

CHAPTER XIII

SUBSISTENCE USE OF RESOURCES

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1.0 INTRODUCTION

This study summarizes the available data on the subsistence use of natural resources in the vicinity of a proposed surface coal mine to be located eight miles north-northeast of Palmer, Alaska (Figure 1). The area in question is located immediately southwest of Wishbone Hill on the north side of the Matanuska River (USGS 1:25,000 C-6 NW and NE Quadrangles; see Figure 2). The proposed coal mine will affect, in one way or another, the surface of an area stretching from the old Premier Mine on the west to just beyond the old Buffalo Mine on the east, and bounded by Moose Creek on the north and the Glenn Highway on the south. However, over the course of mining operations reclamation activities will be performed as contemporaneously as practicable with the mining operations, and will be designed to return the disturbed areas to their approximate premining condition.

In the following discussion, the concept "subsistence use of natural resources" will refer to the use of those resources by a segment of the Alaska population within a specific legal context (see below), while "resource use" will refer to the general use of those natural resources by all individuals.

2.0 AVAILABLE NATURAL RESOURCES IN THE WISHBONE HILL AREA

The project area supports a mixed upland forest interspersed with parkland. Large trees include birches (*Betula* spp.), poplars and aspens (*Populus* spp.) mixed with conifers, mainly spruces (*Picea* spp.). Paper birch (*Betula papyrifera*) and quaking aspen (*Populus tremuloides*) mark the dry eskers and kames. White spruce is found in dryer areas. Ground cover consists predominantly of fireweed (*Epilobium angustifolium*), cow parsnip (*Heracleum lanatum*), rose (*Rosa* spp.) high bush cranberry (*Viburnum edule*), blueberry (*Vaccinium* spp.) and grasses in the parklands and mixed forest. Well-drained hillocks and ridges often possess smaller berry-producing plants, such as low bush cranberry (*Vaccinium vitis-idea*), bunchberry (*Cornus canadensis*), and crowberry (*Empetrum nigrum*). Poorly drained zones include numerous sedges (*Carix* spp.), grasses (*Poa* spp.), and cotton grass (*Eriophorum* spp.).

Alder (*Alnus* spp.) is usually a marker of watercourses, but this species is also an excellent indicator of disturbed zones. Much of the project area is covered with dense stands of alders, new growth

following surface disturbance from earlier mining and exploration activities.

At least 134 species of birds, fourteen species of fish and twenty-eight species of mammals are presently known to inhabit the general vicinity (Alaska Department of Natural Resources 1986). The most important mammal species in the project area include moose, black bear, and some fur bearers; fish known to be present in Moose Creek include Chinook salmon (with an escapement of up to eleven hundred fish), Coho salmon (with an escapement of up to one hundred fish), Dolly Varden and Rainbow trout; the bird species most commonly taken for food include the three species of ptarmigan and spruce grouse. Presumably all of these species would have been available for exploitation by the more recent prehistoric inhabitants of the area, and earlier peoples probably had substantially the same array of subsistence sources. Undoubtedly the most crucial resources over time for Native peoples have been moose and salmon.

3.0 TRADITIONAL SUBSISTENCE USE OF THE WISHBONE HILL AREA

In the late nineteenth and early twentieth centuries, the upper Cook Inlet region of Alaska was occupied by several regional bands of Dena'ina (Tanaina) Athapaskans. The territory around Knik Arm and the Matanuska River drainage was home to the K'enaht'ana regional band. However, many of the places in this area have both a Dena'ina and an Ahtna name (Kari and Fall 1987: 255), reflecting close association between the Upper Inlet Dena'ina and the Ahtna. Apparently, the Ahtna have moved the territory that they exploit west and northwest during the past 150 years, so that the Chickaloon and Oshetna areas, formerly Dena'ina, have been used mainly by the Ahtnas since the mid-nineteenth century (see Kari 1977).

