

ISSUE BACKGROUND: BUCKLAND FOOD SHORTAGE

by
Gregory D. Moore

Technical Paper Number 7

Alaska Department of Fish and Game
Division of Subsistence
Kotzebue, Alaska
September 20, 1979

Introduction

This is an emergency proposal to open the caribou season in the Buckland River drainage to the taking of cow caribou from 15 October 1979 to 15 February 1980. The total harvest of cow caribou will be limited to 210 animals. Only residents of Buckland will be eligible for the hunt. This proposal is designed to alleviate an emergency situation in Buckland composed of the following elements:

1. A food shortage due to an abnormally poor spring marine mammal harvest.
2. A very low local moose population.
3. Usually no access to caribou--the caribou season is closed well before the normal arrival of the herd.
4. Very limited availability of cash and employment opportunities.
5. Very high cost of commercial foods combined with incomplete selection and low stocks.
6. A recent failure of the village electrical system for 7 days (it is likely to continue for another 30 days) has destroyed frozen meat and berry reserves for the winter.
7. NANA Regional Corporation will make available up to 100 reindeer carcasses at \$1.00/lb to Buckland residents. Cash reserves, however, are very low due to the current food shortage. It is unlikely that many residents will be able to afford reindeer meat by November.

In summary, the community of Buckland is currently experiencing a food shortage which will intensify early this winter. The community can solve its own problem if the Department of Fish and Game can provide the regulatory means. Biological indications are that the Western Arctic caribou herd can safely sustain the suggested harvest (B. Pegau, personal communication; J. Davis, personal communication; D. Johnson, personal communication).

This emergency permit hunt is a temporary solution for a specific community resource problem. A detailed consideration of Buckland resource problems will be provided for the spring meeting of the Alaska Board of Game.

The mechanism for managing the proposed hunt falls within the existing permit system for the Western Arctic caribou herd. An estimated 30 hunters will utilize this hunt. Qualified hunting license holders resident in Buckland will each be issued seven harvest tickets for cow caribou. Harvest tickets will be turned in on a daily basis to the local license vendor. If 210 cow caribou are taken before 15 February 1980, the hunt will be closed at that time.

Subsistence Harvest Data -- 1972

The following is an analysis of the 1972 subsistence harvest in Buckland (NANA, 1974). The methodology used to collect these data involved repetitive interviews with households and village councils over the course of the year (Greist, personal communication) (Goodwin, personal communication). In some areas data has been corrected to reflect more accurate biological information, and tabular presentation of data has been changed.

Mammals

In this set of data, the interviewer requested the number of animals taken. These data were multiplied by estimated average-dressed-weights to arrive at the total poundage harvested. In most cases the average dressed weight was over-estimated. In Table 1, the average dressed weights have been corrected (as cited), while the number of animals harvested is assumed to be correct from the original survey.

Table 1

Resources Harvested in Buckland, 1972*

Mammals

<u>Species</u>	<u>Harvest</u>	<u>Weight (lbs.)**</u>	<u>Harvest (lbs.)</u>
Brown Bear	5	127 ¹	635
Beaver	10	15	150
Caribou	150	102 ²	15,300
Hare	205	2 ³	410
Moose	15	475 ⁴	7,125
Muskrat	150	2	300
Porcupine	8	5	40
Bearded seal	80	273 ⁵	21,840
Hair seal	150	.74 ⁶	11,100
Beluga	130	600	<u>78,000</u>
Total Mammal Harvest			<u>134,800</u> Total

* adapted from NANA, 1974.

** 1) Reynolds, H. 9/5/79 Letter to G. Moore.

2) Davis, J. 8/22/79 Letter to G. Moore.

3) Johnson, D. 8/30/79 Personal communication.

4) Gasaway, B. 8/23/79 Letter to G. Moore.

5) Burns, J. 8/30/79 Letter to G. Moore.

6) Moore, G. 8/30/79 Composite average calculated by use of J. Burns' information.

