survey of an estimated 1,798 year round households for a total ADF&G effective population of 5,633 individuals (ADF&G 2000). Of the total of subsistence resources, 21 percent was salmon, 32 percent was non-salmon fish, 25 percent was land mammals, 2 percent was birds and eggs, 18 percent was marine invertebrates, and 2 percent was vegetation. No groundfish were reported as part of the Homer subsistence harvest. This probably indicates a relatively low level of harvest, perhaps as incidental take while targeting some other species, rather than a complete absence of take.

Kenai's community pattern of use of subsistence resources is described as an indicator for Nikiski, as no information exists for Nikiski in the ADF&G subsistence database. Both Nikiski and Kenai had been classified as "non-rural" (non-subsistence) communities until the Federal Subsistence Board changed their classification in May 2000, when the board designated all communities on the Kenai Peninsula as "rural." The ADF&G subsistence database nonetheless includes some historical harvest information for Kenai. Residents of Kenai are reported to harvest and consume about 84 pounds of subsistence resource per capita,

based on a 1993 survey of an estimated 2,274 year round households for a total ADF&G effective population of 6,372 individuals (ADF&G 2000). Of the total of subsistence resources, 46 percent was salmon, 19 percent was non-salmon fish, 20 percent was land mammals, 1 percent was marine mammals, 1 percent was birds and eggs, 6 percent was marine invertebrates, and 6 percent was vegetation. The amount of the non-salmon fish harvest was composed of groundfish (0.32 pounds per capita) is not significant.

Anchorage is not described in terms of its residents' subsistence use patterns because Anchorage is defined as a "non-rural" community and thus its residents are not federally qualified subsistence users. It can be assumed that the average Anchorage resident takes a small amount of groundfish while sport fishing. Seward is not described in terms of its residents' subsistence use patterns because there is no available information. Until May 2000, Seward was also classified as a "non-rural" community. Seward's community pattern of subsistence resource use is probably very similar to Homer's.

1.4 Subsistence in the Southeast Alaska Region

Subsistence utilization in the regionally important groundfish communities of Petersburg, Sitka, and Yakutat are presented in this section. Total utilization ranges between about 200 and 400 pounds per capita in these communities, with groundfish making up between one and five percent of the total subsistence resources consumed.

Residents of Petersburg are reported to harvest and consume about 198 pounds of subsistence resource per capita, based on a 1987 survey of an estimated 1,123 year round households for a total ADF&G effective population of 3,739 individuals (ADF&G 2000). Of the subsistence resource total, 23 percent was salmon, 22 percent was non-salmon fish, 29 percent was land mammals, 2 percent was birds and eggs, 19 percent was marine invertebrates, and 4 percent was vegetation. Various groundfish are a component of the non-salmon fish and average about 2 percent of the total (3.5 pounds per capita). The major contributors to this component are cod and rockfish.

Residents of Sitka are reported to harvest and consume about 205 pounds of subsistence resource per capita, based on a 1996 survey of an estimated 3,053 year round households for a total ADF&G effective population of 8,535 individuals (ADF&G 2000). Of the subsistence resource total, 28 percent was salmon, 26 percent was non-salmon fish, 25 percent was land mammals, 4 percent was marine mammals, 13 percent was marine invertebrates, and 3 percent was vegetation. Various groundfish are a component of the non-salmon fish, and average about 5 percent of the total (9.9 pounds per capita). The major contributors to this component are rockfish (5 pounds) and greenling (3 pounds).

Residents of Yakutat are reported to harvest and consume about 398 pounds of subsistence resource per capita, based on a 1987 survey of an estimated 169 year round households for a total ADF&G effective population of 589 individuals (ADF&G 2000). Of the subsistence resource total, 54 percent was salmon, 19 percent was non-salmon fish, 4 percent was land mammals, 8 percent was marine mammals, 1 percent was birds and eggs, 10 percent was marine invertebrates, and 4 percent was vegetation. Various groundfish are a component of the non-salmon fish, and average about 1 percent of the total (5 pounds per capita). The major contributors to this component are flounder (2.5 pounds), cod (1.5 pounds), and rockfish (1 pound).

2.0 POTENTIAL EFFECTS ON SUBSISTENCE USE OF STELLER SEA LIONS

This section presents the recent historical subsistence harvest of Steller sea lions in Alaska by region, discusses the overall population decline of Steller sea lions and its possible relationship to commercial groundfish fisheries, and assesses the potential effects of the proposed alternatives upon subsistence Steller sea lion harvest and use. The overall conclusion is that, even if a causal linkage exists between the groundfish fishery and declining Steller sea lion populations, the short-term effects of the proposed alternatives on subsistence activities are likely to be negligible or only slightly positive. Alternatives that reduce the commercial groundfish harvest will logically have neutral or positive effects upon Steller sea lion populations. Whether this will increase the subsistence use of the Steller sea lion resource is not clear from the available information. The proposed alternatives, to the extent that they achieve the stated objectives of assisting in the recovery of Steller sea lion populations and given that they do not restrict existing opportunities or abilities to take Steller sea lions for subsistence purposes, will have no negative effects upon subsistence uses of Steller sea lions.

Even if one assumes that the proposed alternatives will have potential effects on the population of Steller sea lions, it is probable that in the short-term any effects on subsistence would be small in magnitude. Even relatively large changes (20 percent) in Steller sea lion populations may not be accompanied by changes in the rate of subsistence use, for the reasons discussed below. Although subsistence harvest is to some degree related to the total population (and density) of animals to be taken, other factors also affect the rate of harvest, especially at low population levels. Unfortunately, little is known about these relationships, so the threshold at which at population is no longer perceived as "low" is not clear, and no information exists on changes in cultural preferences for, and uses of, traditional foods. Thus, the possibility remains that subsistence use of sea lions will increase in direct proportion to any increase in Steller sea lion population, although that does not appear to be the most likely case from the information available.

Steller sea lions are taken by a number of methods throughout the year. Hunting for sea lions is a relatively specialized subsistence activity, and a relatively small core of highly productive hunters from a limited number of households account for most of the harvest. Once harvested, sea lion is widely distributed among a much wider range of households (ADF&G, 1999). For Kodiak Island communities, the sea lion harvest used to take place at their haulouts, and 20 or 30 were transported at a time aboard purse seiners. Thus, one or two hunters could supply an entire village. Currently, hunting sea lions involves two or three individuals using skiffs to hunt swimming sea lions in open water. The hauling capacity of such skiffs is one or two animals, and hunters Kodiak hunters prefer to take young adults of medium size rather than large bulls or young pups. Some sea lions are taken from shore locations where sea lions are known to swim close to the shoreline. The animal is then retrieved using a skiff. Peak months for harvest are October through December (ADF&G, 1991).

Methods in the Aleutians and Pribilof Islands are documented in ADF&G 1995. Pribilof Island residents hunt sea lions almost exclusively from the shore and target swimming juvenile (mid-size) males. On St. Paul Island sea lion hunting is most commonly done from shore at Northeast Point, accessible by truck. St. Paul hunters take advantage of known sea lion "swimways." Once shot, the hunter waits for the wind and sea to bring the carcass to shore, as heavy seas generally preclude the use of a skiff. A "sea dog" (a retrieval device consisting of a piece of wood with hooks attached to a 30 to 40 foot rope) assists in this process. Not all animals are recovered, but hunters try to shoot only those animals for which there is a high probability of eventual recovery. Hunters will at times hunt from skiffs in calm weather. Sea lion hunting on St Paul occurs

mainly from September through May. Sea lion hunting on St. George is similar to that of St. Paul, being predominately shore-based. Harvest occurs mainly from January through May. Sea lion harvest in the Aleutian Chain (Atka, Unalaska, Akutan, and Nikolski) occurs mostly from skiffs in open water, and hunters target both sexes. When skiff travel is risky or for a change of pace, sea lion hunting is also done from concealed shore stations. Aleutian Chain hunters will concentrate effort near haulout locations, and take more adult and female animals than do Pribilof Island hunters. Seasonality of sea lion harvest is quite variable, and appears to be dependent on sea lion abundance and distribution.

Historical documented subsistence harvests of Steller sea lions are presented in Tables 1 through 4. Most of this information is for years when Steller sea lions were classified as "threatened," before the western stock of Steller sea lions was reclassified as "endangered" in 1997. It should also be clearly noted that the information in the first table is not totally consistent with the other three, which underscores the general lack of precision in the data. What is evident, however, is that the area of heaviest subsistence use of Steller sea lions is in southwestern Alaska, and is concentrated in a relatively few communities. It is also important to note that while subsistence use of other resources is open to a broader spectrum of residents of coastal Alaskan communities, the take of marine mammals is restricted to the Alaska Native portion of the population under the terms of the Marine Mammal Protection Act of 1972 (as reauthorized in 1994 and amended through 1997; the specific subsistence exemption for Alaska Natives is found in Section 101 [16 U.S.C. 1371]). Therefore, any subsistence impacts to Stellar sea lions would be concentrated among Alaska Native residents of these communities.

Tables 1 through 4 document a sharp decline in subsistence harvest of Steller sea lions in recent years, the same years that have seen an overall decline in the population of Steller sea lions. More recent information on the subsistence take of Steller sea lions is not available, due in part to the fact that NMFS did not renew its contract with ADF&G for data collection after 1998. Co-management agreements between federal marine mammal regulators and subsistence user groups are still in development or awaiting final approval (Tom Loughlin, personal communication, 2000[9]). It is reasonable, however, to assume that the trend of decline in harvest has continued in more recent years in parallel with the overall sea lion population decline.

[9]Loughlin, Tom, National Marine Mammal Laboratory, Seattle WA. Telephone conversation 09/29/00.

Table 1 Documented Subsistence Steller Sea Lion Harvest, Alaskan Coastal Communities

Community	Region	Year	Total Community Subsistence Harvest (Edible lbs)	Steller Sea Lion		
				Number Harvested	Edible lbs	% Community Harvest
Alakanuk	W	1980	431,904	9	1,200	0.3%
Quinhagek	W	1982	536,584	16	2,286	0.4%
Sitka	SE	1996	1,749,772	2	400	0.0%
Chenega Bay	SC	1993	27,809	12	997	3.6%
Nanwalek	SC	1997	42,593	5	1,048	2.5%
Tatitluk	SC	1997	322,915	19	3,712	1.1%
Akhiok	SW	1992	25,735	3	600	2.3%
Akutan	SW	1990	47,397	38	7,688	16.2%
Aleknagik	SW	1989	54,079	2	221	0.4%
Atka	SW	1994	37,307	44	8,700	23.3%
False Pass	SW	1988	28,586	1	220	0.8%
Iliamna	SW	1991	82,915	1	130	0.2%
Ivanof Bay	SW	1989	15,677	1	150	1.0%
Manokotak	SW	1985	118,337	16	1,639	1.4%
Nikolski	SW	1990	36,945	26	5,143	13.9%
Old Harbor	SW	1997	88,851	37	7,442	8.4%
Ouzinkie	SW	1997	55,015	1	264	0.5%
Perryville	SW	1989	45,729	11	2,067	4.5%
Port Lions	SW	1993	78,371	2	356	0.5%
Saint George	SW	1994	11,330	3	556	4.9%
Saint Paul	SW	1994	131,814	141	28,214	21.4%
Unalaska	SW	1994	355,081	72	14,423	4.1%

Source: ADF&G CPDB, 2000.
NOTE: Numbers are for the "most typical" year for which information is available. ADF&G does only limited surveys and subsistence use can vary greatly from year-to-year. Communities with documented use but no harvest are not included. Numbers differ from, and are not included in, ADF&G 1997a; both are estimates based on samples.