According to Fall (1987: 21-25):

The annual cycle of the K'enaht'ana of Knik Arm and the Matanuska and Knik river drainages was generally like that of the Susitna River Dena'ina. Some Knik Arm people traveled to the mouth of the Susitna River in spring to harvest hooligan, seal, and waterfowl. Others traded with the Susitnuht'ana [lower Susitna River people] for hooligan at Dilhi Tunch'del'usht Beydegh 'Point Where Hooligan Are Transported' (Point MacKenzie). Many K'enaht'ana moved from their winter villages to lower Knik Arm, including the present-day Anchorage area, in April and May to harvest king salmon with dip nets Later in the spring and summer, sockeye and silver salmon were available in many Knik Arm tributaries. The Knik

Arm Dena'ina caught these fish in basket traps and with weirs and dip nets. They stored dried salmon in caches near the winter villages.

Like the other regional bands, the K'enaht'ana hunted primarily in late August and September. Some Knik River and Eklutna people journeyed into the Chugach Mountains for sheep, bear, ground squirrels, and probably caribou. Other Knik Arm Dena'ina hunted caribou in the Talkeetna Mountains. They traded caribou meat and hides with the Tubughna [from the Tyonek area], receiving dried fish and marine mammal products in return Early winter, from November to January, was usually a period of rest in the winter villages.... People visited other communities, traded, told stories, and held potlatches. Hunting partners made short trips of one to several days for moose, bear, ptarmigan, hare, and porcupine to supplement the diet of dried fish, meat and oil. Fresh fish, mostly trout, were harvested through the ice of local lakes. Furbearers, such as marten, were harvested for raw materials, potlatching, and trade. If food supplies ran low in January, February, or March, village groups sometimes dispersed to lakes in new hunting and fishing areas. Specially trained dogs were used to seek out brown and black bear dens. In April, with the anticipated return of waterfowl, hooligan, marine mammals, and salmon, the sparse season ended and the seasonal cycle began again.

While both the K'enaht'ana and Ahtna probably utilized the project area and immediate surroundings, little information is available on specific use localities. Kari and Fall (1987:259-60) list only a few place names for the area:

Chidaq'atnu (K'enaht'ana); Tsidek'etna' (Ahtna)
'Grandmother's Place Creek'

Moose Creek, formerly called Tsadaka Creek

Glenn and Abercrombie (1899:199): "Above Moose Creek on our [north] side of the Matanuska was an old camping place of the Matanuskas used in their journeys up and down the river."

According to Johnny Shaginoff and Katie Wade, there are burials on both sides of the mouth of Moose Creek. Some graves have washed out. Several people died here during the 1918 flu epidemic.

Johnny Shaginoff says a trail led up Moose Creek and over the mountains to the upper Kashwitna River. The Larsons from Talkeetna used to travel this trail.

Chidaq'ashla Bena

'Lake of Grandmother's Little Place'
Wishbone Lake

Chidaq'ashla

'Grandmother's Little Place'
Wishbone Hill

Katie Wade says this is thought of as a dangerous area. Many hunters have gotten lost here. A giant with feet that are turned backwards is said to have lived in the area.

Ts'es Tuk'ilaght (K'enaht'ana); Ts'es Tac'ilaexde (Ahtna)

'Where Fish Run Among Rocks'
Eska Creek, Sutton

The Chickaloon Ahtnas did not spend much time salmon fishing. Some salmon were harvested here and at a small stream now called Mile Seventeen Creek. Johnny Shaginoff says that the salmon are good only the first two or three days of the run. In the past, people used salmon from the Eska area mainly as dog feed. The people in this area obtained dried salmon through trade with the people downstream

The only additional information that the 1988 survey team obtained on historic usage of the area's resources was the report that Katie Wade once had a seasonal camp at the mouth of Moose Creek (Willingham, personal communication).

4.0 CURRENT USE OF NATURAL RESOURCES IN THE WISHBONE HILL AREA

4.1 Legal Status of Subsistence Activities

According to appropriate State and Federal laws, subsistence uses are the customary and traditional uses of fish and game by rural Alaska residents. The project area is wholly within Game Management Unit (GMU) 14A, which has been designated a non-rural area by the joint Alaska Boards of Fisheries and Game. Anyone living within Game Management Unit 14A is not eligible for subsistence use status.

