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BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

APPLICATION FOR LICENSE FOR MAJOR PROJECT

SUSITNA HYDROELECTRIC PROJECT

VOLUME 10A

EXHIBIT E
Chapter 11

FEBRUARY 1983

Prepared by:

ACRES

ALASKA POWER AUTHORITY

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TEXT AND APPENDICES A THROUGH H

AGENCY CONSULTATION

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AGENCY CONSULTATION

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11 - AGENCY CONSULTATION

This chapter describes the various processes utilized, and committees established by the Alaska Power Authority (Power Authority) to provide agency input into the studies and discussions associated with the Susitna Hydroelectric Project. This agency consultation and resulting agency input was requested and provided on both an informal and formal basis as described below. In addition, the Power Authority conducted an extensive public participation program. For a discussion of this general public participation in the project, refer to Appendix D of the Feasibility Report.

In addition to this agency consultation described, a large number of agencies were contacted for information during the preparation of the environmental reports. This resulted in a constant exchange of ideas and updating on the project's progress.

1 - ORGANIZATION OF CONSULTATION PROGRAM

Consultation with the regulatory agencies was conducted on both a formal and informal basis as described below. Formal consultation was conducted with the agencies as required by the regulations of the Federal Energy Regulatory Commission (FERC) and was done primarily via correspondence. Informal consultation was done primarily via numerous meetings and was conducted to provide an information flow between the Alaska Power Authority, its consultants, and the agencies to insure agency input into the project planning and decision making process. Figure E.11.1 depicts the organization of the agency consultation program.

1.1 - Formal Consultation

1.1.1 - Regulatory Requirements

The FERC regulations pertaining to applications for license under Part I of the Federal Power Act require in 18 CFR Part 4, Subpart E, Section 4.41, that applicants for licenses consult with local, state, and federal natural resource agencies prior to filing of their license application. Accordingly, the Alaska Power Authority formulated a plan to consult with these agencies.

The process utilized by the Power Authority was based upon circulation of reports of the various aspects of the projects to the agencies and a written request for agency comments. The reports circulated were interim reports in specific study areas (fisheries, wildlife, etc.) as discussed below, as well as planning decision reports (access road, transmission line corridors, etc.). In addition, prior to initiation of project studies, the Plan of Study and revisions were circulated. Results of the fish and wildlife mitigation planning efforts were also circulated under

this formal program. Finally, a draft version of Exhibit E of the license application was provided to all agencies on November 15, 1982.

1.1.2 - Organization

The organization and implementation of the Formal Agency Coordination Program has been a dynamic process modified because of agency input. The original organization is explained below, followed by an explanation of the revised organization. Correspondence relating to that organizational process appears in Appendix 11.A.

(a) Original Organization

(i) Agency Groups

Subject areas for coordination were selected based upon those required by the FERC regulations. These were water quality and use; fish, wildlife, and botanical; historical and archeological; recreation; aesthetics; and land use. State, federal, and local agencies having jurisdiction over resources in each of these subject areas were then placed in the appropriate group of agencies which would receive reports concerning these subjects. A general category was also added to include agency involvement with policy decisions. Table E.11.1 lists the agencies originally included in each of these groups.

(ii) Reports Circulated

A list of the reports and the groups to which they were sent appears in Table E.11.2. Because of overlapping jurisdictions (one agency present in more than one group), several agencies received reports on different subjects. Table E.11.3 lists, by agency, the reports received.

(b) Revised Organization

Initial circulation of these reports resulted in feedback from the agencies concerning the organization of the formal agency coordination program. Following several meetings between the Power Authority and the agencies, the program was revised. The revisions included:

- An expansion of the number of groups;

- An expansion of the number of agencies within each group; and

- A decrease in the number of reports for which formal comments were requested and, instead, simply providing reports for information as backup documents to reports on which comments were requested.

Table E.11.4 lists the revised subject groups and the agencies within each group. Table E.11.5 lists the reports to be received by each group, and Table E.11.6 reports the date they were circulated and their purpose (information or comment). This revised program exceeds the consultation required by FERC but was implemented to insure that all agencies received adequate information.

1.1.3 - Fish and Wildlife Mitigation Review Group

Throughout the Susitna Hydroelectric Project studies, technical mitigation planning has been conducted by the Power Authority and its consultants to reduce impacts to fish and wildlife resources. To insure agency input into this process, a Fish and Wildlife Mitigation Review Group was established. The purpose of this group was to review fish and wildlife mitigation options presented to them and provide comments on priority and practicality of their options. Agencies invited to be on this committee and those who accepted are listed in Table E.11.7.

1.2 - Informal Consultation

1.2.1 - Sustina Hydro Steering Committee

The Susitna Hydroelectric Project Steering Committee was established in 1980 as a mechanism to insure agency interaction in project progress and decision making. The first meeting was held in July 1980 and meetings continue to date. Originally envisioned as a formal process, it was decided the committee would function as an informal body with official agency comment addressed via the Formal Agency Coordination Program. Appendix 11.A contains correspondence relative to the establishment of the Steering Committee.

The committee consists of representatives of state and federal agencies as listed in Table E.11.8. Table E.11.9 lists the dates of meetings between the Power Authority and the Steering Committee and the purpose of these meetings.

1.2.2 - Environmental Workshop

To assist agencies in reviewing the draft Exhibit E a four-day workshop was held in Anchorage from November 29 to December 2, 1982. The objectives for the workshop agenda and a listing of participants is included in Table E.11.10, E.11.11, and E.11.12, respectively.

