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Susitna Joint Venture
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THE SUSITNA HYDRO STUDIES
November 1980

the susitna hydro studies

november 1980

Fairbanks, Anchorage and Railbelt face major energy decision

Citizens in the "railbelt region" will face a major energy decision in 1982.

At that time, the feasibility studies on the proposed Susitna hydroelectric project and a study of the feasibility of a variety of other energy alternatives will both conclude with their findings.

Information on the energy alternatives study can be anticipated from the Office of the Governor.

The purpose of this newsletter, the first of several, is to present what is going on with the Susitna studies that are now underway. The intent is to present the information objectively so that readers may make their own conclusions based on facts.

A BRIEF HISTORY

There has been a great deal of interest for many years in the building of a hydroelectric project on the Susitna River.

It was initially looked at in the 1940's by the U.S. Bureau of Reclamation and later studied by the U.S. Army Corps of Engineers.

The previous assessments indicated that the Susitna project was economically feasible and that anticipated environmental impacts would not be of such a magnitude as to warrant it undesirable. Consequently, in 1976 the Alaska State Legislature created the Alaska Power Authority and asked the new state corporation to begin detailed feasibility studies on the development of the hydroelectric

potential of the upper portion of the Susitna River. Initial funding was provided in July 1979, and the explorations were initiated in January 1980.

Those explorations, never adequately undertaken before, are now 10 months into a 30-month examination period. Acres American, Inc. (Acres) has been retained by the Power Authority to manage the \$30 million effort.

The state is also funding a related but separate \$1 million study to consider alternatives to Susitna hydroelectric power. That study, contracted by the governor's Policy Review Committee, is being conducted by Battelle-Pacific Northwest Laboratories. It will be completed in the spring of 1982, concurrent with the Susitna feasibility studies.

INDEPENDENT REVIEW BY EXTERNAL CONSULTANTS

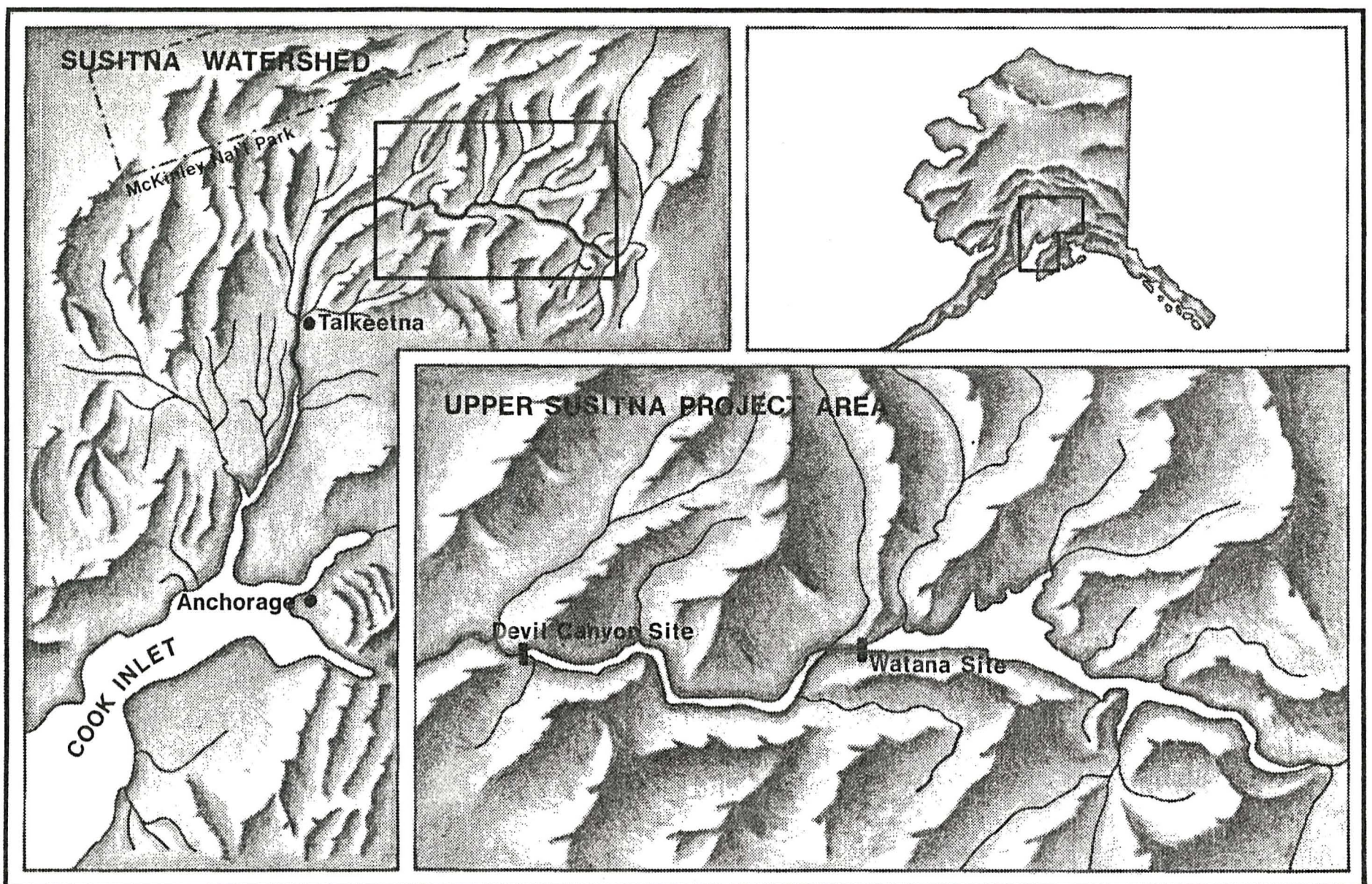
As a part of the Susitna explorations, the Alaska Power Authority is appointing an external review board composed of eminent engineers, scientists, and economists to review the feasibility studies performed by Acres. Approximately \$1 million has been budgeted by the Alaska Power Authority for this review, which will include an independent cost estimate of constructing the Susitna project.

THE SUSITNA HYDRO STUDIES

The Susitna investigations fall into 10 general categories. Not all the studies are going on at this time, nor are all described in this newsletter. They include:

- forecasts of future electrical needs in the railbelt area between the Kenai Peninsula and Fairbanks from 1990 through 2010
- hydrologic analysis of the Susitna River
- seismic examination
- geotechnical exploration near the dam sites
- engineering design development
- environmental data collection and impact assessment
- transmission line analysis

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Jim Gill, Resident Manager,
Anchorage office of Acres
American, Inc.

Firm brings extensive cold region experience to hydro studies

In November 1979, the Alaska Power Authority Board of Directors selected Acres American, Inc., an international consulting engineering firm, to conduct the feasibility studies on the Susitna hydroelectric project.

Reasons for the selection included Acres' past experience with hydroelectric projects in sub-arctic regions.