However, another possibility exists for legal subsistence use of the Wishbone Hill area. There may

be individuals living outside GMU 14A in rural areas who qualify to use subsistence resources within the area because they have customarily and traditionally done so. The State of Alaska has established criteria for determining if customary and traditional use of subsistence resources pertains in specific instances (Alaska Game Regulations, No. 25, p. 66):

Customary and traditional subsistence uses by rural Alaska residents will be identified by use of the following criteria: (1) a long-term, consistent pattern of use, excluding interruption by circumstances beyond the user's control such as regulatory prohibitions; (2) a use pattern recurring in specific seasons of each year; (3) a use pattern consisting of methods and means of harvest which are characterized by efficiency and economy of effort and cost, and conditioned by local circumstances; (4) the consistent harvest and use of fish or game which is near or reasonably accessible from the user's residence; 5) the means of handling, preparing, preserving and storing fish or game which has been traditionally used by past generations, but not excluding recent technological advances where appropriate; (6) a use pattern which includes the handing down of knowledge of fishing or hunting skills, values and lore from generation to generation; (7) a use pattern which the hunting or fishing effort or the products of that effort are distributed or shared among others within a definable community of persons, including customary trade, barter, sharing and gift-giving; customary trade may include limited exchanges for cash, but does not include significant commercial enterprises; a community for purposes of subsistence uses may include specific villages or towns, with a historical preponderance of subsistence users, and in addition encompasses individuals, families, or groups who in fact meet the criteria described in this subsection; and (8) a use pattern which includes reliance for subsistence purposes upon a wide diversity of the fish and game resources of an area, and which provides substantial economic, cultural, social and nutritional elements of the subsistence user's life.

These criteria were applied to the hunting of moose in GMU 14A by individuals living outside the unit and it was determined by the Alaska Board of Game that there was no customary and traditional hunting of moose in GMU 14A (Fall, personal communication). Inhabitants of the closest Native community outside of GMU 14A, those individuals living in the portion of Chickaloon located to the east of the Chickaloon River, apparently have not traditionally conducted extensive harvests of subsistence species as far west as Wishbone Hill, as is indicated by the decision of the Board.

The other potential major subsistence resource is salmon, though both escapement data and ethnographic testimony (see above) indicate that salmon were neither particularly common in the

streams immediately adjacent to Wishbone Hill nor particularly desirable as human food when available. In any event, there has not been a subsistence fishery in the region since 1952 when the federal government closed the Knik/Matanuska Rivers and all tributaries to subsistence salmon fishing.

In conclusion, no rural community meets the eight criteria set by the Alaska Boards of Fisheries and Game for establishing the existence of customary and traditional subsistence use in the Wishbone Hill area.

4.2 Current Subsistence Activities By Native Peoples Living In Chickaloon

Chickaloon is the nearest community to the project area with Native households whose members can possibly partake in the subsistence harvesting. Therefore, it might prove useful to briefly summarize what is known of the extent to which the inhabitants of Chickaloon practice the harvest of subsistence resources. The most recent comprehensive discussion of fish and game use by the Chickaloon community is found in a 1983 study of twenty-two communities in the Copper River basin and Wrangell Mountains by Stratton and Georgette (1984) of the Subsistence Division, Alaska Department of Fish and Game.

For the purposes of the study, the dispersed community of Chickaloon was defined as those households located between Miles 68 and 84 on the Glenn Highway and along the lower Chickaloon River. The Division of Subsistence researchers interviewed residents from eighteen of the thirty year-round households identified in the area. The results of the interviews permit characterization of the community and its reliance on the consumption of fish and game (Tables 1 and 2).

The data collected by Stratton and Georgette (1984: 45ff.) indicate that:

Chickaloon residents were active and relatively successful in resource harvesting during the year covered by the study [1983]. Their per capita harvest (213 pounds) and mean household harvest (490 pounds) were among the highest of the 22 communities (ranked 3rd and 4th respectively) in the study region [in and near the Copper River basin]. Their per capita use (218 pounds) and mean household use (502 pounds) of resources (ranked 6th and 9th respectively) were similar to their

harvest suggesting that substantial quantities of resources did not enter or leave the community. Moose was the major component of the mean household harvest, at 186 pounds.