2 - PHASES OF REVIEW

The Susitna studies have included extensive agency consultation, commencing with a request for review of the Plan of Study in the spring of 1980 through to a request for review and comment on the Draft Exhibit E on November 15, 1982. The various study phases, items reviewed, and review schedule are shown on Figure E.11.2.

2.1 - Consultation Prior to Preparation of Draft FERC License Application

2.1.1 - Plan of Study

The Plan of Study was circulated for review in March 1980, with public and agency meetings being held in April 1980. The Plan of Study was further discussed with the Steering Committee in September 1980. In addition, Environmental Procedure Manuals were circulated for review in October 1980. Comments on the Plan of Study were subsequently received and responded to. This process insured agency input into the design and future of the study. Correspondence appears in Appendix 11.B.

2.1.2 - Data Collection and Project Assessment

All big game and fisheries baseline data were collected by the Alaska Department of Fish and Game (ADF&G) under a Reimburseable Services Agreement with the Alaska Power Authority. ADF&G had a major influence on the direction, scope, and schedule for these studies. Annual reports for all the environmental subtasks were distributed in April-May 1981.

In addition to annual environmental reports, comments were requested on access road reports, transmission line siting reports, and the Susitna Hydroelectric Project Mid-Study report. Correspondence concerning these documents appears in Appendix 11.C.

2.1.3 - Development Selection

In March 1981, the Development Selection Report was circulated to agencies for review and comment. This report compared various development scenarios within the lower and middle Susitna Basin as well as alternatives outside the basin. Comments received on the Development Selection Report appear in Appendix 11.D.

2.1.4 - Mitigation Planning

Mitigation Planning for the Susitna Hydroelectric Project has involved the Power Authority, its consultants, and state and federal resource agencies. A Fisheries Mitigation Core Group, Wildlife Mitigation Core Group (to develop technical mitigation plans), and a Fish and Wildlife Mitigation Review Group (to provide agency input to the mitigation plans) were established.

A Fish and Wildlife Mitigation Policy was developed, revised three times following receipt of comments, and finalized during the 1981-1982 period. Various mitigation option papers were also drafted, circulated for comments, and discussed in meetings with the agencies. Appendix 11.E contains correspondence related to mitigation planning.

2.1.5 - Feasibility Assessment

On March 15, 1982, the Susitna Feasibility Report was distributed for review and comments. During April and May all support documents were distributed. Appendix 11.F contains a list of agencies to whom the report was sent. Also included are agency comments and testimony.

2.1.6 - Additional Studies and Project Refinement

In response to agency concerns and in recognition that further studies, especially in the area of fisheries, were warranted prior to submitting a FERC license appliction, the decision was made by the Alaska Power Authority to delay the license application date. Studies and project refinements that received agency review included the wildlife/habitat model, water quality and flow modeling, access plans, and downstream flow release schedule. Agency consultation took the form of Steering Committee meetings, habitat modeling workshop, Fish and Wildlife Mitigation Review Group meetings, and request for written comment on the revised access plan. Correspondence and minutes of meetings from the above are contained in Appendix 11.G.

2.2 - Draft License Review

On November 15, 1982, a Draft Exhibit E of the license application was distributed to appropriate federal, state, and local agencies for official review and comment. Agencies receiving copies of this report are listed in Table E.11.12. To assist agencies in reviewing the Draft Exhibit E, a four-day workshop was held in Anchorage from November 29 to December 2, 1982. Unofficial agency comments received during this workshop are included in Appendix 11.H. Following the 60-day review period, comments were received from the resource agencies. These appear in Appendix 11.I. Comments relating to any measures or facilities recommended by the agencies that could mitigate potential impacts of the project are addressed specifically at the end of appropriate chapters with Exhibit E. If the Power Authority has not accepted any of these recommendations, the reasons are presented.

An entire set of comments, including all those relating to mitigation, report reviews, assessment of alternatives, and the need for the project, are included in a comment-response format in Appendix 11.J. Each comment is presented followed immediately by the Power Authority's response.

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TABLE E.11.2: ORIGINAL LIST OF REPORTS AND GROUPS TO WHICH REPORTS WERE/WERE TO BE SENT

Report	Group
Plan of Study and Plan of Study Revisions	A11
Development Selection Report	A11
1980 Annual Environmental Summary Report	A11
1980 Annual Reports	
Fish Ecology	FWB
Big Game	FWB
Birds and Non-Game Mammals	FWB
Furbearers	FWB
Plant Ecology	FWB
Land Use	ALU
Socioeconomics	HA
Cultural Resources	HA
Recreation	R
Instream Flow Study Plan	WQ, FWB, G
Transmission Line Corridor Screening Report	A11
Fish and Wildlife Mitigation Policy	FWB
Feasibility Report	A11
1981 Final Phase I Reports	A11

FWB = Fish, Wildlife, and Botanical
ALU = Aesthetics, Land Use
HA = Historic and Archaeological
R = Recreation
WQ = Water Quality
G = General