Table 2 Estimated Subsistence Take of Steller Sea Lions, by Alaska Region

Community	Year						
	1992	1993	1994	1995	1996	1997	1998
Southeast Alaska	6	1	5	0	0	0	8
North Pacific Rim	32	35	26	31	14	6	29
Upper Kenai-Cook Inlet	10	11	1	0	3	0	0
Kodiak Island	58	58	61	137	60	38	18
South Alaska Peninsula	2	6	6	8	5	8	9
Aleutian Islands	135	124	122	96	58	52	37
Pribilof Islands	297	245	193	68	46	56	78
South Bristol Bay	0	0	0	0	0	0	0
North Bristol Bay	8	7	1	0	0	4	0
TOTAL	548	487	415	340	186	164	179

Source: ADF&G 1999

Table 3 Estimated Subsistence Take of Steller Sea Lions, Aleutian and Pribilof Communities

Community	Year						
	1992	1993	1994	1995	1996	1997	1998
Atka	39	25	54	40	17	12	17
Akutan	30	23	16	6	16	6	6
Ivanof Bay	0	4	0	0	2	2	2
King Cove	1	1	4	5	0	4	4
Nikolski	8	6	0	0	3	3	1
Perryville	1	0	1	3	3	2	1
Saint George	70	19	20	8	8	28	20
Saint Paul	227	227	173	60	38	28	58
Unalaska	59	43	42	47	22	30	13
TOTAL	434	344	309	166	109	115	122

Source: ADF&G 1995, 1996, 1997a, 1997b, 1998, 1999
NOTE: Numbers differ from, and are not included in, ADF&G CPDB, 2000. Both are estimates based on samples. Numbers in this table have been rounded to the nearest integer.

Table 4 Estimated Take of Steller Sea Lions, Selected Other Alaskan Communities

Community	Year						
	1992	1993	1994	1995	1996	1997	1998
Tatitlek	13	5	16	3	5	4	22
Akhiok	4	0	3	2	7	8	3
Old Harbor	46	33	48	113	50	26	13

Source: ADF&G 1995, 1996, 1997a, 1997b, 1998, 1999
NOTE: Numbers differ from, and are not included in, ADF&G CPDB, 2000. Both are estimates based on samples. Numbers in this table have been rounded to the nearest integer.

The documented Steller sea lion subsistence take is a measure of the past use and reliance upon this resource, and almost certainly does not represent the current harvest, which can be assumed to be much lower. For Atka, Akutan, Saint George, and Saint Paul (and perhaps Unalaska and several other communities) it can be seen that Steller sea lions represented a very significant subsistence resource in terms of relative contribution to overall community subsistence resource consumption

ADF&G has tried to address the possible linkage between the sharp decline in the overall Steller sea lion harvest and the steep decrease in the sea lion subsistence harvest between 1992 and 1998 ADF&G 1997a, 1998, 1999). They note that while the total number of sea lions harvested has decreased, this can be accounted for by an equivalent decrease in the number of people hunting sea lions. The apparent rate of hunter success has not declined in any measurable way (although ADF&G has not investigated this in a rigorous manner). ADF&G states:

> "… there are probably a variety of local factors related to the year-to-year changes in the number of households hunting sea lions in particular communities, including seasonal hunting conditions, local food needs, and personal circumstances of hunters. It is likely that the declines in the numbers of sea lion hunters in many communities are because sea lions are increasingly harder to find and consequently more difficult and expensive to hunt. As sea lions become scarcer in a community's hunting area, an increasing number of hunters in the community probably choose to stop hunting them. While the hunters that continue to hunt appear to maintain annual harvest rates similar to past years, hunters probably are investing more time and money in pursuit of the sea lions harvest. In addition to these factors, it is quite likely that some sea lion hunters have chosen to reduce their hunting activity because of perceived problems with sea lion populations" (ADF&G 1999:69).

In earlier documents, ADF&G had also suggested that another factor may be the increased availability of seasonal wage employment in local communities (presumably including work the groundfish fisheries). Some hunters may be choosing to work rather than to hunt, as a conscious economic choice of time allocation (ADF&G 1997a, 1998). This explanation is not stressed as much in their 1999 report, being included in the phrase "… personal circumstances of hunters" (ADF&G 1999:69). It should be noted that hunting Steller sea lions does require a considerable amount of effort, and in most cases the cooperation of several people,

so that time management and allocation could be a significant factor. An additional possible contribution to a decrease in sea lion subsistence harvest would be a cultural change in taste, so that the consumptive demand for sea lion may have decreased. No information exists on this possible factor.

This information provides some support for a direct relationship between the overall Steller sea lion population and the level of subsistence harvest. Such support is not definitive, however, and other factors cannot be excluded. The weighting of factors is also not possible from the evidence available. It does appear that present Steller sea lion harvest methods are likely to be more successful, and certainly more efficient, when resource populations (and density) are higher. In general, the more abundant a subsistence resource is, the more heavily it is used. Thus, our analysis does assume some relationship between the Steller sea lion population level and subsistence harvest from that population. The strength of that relationship cannot be determined given other factors in play.

This lack of precise information, both in terms of precise measurement as well as in terms of causal linkages, is not uncommon when examining human behavior. Human behavior is often "over –determined" in the sense that the same behavior can have several "causes," and sometime the same "causes" can have different results.

The relationship between the existing groundfish fishery and Steller sea lion population dynamics is far from clear, although the alternatives posit a direct linkage between the two (e.g., commercial fisheries are causally linked to sea lion population decline). Since the proposed alternatives decrease fishing relative to the status quo, such a causal linkage would logically result in positive Steller sea lion population effects, and neutral or positive in terms of subsistence use of Steller sea lions. Given the current depressed population of Steller sea lions, it is not clear that a slight improvement in their population would be reflected in increased subsistence take. A number of other variables, such as negotiated agreements, and/or other cultural or social variables that may influence long-term subsistence trends may be at work as well. Thus, the potential subsistence effects of most of the proposed alternatives are either neutral or slightly positive.

Given the lack of availability of precise information, it is not possible to distinguish degrees of positive subsistence impact among the alternatives, either to order them or to determine whether or not such theoretically positive impacts would rise to a level of significance. Logically, those which reduce commercial groundfish harvest the most could have the most potential benefit for the subsistence use of Steller sea lions, but operationally such differences will likely be slight. In general, somewhat positive effects could result if reductions in groundfish harvest would lead to increased sea lion populations, and if higher sea lion populations would result in benefits to subsistence users of sea lions. Such benefits could include higher harvest levels and lower harvest costs for sea lions.

Thus, the degree to which subsistence reliance on Steller sea lions could be affected by the proposed alternatives cannot be quantified given the lack of precise data, but it is not likely to be great. There is the additional complication that subsistence harvest levels normally vary considerably from year-to-year, due to the natural variability of weather, animal abundance and distribution, and other factors. Thus the long-term direction of change (trend) is more important than short-term measures of magnitudes of change. If there is a causal relationship between the commercial groundfish fishery and declining Steller sea lion populations, a reduction in or redirection of commercial groundfish harvest is probably a prerequisite for the increased subsistence harvest of Steller sea lions. It is simply not possible to determine how a specific change in one would result in a specific change in the other. ADF&G has concluded that there is a potential but essentially

unknown relationship between sea lion population and the level of sea lion subsistence harvest (ADF&G, 1997a, 1998, 1999). While it is clear that if sea lions approach extinction, then subsistence harvest would likely decline, it is much less clear that if sea lion population increases, then subsistence harvest will also increase. It is likely subsistence harvest changes would "lag behind," and be smaller in magnitude than, potential changes in overall Steller sea lion population. A number of other variables, such as negotiated agreements or other cultural or social variables that may influence long-term subsistence trends may be at work.

In terms of examining impacts on a community level, it is important to note that of all the communities listed in Table 1 as having a documented Steller sea lion harvest, only two of these, Akutan and Unalaska, are identified as "regionally important groundfish communities" (i.e., in Section 3.12.2 and Appendix F(1) of this SEIS) with substantial direct participation in the fishery. In other words, in general, where use of Steller sea lions is important to the community subsistence base, the commercial groundfish fishery is not, and vice versa. The two exceptions to this generalization have their own particular circumstances. In Akutan, as discussed in the community profile in Appendix F(1), the traditional community is essentially distinct from the local seafood processing operation with virtually no overlap in population, although there has been an increase in indirect participation in the fishery by local residents through the CDQ program. In Unalaska, as noted in that community profile in Appendix F(1), there is virtually no direct engagement of the local Aleut population in the commercial groundfish fishery (and Unalaska is not a CDQ community, although the community does benefit from being an ex-officio member of a CDQ group). In sum, the communities and populations that utilize Steller sea lions as a subsistence resource are not the same as those that directly utilize groundfish as a commercial resource, and that would therefore be directly impacted by the changes the proposed alternatives would bring about in commercial groundfish fishery. The communities of Alakanuk, Akutan, Aleknagik, Atka, False Pass, Nikolski, St. George, and St. Paul, listed as having documented Steller sea lion take, do participate in the fishery in various ways and to varying degrees through the CDQ program, and other communities listed also benefit from the fishery in the form of shared fish tax revenues.

3.0 INDIRECT IMPACTS ON OTHER SUBSISTENCE ACTIVITIES

Beyond direct use of groundfish and Steller sea lions as subsistence resources, the commercial groundfish management measures designed to protect Steller sea lions could have impacts on other subsistence pursuits. These type of impacts fall into two main categories:

- Impacts to other subsistence pursuits as a result of loss of income from the commercial groundfish fishery. This income could be used to purchase fuel, vehicles, other subsistence related gear, or otherwise offset expenses required to engage in a range of subsistence pursuits.

- Impacts to other subsistence pursuits as a result of the loss of opportunity to use commercial fishing gear and vessels for subsistence pursuits. This would result from vessels not being ready to go as a result of being prepared for commercial fishing or from the simultaneous harvest of fish and game resources during commercial fishing forays where these assets are used in such a manner that "commercial and subsistence catches are jointly produced, based on shared use of fixed and variable inputs."

With regards to the first type of potential impact, loss of income resulting in funds not being available for subsistence pursuits, this is a very complex issue. Among the factors involved:

- Loss of income can impact everyone associated with the fishery, and people associated with the fishery live in communities ranging across Alaska and the Pacific Northwest. Of the income that is lost to individuals who live in communities where subsistence is pursued, income may or may not be used for subsistence expenses.

- Income specifically contributed by groundfish pursuits may be a larger or smaller proportion funds used for subsistence by individuals or families.