One-half of the surveyed Chickaloon households harvested salmon. Because salmon were not locally available, Chickaloon households harvested considerably less of this resource than communities along the Copper River. Over 100 miles from Chickaloon, the Copper River was the closest personal use and subsistence salmon fishery to Chickaloon residents, with the Kenai River personal use dipnet fishery second closest, approximately 220 miles distant. It is not surprising, then, that those surveyed in Chickaloon frequently used rod and reel fisheries near Palmer and Willow. Four households, however, harvested salmon from the Kenai River. A few residents commented that their use of salmon was restricted by distance and by regulations that did not permit a sufficiently high bag and possession limit to make the drive and expense worthwhile. Only three Chickaloon households reported using any Copper basin salmon. Two of these households harvested salmon, one using a fishwheel in the Copper River, and the other fishing with rod and reel in one of the Copper River's tributaries. All other salmon harvesters fished outside the Copper basin with rod and reel, except one commercial fisherman who used a gillnet. Silver salmon was the most commonly harvested species, with eight households (44 percent) harvesting a mean of 49 pounds, or about eight fish. Red salmon were taken by five households (28 percent) for a mean of 33 pounds, or about seven fish per household.

In contrast to salmon, freshwater fish were largely harvested locally by Chickaloon households. In common with the salmon harvest, rod and reel were the prevalent gear type. Almost three-fourths of Chickaloon households harvested rainbow trout for an average of 54 pounds (about 39 fish) per household in the sample. This species was taken mostly from Long Lake, Bonnie Lake, Fish Lake, Ida Lake, and Chickaloon River.

One-half of the households took grayling for a mean of 17 pounds (about 25 fish), mostly from Bonnie Lake, Sawmill Creek, and Caribou Creek.

Big game hunting by Chickaloon residents concentrated on moose. Eight Chickaloon households (44 percent) harvested a moose during the study period, a higher percent than in any other community surveyed and one approached only by the more remote communities near the Wrangell Mountains and the Alaska Range. Whereas other communities had access to big game animals such as caribou and sheep, Chickaloon residents almost exclusively pursued moose, the only big game locally available. This possibly explains their higher level of participation and success in moose hunting. Chickaloon residents generally hunted on foot or with horses, using the area north of the Glenn Highway between Jonesville Road and

Boulder Creek. Popular drainages for hunting included Granite Creek, King River, Chickaloon River, and Boulder Creek, with residents seldom hunting further than eight miles from the highway. Their success rate in moose hunting might also be related to the relatively more permissive regulations in Game Management Unit 14A (west of the Chickaloon River) which in 1982 allowed the taking of any bull moose, with the provision that antlerless moose could be taken by drawing permit only. This contrasted with Unit 13 regulations that permitted only the taking of moose having an antler spread of at least 36 inches or three brow tines. In addition, several local roads and trails in the Chickaloon area provided residents with access into the Talkeetna Mountains, perhaps improving their hunting success. Road-killed moose received by local residents might account both for the higher number of people using moose than harvesting it, and the greater quantities of moose used than harvested.

Only two households (11 percent) trapped to any extent, using areas near Sutton, Tahnetta Pass, and Eureka Summit and in the Chickaloon River, Talkeetna River, and Caribou Creek drainages. Spruce grouse were taken by slightly more than one-half of the households (56 percent), while ptarmigan were harvested by slightly less than one-third (28 percent). An average of about 18 ptarmigan and grouse was taken by each household.

Two-thirds of Chickaloon households picked berries for a mean household harvest of 30 quarts, among the highest berry harvests reported in the study. Blueberries, cranberries, currants, and raspberries were popular. Slightly less than one-third of the households collected wild plants, with mushrooms being the most commonly harvested plant resource.

Overall, 49 percent of the mean household harvest of wild resources by Chickaloon households was composed of big game and 37 percent was fish. Berries and plants made up eight percent of the harvest, and small game the remaining seven percent. Chickaloon households harvested an average of 7.4 resources, in the lower third among surveyed communities. The fairly narrow range of big game and fish species available locally might account for this.