TABLE E.11.3: ORIGINAL LIST OF AGENCIES AND REPORTS RECEIVED

Agency	Report
Alaska Department of Natural Resources	Plan of Study Plan of Study Revisions Development Selection Report 1980 Annual Environmental Summary Report Instream Flow Study Plan 1980 Socioeconomic Annual Report 1980 Cultural Resources Annual Report 1980 Land Use Annual Report 1980 Recreation Annual Report Transmission Line Corridor Screening Report Fish and Wildlife Mitigation Policy Feasibility Report Final Phase I Reports
Alaska Department of Fish and Game	Plan of Study and Plan of Study Revisions Development Selection Report 1980 Annual Environmental Summary Report Instream Flow Study Plan 1980 Fish Ecology Annual Report 1980 Big Game Annual Report 1980 Birds and Non-Game Mammals Annual Report 1980 Furbearers Report 1980 Plant Ecology Report Transmission Line Corridor Screening Report Fish and Wildlife Mitigation Policy Feasibility Report Final Subtask Reports
Alaska Department of Environmental Conservation	Plan of Study Plan of Study Revisions Development Selection Report 1980 Annual Environmental Summary Report Instream Flow Study Plan 1980 Fish Ecology Annual Report 1980 Big Game Annual Report 1980 Birds and Non-Game Mammals Annual Report 1980 Furbearers Report 1980 Plant Ecology Report Transmission Line Corridor Screening Report Fish and Wildlife Mitigation Policy Feasibility Report Final Subtask Report
Alaska Department of Community and Regional Affairs	Plan of Study Plan of Study Revisions Development Selection Report 1980 Annual Environmental Summary Report 1980 Socioeconomic Annual Report 1980 Cultural Resources Annual Report Transmission Line Corridor Screening Report Feasibility Report Final Subtask Reports

TABLE E.11.3: (Page 2)

Agency	Report
Division of Policy Development and Planning Office of Coastal Management	Plan of Study Plan of Study Revisions Development Selection Report 1980 Annual Environmental Summary Report Instream Flow Study Report Transmission Line Corridor Screening Report Feasibility Report Final Subtask Reports
Mantanuska-Susitna Borough	Plan of Study Plan of Study Revisions Development Selection Report 1980 Annual Environmental Summary Report 1980 Recreation Annual Report Transmission Line Corridor Screening Report Feasibility Report Final Phase I Reports
Cook Inlet Region, Inc.	Plan of Study Plan of Study Revisions Development Selection Report 1980 Annual Environmental Summary Report 1980 Land Use Annual Report Transmission Line Corridor Screening Report Feasibility Report Final Phase I Reports
U.S. Environmental Protection Agency	Plan of Study Plan of Study Revisions Development Selection Report 1980 Annual Environmental Summary Report Instream Flow Study Plan Transmission Line Corridor Screening Report Feasibility Report 1981 Final Phase I Reports
U.S. Army Corps of Engineers	Plan of Study Plan of Study Revisions Development Selection Report 1980 Annual Environmental Summary Report Instream Flow Study Plan Transmission Line Corridor Screening Report Feasibility Report 1981 Final Phase I Reports
National Marine Fisheries Service	Plan of Study Plan of Study Revisions Development Selection Report 1980 Annual Environmental Summary Report Instream Flow Study Report 1980 Fish Ecology Annual Report 1980 Big Game Annual Report 1980 Birds and Non-Game Mammals Annual Report 1980 Furbearer Report 1980 Plant Ecology Transmission Line Corridor Screening Report Fish and Wildlife Mitigation Policy Feasibility Report 1981 Final Phase 1 Reports

TABLE E.11.3: (Page 3)

Agency	Report
U.S. Fish and Wildlife Service	Plan of Study Plan of Study Revisions Development Selection Report 1980 Annual Environmental Summary Report Instream Flow Study Plan 1980 Fish Ecology Annual Report 1980 Big Game Annual Report 1980 Birds and Non-Game Mammals Annual Report 1980 Furbearer Report 1980 Plant Ecology Report Transmission Line Corridor Screening Report Fish and Wildlife Mitigation Policy Feasibility Report 1981 Final Phase I Reports
National Park Service	Plan of Study Plan of Study Revisions Development Selection Report Instream Flow Study Plan 1980 Annual Environmental Summary Report 1980 Socioeconomic Annual Report 1980 Cultural Resources Annual Report 1980 Recreation Annual Report Transmission Line Corridor Screening Report Feasibility Report 1981 Final Phase I Reports
U.S. Bureau of Land Management	Plan of Study Plan of Study Revisions Development Selection Report Instream Flow Study Report 1980 Annual Environmental Summary Report 1980 Land Use Annual Report Transmission Line Corridor Screening Report Feasibility Report 1981 Final Phase 1 Reports

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TABLE E.11.5: EXPANDED LIST OF REPORTS AND GROUPS TO WHICH REPORTS WERE/WERE TO BE SENT

REPORT	GROUP*
Instream Flow Study Plan	R, ALU
Draft Fishery Mitigation Plan	WQ, FWB, R, ALU
Draft Wildlife Mitigation Plan	WQ, FWB, R, ALU
Final Phase I Reports:	
(a) Fish Ecology	WQ, FWB, R
(b) Wildlife Ecology	WQ, FWB, R
(c) Plant Ecology	FWB, ALU
(d) Birds and Non-Game Mammals	FWB, R
(e) Furbearers	FWB, R, SE
(f) Land Use	ALL
(g) Socioeconomics	FWB, R, ALU, SE, G
(h) Cultural Resources	HA, SE
(i) Recreation	R
Land Status Report	R, ALU, SE, GS
Interim Report on Seismic Studies	GS
Final Report on Seismic Studies	GS
Geotechnical Exploration Report on 1980 Studies	GS
Geotechnical Exploration Report on 1981 Studies	GS
Water Quality Report	WQ, FWB, R, ALU
Water Use Report	WQ, FWB, R, ALU, SE
River Morphology	WQ, FWB, R, ALU, GS
Sociocultural Report	FWB, HA, R, ALU, SE
Environmental Evaluation of Access Plans	WQ, FWB, HA, R, ALU, SE, GS
Engineering Evaluation of Access Plans	WQ, FWB, HA, R, ALU, SE, GS

*ALU = Aesthetics, Land Use
FWB = Fish, Wildlife, and Botanical
HA = Historic, Archaeological
WQ = Water Quality
R = Recreation
SE = Socioeconomic
GS = Geology and Soils
G = General

Note: These reports and groups were added to those listed in Table 1.2. Groups refer to those listed in Table 1.4.