In order to better understand how much of the mammal harvest is actually used by Buckland, these data must be corrected for barter (this was not done in the 1972 survey). Buckland residents barter food with friends and relatives in other communities on a regular basis. Barter here includes exchanges of food for food, for materials, and for cash. Bartering activities in Buckland are not well understood. These data have been gathered from personal conversations with Buckland residents and questioning of NANA Land Division personnel familiar with the area. Notice that these data treat only barter outside Buckland, not exchanges and sharing within the community.

The Buckland area is well known for traditional preparations of marine mammals, and especially for white muktuk (beluga) in oil packed five gallon pails, and black meat (dried seal and beluga) in oil packed in five gallon pails. These products are prized throughout the NANA region. It is estimated that at least 50% of the marine mammals harvested in Buckland (in a "normal" year) are bartered outside of the community as prepared products. These products also supply a significant cash income to Buckland families (discussed in the economics section).

Brown bear, moose, and caribou are the principal land mammals taken in Buckland. While the meat of these species is bartered, the exchanges are thought to be for food or simply outright gifts to friends and relatives. It is estimated that about 10% of the harvest of brown bear, moose, and caribou is bartered in this manner outside of Buckland.

The remaining mammal species--beaver, hare, muskrat, porcupine--are taken by recreational activities or by trapping. These foods are not staples in the diet, and while they probably are not delicacies per se, they are at least welcome variety and generally are not bartered outside the community.

Table 2 (see page 3) incorporates the corrections for barter necessary to generate the consumptive harvest in Buckland in 1972. Notice that these data do not show the amounts actually eaten. Rendered marine mammal oil, for example, is a large fractional product of the consumptive harvest, and the weight loss in the rendering process would tend to reduce the representation of marine mammals in the actual diet. Similarly, the production of black meat involves a weight loss which would affect data concerning diet.

Some useful comparisons of the data are possible, especially with respect to the 1972 Buckland population (104):

$$\frac{\text{lbs. raw mammal}}{\text{person-day}} = 1.95 \text{ lbs/person-day}$$

$$\frac{\text{lbs. raw marine mammal}}{\text{person-day}} = 1.38 \text{ lbs./person-day}$$

$$\frac{\text{lbs. raw land mammal}}{\text{person-day}} = 0.57 \text{ lbs./person-day}$$

Consumptive mammal harvest	100%
% marine mammals	71%
% land mammals	29%

Table 2

Consumptive Harvest in Buckland, 1972*
(total harvest corrected for barter)

Mammals

<u>Species</u>	<u>Total Harvest</u>	<u>Correction</u>	<u>Consumptive Harvest</u>
Brown Bear	635 lbs.	63 lbs.	572 lbs.
Beaver	150 lbs.	0 lbs.	150 lbs.
Caribou	15,300 lbs.	1,500 lbs.	13,800 lbs.
Hare	410 lbs.	0 lbs.	410 lbs.
Moose	7,125 lbs.	712 lbs.	6,413 lbs.
Muskrat	300 lbs.	0 lbs.	300 lbs.
Porcupine	40 lbs.	0 lbs.	40 lbs.
Bearded Seal	21,840 lbs.	10,920 lbs.	10,920 lbs.
Hair Seal	11,100 lbs.	5,550 lbs.	5,550 lbs.
Beluga	78,000 lbs.	36,000 lbs.	<u>36,000 lbs.</u>
Total Consumptive Harvest--Mammals			74,155 lbs.

* adapted from NANA, 1974.

In summary, using 1972 as a base year, about 74,000 pounds of mammals were harvested by Buckland residents for eventual consumption in Buckland. Of this harvest about 70% were marine mammals and about 30% were land mammals.

Fish

The data on fish gathered during the 1972 survey were collected in pounds rather than numbers of fish taken and a 25% reduction was made for processing, so that checks for accuracy were impossible. As shown in Table 3 (see page 4), approximately 72% of the total weight of fish harvested by Buckland was smelt.