Like the adjacent community of Matanuska Glacier, many Chickaloon households engaged in raising livestock and gardens. Several residents remarked that this was a more reliable source of food than fish and game.

Analysis of Stratton and Georgette's data suggests that, in 1983 at least, there were very few households with Alaska Native members in the Chickaloon area. While subsistence resources played an important role in the diet of Chickaloon families, resources from the immediate

Wishbone project area apparently were not an important component in their subsistence resource harvest pattern; indeed, there is no mention at all of harvesting subsistence resources there in Stratton and Georgette's study.

4.3 Current Resource Use in the Wishbone Hill Area

This is not to say that the harvest of natural resources does not occur in the Wishbone Hill project area. At least three other sources of data on resource harvest in the Wishbone Hill area are available as noted below, and analysis of other data sources, such as returned Alaska Department of Fish and Game moose tags, might disclose additional information.

The Alaska Habitat Management Guide Reference Maps (Alaska Department of Fish and Game 1985) for the southcentral region (Volume III) depict community use of fish, wildlife and plants in the project area. Those areas shown on the pertinent map are known to have been used for harvesting natural resources for the 1964 through 1984 time period, and according to the map caption that resource use was primarily by individuals from Chickaloon. The three resource use areas noted are the lower Moose Creek valley for freshwater fish, most of the Moose Creek drainage for furbearers, and the entire project area for moose.

The Matanuska Valley Moose Range Management Plan (Alaska Department of Natural Resources 1986:19) estimates that 500-1000 angler days effort per year are expended in fishing for Rainbow and Dolly Varden in Moose Creek.

The third data source is field observations of evidence for resource harvest activities made during the course of an archaeological study of the project area between the eighth and tenth of July, 1988 (Hall and Lobdell 1988). Those portions of the tract with substantial spruce cover have been designated as wood cutting areas and there are abundant signs of this pursuit. The partial remains of a single moose were arranged in such a way as to imply that the animal was killed by a hunter rather than succumbing to natural causes. And, finally, numerous shotgun shells (.410, 20 and 16 gauge) were recorded along roads running through the project area suggesting that bird hunting, probably for grouse and ptarmigan, was a common activity.

5.0 CONCLUSIONS

Based on the available evidence, a number of conclusions are possible:

- 1) Though moose occur in the project area, limited runs of salmon are found in Moose Creek, and other subsistence species may be present in the near vicinity, the project area does not appear to possess enough resource potential to have been the focus of intensive subsistence species harvest activities in the past or in more recent times.
- 2) There is no indication in the ethnographic literature that the project area was particularly important to Native people for subsistence use purposes during the historic period.
- 3) There does not appear to be any legal foundation for subsistence use today of natural resources by Native Alaskans living within GMU 14A, which encompasses the project area.
- 4) Because there was no customary and traditional hunting of moose or use of other subsistence species in GMU 14A, subsistence use of natural resources there by Native Alaskans living outside GMU 14A is not permitted under current regulations.
- 5) The few households with Alaskan Native members in Chickaloon, the nearest community of any size, do not appear to conduct subsistence species harvest activities as far west as Wishbone Hill.
- 6) While some use of natural resources does take place today in the project area, the harvest appears to be neither substantial nor of particular importance to an identifiable subsistence resource user group.

6.0 ACKNOWLEDGEMENTS

I wish to thank Jim Fall, Lynne Fullerton, Jim Helling, Jack Lobdell and Pandora Willingham for their help with this project.

7.0 REFERENCES

Alaska Department of Fish and Game, 1985. Alaska habitat management guide: Reference maps-southcentral region. Vol.III. Juneau.

Alaska Department of Natural Resources, 1986. Matanuska valley moose range management plan. Alaska Department of Natural Resources and Alaska Department of Fish and Game.

Fall, James, 1987. Upper Inlet Dena'ina regional bands, subsistence patterns, and traditional leaders. In Shem Pete's Alaska, edited by James Kari and James Fall, pp. 21-28. Alaska Native Language Center (University of Alaska) and The CIRI Foundation.

Glenn, Edward and William Abercrombie, 1899. Reports of explorations in the Territory of Alaska. U.S. Adjutant General's Office, Military Information Division, Publication 25. War Department Document 102. Washington: U.S. Government Printing Office.