TABLE E.11.6: REPORTS, DATE SENT, AND PURPOSE

DOCUMENT	PRIOR TO 03/15/82	03/15/82	04/01/82	04/15/82	04/30/82	PURPOSE*
Plan of Study	X					FC
Plan of Study - Revision 1	X					FC
1980 Summary Environmental Report	X					I
1980 Annual Environmental Reports:						
(a) Fish Ecology	X					I
(b) Plant Ecology	X					I
(c) Big Game, Birds, and Non-Game Mammals, Furbearers	X					I
(d) Land Use	X					I
(e) Socioeconomics	X					I
(f) Cultural Resources	X					I
Transmission Line Corridor Screening Report	X					FC
Development Selection Report	X					FC
Initial Fish and Wildlife Mitigation Policy	X					FC
(Revised Mitigation Policy)		X				FC
Instream Flow Study				X		FC
Feasibility Report		X				FC
Draft Fishery Mitigation Plan				X		FC
Draft Wildlife Mitigation Plan				X		FC
Phase I Environmental Reports:						
(a) Fish Ecology - ADF&G		X				I
(b) Wildlife Ecology - ADF&G		X				I
(c) Plant Ecology					X	I
(d) Bird and Non-Game Mammals					X	I
(e) Furbearers					X	I
(f) Land Use					X	I
(g) Socioeconomics					X	I
(h) Cultural Resources					X	I
(i) Recreation					X	FC
Land Status Report			X			I
Interim Report on Seismic Studies			X			I
Final Report on Seismic Studies			X			I
Geotechnical Exploration Report on 1980 Studies			X			I
Geotechnical Exploration Report 1981 Studies			X			I
Water Quality Report			X			I
Water Use Report			X			I
River Morphology Report			X			I
Sociocultural Report			X			I
Environmental Evaluation of Access Plans					X	I
Access Route Selection Report			X			I

*FC = Formal Comments Requested
I = Provided for Information Only

TABLE E.11.7: AGENCIES INVITED AND THOSE WHICH DECLINED TO BE ON THE FISH AND WILDLIFE MITIGATION REVIEW GROUP

State Agencies	Status
Alaska Department of Fish and Game	Agreed
Alaska Department of Natural Resources	Agreed
Federal Agencies	
U.S. Fish and Wildlife Service	Agreed
National Marine Fisheries Service	Agreed
U.S. Bureau of Land Management	Agreed
Environmental Protection Agency	Agreed
U.S. Geological Survey	Declined
U.S. Army Corps of Engineers	Declined

TABLE E.11.8: MEMBERS OF THE SUSITNA HYDROELECTRIC PROJECT STEERING COMMITTEE

State Agencies	Federal Agencies
Alaska Department of Fish and Game	U.S. Fish and Wildlife Service
Alaska Department of Natural Resources	U.S. Geology Survey
Alaska Department of Commerce	National Park Service
	National Marine Fisheries Service
	U.S. Bureau of Land Management
Alaska Department of Environmental Conservation	Environmental Protection Agency
	Heritage Conservation and Recreation Service

Other

Arctic Environmental Information and Data Center

Note: U.S. Army Corps of Engineers, Alaska Division of Policy Development and Planning and Matanuska-Susitna Borough were invited but declined to sit on the Steering Committee.

TABLE E.11.9: DATES AND PURPOSE OF STEERING COMMITTEE MEETINGS WITH APA AND/OR ITS CONSULTANTS

DATE	PURPOSE
June 12, 1980	Objective of Committee and Introduction to Project
July 17, 1980	Federal Energy Regulatory Commission and State License Process, Instream Flow Studies
November 5, 1980	Evaluation of Alternatives to Susitna
April 13, 1981	Alternatives, Access Road Evaluation, and Comments on Environmental Studies
October 20, 1981	Access Road Evaluation
December 2, 1981	Explanation of Agency Comments Requests from APA
January 20, 1982	Environmental Studies and Concerns, Fisheries Mitigation
June 14, 1982	Instream Flow Studies, Access Road Evaluation, Formalization of Steering Committee role
November 4, 1982	Reorganization of Steering Committee, Status of AEIDC Work and Discussion of Land Use and Recreation

TABLE E.11.10: OBJECTIVES OF THE SUSITNA HYDROELECTRIC ENVIRONMENTAL WORKSHOP

SUSITNA HYDROELECTRIC PROJECT

FERC License Application Exhibit E Presentation and Discussion

Anchorage, Alaska
Holiday Inn

November 29 - December 2, 1982

Objectives

1. Update federal, state, and local agencies regarding significant changes in project features since the Feasibility Report was published in March 1982.

2. Use the presentations and discussions as an interactive process whereby federal, state, and local agency review of the draft Exhibit E can be facilitated.

3. Develop a mechanism for continued interaction as the finalized Exhibit E is prepared for submission to FERC.

TABLE E.11.11: AGENDA OF THE SUSITNA HYDROELECTRIC PROJECT ENVIRONMENTAL WORKSHOP

Monday, November 29 1:00 P.M.

Introduction
Project Operational Description

- Watana Dam
- Devil Canyon Dam
- Access
- Transmission

Schedule for Preparation of Exhibit E
Group Definition

Tuesday, November 30 9:00 A.M.

Group 1 - Water Use and Quality and Fishery Resources
Group 2 - Wildlife and Botanical Resources
Group 3 - Socioeconomic/Land Use
Group 4 - Cultural Resources

Wednesday, December 1 9:00 A.M.