Due to the low productivity and general unavailability of salmon in the Buckland River, by comparison with other villages in the NANA region (especially the five Kobuk River villages and Selawik), Buckland takes very few fish. Kobuk, with a 1972 population of 60, took 59,000 pounds of fish, nearly 49,000 pounds more than Buckland.

Table 3

Resources Harvested in Buckland, 1972*

Fish
(number of animals not expressed)

<u>Animal</u>	<u>Pounds</u>
Char/Pike (Pike)	150
Grayling	10
Chum Salmon	400
Pink Salmon	180
Mud Shark (Burbot)	500
Smelt	7000
Trout (Char)	50
<u>Shortnose Whitefish</u>	<u>1500</u>
Total	9790

Table 4

Resources Harvested in Buckland, 1972*

Birds

<u>Animal</u>	<u>Harvest</u>	<u>Lbs./Animal</u>	<u>Total Pounds</u>
Ducks	3,000	1	3,000
Geese	700	4	2,800
Ptarmigan	2,400	1	2,400
Total			8,200

Birds

Table 4 presents data on the harvest of birds by Buckland residents in 1972. Most of the migratory waterfowl are taken in the spring, while ptarmigan are taken over the course of the winter.

Plant Material

Table 5 summarizes 1972 data on the berry and vegetable harvest by Buckland residents. Of course this harvest occurs during the summer, with preservation methods either freezing or souring in marine mammal fats.

* adapted from NANA, 1974.

Table 5

Resources Harvested in Buckland, 1972*

Plant Material Harvest

<u>Species</u>	<u>Harvest (lbs.)</u>	<u>Preservation</u>
Berries		
Blueberries	1,400	
Crowberries	100	
Salmonberries	2,550	Freezing
Strawberries	<u>35</u>	
Subtotal	4,085	
Greens/Roots		
Fireweed	25	Eaten Fresh
Sourdock	350	Souring
Labrador Tea	5	Dried
Willow Leaves	<u>115</u>	Souring
Subtotal	495	
Vegetables (wild)		
Celery	8	Cooled
Eskimo Potato	10	Cooled
Onions	15	Cooled
Rhubarb	<u>800</u>	Freezing
Subtotal	833	
Total	5,413	

Summary

The total weight of subsistence foods harvested in Buckland in 1972 was:

Mammals	74,155 lbs.
Fish	9,790 lbs.
Birds	8,200 lbs.
Plants	5,413 lbs.
Total	97,558 lbs.

Notice that marine mammals represent about 54% of the total food harvest for the community.

* adapted from NANA, 1974.

Subsistence Harvest Data, 1979

No, in-depth studies of the subsistence harvest in Buckland have been conducted in 1979. At the time the Subsistence Section was made aware of the resource problem in Buckland (July 17, 1979) (memo Moore to Lonner, July 18, 1979) the Section was not yet fully prepared to launch in-depth studies of local problems; however immediate followup was made (memo: Moore to Lonner, August 3, 1979).

It is reported (Magdaug, personal communication) that Game Division in Fairbanks was aware of the Buckland situation somewhat earlier around the first week of June 1979, and that the Game Division in Nome was similarly aware of the problem (Kuhlman, personal communication).

Subsistence Section investigation of the reported failure of the beluga harvest consisted of two village meetings, the first conducted on July 30, 1979. (This first meeting would have been held sooner after the problem arose except that an accidental death of a child in Buckland delayed the desirability of a village meeting.) The second meeting was held adjunct to hearings on National Park Service regulations on September 5, 1979. A total of five days were spent in Buckland between July 18, 1979 and September 14, 1979 by the Resource Specialist.

Many conversations were had in Buckland households in which resource and harvest problems were discussed. The results of these discussions also form part of the data base here.

Mammals

A total of four beluga were taken by Buckland hunters during late spring and early summer, 1979. To date (September 14, 1979) no beluga have yet been harvested by Buckland hunters in the fall season.