Also important was Acres' decision to utilize Alaskan expertise

in the field work (which would maximize the expenditure of monies within the state), and its proposal to provide for an extensive and direct public participation process.

The selection was made with support from both the public and the State House Power Alternatives Study Committee, a legislative subcommittee set up to oversee the feasibility work.

The Acres organization is active in diversified fields of planning, engineering, feasibility studies, environmental assessment, and project management. Among other energy technologies, the company has more than fifty years of experience with large and small hydroelectric development.

Included in these are the Churchill Falls project in Labrador and the Nelson River project in Canada, both of which

are located in northern climates and presented problems similar to those the proposed Susitna project may encounter.

The Susitna project is managed by Acres out of its main office in Buffalo, New York. Its resident office is in Anchorage and the field camp is in the upper Susitna basin close to Deadman Creek.



Expertise applied to socioeconomic questions

The construction and operation of a hydroelectric project in the Susitna River basin might affect the lives of Alaskans, in both positive and adverse ways. While Railbelt residents generally might experience energy independence and lower costs for electricity (relative to other alternatives), certain groups of people might experience population shifts, changes in service requirements, tax rate and revenue changes, and changes in the general quality of life.

Frank Orth & Associates, Inc.,

a firm with experience in conducting socioeconomic analyses, particularly in Alaska, is presently conducting the first phase of a two-phase study that will identify and analyze potential changes in socioeconomic conditions.

Between now and spring of 1981, the firm is developing socioeconomic profiles for local, regional, and to some extent, statewide areas. These profiles are descriptions of existing conditions such as population levels, availability and type of housing, employ-

ment and income levels, business activity, education enrollment and cost, transportation facilities, and land use patterns.

Later, between late spring and early fall 1981, these same conditions will then be described for a future without the Susitna project. The result will be a baseline from which comparisons can be made. A preliminary assessment of socioeconomic impacts that could result from a Susitna development will be made prior to a state decision on Susitna in

1982.

If the state decides to file a license application in 1982, a detailed analysis of what affect construction and operation of the Susitna project might have on social and economic conditions will then be conducted.

Frank Orth & Associates will identify and examine changes in socioeconomic conditions so that people can make their own evaluations of how such changes could affect their life styles.

Background information on proposed Susitna project



LOCATION

The proposed Susitna River hydroelectric project is located on the upper Susitna River, approximately 125 air miles north of Anchorage, 150 air miles south of Fairbanks, and 70 miles northeast of Talkeetna.

POTENTIAL POWER

For a year with typical precipitation and climatic conditions, the average energy potential of the basin is about 7 billion Kwh. This is about twice what the railbelt generation was in 1979. There are a number of development concepts that can be designed to use all or a portion of this energy potential.

SUSITNA ALTERNATIVES

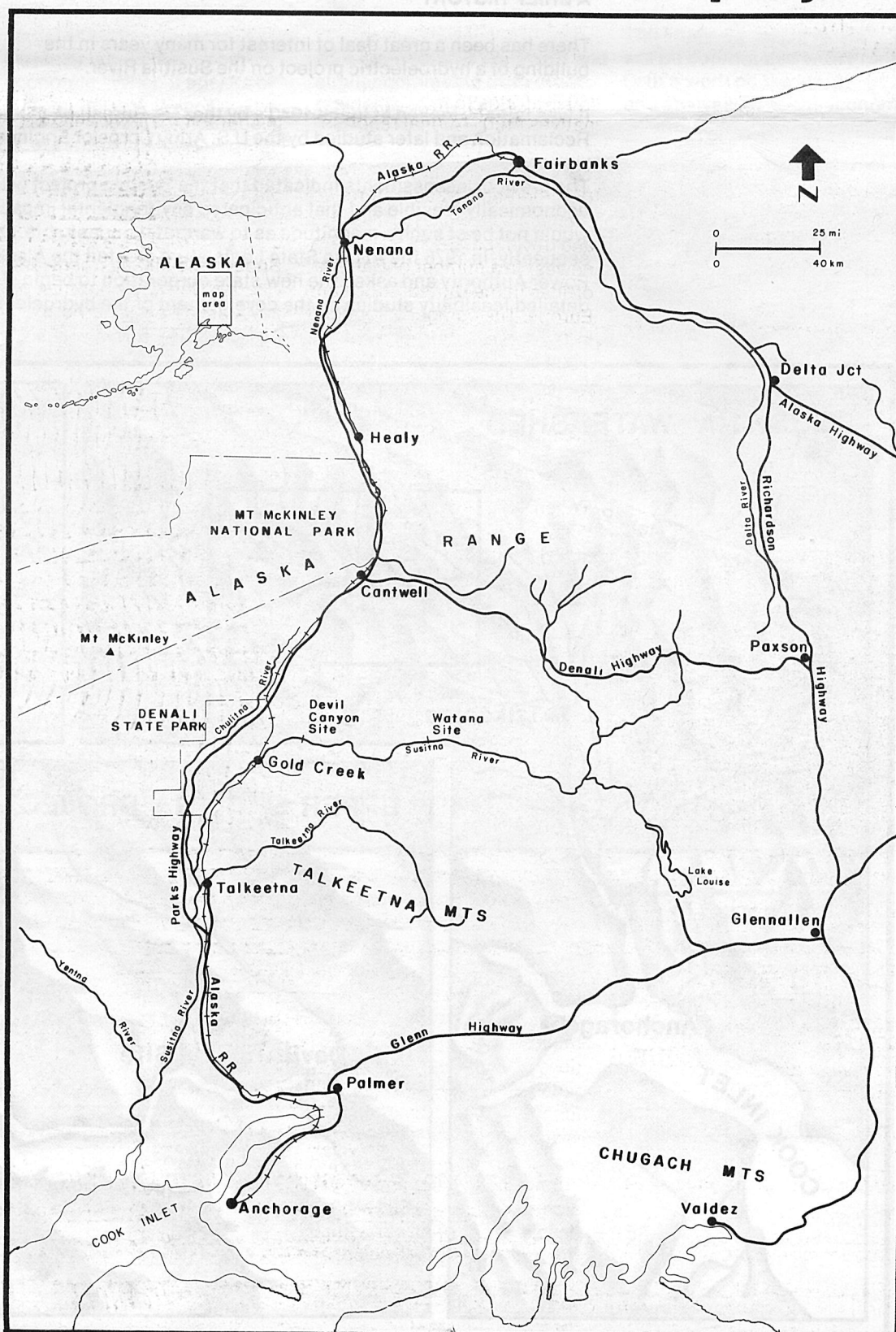
Between the Denali Highway upstream and Gold Creek downstream, twelve dam sites and two primary tunnel plans are being considered as possible building blocks in the formulation of a preferred development plan.

PRESENT LAND USE

The project area is presently used by guided hunters operating principally out of the Stephan Lake area, with scattered private cabins being present on most of the larger lakes in the upper Susitna basin. In addition, mining claims have been filed on many of the tributary streams within the drainage. Access to the area is predominantly by aircraft, although there is limited access by river from the east.