Group 1 - Water Use and Quality and Fishery Resources
Group 2 - Wildlife and Botanical Resources
Group 3 - Recreation and Aesthetics

Thursday, December 2 9:00 A.M.

Group 1 - Water Use and Quality and Fishery Resources
Group 2 - Wildlife and Botanical Resources

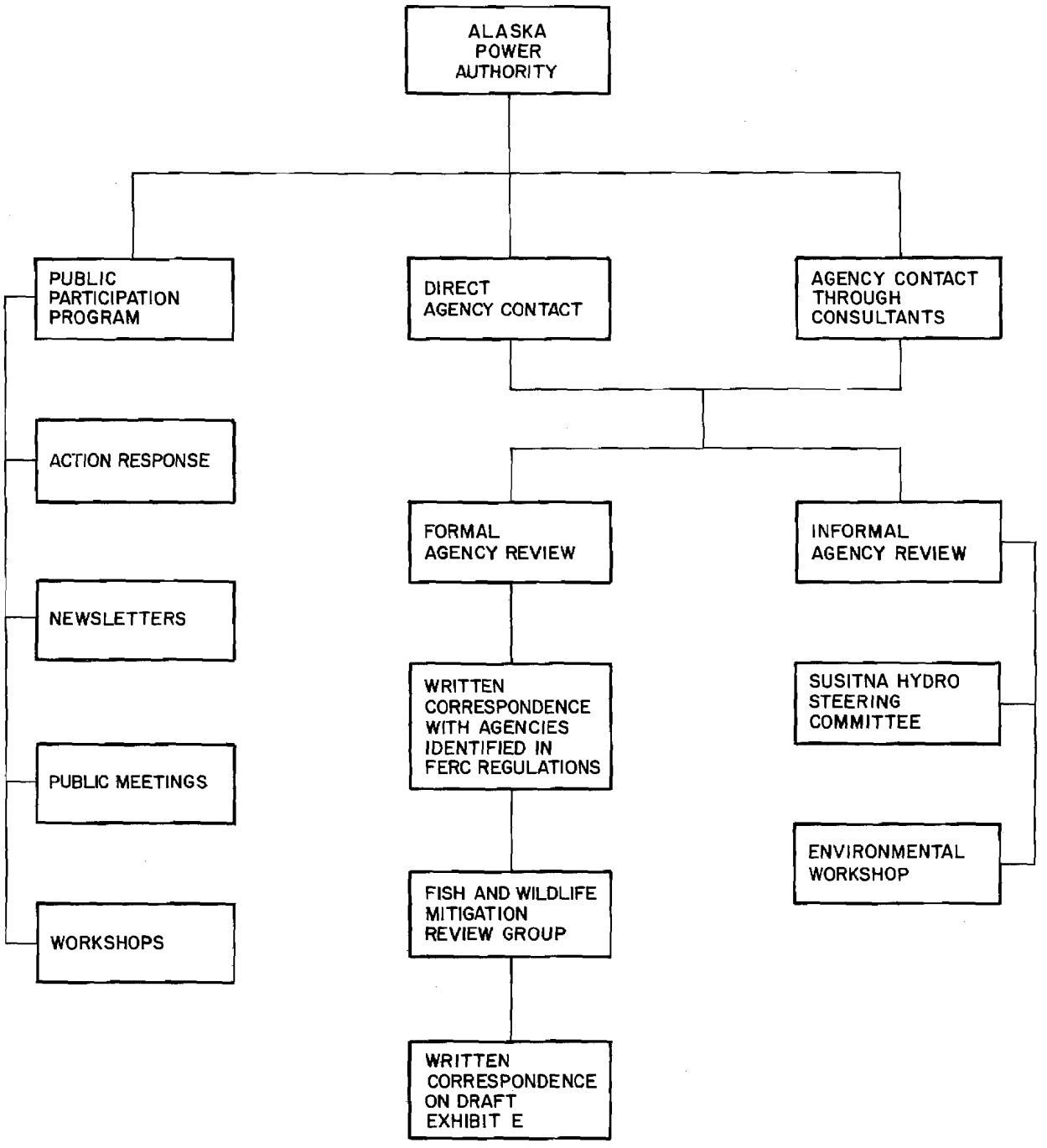
TABLE E.11.12: LIST OF ATTENDEES

SUSITNA HYDROELECTRIC PROJECT WORKSHOP

Holiday Inn, Anchorage, AK

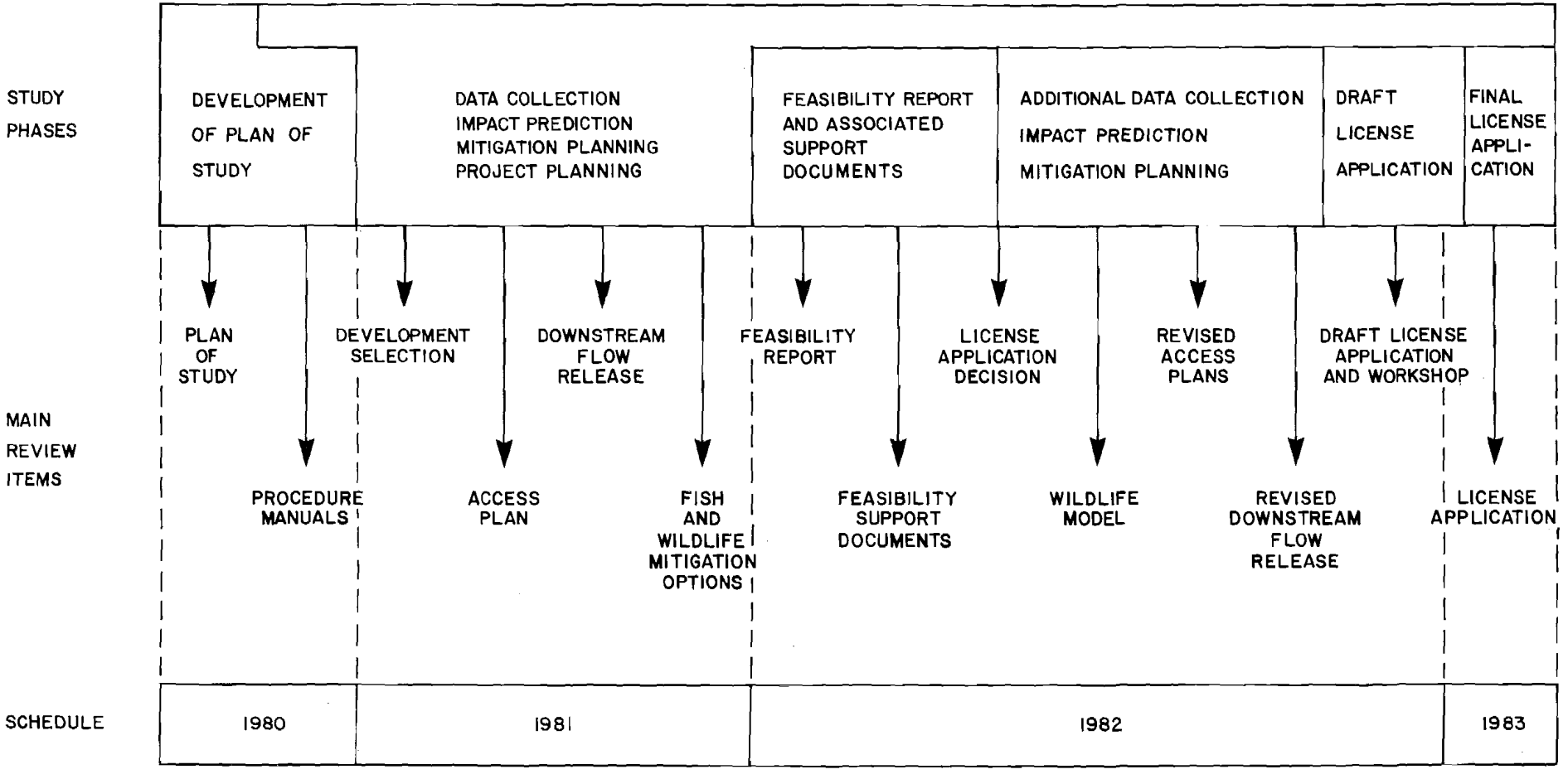
Monday, November 29, 1982

Name	Organization	Telephone
Michael P. Storonsky	Acres	276-4888
Philip Hoover	Acres	"
Thomas Lavender	Acres	"
Tony Burgess	Acres	"
Michael Grubb	Acres	716-853-7525
Charlotte Thomas	Alaska Power Authority	276-0001
Steve Fancy	LGL Alaska	479-2669
Martha Raynolds	LGL Alaska	274-5714
Robert Sener	LGL Alaska	274-5714
Dave Tremont	Dept. Community Regional Affairs	264-2206
Roland Shanks	Cook Inlet Region, Inc.	274-8638
Priscilla Lukens	Acres	276-4888
Michele Urban	Harza/Ebasco	277-1561
Tom Arminski	Alaska Power Authority	276-0001
Leonard Corin	USFWS	271-4575
Larry Moulton	Woodward-Clyde	276-2335
Jean Baldridge	Woodward-Clyde	276-2335
Keith Quintavell	DNR - DLWM	276-2653
Robert Mohn	Alaska Power Authority	276-0001
George Gleason	Alaska Power Authority	"
John Bizer	Harza/Ebasco	277-1561
Jack Robinson	Harza/Ebasco	"