Bearded and hair seal harvests were also very low in the spring. Although total numbers of animals taken are not available, it was reported that only four families had taken spring seals and these in low quantities. The fall 1978 seal harvest was also low, with about 17 to 18 seals (unspeciated but probably hair seals, as oogruks are usually distinguished) having been taken.

Caribou was reported to have been the staple food in mid- and late-winter 1979. Reindeer herders are said to have cooperated by shooting caribou which mingled with the reindeer, then informing Buckland residents of the presence of the carcasses.

No data were available on winter moose or bear harvests, and ADF&G harvest ticket returns were considered unreliable. The moose population in the Buckland River drainage is known to be low (Johnson, personal communication). Buckland residents reported the presence of cow moose upriver early in August, but no bulls had been seen. (The current harvest of moose on the Seward Peninsula within GMU23 is limited to bulls only.)

The fall caribou harvest has not yet begun. Caribou do not normally arrive in the Buckland area until mid-November, well after the October 15

closure of the fall season. Upon arrival in the Buckland River drainage, bull caribou are in the rut and considered inedible. Although cows are the edible sex, the regular season is closed to the taking of cows.

Fish

The fishing season in the Buckland River was considered by residents to be normal up to September. The Buckland River supports relatively small runs of pink and chum salmon. Whitefish and smelts are the most important subsistence species.

Commercial Fisheries Division, Nome and Subsistence Section, Kotzebue, have arranged to extend the coverage of the Kotzebue Sound subsistence fish survey to the Buckland area this year. A fisheries technician experienced in local surveys will be in Buckland for several days during the period 14-21 September 1979.

Birds

No data were gathered. Some eggs were harvested on Chamisso Island in the spring but the relative amounts are unknown.

Plant Materials

Summer 1979 was thought to be a good year for berries, especially salmonberries. The relatively wet August weather forced early picking so that most if not all of the berry harvest was put up in freezers. The loss of the village generator on about September 7, 1979 subsequently caused a loss of most of the frozen berry harvest.

No data are available on other plant materials.

Summary

Available data indicates a considerable loss in the consumptive harvest of foodstuffs for Buckland. Using 1972 as a base year, approximately 70% by weight of the total mammal harvest, or about 50% by weight of the total subsistence harvest has been lost. Most of the berry harvest has also been lost along with some frozen meat due to failure of the village generator.

The results of two village meetings and many personal discussions on the subject indicate that Buckland residents see caribou as the only possible alternative to the problem at hand. The moose population is down in the area, and other mammals cannot supply sufficient meat to make up the deficit created by the failure of the marine mammal hunt.

Nutritional Factors

A full range of nutritional data is not available for the southern Kotzebue Sound area. Some consideration of the coarse nutritional factors involved in Buckland should be given.

Clearly the marine mammal harvest supplies a significant input of unsaturated fats and fat soluble vitamins to Buckland residents. The full array of nutrients offered by the marine mammal harvest is irreplaceable in total by any alternative land mammal harvest. Caribou meat might easily replace seal meat, but there is no equivalent substitute for seal oil. It is possible that Buckland residents will be attempting to barter outside the community in order to obtain seal oil. Since local food reserves are already low, these exchanges might involve cash to a greater degree than in earlier years.

The loss of the berry harvest is significant in that a concentrated source of the water soluble vitamins, especially vitamin C, has been lost. There are several methods of replacing these nutrients, including food supplements, fresh fruits and vegetables, and rare or raw red meat. Since the use of food supplements and fresh produce is unlikely in Buckland, it is hypothesized that fresh red meat prepared in the traditional manner will meet the deficit caused by loss of the berry harvest.

The potential for replacing the subsistence red meat harvest with commercial foods is not only an unlikely economic choice, but a poor nutritional exchange. All commercial meats sold in Buckland are frozen. These meats are both lower in vitamin content than wild meats and subject to storage degradation of vitamins (denaturation of protein-enzyme complexes due to prolonged freezing and oxidation of hydrophilic vitamins).