LAND OWNERSHIP

The major land ownership is by Cook Inlet Region, Inc., and its Native village corporations. There are also some inholdings within the project area, such as mining claims, Native allotments, open-to-entry parcels, and homesteads.



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- cost estimating
- preparation of FERC (Federal Energy Regulatory Commission) licensing documents, if appropriate
- marketing and financing analysis

**THE SUSITNA WORK
THUS FAR**

Last summer, scientists and engineers went into the field to begin the Susitna work. An explanation and first examination of this work is the text that follows on the inside pages of this newsletter. Further information will follow in subsequent reports.

**FINAL RECOMMENDATIONS
ON POWER DEVELOPMENT**

In April 1982 the five-member Alaska Power Authority Board of Directors will formulate its recommendation to the governor and the legislature in regard to power development along the railbelt. At approximately the same time, the governor's Policy Review Committee will be forwarding its independent recommendation.

THE DECISION

Final determination on the subject rests with the state in 1982. If the decision is made to proceed with the development of Susitna, a license application for construction will be filed with the Federal Energy Regulatory Commission in Washington, D.C.

**Who is the
Alaska Power
Authority**

The Alaska Power Authority is a public corporation funded by the state and headed by a five-member board of directors

appointed by the governor and approved by the legislature. Its day-to-day business is conducted by a sixteen-member staff located in Anchorage.

The purpose of the Power Authority is to assist the residents of Alaska in both urban and rural areas in constructing, acquiring, financing, and operating power production facilities of various types. Those types include fossil fuel, wind power, tidal, geothermal, hydroelectric, solar energy production, and waste energy conservation facilities. The Power Authority is currently developing a number of hydropower and alternative energy projects statewide.

Alternative energy study goes to Battelle



To assure sufficient checks and balances, the 1980 state legislature determined that an independent consulting firm should conduct the Railbelt power alternatives study.

In the original plan of study presented to the Alaska Power Authority by Acres American, Inc., Acres was to conduct the alternatives study in parallel with feasibility level studies of the Susitna hydroelectric project.

This fall the governor's Policy Review Committee selected Battelle-Pacific Northwest Laboratories to make the alternatives study. A final report is expected in the spring of 1982.

Battelle-Pacific Laboratories, a Richland, Washington, research and development firm, is the newest in a number of Battelle offices in the United States and Europe. The company, founded in 1929, has a staff today of 6,000. Research in the Northwest office focuses primarily on the technological and environmental issues of energy production and use.

Recent studies by Battelle have

included a national coal utilization assessment and an assessment of the effects of thermal power plant site and design alternatives on the cost of electric power, both for the federal government.

"Battelle has a lot of experience doing exactly what this request for proposal calls for, and they have a great amount of experience doing projects in Alaska," said Fran Ulmer, chairwoman of the Policy Review Committee and director of Policy Development and Planning in the governor's office.

In addition to Ulmer, members of the Review Committee include Clarissa Quinlan, director of the Division of Energy and Power Development; Ron Lehr, director of the Division of Budget and Management; and Charles Conway, chairman of the Alaska Power Authority Board of Directors.

While Acres American, Inc. reports to the Alaska Power Authority for the Susitna studies, Battelle will report directly to the Policy Review Committee.

OBJECTIVE / COST

The objective of the alternatives study is to determine if there are more cost effective ways to meet the energy needs of the Anchorage-Fairbanks railbelt area than through the development of the Susitna River's hydroelectric potential.

Cost of the 18-month study is \$1 million.

**WHAT ABOUT THE
RECOMMENDATION?**

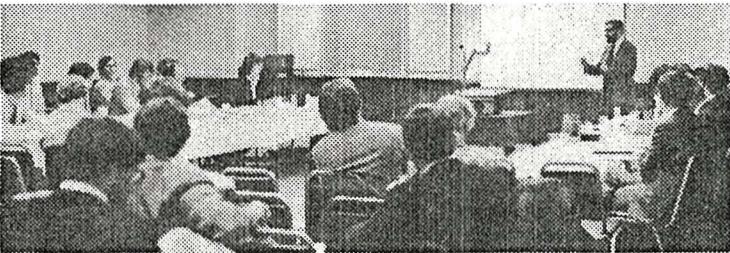
When the Battelle study is completed in April, 1982, the Policy Review Committee and the Alaska Power Authority Board of Directors will consider the results in formulating their respective recommendations for Railbelt power develop-

ments to the governor and the legislature.

**WHERE QUESTIONS
SHOULD GO**

Questions regarding the alternatives study should be directed to Fran Ulmer, Director of the Division of Policy Development and Planning (DPDP), Pouch AD, Juneau, Alaska 99811, phone (907) 465-3577.

Questions regarding the Susitna hydroelectric exploration should be sent to Eric Yould, Executive Director of the Alaska Power Authority, 333 West 4th Avenue, Suite 31, Anchorage, Alaska 99501, phone (907) 276-0001.



Ward Swift of Battelle Northwest explains his firm's proposal to members of the public and the governor's Policy Review Committee this fall. Battelle was selected to conduct the energy alternatives study. Battelle's work is expected to be completed at the same time as the Susitna feasibility studies in spring 1982.

ISER expects more than doubling of electricity needs despite slower growth rate



Dr. Scott Goldsmith, Institute of Social and Economic Research.

Initial forecasts from the Institute of Social and Economic Research (ISER) indicate that future growth of electric utility sales is expected to be slower than the historical Alaskan growth rate. Because of anticipated high rates of economic growth, however, utility sales will equal or exceed recent national elec-

tricity consumption growth rate projections.

Several forecasts were made to reflect the uncertainty surrounding both future economic activity and relative prices of energy. ISER's "most likely" forecast indicates that electrical utility sales in the year 2000 are likely to be about 2.4

times what it is in the railbelt today.

The railbelt region generally includes these areas: Fairbanks, Talkeetna, Palmer/Wasilla, Anchorage, the Kenai Peninsula, Glenallen, and Valdez.

The ISER forecasts are considerably lower than previous forecasts that served as a basis

of earlier studies of the Susitna hydroelectric project by the Corps of Engineers.

Historically, the annual growth rate from 1965 to 1975 was about 14%. During the last five years, it has been 7%. The projected annual growth rate over the next 20 years averages 4 1/2 %.

**Design options
include tunnels**

Previous plans indicated a basin development preference ranging from a four-dam basin development plan to the more recent preference for two dams located at Devil Canyon and Watana.