Randy Fairbanks	Harza/Ebasco	"
Gary Lawley	Harza/Ebasco	"
George S. Smith	University of AK Museum	474-7818
E. James Dixon	University of AK Museum	"
B. Agnes Brown	Tyonek Native Corporation	272-4548
Carole A. Ellerbee	Tyonek Native Corporation	"
Robert M. Erickson	EDAW, Inc.	274-3036
Tim Smith	DNR-Parks (History and Archaeology)	264-2139
Richard Fleming	Alaska Power Authority	276-0001
Bob Madison	USGS-WRD	271-4138
Bob Lamke	USGS-WRD	"
Bob Martin	ADEC	274-2533
Don McKay	ADF&G	267-2284
George Cunningham	ADF&G	"
Randy Cowart	ADNR-R&D	276-2653
Al Carson	ADNR	276-2653
Paul Janke	ADNR	"
Gary Prokosch	ANDR-Water	276-2653
Mary Lu Harle	ANDR-Water Management	"
Robin Hill	Frank Orth & Associates	206-455-3507
Peter Rogers	Frank Orth & Associates	"
Steve Zrake	ADEC	274-2533
Jan Hall	USFWS	263-3403
Gary Stackhouse	USFWS	263-3475
Brad Smith	NMFS	271-5006
Bill Lawrence	U.S. EPA	271-5083
Floyd Sharrock	NPS	271-4216
Bruce Bedard	Alaska Power Authority	276-0001
Ann Rappoport	USFWS-WAES	271-4575
Bob Everett	ESSA Ltd.	274-5714
Eric Myers	NAEC	276-4244
John Rego	BLM	267-1273
Lee Adler	AHTNA, Inc.	822-3476
Bill Wilson	AEIDC	279-4523
Chris Godfrey	COE	552-4942
Ted Rockwell	USCE Reg. Fnction	"
Larry M. Wright	NPS	271-4236
Kevin R. Young	Acres	716-853-7525
John W. Hayden	Acres	907-276-4888
Wayne Dyok	Acres	907-276-4888