- The relationship between loss of income to specific subsistence outcomes is not entirely straightforward. Clearly, income is required for contemporary subsistence pursuits and a loss of income could and would decrease subsistence efforts if the loss of income were of a sufficient magnitude across the groups that pool resources (e.g., extended families or entire communities in some cases) or engage in subsistence harvests or sharing. However, factors that influence participation in subsistence activities are many and complex. An increase of income may decrease subsistence activity (e.g. if the source of the income requires a time commitment away from subsistence pursuits) or an increase in subsistence activity (e.g., if the income is used to increase the efficiency of subsistence pursuits that are undertaken). A decrease in income may decrease subsistence involvement (e.g., it is more difficult to afford fuel for vessels used for subsistence) or increase subsistence involvement (e.g., subsistence represents a more attractive alternate activity of income producing activities are curtailed). This type of analytic difficulty in assessing the indirect subsistence outcomes of alternatives that may impact income - i.e., there is not a linear relationship between income and subsistence - is further discussed below.

- Field experience would indicate that subsistence strategies are, at least in part, flexible in nature and are readily adapted to the level of cash flow available. For example, when cash is relatively plentiful, subsistence activities may take place over a wider geographic area as new areas are explored for what may be marginal returns, but when cash becomes less available, subsistence is pursued with a more economic strategy, with the activity becoming more focused and cash efficient.

- Income associated with the groundfish fishery can derive from direct participation (e.g., employment), investment (e.g., vessel or processor ownership), control of quota (e.g. CDQ related revenues).

- CDQ communities represent a special case in that these are virtually the only communities where subsistence is heavily practiced and that benefit from the fishery primarily through investment (and control of quota).

- Different CDQ groups have chosen different organizational structures and strategies for use of funds derived from the program (and have had varying degrees of success with investments). As a result, there are effectively different levels of income to individuals and families in different CDQ communities.

- CDQ programs focused on employment and training may, in turn, indirectly influence individual subsistence spending and participation decisions.

The second type of potential impact, loss of opportunity for joint production, applies to groundfish communities with direct participation in the fishery (i.e., only vessels that currently participate in the commercial fishery can be used for joint production). Below are some general points about the vessels involved, followed by points about the communities involved.

- Not all vessels in the commercial groundfish fishery are used for subsistence in addition to commercial fishing.

- Depending on the community involved, a greater or lesser proportion of fleet engaged in the local commercial groundfish fishery is a non-resident fleet.

- Joint production can occur in at least two fundamentally different ways. Subsistence fish can be retained during what are otherwise commercial trips, or separate trips may be taken that focus on subsistence.

- As a general rule, trips specifically dedicated to subsistence are uneconomic for the larger vessels engaged in the groundfish fishery. Larger vessels also tend to fish more away from the community of residence of owner, skipper, and crew, therefore subsistence use is not practical even during what could otherwise be combined commercial/subsistence trips. For the largest vessels participating in the fishery, there is no indication of any subsistence utilization in any form. (For the large vessels that are based in communities were subsistence does take place, dedicated subsistence trips for fishing may be unusual, but it is known from field interviews that sometimes larger vessels are used to mke hunting trips with several persons going at once.)

- Smaller vessels are most likely to be involved in joint production.

- The proportion of the total subsistence production for individual communities that result from joint production from these particular vessels during the groundfish fishery is unknown, but as a general rule of thumb, the smaller vessel classes are less likely to be narrowly specialized than the larger vessels. Nearly all of the smaller class vessels that engage in the groundfish fishery are also involved in some combination of (or all of) the salmon, halibut, sablefish, and herring fisheries. Joint production opportunities would presumably still exist during pursuit of fisheries other than those potentially altered or reduced by the proposed alternatives. This is true both for the vessels engaged in the groundfish fishery, as well as for other vessels in the community that are not engaged in the groundfish fishery. As most if not all vessels are going to be gearing up anyway, the vessel will have had its annual maintenance (fixed costs) taken care of regardless, as long as the vessel is operating in some (any) fishery. Variable costs of subsistence may increase if vessels have to make more dedicated subsistence trips to achieve desired catch levels.

- For those small vessels engaging in other fisheries in addition to the groundfish fishery, the time of the year that the vessel would be available for joint production may decrease if the reduction of the commercial groundfish fishery were of a sufficient magnitude. For example, if a vessel owner decided not to prepare the vessel for pursuit of Pacific cod in March, but rather waited to get the boat ready for the year until a salmon opener in May, there may be crab subsistence opportunities forgone in the period the vessel was not available. Similarly, some vessel owners

may put their vessels to bed for the winter sooner than they otherwise would have, such that other joint production subsistence opportunities are foregone at the end of the year.

- In practical terms, joint production opportunities vary by gear type as well as vessel size. Although quantitative data are slim, knowledge of the industry would suggest that little subsistence takes place using trawl vessels compared to other gear types. Among the fixed gear classes, much more time is directed toward sablefish, salmon, and herring than is devoted to groundfish, therefore the joint production opportunities in this class would remain relatively high independent of the groundfish management alternative chosen.

- Field observations and discussions would indicate that almost all commercial vessel owners resident in communities where subsistence takes place also own at least one skiff from which they can engage in subsistence pursuits, so even if the larger commercial vessel is not available for any number of reasons, it will not mean the discontinuation of subsistence efforts. Even if a commercial vessel owner does not individually own a skiff, it is a truism of village life that there will always be other vessels owned by sons, fathers, brothers, other kin, or neighbors. It is also important to note that if commercial fishing time goes down, it is likely that subsistence activities will increase, because the relative importance of subsistence in the household economy (e.g., suppling food for the table) will increase.

- Field observations would indicate that different individuals look at the balance between commercial and subsistence catches during times of scarcity or forced decision making in very different ways. From one point of view, if the fishing is poor, the vessel owner should direct effort to the greatest extent possible toward the commercial catch in order to get at least some economic return out of a scarce resource for the family or household economy. From the other point of view, if conditions are bad, subsistence fishing should be accomplished first, because subsistence takes care of the basic need to put food on the table in the most direct way possible. Clearly both points of view are held, and both strategies are pursued by different individuals, and this is illustrative of another dimension of the complex relationship between commercial and subsistence pursuits.

- CDQ owned vessels that participate in the groundfish fishery largely do not participate in subsistence activities. Although CDQ communities in general have relatively high levels of subsistence engagement, CDQ owned vessels participating the groundfish fishery may not be based in those communities (i.e., they are an investment that is not directly run out of one of the communities, as is the case for ownership interest in catch processors). Other CDQ owned vessels do not participate in the groundfish fishery (or those portions of the groundfish fishery that will could change as a result of the alternatives) at all, or at only very low levels. For example, some CDQ owned vessels concentrate nearly exclusively on the salmon fishery, while others focus on halibut and sablefish. A more detailed discussion of CDQ owned fleet characteristics is provided in the separate CDQ discussion in this document.

- As noted earlier, factors involved in whether or not individuals engage in subsistence pursuits are multiple and complex, and this applies to vessels as well. Some data from ADF&G (and mentioned in the Steller sea lion subsistence section, above) suggest that in at least some instances, level of engagement in subsistence activities declines when individuals are engaged in

commercial pursuits. Therefore it may be the case for at least some individuals that if their commercial groundfishing activity declines, their direct participation in subsistence activities may increase. Field interviews and other studies (Kruse, et al., 1981, Kruse, 1982, Schroeder, et al., 1987) suggest that in other cases, individuals who are the most economically successful in a given community are often also among the highest subsistence producers.[10] This likely results from these individuals having access to more income to purchase better or more efficient equipment (and to be able to afford to engage in activities that require cash outlay for longer periods of time), and the flexibility of schedule that often comes with higher paying employment, among other individual or personal factors. In sum, the factors leading to subsistence participation are many, and even appear to be contradictory in some cases.

In terms of communities, significant social or community level impacts resulting from the alternatives analyzed are only anticipated in Unalaska, Akutan, King Cove, Sand Point, and Kodiak, based on the information presented in Section 3.12.2 and Appendix F(1), and the analysis presented in Section 4.14.2. (Some brief supplemental information on the characteristics of the Chignik area fleet is presented in Section 1.4 of Appendix F(1). As outlined below, joint production impacts are only considered likely for a subset of these communities.

- In the case of Unalaska, none of the large commercial vessels that deliver groundfish to the local processing plants are owned or crewed by residents of the community. There is a small boat fleet from the community that does jig for cod, although the most recent data available suggest that none or very few of jig boat owners derive their income exclusively from commercial fishing. The fact that commercial fishing for small boat owners is generally one part of a (variable) multiple income source strategy of piecing together a living suggests that even if there were a partial reduction opportunity to fish, there would still be incentives to continue to fish. If at least some fishing took place, the opportunity would continue to exist for joint commercial/subsistence production. In terms of the number of participants, this fleet has seen growth and decline in recent years. According to CFEC/ADF&G fish ticket data, three Unalaska/Dutch Harbor jig vessels fished groundfish in 1992, two fished in 1993, and then there was an upsurge in participation with between 13 and 18 vessels reporting per year from 1994 to 1997, inclusive. A decline quickly followed, however, as in 1998, 1999, and 2000, there were 9, 8, and 7 vessels participating each year, respectively. There are also some small boat longline groundfish activity by small boats, but the level of effort in federal waters by local residents within this small boat fleet is difficult to assess with currently available data, as noted in the Unalaska community profile in Appendix F(1) of this SEIS.

- In Akutan, like Unalaska, the fleet the delivers at the local processing facility is a non-residential fleet. Unlike Unalaska, however, the small boat fleet from the community comprised nearly exclusively of open-skiff type of vessels that generally do not deliver groundfish to the plant, so the residential fleet from the village/traditional community is essentially not engaged in the commercial groundfish fishery. Therefore, there would be no joint production impacts from any of the alternatives.

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[10] This general point is also developed on the ADF&G website Subsistence FAQ at:
http://www.state.ak.us/local/akpages/FISH.GAME/subsist/geninfo/about/subfaq.htm

- In the case of Sand Point and King Cove, there is a residential fleet that does deliver groundfish in significant volume to the plants in addition to deliveries from non-residential catcher vessels. In 2000, 57 of the 80 total vessels in the AKAPAI region were owned by residents of King Cove and Sand Point (including 6 of the 10 'ghost' vessels). Looking at the vessel classes involved, it is unlikely, for reasons outlined above, that the four local pot boats (all over 85 feet in length) are in part subsistence vessels. It is also unlikely that the two "04-TCV Non-AFA" vessels over 90 feet in length (2 in King Cove and 1 in Sand Point) commonly engage in subsistence, although the third vessel in this class, at 68 feet, is more likely to do so. The rest of the local vessels are of a size that they are likely to engage in subsistence. (One factor to keep in mind is that 'ghost' vessels are so classified because while they made groundfish landings, they did not make enough to put them into a particular class, and therefore they are not likely to be affected by any of the alternatives.)