Economic Data

During the first visit to Buckland an attempt was made to gather some baseline economic data.

Income

The permanent employment available in Buckland consists of 11 CETA jobs involving regional and village government functions. These positions currently pay \$848.00 per month gross.

Part-time jobs available include six seasonal part-time positions at the school through the Northwest Arctic School District (cooks, janitors, bilingual instructors, etc.). Other part-time jobs include the local agent for Munz Northern Airlines, occasional stocking at the Native Stores, and National Guard duty.

At least three commercial fishermen reside in Buckland (CFEC printout of 1979 commercial fishermen in Kotzebue Sound was unavailable). The average annual income from commercial fishing in the Kotzebue Sound Management District is \$6000.00 gross per license holder (Kuhlman, personal communication).

Some income was also derived from firefighting in August 1979. An unknown number of Buckland men, certainly ten or more, were involved in fighting fires on the Yukon River.

The marine mammal harvest also has supplied a supplemental income in former years. Each beluga normally would supply five to six five gallon cans of solid-pack muktuk and at least as much oil in rendered form. The muktuk was cut 1:1 with the oil, and sold regionally at about \$100.00 per five gallon can (1978-1979 value). Each beluga, then, was worth about \$1000.00 to \$1200.00. Given that about half of the total harvest was available for barter, the harvest was worth approximately \$35,000 to \$78,000 to the Buckland economy. These figures are not exact, but serve only to identify the marine mammal harvest as an important source of income which has been lost in 1979. (These data should be considered both partial and confidential, as a complete assembly of Buckland residents has not yet approved them.)

Regionally, Buckland residents are considered to have very low income (Adams, personal communication; Schaeffer, personal communication). The NANA Regional Corporation, AVEC (Alaska Village Electric Cooperative), and ANICA (Alaska Native Industrial Cooperative Association) all reportedly have debt and collection problems in Buckland.

Expenditures

A formal cost of living index has not been assembled for Buckland due to time constraints, however the cost of living is certainly high by any standard. A selected group of housing expenditures in Buckland is as follows:

Heating oil	94.00 per bbl	Propane
Propane	74.00 per btl	
Power	65.00 per mo	(flat rate)

New houses erected by NANA Housing Authority in Buckland are reported to use about three drums of heating oil per month in winter. A bottle of propane lasts about three months.

An unknown number of houses are mortgaged in Buckland, either through ASHA or NANA. The size of the mortgages is also unknown.

A selected group of food prices based on a survey of the Buckland Native Store on 1 August 1979 is as follows:

<u>Item</u>	<u>Size</u>	<u>Price (\$)</u>
Creamed corn--canned	1 lb 1 oz	0.96
Asparagus--canned	15 oz	2.66
Tomatoes--stewed--canned	16 oz	0.95
Canned Tuna	6.5 oz	1.62
Powdered milk	makes 4 qt.	2.45
Spam	12 oz	2.35
Nabob preserves	2 lbs	4.40
Coffee	2 lbs	10.52
Ground Beef	1 lb	3.38
Stew Beef	1 lb	5.72
Pork chops	1 lb	4.82
Chicken	1 lb	2.11
Chuck roast (bnls)	1 lb	4.41
New York Steak	1 lb	10.07
Beef liver	1 lb	2.66
Turkey	1 lb	2.76
Flour	10 lbs	5.07
Sugar	10 lbs	6.50
Macaroni	2 lbs	1.77

More complete data are available on food prices but this limited list serves to demonstrate that food prices are very high, while meat prices are prohibitive.

For the sake of demonstration, consider a family of five, two adults and three children, who substituted hamburger every other day at the rate of one pound per adult and one half pound per child. The monthly expense on meat alone in this example would be about \$177.50.

Public Assistance Programs

The level of use of state and federal public assistance programs in Buckland is not known.