ORGANIZATION OF AGENCY CONSULTATION PROGRAM

FIGURE E.II.I



AGENCY CONSULTATION REVIEW PROCESS

FIGURE E.II.2

APPENDIX E11A

CORRESPONDENCE RELATING TO ORGANIZATION OF CONSULTATION PROGRAM

APPENDIX 11.A

ORGANIZATION OF CONSULTATION PROGRAM

The Alaska Power Authority established a number of committees and interagency groups to serve as a means of consulting with federal and state agencies. This included the Susitna Hydro Steering Committee and the Fish and Wildlife Mitigation Review Group. In addition, reports concerning each of the major subject divisions (water quality, recreation, wildlife, etc.) were circulated to the appropriate agencies responsible for these resources.

This appendix contains correspondence concerning the organization and establishment of the Susitna Hydro Steering Committee and correspondence relating to the various agencies groups. The first set of letters address the Susitna Hydro Steering Committee; the second the agency coordination program. Due to the importance of mitigation as a separate effort, correspondence concerning this subject is in Appendix 11.E. Correspondence concerning comments on individual reports is in Appendix 11.C and G.

ALASKA POWER AUTHORITY

June 3, 1980

The Honorable Lee McAnerney
Commissioner
Department of Community and
Regional Affairs
Pouch B
Juneau, Alaska 99811

Dear Commissioner McAnerney:

The Alaska Power Authority through its consultant, Acres American Incorporated, is in the early stages of a 30-month feasibility study of the proposed Susitna Hydroelectric Project. Because of the magnitude of this study, effective interagency coordination will be best accomplished through formation of a Susitna Hydroelectric Steering Committee. The function of this committee would be to provide coordinated exchanges of information between the Alaska Power Authority and interested resource management agencies. Through this exchange, the concerns of all agencies involved would be identified early and hopefully prevent unnecessary delays in the progress of the feasibility study, application for the Federal Energy Regulatory Commission license to construct, and Environmental Impact Statement review.

As proposed, the Steering Committee would be composed of representatives of resource agencies with responsibilities pertaining to the Susitna Hydroelectric Feasibility Studies and/or the project's environmental consequences. We therefore invite your agency's participation.

The committee would provide for interagency coordination through joint review of project related materials and development of more informed and uniform positions representing all resource interests. We believe this will provide a more efficient process of information exchange.

Proposed objectives for this committee are to:

1. Review and comment on study approaches throughout each phase of the planning process;

2. Insure that the biological and related environmental studies, their timing, and technical adequacy are planned, implemented, and conducted to provide the quantitative and qualitative data necessary to:

   (a) assess the potential impacts to fish and wildlife resources, and

   (b) provide the basis for mitigation and compensation of resource losses which will result from the project;

3. Provide a forum for continued project review of all aspects of the studies, for a timely exchange of information, and for recommendation of study redirection, should the accomplishment of specific objectives be in jeopardy;

4. Monitor compliance of the studies with all state and federal laws, regulations, Executives Orders, and mandates as they apply to fish and wildlife resources; and

5. Provide unified agency comments from the committee to the Power Authority.

Should your agency elect to participate in the committee, we recommend that your representative have a technical background enabling him to comment on the adequacy and approach of ongoing and future feasibility studies, and be able to speak knowledgeably on the policies and procedures of your agency with respect to the review of the Federal Energy Regulatory Commission license application for the project and the subsequent Environmental Statement (ES).

The first Susitna Hydroelectric Steering Committee meeting will be held at the Alaska Power Authority, 333 West 4th Avenue, Suite 31, Anchorage, Alaska on June 12th at 9:00 AM. Attached is a sheet with a description of the agenda for this first meeting. Your attendance is encouraged.

Sincerely,

Eric P. Yould
Executive Director

Attachment:
as noted

Preceding Letter Sent To:

Ms. Lee McAnerney
Department of Community and Regional Affairs
Pouch B
Juneau, AK 99811

Mr. Harry Hulsing, Chief
U.S. Geological Survey
Water Resources Division
218 E Street
Anchorage, AK 99501

Colonel Lee Nunn
U.S. Army Corps of Engineers
P.O. Box 708
Anchorage, AK 99510

Mr. Bob Bowker
U.S. Fish and Wildlife Service
733 West 4th Avenue
Anchorage, AK 99501

Mr. John Rego
U.S. Bureau of Land Management
4700 East 72nd Avenue
Anchorage, AK 99507

Mr. Robert E. LeResche
Commissioner
Alaska Department of Natural Resources
Pouch M
Juneau, AK 99811

Mr. Frances A. Ulmer, Director
Division of Policy Development and Planning
Office of the Governor
Pouch AD
Juneau, AK 99811

Mr. Ronald O. Skoog
Commissioner
Alaska Department of Fish and Game
Juneau, AK 99801

ALASKA POWER AUTHORITY

SUSITNA HYDRO STEERING COMMITTEE

Bob Lamke
U. S. Geological Survey
Water Resources
733 W. 4th Avenue, Suite 400
Anchorage, Alaska 99501

271-4138

John Rego
Bureau of Land Management
Anchorage District Office
4700 E. 72nd Avenue
Anchorage, Alaska 99502

344-9661

Brad Smith
National Marine Fisheries Studies
701 "C" Street, Box 43
Anchorage, Alaska 99513