  In terms of relative engagement in other fisheries, the local fixed gear boats are heavily engaged in non-groundfish fisheries (approximately 65% of ex-vessel value for the FGCV 33-59' class and approximately 75% of FGCV less than 32' class is non-groundfish). Similarly all of the TCV 60 vessels are currently participating in salmon fisheries. Although data are not available to quantify potential impacts of this nature, it would appear likely that if income of larger vessels (i.e., those in the TCV NON-AFA/TCV 60/PCVs classes and some in the FGCV 33-59' vessel class) goes down significantly because of SSL alternatives, it will be more difficult for vessel owners and operators to justify using their large vessel for certain types of subsistence activities. One logical outcome could be that subistence effort may be shifted toward resources that are more accessible

- For Kodiak, similar to Sand Point and King Cove, there is a residential fleet that delivers significant amounts of groundfish to the local processing plants. The City of Kodiak based vessels account for 95 percent of the groundfish total ex-vessel value of the region, and about 87 percent of all grounfish vessels in the region. Old Harbor and Ouzinkie vessels account for between 1 and 2 percent of the total regional catcher vessel ex-vessel value each. Old Harbor is home to about 6 percent of the grounfish vessels in the region, and Ouzinkie about 3 percent of these vessels. Port Lions and Larsen Bay represent less than 1 percent of value and 2 percent of regional vessels each. As a general rule, the larger vessels in the region tend to be disproportionately associated with the community of Kodiak compared to the smaller villages. All onshore groundfish processing in the region occurs the community of Kodiak, with the exception of a single processor at Atilak. Available data suggest that this facility, however, does not appear to focus strongly on groundfish, and does not appear to take much if any delivery of groundfish from vessels based in the nearby community of Akhiok. Given the concentration of the fleet in Kodiak, and the inherent tendency of smaller vessels (such as those in the smaller villages as well as that portion of the Kodiak fleet) to be less specialized (and therefore have more joint production opportunities), whatever indirect subsistence impacts that do occur in this region as a result of the alternatives are likely to be concentrated in the City of Kodiak itself.

In summary, the indirect impact of the alternatives on subsistence is difficult to assess for the reasons discussed in this section. Impacts are likely to be concentrated among small vessel owners in a relatively small number of communities, although indirect impacts through loss of income may have impacts on subsistence pursuits in a wider range of communities, including the CDQ communities.

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APPENDIX F4: CDQ REGION AND PROGRAM EXISTING CONDITIONS

1.0 INTRODUCTION

The western Alaska Community Development Quota (CDQ) program was established to enable residents of rural communities in western Alaska to participate in the fisheries off their shores in a way that will bring significant economic development to the Bering Sea region. Originally involving only the pollock fishery, the program has in recent years has expanded to become multi-species in nature, encompassing both groundfish and non-groundfish fisheries.

The CDQ program is a federal program that allocates a portion of the total allowable catch (TAC) for federally managed Aleutian Island and Bering Sea species to eligible communities in western Alaska. The CDQ program includes such species as pollock, Pacific cod, Atka mackerel, flatfish, sablefish, and other groundfish, along with halibut, and crab. Currently, the CDQ program is allocated portions of the groundfish fishery that range from 10 percent for pollock to 7.5 percent for most other species. The CDQ program was granted in perpetuity through the Magnuson-Stevens Act authorized by the U.S. Congress in 1996. The State of Alaska is responsible for the administration and monitoring of the program. The State administers the program jointly thorough the Alaska Department of Community and Economic Development (the lead agency) and the Alaska Department of Fish and Game.

Sixty-five Alaska Native Claims Settlement Act (ANCSA) villages near the Bering Sea have established eligibility under federal and state regulations. These villages formed six non-profit CDQ groups: Aleutian Pribilof Island Community Development Association (APICDA); Bristol Bay Economic Development Corporation (BBEDC); Central Bering Sea Fishermen's Association (CBSFA); Coastal Villages Region Fund (CVRF); Norton Sound Economic Development Corporation (NSEDC); and Yukon Delta Fisheries Development Association (YDFDA). The groups have established partnerships with fishing corporations. Local hire and reinvestment of proceeds in fishery development projects are a required part of the program.

In recent years the program has provided more than 1,000 jobs annually for region residents. Yearly wages have exceeded $8 million. This program has also contributed to infrastructure development projects within the region as well as loan programs and investment opportunities for local fishermen.

Reports summarizing and/or reviewing the activities of the CDQ program have been prepared for several purposes (NPFMC 1998, NRC 1999, DCED 2001). In addition, each of the CDQ groups file a management plan with the State when they apply for their requested share of the overall CDQ allocation. Each group also files quarterly reports that detail their activities and tracks their progress in relation to the goals they have set in their management plans. The State can adjust the percentages awarded to each group from one allocation period to the next, based on the State's evaluation of various factors – documented need, adequacy of the proposed plans to use the requested allocation to meet those needs, past performance, and perhaps others.

1.1 CDQ Allocations and Harvest

In 1991, the NPFMC recommended to the Secretary of Commerce that a fishery CDQ program be created. The purpose of the CDQ program was to extend the economic opportunities of the productive fisheries in the Bering Sea and Aleutian Islands (especially pollock) to small, rural communities in proximity to these valuable living marine resources. As initially envisioned, the proposed program set aside 7.5 percent of the Bering Sea

and Aleutian Island's annual TAC for Alaska pollock for allocation to qualifying rural Alaskan communities. The program was initially proposed to run for a period of four years, lasting from 1992 through 1995, but was subsequently extended for an additional three years, carrying it through 1998. In subsequent actions, a CDQ program for BSAI halibut and sablefish was implemented in 1995. A CDQ program for BSAI crab was implemented in 1998, and the multi-species groundfish CDQ program was implemented in late 1998. The NPFMC also extended the pollock CDQ allocations permanently by including pollock in the multi-species groundfish CDQ program. The American Fisheries Act of 1998 increased the pollock allocation for the CDQ program to 10 percent of the annual TAC.

Under the current regulations all groundfish and prohibited species caught by vessels fishing for CDQ groups accrue against the CDQ allocations and none of the groundfish or prohibited species caught in the groundfish CDQ fisheries accrue against the non-CDQ apportionment of the TAC or prohibited species catch limits. The CDQ groups are required to manage their catch to stay within all of their CDQ allocations. The CDQ allocations recommended by the State for 2001-2002 are displayed in Table 1. In 2001, these percentages represented approximately 185,000 metric tons of groundfish (Table 2).

Table 1 CDQ Allocation Percentages by Species and Group, 2001-2002

	Allocation (Percent)						
	APICDA	BBEDC	CBSFA	CVRF	NSEDC	YDFDA	Total
Halibut							
4B	100	0	0	0	0	0	100
4C	10	0	90	0	0	0	100
4D	0	26	0	24	30	20	100
4E	0	30	0	70	0	0	100
Crab							
Bristol Bay Red King	18	18	0	18	18	18	100
Norton Sound Red King	0	0	0	0	50	50	100
Pribilof Red & Blue King	0	0	100	0	0	0	100
St. Matthew Blue King	50	12	0	12	14	12	100
Bering Sea C. Opilio Tanner	10	19	19	17	18	17	100
Bering Sea C. Bairdi Tanner	10	19	19	17	18	17	100
Sablefish & Turbot							
Sablefish, Hook & Line – A1	15	20	0	30	20	15	100
Turbot-AI	16	20	5	21	20	18	100
Sablefish, Hook & Line – BS	15	22	18	0	20	25	100
Turbot-BS	20	22	7	15	15	21	100
Pacific Cod	16	20	10	17	18	19	100

	Allocation (Percent)						
	APICDA	BBEDC	CBSFA	CVRF	NSEDC	YDFDA	Total
Pollock							
Bering Sea/ AI/Bogoslof	14	21	4	24	23	14	100
Atka mackerel:							
Eastern	30	15	8	15	14	18	100
Central	30	15	8	15	14	18	100
Western	30	15	8	15	14	18	100
Yellowfin sole	28	24	8	6	7	27	100
Flatfish:							
Other Flats	25	23	9	10	10	23	100
Rocksole	24	23	8	11	11	23	100
Flathead	20	20	10	15	15	20	100
Other Species	18	20	10	16	16	20	100
Other Rockfish							
O. Rockfish-BS	25	21	7	12	13	22	100
O. Rockfish – AI	23	17	7	18	17	18	100
Arrowtooth	24	22	9	11	10	24	100
Pacific Ocean Perch Complex							
True POP-BS	18	21	7	18	18	18	100
Other POP-BS	23	18	8	16	16	19	100
True POP – AI							
Eastern	30	15	8	15	14	18	100
Central	30	15	8	15	14	18	100
Western	30	15	8	15	14	18	100
Sharp/Northern-AI	30	15	8	15	14	18	100
Short/Rougheye – AI	22	18	7	18	17	18	100
Sablefish, Trawl – A1	24	23	9	10	10	24	100
Sablefish, Trawl – BS	17	20	10	17	18	18	100
Prohibited Species							
Halibut (mt)	22	22	9	12	12	23	100
Chinook salmon (#)	15	21	4	23	23	14	100
Other salmon (#)	15	21	5	23	22	14	100
Opilio (#)	24	22	9	11	10	24	°100
C. Bairdi – Zone 1 (#)	26	24	8	8	8	26	100
C. Bairdi – Zone 2 (#)	23	22	9	12	11	23	100
Red King Crab (#)	29	23	8	7	7	26	100

Source: DCED (2001)

Table 2 CDQ Allocation Amounts by Species and Group, 2001

CDQ Species	2001 TAC	2001 CDQ Allocation	CDQ Group Amounts (Metric Tons)					
			APICDA	BBEDC	CBSFA	CVRF	NSEDC	YDFDA
BS FG Sablefish	780	156	23	34	28	0	31	39
AI FG Sablefish	1,875	375	56	75	0	113	75	56
BS Sablefish	780	59	10	12	6	10	11	11
AI Sablefish	625	47	11	11	4	5	5	11
BS Pollock - total	1,400,000	140,000	19,600	29,400	5,600	33,600	32,200	19,600
AI Pollock	2,000	200	28	42	8	48	46	28
Bogoslof Pollock	1,000	100	14	21	4	24	23	14
Pacific Cod	188,000	14,100	2,256	2,820	1,410	2,397	2,538	2,679
WAI Atka Mackerel	27,900	2,093	628	314	167	314	293	377
CAI Atka Mackerel	33,600	2,520	756	378	202	378	353	454
EAI/BS Atka Mackerel	7,800	585	176	88	47	88	82	105
Yellowfin Sole	113,000	8,475	2,373	2,034	678	509	593	2,288
Rock Sole	75,000	5,625	1,350	1,294	450	619	619	1,294
BS Greenland Turbot	5,628	422	84	93	30	63	63	89
AI Greenland Turbot	2,772	208	33	42	10	44	42	37
Arrowtooth Flounder	22,011	1,651	396	363	149	182	165	396
Flathead Sole	40,000	3,000	600	600	300	450	450	600
Other Flatfish	28,000	2,100	525	483	189	210	210	483
BS Pacific Ocean Perch	1,730	130	23	27	9	23	23	23
WAI Pacific Ocean Perch	4,740	356	107	53	28	53	50	64
CAI Pacific Ocean Perch	2,560	192	58	29	15	29	27	35
EAI Pacific Ocean Perch	2,900	218	65	33	17	33	31	39
BS Other Red Rockfish	135	10	2	2	1	2	2	2
AI Sharpchin/Northern	6,745	506	152	76	40	76	71	91
AI Shortraker/Rougheye	912	68	15	12	5	12	12	12
BS Other Rockfish	361	27	7	6	2	3	4	6
AI Other Rockfish	676	51	12	9	4	9	9	9
Other Species	26,500	1,988	358	398	199	318	318	398
Protected Species								
Zone 1 Red King Crab (no.)	97,000	7,275	2,110	1,673	582	509	509	1,892
Zone 1 Bairdi Tanner Crab (no.)	730,000	54,750	14,235	13,140	4,380	4,380	4,380	14,235
Zone 3 Bairdi Tanner Crab (no.)	2,070,000	155,250	35,708	34,155	13,973	18,630	17,078	35,708
Opilio Tanner Crab (no.)	4,350,000	326,250	78,300	71,775	29,363	35,888	32,625	78,300
Pacific Halibut (mt)	4,575	343	75,460	75,460	30,870	41,160	41,160	78,890