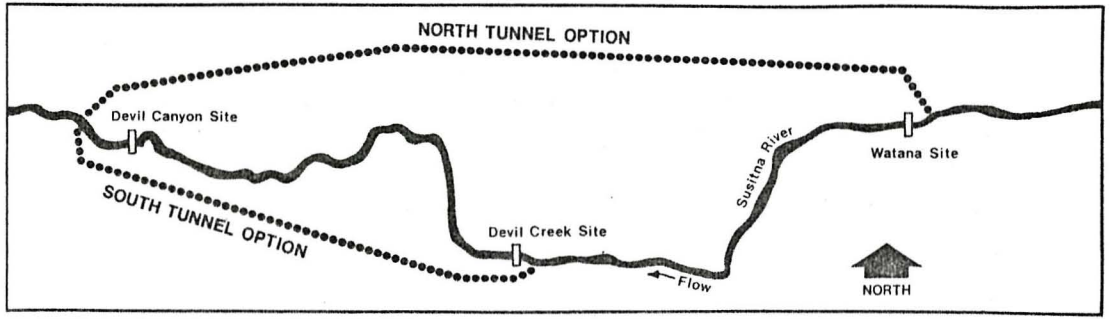
Tunnels are also being considered in the options for development of power within the upper Susitna. Two conceptual tunnel plans are shown in the map to the right, along with three of the potential dam sites.

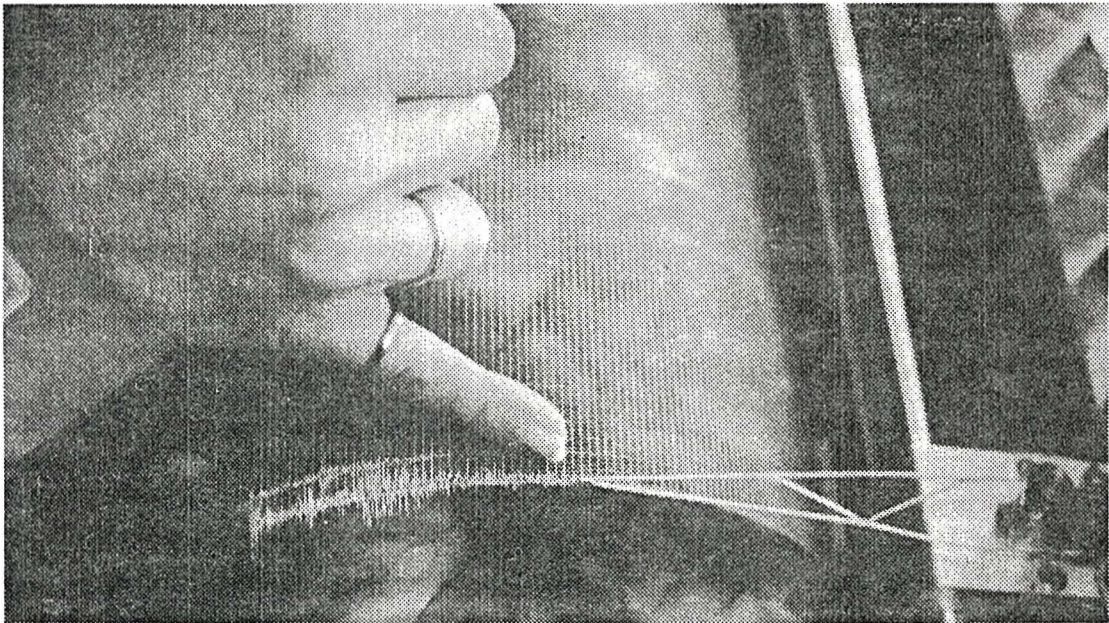
The sites and tunnels shown do not imply all would be developed. Using a multi-disciplinary approach, the

preferred concept plan will be based on such things as anticipated power needs, costs, environmental and social im-

pacts, safety and reliability.

The preferred concept plan is expected in March 1981.





MICROEARTHQUAKE MEASURES 2.0:
Portable seismographs like this one have been set up at the Watana base camp to register microearthquake activity. This particular microearthquake, with an epicenter in the southwest corner of Mt. McKinley Park, measured 2.0 on the Richter scale last August 27th. Microearthquakes usually are not felt by human beings. They occur constantly throughout the railbelt.

Microearthquake studies review old data, collect new

Seismic activity in the project area is being studied by Woodward-Clyde Consultants' seismologists.

In addition to reviewing historical earthquakes, seismologists have been monitoring microearthquake activity in the vicinity of the dam sites. During this year 10 very sensitive seismometers were installed in shallow holes within a 25-mile radius of the dam sites.

The seismometers measure ground motions for earthquakes as small as Richter magnitude zero (magnitude 3 or larger earthquakes usually can be felt).

The signal from each seis-

meter was transmitted from radio to recording seismographs that were installed at the Watana base camp.

Analysis of the records (seismograms) from the seismographs provides information on microearthquakes in the vicinity of the dam sites. This information includes the size, location, and depth of each microearthquake.

The microearthquake data and geological data are studied by both geologists and seismologists. This interdisciplinary approach provides scientists with information to evaluate the seismic design criteria for the dam sites.

How to study earthquake potential

Geologic and seismologic studies are conducted to obtain an understanding of the seismic activity within an area. These studies begin with a comprehensive review of the literature and aerial photography to identify all faults and lineaments. Faults and lineaments that may be potentially important to dam design are then studied in the field.