Hall, Edwin S., Jr., and John E. Lobdell, 1988. Wishbone Hill Project cultural resources site survey. Northern Anthropology Consortium.

Kari, James, 1977. Linguistic diffusion between Ahtna and Tanaina. International Journal of American Linguistics 43:274-289.

Kari, James and James Fall (eds.), 1987. Shem Pete's Alaska. Alaska Native Language Center (University of Alaska) and The CIRI Foundation.

Stratton, Lee and Susan Georgette, 1984. Use of fish and game by communities in the Copper River basin, Alaska: A report on a 1983 household survey. Anchorage: Alaska Department of Fish and Game, Subsistence Division, Technical Paper No. 107.

8.0 RESPONSIBLE PARTIES

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TABLES

Subsistence Resource Use in the Wishbone Hill Project Area

Table 1. Characteristics of Chickaloon Community
(data from Stratton and Georgette 1984)

Population (1980)	136
Households (1980)	53
Estimated population (1983)	69
Year-round households (1983)	30
Households interviewed	18
Mean household size	2.3 persons
Mean length of residency	12.3 years
Number of household heads born in Copper River region	1
Number of household heads born in Alaska	3
Number of household heads born outside Alaska	14
Households with Alaska Native members	2 (11 percent)
Households with no Alaska Native members	16 (89 percent)
Households with members employed in trades	61 percent
Households with members employed in clerical jobs	11 percent
Households with members employed as merchants	6 percent
Households with members employed in natural resources	6 percent
Households with members who are retired	17 percent
Mean number of months employed, per household (1982–83)	7.9
Per capita harvest of fish and game	213 pounds
Mean household harvest of fish and game	490 pounds
Per capita use of fish and game	218 pounds
Mean household use of fish and game	502 pounds
Mean household wild resource harvest breakdown	
Game	49 percent
Fish	37 percent
Berries and plants	8 percent
Small game	7 percent
Average number of resources harvested per household	7.4 resources

Subsistence Resource Use in the Wishbone Hill Project Area

**Table 2. Chickaloon Household Resource Harvest and Use
June 1982 through May 1983**

(Stratton and Georgette 1984: 47)

<i>Species</i>	<i>PHH*</i>	<i>MNH*</i>	<i>MPH*</i>	<i>PHU*</i>	<i>MNU*</i>	<i>MPU*</i>
King Salmon	11	**	6	22	**	11
Red Salmon	28	8	33	28	8	33
Silver Salmon	44	8	49	56	8	50
Rainbow Trout	72	39	54	67	39	54
Lake Trout	11	**	2	11	**	2
Burbot/Lingcod	11	**	**	11	**	**
Grayling	50	25	17	56	25	17
Dolly Varden	22	17	15	22	17	15
Hooligan	6	4	1	6	4	1
Pink Salmon	6	**	2	6	**	2
Other Fish	6	**	**	6	**	**
Moose	44	**	186	61	**	192
Caribou	0	0	0	6	**	**
Black Bear	17	**	11	22	**	10
Bison	6	**	42	6	**	42
Hare	22	12	18	22	12	18
Porcupine	17	**	3	17	**	3
Beaver	11	**	2	6	**	1
Muskrat	6	22	***	6	22	0
Coyote	11	**	NA	NA	NA	NA
Fox	11	**	NA	NA	NA	NA
Marten	6	**	NA	NA	NA	NA
Ground Squirrel	6	1	NA	NA	NA	NA
Ptarmigan	28	8	4	28	8	4
Spruce Grouse	56	9	5	56	9	5
Ducks	6	1	2	6	1	2
Berries	67	NA	30	61	NA	30
Plants	28	NA	8	28	NA	8