CDQ Species	2001 TAC	2001 CDQ Allocation	CDQ Group Amounts (Metric Tons)					
			APICDA	BBEDC	CBSFA	CVRF	NSEDC	YDFDA
Chinook Salmon (no.)	41,000	3,075	461	646	123	707	707	431
Non-Chinook Salmon (no.)	42,000	3,150	473	662	158	725	693	441

Additional details on the harvest amount and wholesale value of the groundfish CDQ allocations are presented in Table 3 and Table 4. As noted above, prior to implementation of the multi-species groundfish CDQ program in 1998, the only groundfish species for which CDQ allocations existed were pollock and sablefish. However, other groundfish species were harvested incidentally. After 1998, CDQ allocations became available for all groundfish species, and the harvest of some species such as Pacific cod (PCOD) and Atka mackerel (AMCK) increased.

Table 3 Harvest Quantity of CDQ Allocations by Species, 1993-2000

Year	Reported Metric Tons (Thousands)							
	AMCK	FLAT	OTHR	PCOD	PLCK	ROCK	SABL	Total
1993	0.75	0.76	0.20	0.45	126.23	0.04	0.02	128.44
1994	0.00	1.02	0.13	1.77	137.51	0.02	0.00	140.45
1995	0.01	0.40	0.19	0.87	97.39	0.03	0.00	98.90
1996	0.00	0.56	0.10	0.75	92.77	0.01	0.00	94.20
1997	0.02	0.64	0.36	0.44	87.58	0.07	0.09	89.21
1998	1.22	1.31	0.71	2.49	83.97	0.45	0.10	90.24
1999	2.59	4.52	1.93	11.63	100.16	0.96	0.15	121.95
2000	4.79	1.79	3.05	13.48	113.71	1.19	0.16	138.18

Source: NMFS Blend and WPR Data, June 2001.

Table 4 Wholesale Value of CDQ Allocations by Species, 1993-2000

Year	$Millions							
	AMCK	FLAT	OTHR	PCOD	PLCK	ROCK	SABL	Total
1993	0.69	0.16	0.00	0.16	47.06	0.03	0.05	48.14
1994	0.00	0.10	0.00	0.59	60.36	0.00	0.00	61.05
1995	0.00	0.00	0.00	0.12	56.82	0.00	0.00	56.94
1996	0.00	0.01	0.00	0.08	51.71	0.00	0.00	51.80
1997	0.00	0.43	0.00	0.10	50.66	0.02	0.48	51.68
1998	0.43	0.65	0.00	2.00	43.10	0.16	0.35	46.70
1999	1.08	1.60	0.06	13.39	76.70	0.47	0.78	94.07
2000	2.06	0.72	0.03	16.01	91.66	0.55	0.77	111.80

Source: NMFS Blend and WPR Data, June 2001.

Table 5 shows the seasonal variability in the value of groundfish catches. The bimodal distribution in the groundfish fishery is a function of the two seasons – the A season, which by regulation opens in late January and continues into March, and the B season, which opens in September. Fishing is usually more lucrative in the A season because of the high value of pollock roe.

Table 5 Wholesale Value of CDQ Allocations by Target Fishery and Month, 1999-2000

		$Millions							
Year	Month	AMCK	FLAT	OTHR	PCOD	PLCK	ROCK	SABL	Total
1999	Jan	0.00	0.00	0.00	0.01	2.01	0.00	0.00	2.02
	Feb	0.00	0.00	0.00	0.00	28.87	0.00	0.00	28.87
	Mar	0.00	0.11	0.00	0.00	14.08	0.00	0.00	14.20
	Apr	0.00	0.00	0.00	0.52	0.00	0.00	0.00	0.52
	May	0.47	0.07	0.00	2.96	0.00	0.07	0.01	3.58
	Jun	0.70	0.05	0.00	0.89	0.00	0.05	0.18	1.86
	Jul	0.14	0.14	0.01	0.01	8.15	0.04	0.15	8.65
	Aug	0.04	0.02	0.02	1.46	4.21	0.07	0.13	5.95
	Sep	0.16	0.37	0.00	2.24	12.52	0.00	0.15	15.43
	Oct	0.01	0.28	0.00	0.85	4.10	0.00	0.12	5.36
	Nov	0.16	0.99	0.00	3.01	2.70	0.02	0.00	6.88
	Dec	0.00	0.09	0.00	0.67	0.00	0.00	0.00	0.76
2000	Jan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Feb	0.00	0.00	0.00	0.00	23.18	0.00	0.00	23.18
	Mar	0.00	0.00	0.00	3.67	23.88	0.00	0.00	27.55
	Apr	0.00	0.05	0.00	5.71	2.59	0.00	0.06	8.41
	May	0.81	0.09	0.00	1.50	0.00	0.00	0.11	2.52
	Jun	0.25	0.50	0.00	0.24	0.00	0.00	0.00	0.99
	Jul	0.89	0.19	0.00	0.62	7.37	0.00	0.13	9.21
	Aug	0.39	0.02	0.00	1.41	10.79	0.00	0.00	12.61
	Sep	0.00	0.00	0.01	0.39	12.16	0.00	0.18	12.73
	Oct	0.00	0.00	0.00	0.00	10.79	0.00	0.07	10.86
	Nov	0.55	0.00	0.00	0.22	0.93	0.05	0.01	1.75
	Dec	0.02	0.00	0.00	1.81	0.00	0.16	0.00	1.99

Note: The value shown is the total value of all species caught by the target fishery.
Source: NMFS Blend and WPR Data, June 2001.

1.2 CDQ Communities

The purpose of the CDQ program is to facilitate the participation of Bering Sea and Aleutian Islands community residents in the Bering Sea/Aleutian Island fishery, as a means to develop local community

infrastructure and increase general community and individual economic and social well-being. CDQ communities are predominantly Alaska Native villages, as shown in Table 6. Alaska Native residents comprise 86.8 percent of the combined total population of all CDQ communities. They are remote, isolated settlements with few natural assets with which to develop and sustain a viable diversified economic base. As a result, economic opportunities have been few, unemployment rates have been chronically high, and communities (and the region) have been economically depressed.

While these communities border some of the richest fishing grounds in the world, they have largely been unable to exploit this proximity. The full Americanization of the Bering Sea/Aleutian Island fisheries occurred relatively quickly. However, the very high capital investment required to compete in these fisheries precluded small communities from participating in their development. The CDQ program serves to ameliorate some of these circumstances by extending an opportunity to qualifying communities to directly benefit from the productive harvest and use of these publicly owned resources.

According to Sec. 305(i)(1)(B) of the Magnuson-Stevens Act, to be eligible to participate in the CDQ program a community must–

(i) be located within 50 nautical miles from the baseline from which the breadth of the territorial sea is measured along the Bering Sea coast from the Bering Strait to the western most of the Aleutian Islands, or on an island within the Bering Sea;

(ii) not be located on the Gulf of Alaska coast of the north Pacific Ocean;

(iii) meet criteria developed by the Governor of Alaska, approved by the Secretary, and published in the Federal Register;

(iv) be certified by the Secretary of the Interior pursuant to the Alaska Native Claims Settlement Act (43 U.S.C. 1601 et seq.) to be a Native village;

(v) consist of residents who conduct more than one-half of their current commercial or subsistence fishing effort in the waters of the Bering Sea or waters surrounding the Aleutian Islands; and

(vi) not have previously developed harvesting or processing capability sufficient to support substantial participation in the groundfish fisheries in the Bering Sea, unless the community can show that the benefits from an approved Community Development Plan would be the only way for the community to realize a return from previous investments.

The sixty-five coastal communities currently eligible to participate in the CDQ program are organized into six CDQ groups, with between one and 21 communities in each group. The CDQ communities are geographically dispersed, extending westward to Atka, on the Aleutian chain, and northward along the Bering coast to the village of Wales, near the Arctic Circle. Table 7 summarizes the six CDQ groups in terms of their membership, approximate populations, and office locations. The total population of the 65 CDQ communities in 2000 was estimated to be 27,073. However, this population figure may include a substantial number of individuals who are not year-round residents. The administrative offices of CDQ groups tend to be located in regional hub communities, near government or industry partner offices, and/or near community or other ongoing projects.

Table 6 Alaska Native Percentage of Total Community Population, Alaska CDQ Communities, 2000

Aleutian Pribilof Island Community Development Association	
Akutan	16.4%
Atka	91.3%
False Pass	65.6%
Nelson Lagoon	81.9%
Nikolski	69.2%
Saint George	92.1%
Bristol Bay Economic Development Corporation	
Aleknagik	84.6%
Clark's Point	92.0%
Dillingham	60.9%
Egegik	76.7%
Ekuk	0.0%
Ekwok	93.8%
King Salmon	30.1%
Levelock	95.1%
Manokotak	94.7%
Naknek	47.1%
Pilot Point	86.0%
Port Heiden	78.2%
Portage Creek	86.1%
South Naknek	83.9%
Togiak	92.7%
Twin Hills	94.2%
Ugashik	81.8%
Central Bering Sea Fishermen's Association	
Saint Paul	86.5%
Coastal Villages Fishing Cooperative	
Chefornak	98.0%
Chevak	95.9%
Eek	96.8%
Goodnews Bay	93.9%
Hooper Bay	95.8%
Kipnuk	98.0%
Kongiganak	97.2%
Kwigillingok	97.9%

Coastal Villages Fishing Cooperative (Continued)	
Mekoryuk	96.7%
Napakiak	96.6%
Napaskiak	98.2%
Newtok	96.9%
Nightmute	94.7%
Oscarville	100.0%
Platinum	92.7%
Quinhagak	97.3%
Scammon Bay	97.4%
Toksook Bay	97.6%
Tuntutuliak	98.9%
Tununak	96.9%
Norton Sound Economic Development Corporation	
Brevig Mission	92.0%
Diomede	93.8%
Elim	94.9%
Gambell	95.8%
Golovin	92.4%
Koyuk	94.3%
Nome	58.7%
Saint Michael	93.2%
Savoonga	95.5%
Shaktoolik	94.8%
Stebbins	94.7%
Teller	92.5%
Unalakleet	87.7%
Wales	90.1%
White Mountain	86.2%
Yukon Delta Fisheries Development Association	
Alakanuk	97.9%
Emmonak	93.9%
Grayling	91.8%
Kotlik	96.1%
Mountain Village	93.5%
Nunam Iqua	93.9%
Total All Villages	**86.8%**