Summary

Income opportunities in Buckland are limited. Eleven permanent jobs were identified for 32 households. Most income opportunities are part-time or seasonal. The marine mammal harvest is thought to have provided significant cash income in the past but was unavailable in 1979.

The cost of living in Buckland is high. Fuel and food costs are especially high.

Sociological Data

Only the broadest outlines of sociology in Buckland are understood. The following data were gathered in August and September 1979.

Population

The Buckland population in August 1979 was 177 persons, based on Municipal Revenue Sharing data (Geary, personal communication). The 1972 revenue sharing population was 104 (NANA, 1974).

Households

There are 32 households in Buckland. Most of the households are believed to involve either more than one family or extended family relationships (Geary, personal communication).

Kinship

Exact kinship patterns are unknown in Buckland. The observer received the impression that there were more kinship ties with Selawik and Noorvik than with either Kotzebue or Deering. Many residents mentioned familial barter with Selawik and Noorvik involving caribou and whitefish in exchange for muktuk.

Tradition

Buckland retains many traditional practices, but is not regionally perceived to be as traditional as the upper Kobuk River villages of Shungnak and Kobuk.

All respondents in Buckland spoke English, while two elders preferred to converse in Inupiat if possible. Most middle-aged people appeared to be fully bilingual. Adolescents appeared to be conversant in English only.

Women appeared to be the driving force in the community and somewhat responsible for the organization of community activities. Women were outgoing and helpful with respect to communicating resource problems.

If reindeer herding can be considered a traditional practice, the evolution of herders from a relatively nomadic existence to village life was apparent. The older men who had been reindeer herders most of their lives were constantly active and busy at a wide range of activities throughout the day.

Leadership

Leadership authority in Buckland appeared to rest in a combination of the elders in the village and male heads of the village council and IRA council.

Proposal Background

The previous data has established that there has been a multiple loss of food resources in Buckland combined with economic problems which have tended to increase the intensity of the resource loss. A serious food shortage will likely occur this winter if alternatives are not used.

Buckland residents have expressed the desire to make up the resource deficiencies with an increased fall caribou harvest. This option was pursued during August by reviewing the biological situation of the Western Arctic caribou herd. My observation of the data along with the opinions of J. Davis (personal communication), D. Johnson (personal communication), and B. Pegau (personal communication) all have agreed that the caribou herd can sustain a limited cow harvest certainly not to exceed 500 animals.

The time period for the cow hunt is between the closure of the fall season, October 15, 1979, and the opening of the spring season, February 15, 1979. After February 15, the season is open to bulls which will be edible if hard for hunters to distinguish from cows.

During the 120 day opening, it was estimated that 177 residents would have to be supplied with an average of one pound of red meat per day. Given that the average dressed weight of Western Arctic herd cows is 102 lbs. (Davis, letter, 8/22/79), it is a simple calculation to see that 208 cow caribou, which was rounded for simplicity to 210 cow caribou, will be required to meet Buckland's food needs.

Estimating that about 30 hunters from Buckland will participate in the hunt, it is suggested that each local hunter receive seven cow caribou harvest tickets as an initial guideline. The successful hunter would return his harvest ticket directly to the local vendor as soon as practical after the kill. In this manner the progress of the harvest could be closely monitored.

Consideration should be given to limiting the hunt to the Buckland River drainage and Buckland residents only. The communities closest to Buckland, including Deering, Selawik, and Kotzebue, are not experiencing resource harvest problems so that they should not compete with Buckland for a limited supply of cow caribou. Similarly, it would not be wise for Buckland residents to be able to harvest cow caribou in the immediate vicinity of either Selawik or Deering.

The proposal is designed to be a temporary solution using a modification to the existing permit situation, to a specific, intense local resource loss. The community has expressed its desire to avoid public assistance programs and wishes to take cow caribou to resolve the problem.

An in-depth consideration of the Buckland resource problem will be presented to the spring meeting of the Board of Game. The Resource Specialist stationed in Kotzebue is planning winter research activities in the Buckland area.