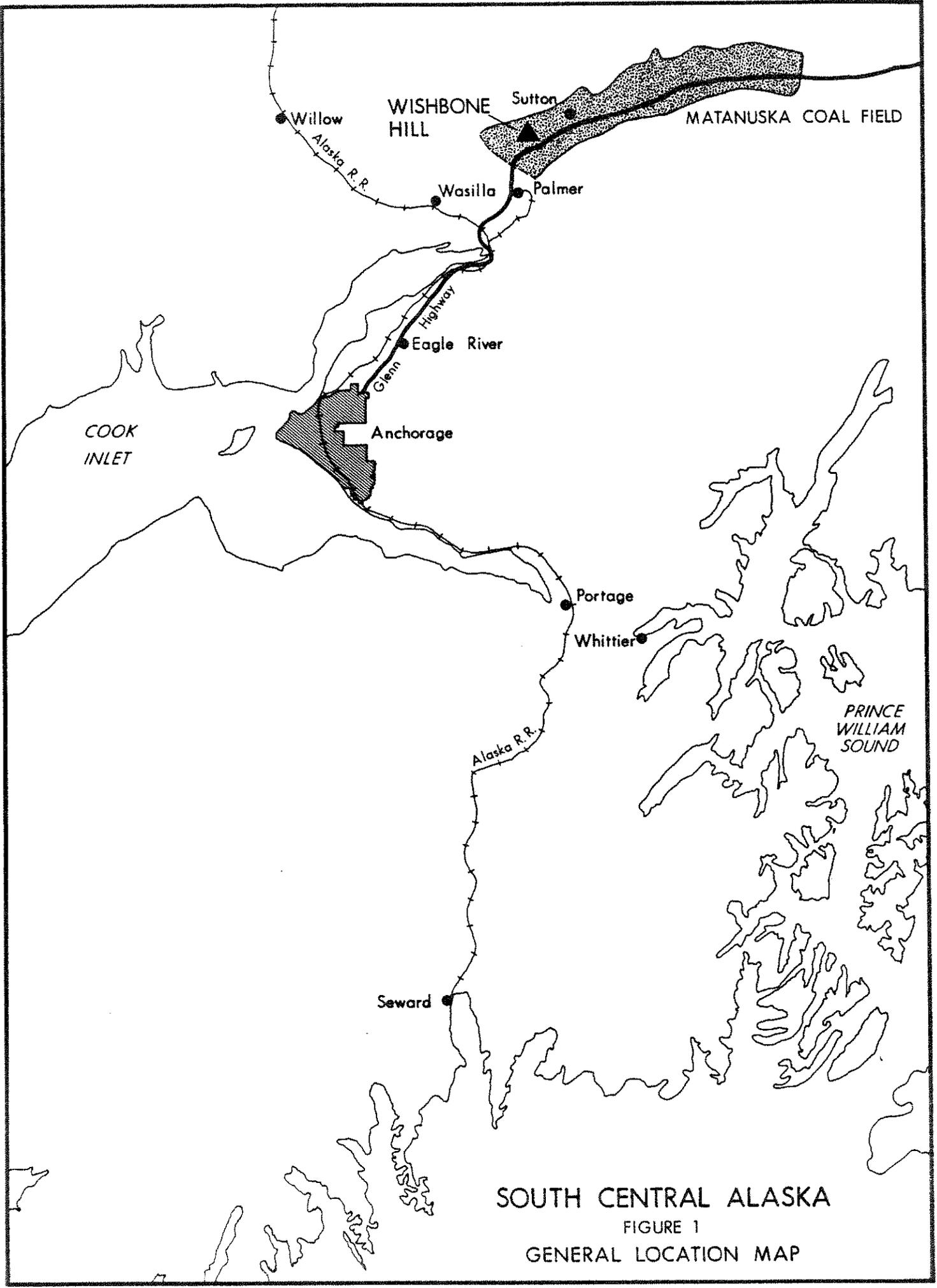
* PHH = percent households harvesting; MNH = mean number harvested; MPH = mean pounds harvested; PHU = percent households using; MNU = mean number used; MPU = mean pounds used.