Source: U.S. Census Bureau Census 2000

Table 7 CDQ Group Communities, Populations and Administrative Locations

CDQ Group	Member Communities		2000 Population[1]	Office Locations
APICDA	Akutan Atka False Pass Nelson Lagoon	Nikolski St. George Unalaska[2]	1,143	Juneau Unalaska Staff also in Homer and Anchorage
BBEDC	Aleknagik Ckark's Point Dillingham Egegik Ekuk Ekwok King Salmon/Savinoski Levelock Manokotak	Naknek Pilot Point Portage Creek Port Heiden South Naknek Togiak Twin Hills Ugashik	5,932	Dillingham Juneau Seattle
CBSFA	St. Paul		532	St. Paul Anchorage
CVRF	Chefornak Chevak Eek Goodnews Bay Hooper Bay Kipnuk Kongiganak Kwigillinook Mekoryuk Mountain Village Napakiak	Napaskiak Newtok Nightmute Oscarville Platinum Quinhagak Scammon Bay Toksook Bay Tuntutuliak Tununak	7,855	Anchorage Bethel
NSEDC	Brevig Mission Diomede/Ignaluk Elim Gambell Golovin Koyuk Nome Savoonga	Shaktoolik St. Michael Stebbins Teller Unalakleet Wales White Mountain	8,488	Anchorage Various
YDFDA	Alakanuk Emmonak Grayling	Kotlik Sheldon Point	3,123	Seattle Seward

[1] The population estimate may include individuals who are not year-round residents.
[2] Unalaska is an *ex-officio* member of APICDA.
Source: DCED 2001, U.S. Census, 2000

2.0 CDQ GROUP PROFILES

Individual groups have followed a variety of strategies for using their CDQ allocations, and for the investment or other use of the proceeds. Most have formed stable partnerships with established fishing industry participants and have, or are seeking to, invest in the fishery. The following CDQ group profiles are adapted from those contained within the inshore/offshore pollock allocation amendment to the Bering Sea groundfish fishery management plan. Each CDQ group is allocated a share of the full suite of the species subject to CDQ allocations, but only pollock and Pacific cod are highlighted in the brief discussions below.

2.1 Aleutian Pribilof Island Community Development Association (APICDA)

The communities represented by APICDA are relatively small and located adjacent to the fishing grounds. Unalaska, the largest community in the region and the hub of the Bering Sea fishery, is a non-voting member of the APICDA Board of Directors. Unalaska residents are eligible for APICDA training and education opportunities, many of which are located in Unalaska to take advantage of proximity to the industry, rather than in the other member villages.

Currently, APICDA is allocated 14 percent of the pollock and 16 percent of the Pacific cod CDQ allocations, which are shared among its inshore and offshore partners in such a way as to maximize the benefit to APICDA. Because of proximity to the fishing grounds and year-round access to ice-free waters, APICDA's focus is primarily on community development and employment opportunities that occur in or near each community. These villages do not have the same need for factory trawler employment, as do residents of many other CDQ communities, who do not have the same opportunity for local fishery development. This is reflected in APICDA's employment statistics, which show one of the highest total employment levels, but a relatively low number of pollock processing jobs. APICDA also has a wide variety of investments in different sectors of the fishery, as well as in tourism, and other areas.

APICDA has employment provisions with both its inshore and offshore partners and has invested, both with them and individually, in a number of fisheries-based development projects in several of its villages, creating a variety of employment opportunities. Though the group has placed residents with all three pollock sectors, APICDA residents in general have shown a preference for non-pollock employment, with the single largest source being renovation and operation of a halibut processing plant in Atka.

2.2 Bristol Bay Economic Development Corporation (BBEDC)

BBEDC represents 17 villages distributed around the circumference of Bristol Bay, including Dillingham, the second-largest CDQ community with approximately 2,200 residents and the location of BBEDC's home office. BBEDC is currently allocated 21 percent of the pollock and 20 percent of the Pacific cod CDQ harvest.

To date, BBEDC has focused its community development efforts primarily on creating offshore employment opportunities, and it has employed more village residents in pollock processing jobs than any other group. The group changed from one offshore partner to another before the 1996 harvest. BBEDC's current partner is said to hire approximately 20 percent of its crew from CDQ villages.

BBEDC has also invested in a variety of fishing vessels, including part-interest in two pollock catcher processors and a freezer longliner. However, BBEDC also has a program to evaluate investments in regional infrastructure. The group also has active vocational training and internship programs with its offshore partner, and provides internship opportunities with out-of-region and local businesses to develop administrative and other specialized skills. BBEDC is also helping to promote workforce readiness skills through the four Bristol Bay school districts.

2.3 Central Bering Sea Fisherman's Association (CBSFA)

CBSFA is unusual among CDQ groups in that it represents a single community, St. Paul in the Pribilof Islands. St. Paul is strategically located to serve the Bering Sea fishing industry. As a result, CBSFA has focused attention on working with other island entities to improve St. Paul's harbor facility and on expanding the island's small boat fleet. The group also operates a revolving loan program to provide boat and gear loans to resident fishermen. CBSFA has primarily invested in crab vessels and has a small ownership interest in American Seafoods. CBSFA has been working with American Seafoods to explore the possibility of developing a multi-processing facility in Saint Paul.

Reflecting the focus of St. Paul residents on developing local fishing ventures and infrastructure, CBSFA has not seen much demand among residents for off-island processing jobs, either offshore or inshore. The group is partnered with a large offshore company and would like to build on the benefits of product offloads at St. Paul harbor and the attendant support services its residents can provide. Currently, CBSFA receives four percent of the pollock and ten percent of the Pacific cod CDQ harvest.

2.4 Coastal Villages Region Fund (CVRF)

CVRF currently manages 24 percent of the pollock and 17 percent of the cod CDQ harvest for its 21 member villages. The villages are located along the coast between the southern end of Kuskokwim Bay and Scammon Bay, including Nunivak Island. This remote area is poorly located to engage in the current Bering Sea fisheries. Furthermore, its residents, for the most part, have had little experience with commercial enterprise. CVRF has focused on helping residents adjust to working conditions outside of the immediate area and employs a training coordinator who actively recruits residents for employment and internship opportunities. CVRF sees a distinct employment advantage in the offshore sector for its residents, primarily because of shorter time commitments and higher wages. However, the group currently has both inshore and offshore partners. CVRF has purchased 22.5 percent of American Seafoods, the largest offshore fishing company in the Bering Sea. This investment includes seven factory trawlers.

CVRF provides employment to fishermen through its nearshore CDQ halibut fishery and on a longline vessel that harvests CDQ sablefish. The group continues to be interested in establishing salmon processing facilities both on the Kuskokwim and elsewhere in the region, as well as halibut processing facilities.

2.5 Norton Sound Economic Development Corporation (NSEDC)

Fifteen villages make up the region represented by NSEDC, which ranges from St. Michael to Diomede. The geographic expanse and diversity of interests among NSEDC's communities are challenging, as are the hurdles to developing local fisheries in this remote area that is ice-bound in winter.

Nevertheless, NSEDC has actively pursued both local fisheries and Bering Sea pollock investment strategies. The group has purchased approximately 50 percent of its offshore processor partner, Glacier Fish Company (GFC), including two catcher/processors and a seafood marketing subsidiary Together with the GFC, NSEDC owns the Norton Sound Fish Company, which operates a longline vessel and employs significant numbers of region residents. The group also owns independently two tender vessels specially built for the Norton Sound region.

NSEDC has developed or planned fisheries development projects in several villages, including Norton Sound Crab Company in Nome and commercial halibut operations on St. Lawrence Island. GFC hires residents of the Bering Sea region on a preferential basis for CDQ fishery operations. NSEDC operates an employment and training office in Unalakleet. This CDQ group currently receives 23 percent of the pollock and 18 percent of the Pacific cod CDQ allocations.

2.6 Yukon Delta Fisheries Development Association (YDFDA)

YDFDA represents five communities. The group's emphasis has been on creating employment opportunities in the Bering Sea fishery both through its mothership partner and through other pollock processors, both inshore and offshore. Another area of focus has been on a comprehensive training program that includes a combination trawl/pot/longline vessel and a 47-foot longline crab vessel. YDFDA has received steadily increasing CDQ pollock allocations and currently receives 14 percent of the pollock and 19 percent of the cod CDQ allocations. YDFDA faces the challenges of representing a region with few natural resources to develop, long distances to most viable fisheries, and relatively undeveloped human resources with respect to active participation in a commercial economy setting. While the group places residents in jobs with all three sectors, it indicates that offshore and mothership employment are most useful for its residents. The group's CDQ royalties fund a variety of training activities encompassing technical and office skills.

3.0 ECONOMIC IMPACTS OF THE CDQ PROGRAM

3.1 Revenue Generation

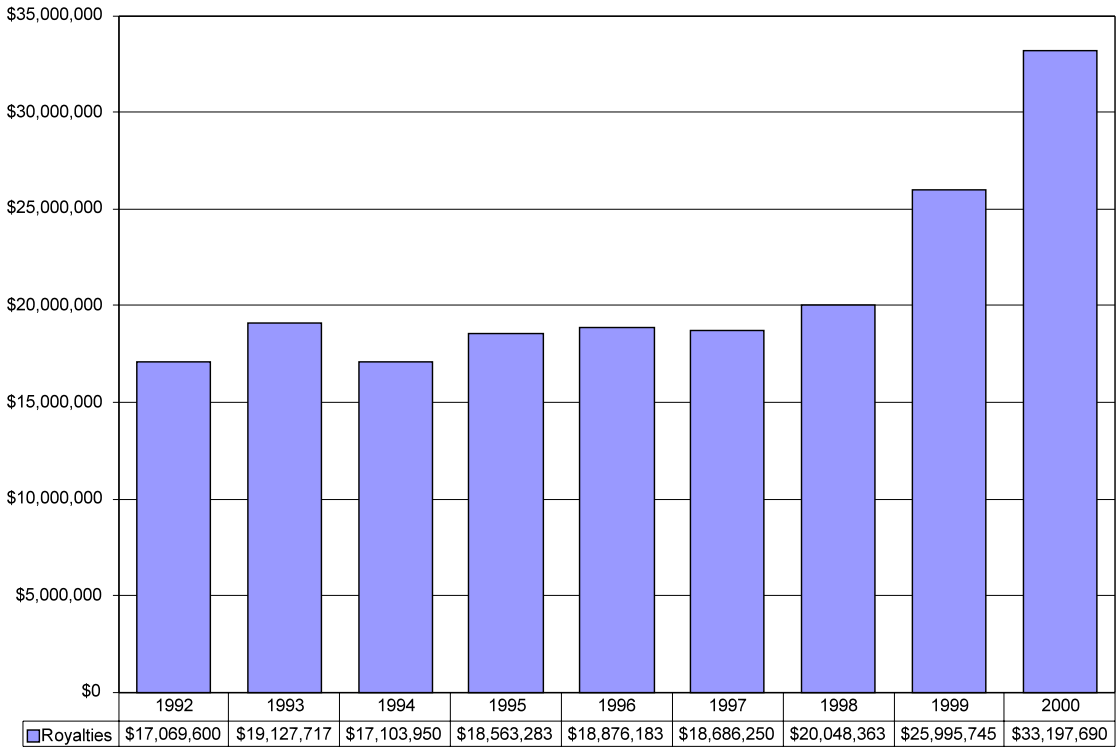
To be eligible to participate in the CDQ program, CDQ communities could have no current or historical linkage to the fisheries in question at the time of the program's implementation. Therefore, it has been necessary (with the exception of some of the halibut CDQs) for each CDQ group to enter into a relationship with one or more of the large commercial fishing companies that participate in the fishery. The CDQ community brings the asset of preferential access to the fish while the partnering firm brings the harvesting/processing capacity and experience in the fishery. The nature of these relationships differs from group to group. In every case, the CDQ community receives royalty payments on apportioned catch shares. Some of the agreements also provide for training and employment of CDQ community members within the partners' fishing operations, as well as other community development benefits. Each of the six groups negotiates a specific price per metric ton for the use of the apportioned CDQ shares, or a base price plus some form of profit sharing.