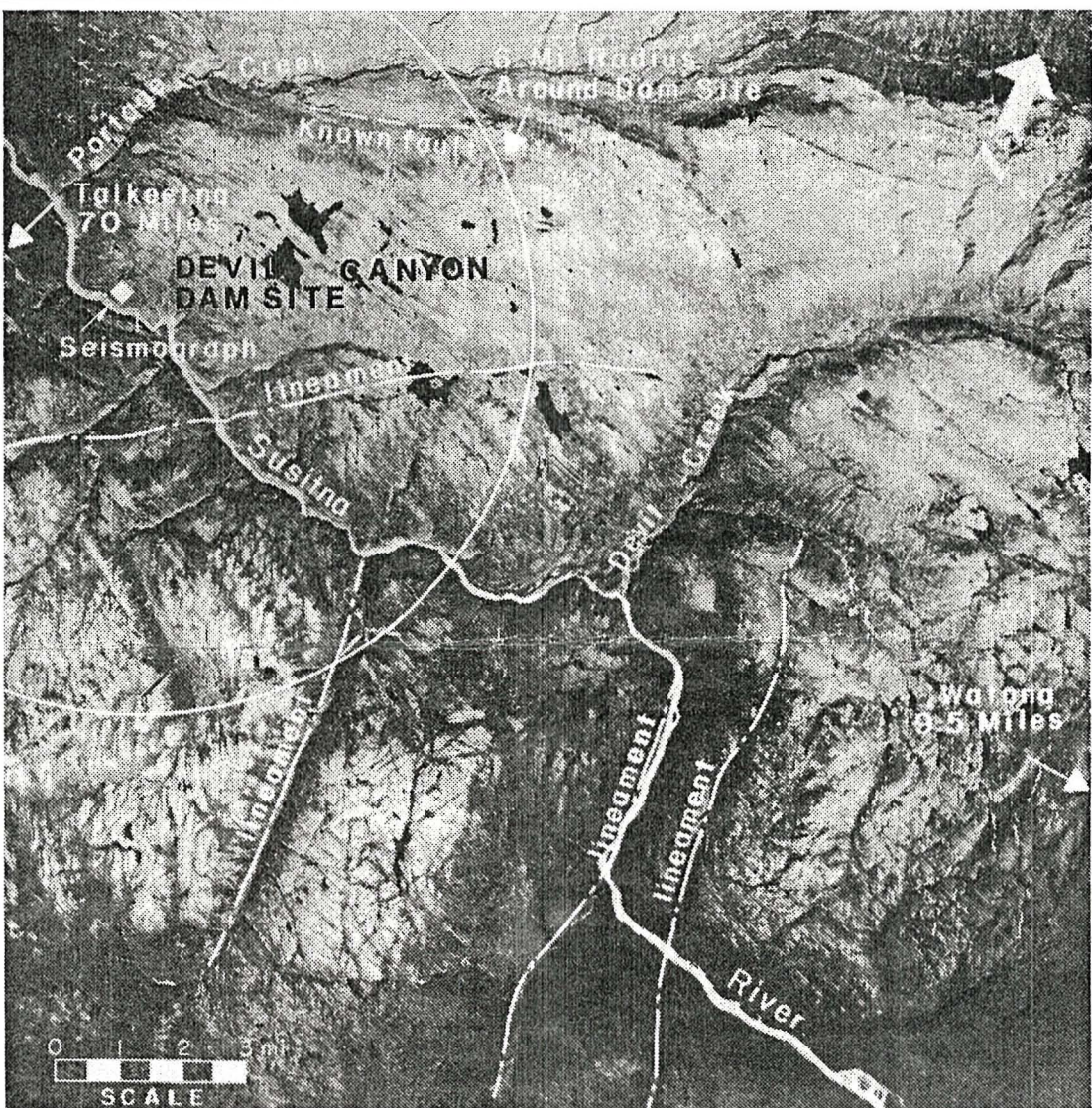
A lineament is a straight line feature observed on aerial photographs, maps or from an aircraft. A lineament may be produced by glacial ice, by faults, or by other earth shaping forces. All lineaments are not necessarily faults.

For the Susitna project, all potentially important faults and lineaments within approximately 60 miles of either dam site have been studied. During the past year, these preliminary studies have included aerial reconnaissance with helicopters and small airplanes, along with investigations on the ground.

Features that are considered to be of potential importance are scheduled to be studied in detail next year.

The objective of these studies is to determine if the lineaments are faults and to estimate how recently the faults may have moved. Active faults, those that have moved during recent geological time, are important to dam design.

The Denali Fault is an example of a fault which has had movement during recent geologic time. The fault is 40 miles north of both the Devil Canyon and Watana dam sites. The Denali Fault is more than 800 miles long as it runs in generally an



The figure above shows a portion of the area around the Devil Canyon dam site. The location of a mapped fault and several lineaments are shown on a high-altitude aerial photograph taken by a U-2 aircraft. These features along with others in the vicinity of two dam sites are being analyzed by geologists and seismologists from Woodward-Clyde Consultants. In addition, the Alaska Power Authority will retain independent experts to review the work done by Woodward-Clyde, a conservative policy much like "getting a second opinion" within the medical profession.

east-west direction through the Alaska Range.

Studies by a number of geologists show that movement has occurred along various sections of the Denali fault during large earthquakes that have occurred over several hundred thousand to several million years. The average rate of movement has been approximately one-half

inch per year.

Woodward-Clyde Consultants are working under contract to Acres American, Inc., to evaluate potential seismic activity.

The first data from Woodward-Clyde Consultants is expected by the end of 1980. It will include information obtained to

date and a discussion of lineaments and faults that need to be studied in more detail to understand their potential significance to the design of project facilities.

The Alaska Power Authority will schedule meetings in Spring 1981 and information collected and analyzed by the consultants will be presented to the public.

Plant study considers effects on moose habitat

William Collins of the University of Alaska's Agricultural Experiment Station in Palmer notes that plant ecology studies will support and assist the studies being made on wildlife within the Susitna River basin. For instance, moose eat the leaves, twigs, and bark of birch, cottonwood, and willow. When these trees grow by rivers, they are subject to flooding, which exposes new sites for the trees to grow. Young trees, with branches no thicker than one

inch in diameter, are excellent forage for moose, since the animals cannot break large branches with their mouths. How will the disruption of river flows and flooding affect new plant growth that moose rely on for adequate food supplies?

Collins also notes that the plant studies will have a lasting value beyond the immediate role they are playing as part of the feasibility studies on the Susitna hydroelectric project.

For instance, few descriptions of vegetation have been made for the area. Therefore, the species list of vegetation and the first detailed vegetation maps will be two important products of the current Susitna studies.

The specific goals of the two-year plant ecology studies are to forecast what effect construction of the dams would have on plant life within the area, to identify the wetland

areas, and to identify plants that are endangered, rare, or threatened. Collins and his assistants will accomplish this by studying old and new aerial photographs, and by observing the area on foot, noting such findings as the age of vegetation and the effect of seasonal flooding on the establishment and maintenance of plants that are important as forage for moose. Their first vegetation maps will be completed by December of this year.

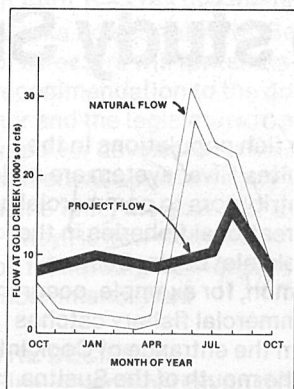
Studies identify change in downstream water flow

GENERAL
Flow studies are one of a number of types of hydrologic investigations. Also included are assessments of reservoir operation, sediment yield, river morphology, glacial contribution and ice formation.

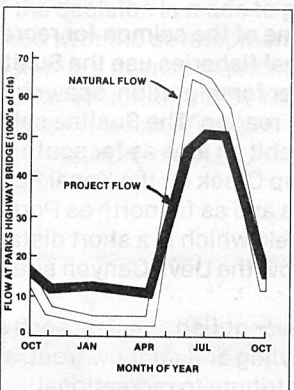
The development of any hydroelectric scheme on the upper Susitna will result in seasonal changes in downstream flow patterns. Taking the two-dam proposal as an example, the three graphs show the difference between natural seasonal flow patterns and project seasonal flow patterns at three points along the Susitna River. As one goes downstream, the difference between natural and project flows begins to dissipate as the effects are diluted by the normal flows from the other tributaries.

Changes in flow patterns can have a positive or negative impact on such things as fisheries, moose habitat, flooding, and navigation.