Special consideration needs to be given to the beluga problem in Escholtz Bay. Hunters from Buckland felt that beluga avoided the area because of the presence of killer whales, and because of uncoordinated hunting pressure from Kotzebue boats. Buckland hunters normally coordinate by use of CB radios or prearranged plans in order to allow beluga to pass the narrows in Escholtz Bay and enter the Buckland River. Beluga are very sensitive to sound at this time. Kotzebue hunters were not cooperating with Buckland hunters and were randomly giving chase to beluga by use of large (150 hp and up) outboard motors. It is planned to address this problem with community contacts and an I and E program in Kotzebue in spring of 1980.

Reindeer

The presence of a local reindeer herd near Buckland has been seen by some as a solution to the food shortage problem. Certainly this is not the case for reasons of:

- 1) Private ownership of the herd--the reindeer herd is no more a public resource than a cattle herd using federal grazing lands.
- 2) Management prerogatives--about 3000 animals are present in the locally owned herd, and about 6500 total in the region. These herds are being cooperatively managed by NANA towards an eventual herd size of 30,000 reindeer. At this time NANA does not feel it is possible to supply Buckland's food needs with reindeer and safely manage the herd (Schaeffer, personal communication).

NANA has, however, agreed to supply 100 reindeer to Buckland at \$1.00 per pound (unbutchered). Given the current food shortage and limited cash reserves, both NANA and myself feel it is unlikely that many Buckland residents will be able to afford reindeer meat.

NANA has had to make a difficult choice here involving the ultimate health of a herd of reindeer which could eventually supply regional food needs compared to a premature slaughter which would be detrimental to the herd's health. NANA, it is worth noting, is also legally mandated to earn a profit for its shareholders. The reindeer herds are no more available for emergency public utilization than are farm stocks of beef.

Citations

Literature Cited

NANA. 1974. Resources Harvested in the NANA Native Region, In: Subsistence Harvests in Five Native Regions; Anchorage, Alaska, Joint Federal-State Land Use Planning Commission for Alaska, Resource Planning Team, pp. 9-13.

Letters and Memoranda Cited

Burns, J. (ADF&G, Fairbanks) 8/30/79. Letter to G. Moore.

Davis, J. (ADF&G, Fairbanks) 8/22/79. Letter to G. Moore.

Gasaway, B. (ADF&G, Fairbanks) 8/23/79. Letter to G. Moore.

Moore, G. (ADF&G, Kotzebue) 7/13/79. Memo to T. Lonner.

_____ 8/3/79. Memo to T. Lonner.

_____ 8/28/79. Memo to T. Lonner.

_____ 9/14/79. Memo to R. Skoog, R. Sommerville,
G. Cook, T. Lonner.

Reynolds, H. (ADF&G, Fairbanks) 9/5/79. Letter to G. Moore.

Personal Communications

Adams, A. (President, KIC Corp., Kotzebue) 7/18/79. Personal communication.

_____ 9/14/79. Personal communication.

Davis, J. (ADF&G, Fairbanks) 9/14/79. Personal communication.

Geary, M. (City Administrator, Buckland) 7/31/79. Personal communication.

Goodwin, W. Jr. (formerly NANA Land Div.) 9/11/79. Personal communication.

Griest, B. (Director, NANA Land Div.) 7/17/79 - 9/14/79. Repeated personal communications.

Johnson, D. (ADF&G, Kotzebue) 8/30/79. Personal communication.

_____ 9/14/79. Personal communication.

Kuhlman, F. (ADF&G, Nome) 7/13/79 - 7/29/79. Repeated personal communications.

Magdanz, J. (Writer, Alicia Patterson Foundation, Shungnak) 7/28/79.
Personal communication.

Pegau, B. (ADF&G, Nome) 9/14/79. Personal communication.

Schaeffer, J. (President, NANA) 9/14/79. Personal communication.