Based upon reports of consistently high bid-prices for CDQ shares (see, for example, testimony before the NPFMC on the impacts of Inshore/Offshore III on the pollock CDQ program), the partnering companies also apparently receive substantial benefits from these CDQ relationships. These benefits may include preferred access to the resource, resulting in better yields and more valuable product forms (e.g., roe), and the more

efficient use of capacity. The positive aspects of the CDQ pollock fishery probably contributed to the successful implementation of the offshore cooperative management system.

Over the duration of the CDQ program, pollock CDQ royalties have consistently exceeded $17 million (Figure 1). Royalty income rose substantially after 1998 because both the TAC and lease price of pollock CDQ shares increased. Stronger overseas markets for groundfish products and a shift by processors to higher value products were among the reasons for the increase in CDQ lease values. In 2000, the CDQ groups received over $33 million in pollock CDQ royalties.

Figure 1. Pollock CDQ Royalties, 1992-2000



Source: DCED (2001)

Royalties from the multi-species program provided an additional $7.5 million to the CDQ groups in 2000 (DCED 2001). The percentage of the total 2000 royalties generated by each non-pollock species are as follows: Pacific cod – 8%; opilio crab – 5%; Bristol Bay red king crab – 3%; and other species, including sablefish, Atka mackerel, halibut and turbot – 2%.

3.2 Asset Accumulation

The revenue stream from the lease of CDQ allocations has permitted the development of considerable savings within the CDQ groups. These savings provide important capital for making investments, and asset

accumulation by CDQ communities is one empirical measure of the performance of the program. Amassment of equity interest in real assets represents a clear community development strategy. Data suggest that CDQ groups, when taken as a whole, have retained almost half of their gross revenues in some form of equity, whether vessel ownership, processing facilities, marketable securities, loan portfolios, and IFQ holdings. The value of CDQ assets in aggregate increased from $1.5 million in 1992 to over $157 million in 2000 (DCED 2001).

Another benefit of capital asset acquisitions and venturing with industry participants is the enhanced control communities may exercise over the joint economic activity. As members in fishing companies with ownership interest, the CDQ groups are better able to take part in decisions that directly impact business operations and, thus, profitability. Also, the opportunity for technology transfer and hands-on experience (whether operational or managerial) occurs from the industry partner to the CDQ group. CDQ groups and their residents are able to learn first hand how the industry functions. This increases the likelihood of local control as CDQ residents, who have spent time learning from established industry partners, may one day be in control of their own operations and be able to operate independent of the CDQ program. In the interim, expanded employment opportunities, made available through vessel acquisition and partnering with established industry members, increase the sharing of benefits that accrue from the CDQ activities.

Investments in the Harvesting and Processing Sectors

Increasingly, CDQ groups are using their CDQs to leverage capital investment in harvesting/processing capacity. Acquisition of ownership interest in commercial fishing operations and other fisheries-related enterprises is one important means of directly adding to a CDQ group's economic sustainability, consistent with the program's mandate. Current equity acquisitions in vessels are presented in Table 8. The table also specifies, if applicable, the catcher vessel class or catcher processor class in which each vessel has been included for the sector profiles.

Table 8 Vessel Acquisitions by CDQ Groups

CDQ Group	Vessel Acquisitions (percent ownership in parentheses and vessel class in brackets)
APICDA	• Starbound (20%) 240' pollock factory trawler [FT-CP] • Bering Prowler (*25%)* 124' longline vessel harvesting Pacific cod and sablefish [L-CP] • Prowler (*25%)* 114' longline vessel harvesting Pacific cod and sablefish [L-CP] • Golden Dawn (*25%)* 148' catcher vessel harvesting Pacific cod, pollock and crab [TCV BSP = 125] • Ocean Prowler (20%) 155' longline-processing vessel harvesting Pacific cod and sablefish [L-CP] • Farwest Leader (*25%)* 105' pot vessel harvesting crab and Pacific cod [PCV] • Stardust (100%) 56' longline vessel harvesting Pacific cod and halibut [FGCV 33-59] • Bonanza (100%) 38' longline vessel harvesting halibut [FGCV 33-59] • AP#1, AP#2, AP#3 (100%) 36' longline vessels harvesting halibut and Pacific cod [GHOST or unclassified] • AP#4, AP#5 (100%) 35.5' longline vessels harvesting halibut and Pacific cod [GHOST or unclassified] • Konrad 1 (*75%)* 58' trawler/pot/tender vessel harvesting Pacific cod and pollock, salmon tender [TCV < 60] • Nikka D (100%) 28' vessel harvesting halibut [unclassified] • Agusta D (100%) 28' sportfishing charter vessel [unclassified] • Grand Aleutian (100%) 32' sportfishing charter vessel [unclassified]
BBEDC	• Arctic Fjord (20%) 270' pollock factory trawler [ST-CP] • Bristol Leader (50%) 167' longline vessel harvesting Pacific cod, halibut and sablefish [L-CP] • Neahkahnie (20%) 110' pollock catcher-processor [TCV BSP 60-124] • Northern Mariner (45%) crab vessel [PCV} • Bristol Mariner (45%) 125' crab vessel [PCV] • Nordic Mariner (45%) 121' crab vessel [PCV] • Cascade Mariner (40%) 100' crab vessel [unclassified]
CBSFA	• American Seafoods, LP (22.5%) which owns the following 270-340' catcher processors harvesting pollock, Pacific cod, yellowfin sole and rock sole: American Dynasty [ST-CP], Katie Ann [FT-CP], Northern Eagle [ST-CP], Ocean Rover [ST-CP], Northern Jaeger [ST-CP], American Triumph [ST-CP] and Northern Hawk [ST-CP] • Zolotoi (20%) 98' crab vessel [PCV] • Ocean Cape (35%) 98' crab vessel [FGCV 33-59]
CVRF	• American Seafoods, LP (22.5%) which owns the following 270-340' catcher processors harvesting pollock, Pacific cod, yellowfin sole and rock sole: American Dynasty [ST-CP], Katie Ann [FT-CP], Northern Eagle [ST-CP], Ocean Rover [ST-CP], Northern Jaeger [ST-CP], American Triumph [ST-CP] and Northern Hawk [ST-CP] • Ocean Prowler (20%) 155' longline-processing vessel harvesting Pacific cod and sablefish [L-CP] • Ocean Harvester (45%) 58' longline vessel harvesting halibut and Pacific cod [LCV] • Silver Spray (50%) 116' crab vessel and Pacific cod freezer boat [P-CP]
NSEDC	• Glacier Fish Company (50%) which owns the following 201-276' catcher processors harvesting pollock and Pacific cod: Northern Glacier [FT-CP] and Pacific Glacier [ST-CP] • Norton Sound (49%) 139' longline vessel [L-CP] • Golovin Bay (100%) tender [unclassified] • Norton Bay (100%) tender [unclassified]

CDQ Group	Vessel Acquisitions (percent ownership in parentheses and vessel class in brackets)
YDFDA	• Emmonak Leader (75%) 103' catcher vessel harvesting pollock [TCV BSP 60-124] • Alakanuk Beauty (75%) 105' catcher vessel harvesting pollock [TCV BSP 60-124] • Golden Alaska (19.6%) 308' pollock mothership [MS] • Blue Dolphin (100%) 47' longline/crab vessel [FGCV 33-59] • Lisa Marie (100%) 78' trawl/pot/longline vessel [PCV]

Source: DCED (2001)

All six CDQ groups have acquired ownership interests in the offshore pollock processing sector. In addition, APICDA and NSEDC have invested in inshore processing plants, some of which process groundfish (Table 9). These inshore plants include both shorebased and floating processing facilities.

Table 9 Inshore Processing Plant Acquisitions by CDQ Groups

CDQ Group	Inshore Plant Acquisitions (percent ownership in parentheses)
APICDA	• Atka Pride Seafoods, Inc. (100%) processes halibut • Bering Pacific Seafoods (50%) processes Pacific cod, salmon and other species
NSEDC	• Norton Sound Seafood Products (100%) processes mainly salmon • Norton Sound Crab Company (100%) processes mainly crab

Source: DCED (2001)

In most of the processing ventures in which CDQ groups have invested, the groups are minority owners. However, the revenues derived from these investments may be substantial. An overview of the relative economic importance of investments in the offshore and inshore groundfish processing sector may be acquired by examining the historical quantity and value of groundfish processed by catcher processors and inshore plants in which CDQ groups currently have an equity interest (Table 10 and Table 11). The groundfish processed by these enterprises accounted for about 14 percent of the total tonnage and 15 percent of the total wholesale value of groundfish processed in the Alaska fishery in 1999 and 2000. Overall, it is estimated that the ownership shares of CDQ groups represents approximately 27 percent of the total groundfish revenues of these enterprises based on a weighted average of wholesale product revenue.