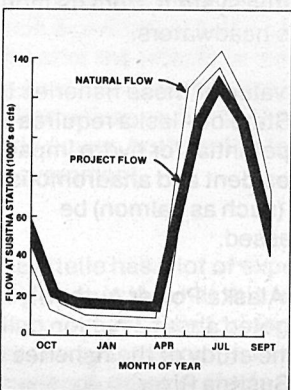
Fisheries directly depend on water flow. Since the effects of flow are greater on the upstream portion of the river, the initial emphasis of study efforts is most intensive upstream. Following the review of the basic river hydraulics, Acres will determine the required extent of assessment of downstream resources.



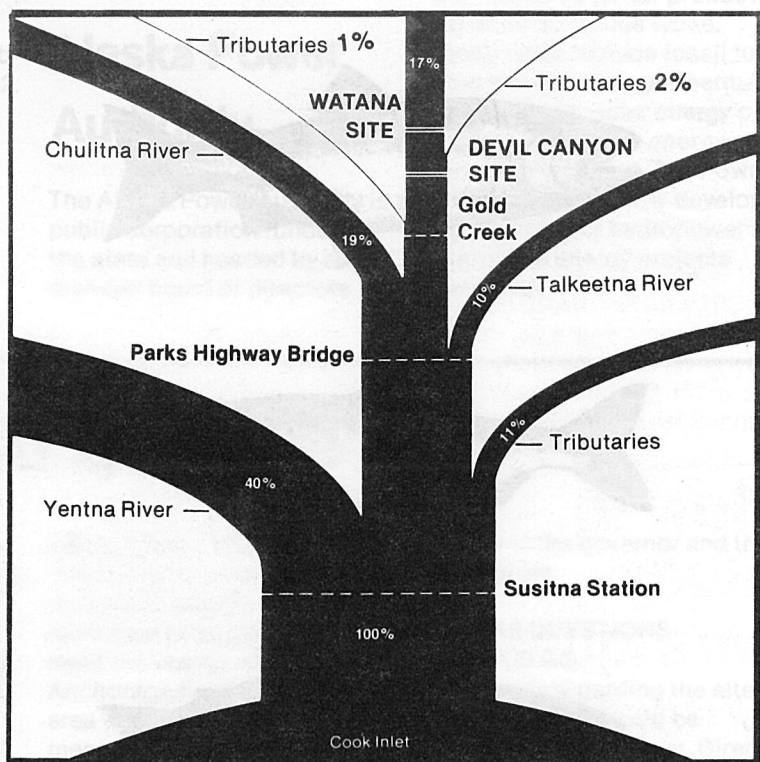
GOLD CREEK



PARKS HIGHWAY BRIDGE



SUSITNA STATION



This is a schematic diagram of the Susitna River system. An important aspect of this system is that the upper Susitna (the area under consideration for hydroelectric development) contributes less than 20 percent of the river's average total flow. Other tributaries, including the Yentna, Chulitna, and Talkeetna Rivers, contribute the other 80 percent.

Radio collaring used to study wildlife

What effect would the construction of a large hydroelectric project have on the wildlife that inhabits the upper Susitna basin and downstream areas? Since this is a question of serious concern to those studying the feasibility of building the project in the Susitna River basin, a number of respected scientists have been hired to find the answer.

"It is important that people know we are not politicians, that we are not here to decide if the Susitna project should be built in the first place," said Dr. Phil Gipson of the University of Alaska, Fairbanks, Cooperative Wildlife Research Unit.

"We are here to study the area and to determine the impact on the animal life if construction takes place. The purpose of all the studies is to give the decision makers the facts so that they can make the best decision with full knowledge of the positive and negative consequences," he said.

There are vast numbers of animals that live within the Susitna basin. Bears, wolves, caribou, moose, fox, otter, and mink all live in abundance. Why do they live there? And could they live somewhere else just as well?

As part of the Power Authority investigations, the Alaska Department of Fish and Game began monitoring big game animals last summer by airplane following earlier tagging and radio collaring efforts. Studies

will continue this winter as the researchers note animal distribution, abundance, habitat preference, and movement patterns. It is easier to study most animals during the winter months, because they are more visible and it is easier to follow their tracks.

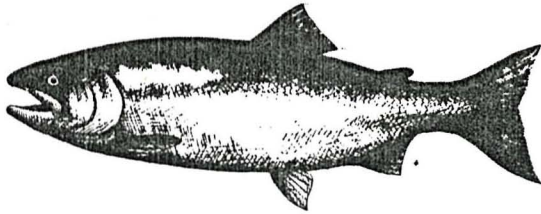
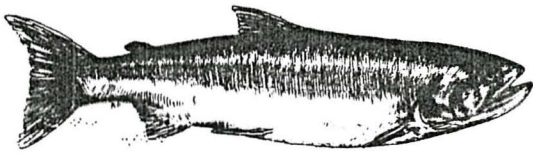
The group of scientists headed by Gipson has begun a two-year study of the furbearing animals that live within the area. Again, the purpose is to identify and count them, observe their seasonal habits, and determine what kind of habitat they need in order to live. In view of existing fodder, how large a

range, for instance, does a red fox need? Gipson and his colleagues are studying the animals by tracking them in the snow and by radio collaring. Survey lines are established in representative types of vegetation and tracks of furbearers are identified in each vegetation type.

Karl Schneider of the Alaska Department of Fish and Game puts a radio collar on moose number 38. An iridescent orange ear tag makes the moose more visible from the air. Schneider heads a team of researchers who have identified big game animals within the Susitna basin. The scientists began monitoring the animals last summer by airplane following earlier tagging and radio collaring efforts.



\$3 million budgeted to study Susitna fish



Alaska Department of Fish and Game
Wildlife Notebook Series

The fish populations in the Susitna River system are major contributors to commercial and recreational fisheries in the Cook Inlet basin. Susitna salmon, for example, occur in commercial fishery catches from the entrance of Cook Inlet to the mouth of the Susitna River.

Some of the salmon for recreational fisheries use the Susitna River for migration, spawning and rearing. The Susitna salmon inhabit an area as far south as Deep Creek on the Kenai Peninsula and as far north as Portage Creek, which is a short distance below the Devil Canyon site.

Resident fish species, such as grayling and rainbow trout, also contribute to recreational fisheries throughout the Susitna system, from its mouth to its headwaters.

The value of these fisheries to the State of Alaska requires that the potential for hydro impacts on resident and anadromous fish (such as salmon) be assessed.

The Alaska Power Authority has budgeted about 3 million dollars for the study of the fisheries of the Susitna River.

Field data on the fish populations and habitat of the Susitna River will be collected by biologists of the Alaska Department of Fish and Game

(ADF&G). Utilizing data supplied by ADF&G, existing fisheries information, and past experience, the private consulting firm of Terrestrial Environmental Specialists (TES) will assess the positive or negative impacts of development and operation of the proposed hydroelectric project and suggest measures to avoid, minimize, or compensate for possible adverse affects. Comparisons will be made to similar systems found in other cold regions of the world (for instance, Sweden and Russia).

TES will be assisted by noted specialists from the University of Washington, Dr. Clinton Atkinson and Dr. Milo Bell. Clint Atkinson has extensive experience with Alaska salmon fisheries, including those in the Susitna basin, while Milo Bell has 50 years of experience working on related engineering problems throughout North America on hydropower projects.