** Less than 1.0 percent.

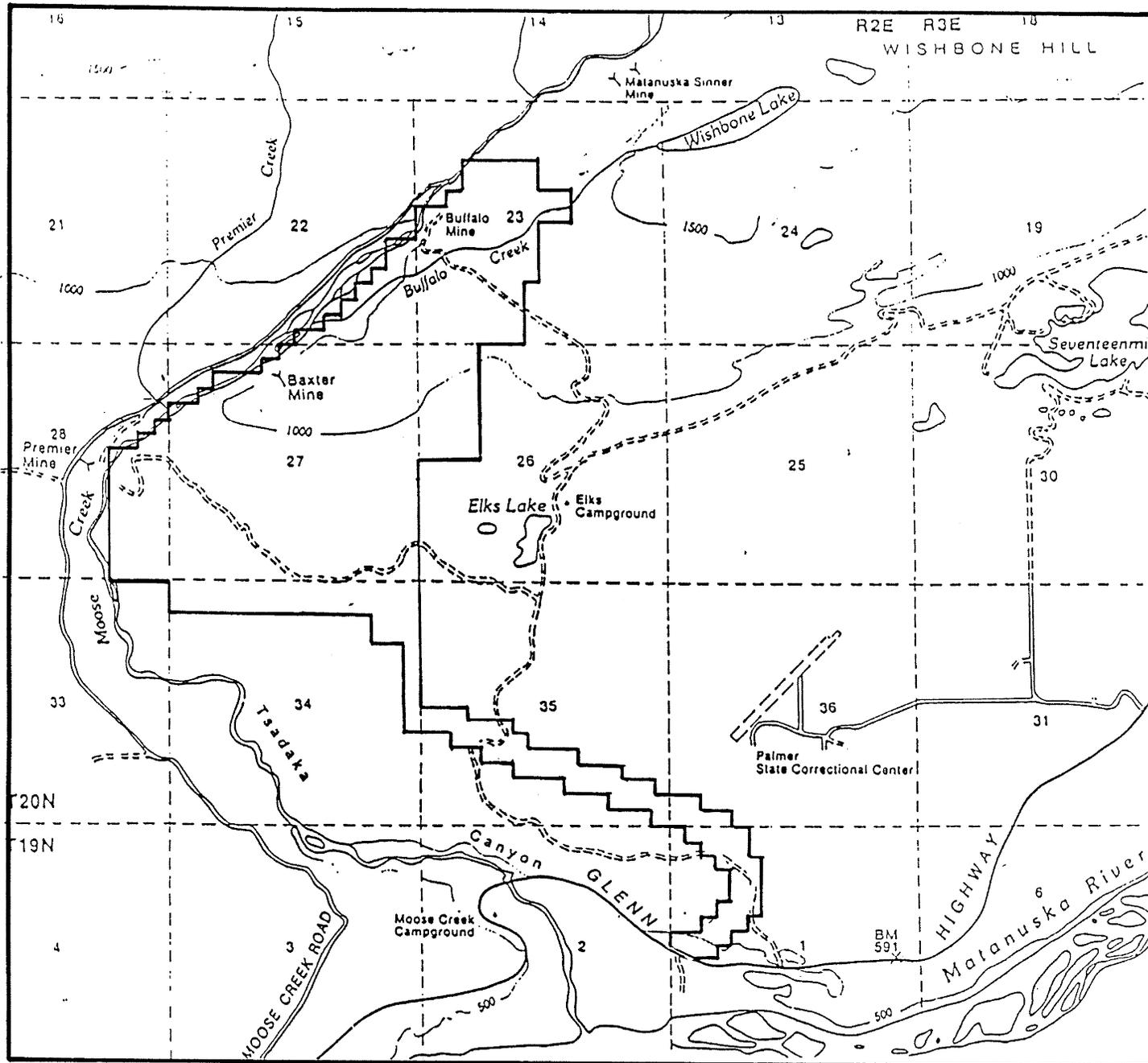
*** Meat was not salvaged from the harvest.

NA Not applicable.

FIGURES



SOUTH CENTRAL ALASKA
FIGURE 1
GENERAL LOCATION MAP



DESIGN BY:
 DRAWN BY:
 CHECK BY:
 DWG FILE:
 DATE DRAWN:

PROJECT AREA

USIBELLI COAL MINE, INC.
 P.O. BOX 1000, HEALY, ALASKA 99743 (907) 683-2226

WISHBONE HILL MINE		PERMIT No. 01-89-796
FIGURE No. 2		REV. 0
SCALE:		