Table 10 Quantity of Groundfish Processed by Catcher Processor Vessels and Inshore Plants in which CDQ Groups Currently Have an Equity Interest, 1999-2000

Year	Source of Harvests	AMCK	FLAT	ROCK	OTHR	PCOD	PLCK	SABL	Total
1999	Non-CDQ (1,000 MT)	0.00	10.46	0.09	2.63	18.79	211.14	0.33	243.45
	CDQ (1,000 MT)	0.00	0.52	0.03	0.86	5.42	66.55	0.05	73.43
	CDQ Tons as % of Total	15.4	4.7	23.0	24.6	22.4	24.0	13.8	23.2
2000	Non-CDQ (1,000 MT)	0.00	11.80	0.09	4.14	15.44	240.57	0.26	272.31
	CDQ (1,000 MT)	0.01	0.85	0.03	2.09	8.22	91.78	0.05	103.02
	CDQ Tons as % of Total	98.8	6.7	22.8	33.5	34.7	27.6	16.1	27.4

Source: NMFS Blend Data, June 2001; DCED (2001)

Table 11 Wholesale Product Value of Groundfish Processed by Catcher Processor Vessels and Inshore Plants in which CDQ Groups Currently Have an Equity Interest, 1999-2000

Year	Source of Harvests	AMCK	FLAT	ROCK	OTHR	PCOD	PLCK	SABL	Total
1999	Non-CDQ ($Millions)	0.00	2.16	0.09	0.03	19.99	161.10	1.45	184.82
	CDQ ($Millions)	0.00	0.17	0.01	0.04	6.15	50.46	0.23	57.06
	CDQ Value as % of Total	0.0	7.3	11.5	58.9	23.5	23.9	13.5	23.6
2000	Non-CDQ ($Millions)	0.00	2.20	0.10	0.07	17.77	192.91	1.19	214.25
	CDQ ($Millions)	0.00	0.21	0.01	0.01	9.66	73.64	0.23	83.77
	CDQ Value as % of Total	77.1	8.8	9.0	17.4	35.2	27.6	16.4	28.1

Source: NMFS Blend Data, June 2001; DCED (2001)

The most important component that CDQ groups bring into investments in the offshore groundfish processing sector is quota (DCED 2001). As shown in Table 10 and Table 11, CDQ catch accounts for a substantial portion of the total amount and value of groundfish processed by the companies in which the groups have invested.

The vessel list in Table 8 shows that CDQ groups have also invested in catcher vessels harvesting groundfish and other species. An overview of the relative economic importance of investments in these enterprises may be obtained by examining the historical quantity and value of groundfish caught by catcher vessels in which CDQ groups currently have an equity interest (Table 12). The groundfish harvested by these fishing operations accounted for about two percent of the total tonnage and three percent of the total ex-vessel value of groundfish harvested in the Alaska fishery in 1999 and 2000. Overall, it is estimated that the ownership

shares of CDQ groups represents approximately 50 percent of the total groundfish revenues of these enterprises based on a weighted average of ex-vessel revenue.

Table 12 Quantity and Ex-Vessel Value of Groundfish Harvested by Catcher Vessels in which CDQ Groups Currently Have an Equity Interest, 1999-2000

Year	AMCK	FLAT	ROCK	OTHR	PCOD	PLCK	SABL	Total
Retained Tons (Thousands)								
1999	0.04	0.04	0.01	0.00	2.17	30.13	0.14	32.54
2000	0.00	0.03	0.01	0.01	2.04	30.97	0.11	33.16
Ex-vessel Value ($Millions)								
1999	0.00	0.02	0.02	0.00	1.14	5.84	0.57	7.59
2000	0.00	0.01	0.01	0.00	1.34	7.18	0.55	9.09

Source: NMFS Blend Data and Weekly Reports, June 2001; DCED (2001)

3.3 Employment and Income

At the time of the 1990 U.S. Census, all the communities in rural, western Alaska were experiencing relatively high levels of unemployment, ranging from 9 percent in the Bristol Bay area to 31 percent in the Yukon Delta area (DCED 2001). While these high unemployment rates partly reflect the seasonality of employment opportunities and the timing of the census in April, they also may show the effects of limited employment opportunities. All of the communities in the CDQ areas had median incomes that were lower than the state median income (DCED 2001). The median income of the Central Bering Sea area and the Bristol Bay area was less than ten percent below the state level, but in the Yukon Delta area and the Aleutian Pribilof area the median income was only slightly greater than half the state level (DCED 2001). The poverty rates in all the CDQ areas except the Central Bering Sea were at least twice the state rate of seven percent.

Employment opportunities have been one of the most tangible direct effects of the CDQ program for many western Alaska village residents. Indeed, the CDQ program has had some success in securing career track employment for many residents of qualifying communities, and has opened opportunities for non-CDQ Alaskan residents, as well. Jobs generated by the CDQ program included work aboard harvesting vessels, internships with the partner company or government agencies, work at processing plants, and administrative positions.

Table 13 summarizes the total annual CDQ employment and wages presented in quarterly reports. The CDQ program has created an excess of $8 million in wages annually since 1998.

Table 13 CDQ Employment and Wages for all CDQ groups, 1993-2000[1]

	1993	1994	1995	1996	1997	1998	1999	2000
Number Working								
Management/ Administration	26	48	58	63	63	79	96	155
CDQ Pollock-Related	186	213	228	261	227	443	244	297
Other Fisheries	64	276	393	691	629	634	786	1146
Other Employment	95	531	157	138	130	194	213	236
Total	371	1068	836	1153	1049	1350	1339	1834
Total Wages ($)								
Management/ Administration	586,537	1,012,125	1,218,892	1,636,860	1,803,766	2,284,792	2,661,976	3,084,757
CDQ Pollock-Related	1,000,360	1,280,695	1,866,619	1,686,104	2,660,938	2,649,001	2,149,062	1,741,871
Other Fisheries	609,058	1,000,103	1,132,824	2,280,554	2,756,688	2,075,495	4,201,775	5,959,516
Other Employment	0	1,791,479	1,350,766	723,724	887,338	1,167,173	1,573,358	1,723,054
Total	2,195,955	5,084,402	5,569,101	6,327,242	8,108,730	8,176,461	10,586,171	12,509,198

[1] Employment figures may not represent full-time positions. In addition, some double-counting of employment and wages may have occurred in the compilation of data for quarterly reports.
Source: DCED (2001)

From 1993 through 2000, CDQ management and administration accounted for about six percent of the jobs and 24 percent of the wages. Pollock harvesting and processing accounted for 24 percent of the jobs and 26 percent of the wages. Other fisheries, which include halibut, salmon, sablefish, herring and crab related employment, accounted for 51 percent of the jobs and 34 percent of the wages. Finally, other employment, including internships, accounted for 18 percent of the jobs and 15 percent of the wages.

An overview of the relative impacts of the CDQ program may be gained by comparing income generated by the CDQ program with the total income in CDQ communities. Adjusted gross income data by zip code are available from the Internal Revenue Service for two years during the period that the CDQ program has existed - 1997 and 1998. The total adjusted gross income for all CDQ communities in these two years was $242,200,000 and $252,600,000, respectively. In addition, an estimate of adjusted gross income can be derived for 1999, the most recent year for which personal income data are available from the Regional Economic Information System (REIS) of the U.S. Bureau of Economic Analysis for Alaska boroughs and census areas. In 1997 and 1998, adjusted gross income in CDQ communities was approximately 27.5 percent of the total personal income in the boroughs and census areas in which CDQ communities are located. Applying this percent to the 1999 REIS personal income data yields an estimated adjusted gross income of $259,800,000 in CDQ communities for that year.

Table 14 shows CDQ wages in 1997 and 1998 as reported to DCED and total adjusted gross income for all CDQ communities as estimated above. CDQ-related income accounted for about 4.1 percent of the total income in CDQ communities by 1999.

Table 14 CDQ Wages Compared with Total Adjusted Gross Income in CDQ Communities, 1997-1999

	Total Adjusted Gross Income ($)	CDQ Wages ($)	CDQ Wages as % of Total Adjusted Gross Income
1997	242,200,000	8,108,730	3.3
1998	252,600,000	8,176,461	3.2
1999	259,800,000	10,586,171	4.1

[1] Includes management/administration wages
Sources: DCED (2001); Internal Revenue Service

While this analysis is based on the best information available, it yields only a rough approximation of the contribution of CDQ wages to regional income. As noted above, CDQ management and administration account for nearly one-fourth of CDQ wages. Many of the individuals in administrative positions work and reside in non-CDQ communities (Table 7). By including the wages of those individuals, this analysis overestimates the contribution of CDQ wages to the total income of CDQ communities. Some level of error may also have been introduced in the analysis because IRS income data are reported by zip code. The incomes of a number of small non-CDQ communities that share a zip cope with CDQ communities were included in the figure for total adjusted gross income. However, given the small size of the non-CDQ

communities included, it is unlikely that the introduced error appreciably changed the analysis results. Similarly, the incomes of certain CDQ communities (Kongiganak, Napaskiak, Newtok and Oscarville) were omitted from the total adjusted gross income figure because their zip code overlapped with the relatively large non-CDQ community of Bethel. Again, the introduced error is likely insignificant due to the small size of the CDQ communities omitted.

Adjusted gross income data obtained from the IRS for 1997 and 1998 can also be used to examine the contribution of CDQ wages of each CDQ group (Table 15). Among the factors that account for the differences across groups is the presence or absence of communities with comparatively large populations and diverse economies. For example, the CDQ communities of King Salmon and Dillingham in the BBEDC region and Nome in the NSEDC region contributed about half of the total adjusted gross income for all CDQ communities in 1997 and 1998. The higher level of economic activity in these towns results in higher per capita incomes and reduces the relative importance of CDQ wages.

Table 15 CDQ Wages Compared with Total Adjusted Gross Income in CDQ Communities, by CDQ Group, 1997-1999

	APICDA	BBEDC	CBSFA	CVRF	NSEDC	YDFDA
1997						
CDQ Wages ($)[1]	1,343,950	1,480,979	223,201	1,193,590	1,252,493	1,831,355
Total Adjusted Gross Income ($)	11,115,000	74,730,000	8,517,000	33,381,000	97,171,000	17,256,000
CDQ Wages as % of Total Adjusted Gross Income	12.09	1.98	2.62	3.58	1.29	10.61
1998						
CDQ Wages ($)[1]	1,061,750	1,317,694	714,288	1,645,402	1,663,439	1,773,888
Total Adjusted Gross Income ($)	10,209,000	80,655,000	8,010,000	35,719,000	100,375,000	17,659,000
CDQ Wages as % of Total Adjusted Gross Income	10.40	1.63	8.92	4.61	1.66	10.05

[1] Includes management/administration wages
Sources: DCED (2001); Internal Revenue Service; Regional Economic Information System

3.4 Training and Education

Training of CDQ community residents has been a primary objective for all the CDQ groups from the outset of the program and has been promoted as an essential means to a sustainable locally based fishery economy. Each CDQ group provides training for their residents, based not only upon the individual needs of the trainee, but upon the overall needs of the community.

Training programs span the range of educational opportunities, from vocational and technical training, to support for higher education at college and university levels. CDQ groups have spent nearly $8 million directly on training expenditures involving over 7,000 residents since 1993 (DCED 2001).

These investments are wholly dependent upon the revenues generated by the CDQ apportionments and, therefore, are another empirical measure of benefits deriving from the groundfish fisheries of the BSAI management area.

3.5 Indirect Employment and Income Effects

Some of the income earned in CDQ jobs, as well as spending for supplies and services in support of CDQ projects, passes through local merchants, service providers, and others before leaking out of the region in exchange for imports. The additional employment and income generated in this way is referred to as indirect economic impacts. In an area such as western Alaska, where very few goods and services are provided locally, money leaks out of the region relatively quickly. Nevertheless, every extra contribution to jobs and income helps, and these additional economic impacts of the CDQ program should not be overlooked.

4.0 REFERENCES CITED

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