The Department of Fish and Games' responsibility during the field studies will be to determine existing fisheries conditions in the Susitna River. This includes identifying the distribution and abundance of salmon and resident fishes in the system as well as the seasonal importance of the river to their migration, spawning, and rearing.

Initial field work for these

studies will begin late in 1980 and continues for 15 months. If the project goes to the Federal government for license approval, studies will continue through the post license application period.

A major question in the fisheries study is what would happen to the Susitna River fisheries if the dams were built. For example, will important fish habitats for migration, spawning, and rearing be favorably or unfavorably altered? If the impacts are negative, can they be minimized or offset in some manner such as by hatchery propagation of fish or through a scheme of regulation of river flows and discharge through the dams?

Tom Trent, one of the study coordinators from the Department of Fish and Game, emphasizes that study efforts of those conducting river hydrology and water quality studies must be closely coordinated.

Mr. Trent also noted that, "The Department of Fish and Game conducted very limited assessment work during the years 1973 to 1978, but the intensity and design for the next fifteen months and beyond will be aimed at collecting information enabling the State to make objective judgements of probable project impacts on the Susitna River fishery resources."

Environmental studies use Alaska experts

Terrestrial Environmental Specialists (TES), the consulting firm retained by Acres American, Inc., to conduct the environmental studies on the proposed Susitna project, has contracted with the University of Alaska on a number of the studies.

They include: furbearers, birds

and small mammals, land use and recreation, cultural resources, and plant ecology.

"We chose the university because experts there are familiar with environmental conditions in Alaska," Jeffrey O. Barnes, TES president, said. TES is headquartered in Phoenix, New York.

Drilling program completes first year

Deep drilling (over 700 feet per hole) into the areas around the proposed dam sites determines the types of rock, the rock structure, its strength, and the

stability of the bedrock on which dams would sit or through which a tunnel would pass. Core samples are then retrieved and studied by geologists.

R & M Consultants is the subcontractor conducting the drilling program at the Watana and Devil Canyon sites.

Keys to upper Susitna prehistory may be found

"Before any land-disturbance activities may take place on federal or state lands, an inventory of cultural resource sites must be made and recommendations developed to lessen or avoid the impact of the project on them," George Smith, an archaeologist with the University of Alaska Museum in Fairbanks, noted last summer.

In other words, before the construction of a hydroelectric project in the Susitna River basin may begin, there must be an archaeological survey to locate sites within the area.

Last summer archaeologists examined 55 sampling sites, determining that 33 of them were of archaeological importance. Next summer the museum will send several crews into the field to systematically test and analyze a portion of each site in order to evaluate its significance and to then make recommendations to minimize possible adverse effects. Sites

that might be adversely impacted by project construction will be excavated if the decision to construct the hydroelectric project is made.

During the extensive testing scheduled for 1981, each site will be divided into a checkerboard of squares one meter in size. Artifacts found in the sampled squares will be catalogued and become a part of the University of Alaska Museum's archeological collection, where they will be available for display and research.

Although it may be premature to assess the significance of artifacts before their analysis is complete, Dixon and Smith are excited about the results of the survey. They have discovered several sites which will help unravel the poorly understood prehistory of this area of the state and which will provide important information about the way people lived in the upper Susitna thousands of years ago.



University of Alaska-Fairbanks Photograph

Dr. E. James Dixon and Mr. George S. Smith of the University Museum head a team of scientists who will investigate the area for evidence of human activity which, they say, may extend back 10,000 years. Shown above are Les Baxter and George Smith. They are looking at buried animal bone fragments.

University survey seeks public comment on recreation potential



If the Susitna project is built, the areas surrounding it may be developed for recreational use. What kind of use is the subject of a questionnaire being sent this fall to residents of Anchorage, Fairbanks, and the smaller communities along the railbelt (Talkeetna, Palmer, Wasilla, Willow). More than 2,000 people, randomly selected in these locations, will be asked by the University of Alaska, Fairbanks, to describe the kind of facilities they would like to see developed. From their answers, Dr. Alan Jubenville and Ms. J. K. Feyhl at the university will determine which of five concept plans presented to the respondents is most acceptable.

In May, the Alaska Power Authority tentatively will hold community meetings and recreation will be one of the topics. Comments from both the meetings and from the questionnaire will be analyzed by the University of Alaska and a second survey on the subject will follow. A report will be made to the Alaska Power Authority in 1981, even though at that time the question of whether to develop the project will not have been decided.

In brief, people are being asked if they would prefer minimum or maximum recreation development (or something in between) in the areas of the two proposed damsites.

One concept plan calls for minimal development and management. It assumes that public access by road into the reservoir areas is restricted or not permitted. Development would be limited to a visitor information center on the Parks Highway. However, access by float plane would be possible on the reservoirs and access by canoe and kayak on the upper rivers would continue as it does at the present.

Another plan suggests that access by road to both reservoirs is possible. As a result, primitive campgrounds and simple boat ramps would be constructed at the damsites. A tour boat service of the reservoir would be offered at the Devil Canyon site.

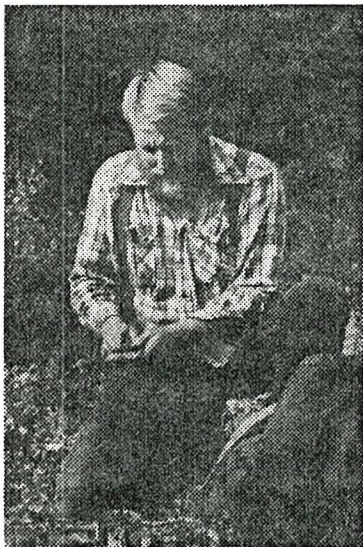
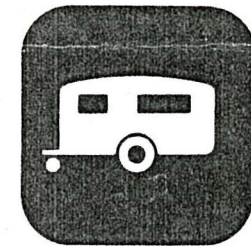
A third approach calls for extensive development at the Watana damsite and only minimal development at the Devil Canyon location. Simple back-country campsites would be provided at selected locations around Watana. Additional services would include a boat ramp and docking facility, store and service station and float plane tie-downs.

In a fourth concept plan, the development would be at reversed locations, with highly-developed facilities provided at the Devil Canyon reservoir and damsite and only minimal facilities at Watana.

In the fifth concept plan, both damsites would be extensively developed to include complete visitor facilities with back-country boat-in campsites built at five locations. Facilities, in addition to those suggested as extensive development in the third and fourth plans, would include lodging, such as motels, and restaurants with minimal or full service.

"The surveys we are making are more thorough than any made previously in regard to recreation plans associated with the development of a hydroelectric project," Jubenville said. He noted there were no good plans at the federal level to assist him.

"We are surveying the people who live in the area where the dams are proposed to be built as well as those who live in the urban areas both north and south, and we are surveying more than once."



Mice important in food chain

Stephen O. McDonald, University of Alaska biologist, is directing a two-year study of small mammals that live within the project area. Among the small mammals under observation at present are mice, shrews, red squirrels, snowshoe hares, arctic ground squirrels, porcupines, and hoary marmots. The scientists set up sampling lines to aid them in collecting such information as the type of

mammal, its abundance, and habits. Here, McDonald baits a mouse trap in an effort to determine the kinds and numbers of mice present in the different habitats of the study area. Since mice and other small mammals are part of the natural "food chain," their numbers and condition are of crucial importance in determining the health of the project area ecosystem.

Two year study on birds underway

A number of bird species use the upper Susitna River basin during the summer and during migration. They include large birds such as eagles, hawks, and swans, and a number of smaller species.

Dr. Brina Kessel of the University of Alaska, Fairbanks, is project leader for a group of scientists studying bird life within the Susitna River basin.

The goal is to identify species that occur, their abundance, and what habitats the birds utilize. Answers will enable the scientists to predict the impact that construction of the Susitna hydroelectric project would have on the existing bird life.

Kessel began a field study last summer, observing birds by sight and sound, and by using aerial surveys to search for evidence of the larger nesters. Bird habitats will be visited on a regular basis throughout the migration and summer periods over the course of the two-year period.

If you want to get future newsletters

This public information document on the Susitna hydropower project was developed by the Alaska Power Authority Public Participation Office, Nancy Blunck, Director. Comments on the substance of this newsletter and ideas for future publications should be forwarded to the Public Participation Office by way of the following coupon.

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Name	<input type="text"/>	<input type="text"/>	<input type="text"/>
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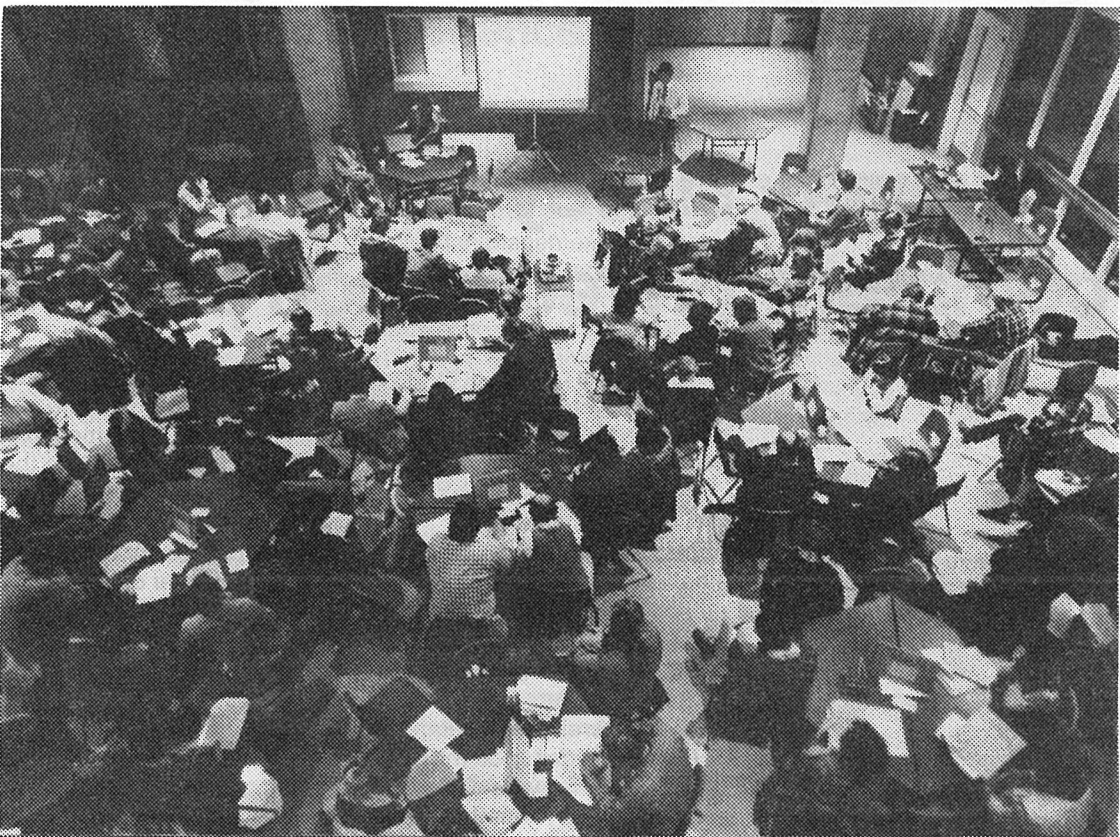
How YOU can be involved...

COMMUNITY MEETINGS are held prior to important study decisions at four locations throughout the railbelt area. Meetings review the progress of studies and provide people with an opportunity to make comments and have questions answered.

WORKSHOPS are held as needed in individual railbelt communities. Workshops are narrower in scope than community meetings and serve as a forum for presenting in-depth information on a limited number of subjects.

NEWSLETTERS are widely distributed to the public and report factual information about the studies. This newsletter is the first of several. To receive future newsletters, clip and mail the coupon on page 7.

The **ACTION SYSTEM** is a means of suggesting changes to the plan of study. Send comments to the Public Participation Office for review and comment by Acres and Power Authority staff.



Community meetings (like this one in Anchorage in April) will be held in spring 1981. They are tentatively scheduled for Fairbanks, Talkeetna, Kenai/Soldotna, and Anchorage. Another set of meetings will be held in spring 1982, just prior to the decision on Susitna.

Public concerns bring changes in study plan

For about a year, individuals and agencies have had a number of opportunities to comment on the adequacy of the Susitna study plan. Their comments have steadily improved the document. For instance, the 1980 legislature appropriated an additional \$1,365,000 to add more resources and take more time in conducting the energy alternatives study. An independent firm was also hired to conduct the study.

Another example began with a concern expressed last spring. One person from Talkeetna articulated a concern for anticipated impacts on life style with the following comment:

"When this plan speaks of social or human impacts, it consistently labels this 'socio-economic.' When it speaks of cultural impact, it does so in terms of archaeology and

historical investigation.

"I feel that it is desirable and timely that the plan recognize the existence of that concept which is socio-cultural, in a contemporary sense. The Plan of Study is deficient in that it does not."

As a result of this comment and similar comments from other residents of the Talkeetna area, the Alaska Power Authority con-

cluded that an additional look should be made on the subject to which the comment spoke: how would the construction of the Susitna project affect the current life style of the people who live in the immediate dam-site vicinity?

The study will begin in 1981, and will be coordinated with Frank Orth's work on the identification and analysis of socio-economic conditions.

the susitna hydro studies

This is the first of several newsletters published by the Alaska Power Authority for citizens of the railbelt. The purpose is to present objective information on the progress of the Susitna hydroelectric feasibility studies so that readers may make their own conclusions based on accurate information.

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