271-5006

William J. Wilson
Arctic Environmental Information &
Data Center, (U of A)
707 A Street
Anchorage, Alaska 99501

279-4523

Al Carson
State of Alaska
Department of Natural Resources
323 E. 4th Avenue
Anchorage, Alaska 99501

279-5577

Tom Trent
Alaska Department of Fish and Game
2207 Spenard Road
Anchorage, Alaska 99503

274-7583

Larry Wright
Heritage Conservation and
Recreation Service
1011 E. Tudor Road, Suite 297
Anchorage, Alaska 99503

276-1666

Lenny Corin
U. S. Fish and Wildlife Service
733 W. 4th Avenue, Suite 101
Anchorage, Alaska 99501

271-4575

Gary Stackhouse
U. S. Fish & Wildlife Service
1011 E. Tudor Road
Anchorage, Alaska 99501

276-3800

Bob Martin
Department of Environmental
Conservation
437 E Street
Anchorage, Alaska 99501

274-2533

Mr. Bill Lawrence
Anchorage Operations Office
Environmental Protection Agency
701 C Street
Anchorage, Alaska 99513

271-5083

Judy Schwarz
Environmental Evaluation Branch
Mail Stop 443
Region X, EPA
1200 6th Avenue
Seattle, Washington 98101

(206) 442-1285

ALASKA POWER AUTHORITY

SUSITNA HYDRO STEERING COMMITTEE MEETING

TIME: 9:00 AM

DATE: June 12, 1980

PLACE: Alaska Power Authority
333 West 4th Avenue, Suite 31
Anchorage, Alaska 99501

AGENDA:

1. A discussion and outlining of the purpose and objectives of the Susitna Hydro Steering Committee.

2. A review by Acres American of the procedural aspects of the FERC license application, the ES review processes, and their perspectives on the procedural mileposts for this project.

3. A discussion of the proposed FERC license application and ES review process by the Steering Committee and an assessment of the agencies views and mandates to review and comment upon the proposed project.

4. A review of the Susitna Hydro feasibility tasks by Acres American with discussion of FERC's possible requirements for study, technical standards, and land or environmental study subjects which must be emphasized.

5. A discussion by the Steering Committee of the cross study task or interdisciplinary aspects of the Susitna Hydro feasibility studies.

6. Steering Committee discussion of a proposed agenda for the July meeting involving representatives of FERC.

Susitna Hydro Steering Committee Meeting

June 12, 1980

Name	Affiliation
BRENT PETRIE	ALASKA DNR
~~Thomas Trent~~	~~Alaska Dept. Fish + Game~~
Dave Sturdevant	ADEC
John Haydon	ACRES
Bob Lamke	U.S Geol. Survey WRD
Bill Nelson	AEIDC, Univ. of Alaska
Bill Welch	HCRS
PAT Beckley	BLM
Don McKay	USFWS
Jeffrey Barnes	TES
Gary STACKHOUSE	USFWS
Cikki Fowler	ADEC
MARY LU HAMZE	ALNR
Floyd Hamilton	
James D. Gill	Acres American
	Fairbanks Environmental Center
	TES
Reyo John	Susitna Coordinator
Heidi W Nowacki	Division of Energy + Power Development

ALASKA POWER AUTHORITY

333 WEST 4th AVENUE · SUITE 31 · ANCHORAGE, ALASKA 99501

Phone: (907) 277-7641
(907) 276-2715

July 7, 1980

Mr. Ronald Morris
National Marine Fishery Service
701 "C" Street
Anchorage, Alaska 99513

Dear Mr. Morris:

The Alaska Power Authority, acting on behalf of the resource management agencies, would like to inform you of the second Susitna Hydro Steering Committee meeting. At the request of the various agencies, we have made arrangements for representatives of the Federal Energy Regulatory Commission to be present at the meeting in order to answer technical questions. The subject of the first day of this two day session will consist of a discussion of the general technical aspects of the FERC and state licensing process whereas the second day will specifically address the Susitna fisheries and in-stream flow studies programs.

In addition to the above topics, an election of a committee chairman will take place (please be thinking of prospective candidates for nomination), and the guidelines for the committee's organization will be established.

The first days session of the second Susitna Hydro Steering Committee meeting will be held at the ACC Lucy Cuddy Center on July 17th at 8:00 a.m. The second day's session will be held at the Federal Building, Room C-105 on July 18th at 8:30 a.m. Attached is a sheet with a description of the meeting agenda. Your participation is encouraged.

Sincerely,

Eric P. Yould

Eric P. Yould
Executive Director

Attachment

ALASKA POWER AUTHORITY

SUSITNA HYDRO STEERING COMMITTEE MEETING

1st Day

Date: July 17, 1980
Time: 8:00 a.m.
Place: ACC Lucy Cuddy Center

2nd Day

Date: July 18, 1980
Time: 8:30 a.m.
Place: Federal Building, Room C-105

AGENDA

1st Day Topics

8:00 a.m. - 9:30 a.m.
- Election of a committee chairman
- Discussion of the committee's organization
- Any other items of concern

9:30 a.m. - 5:00 p.m.
- General technical overview of FERC licensing process
- Discussion of general technical license requirements for hyroelectric projects (both FERC and State)
- Discussion of Susitna specific technical license requirements (both FERC and State)

2nd Day Topics

8:30 a.m. - 5:00 p.m.
- Potential changes in Susitna River hydrology due to hydroelectric development
- Details of hydrology - water quality monitoring program
- Details of the ADF&G fisheries program
- Development of fisheries impact predictions and mitigation plan
- Modifications incorporated into the study program in order to accomodate the in-stream flow studies
- Discussion of details on in-stream flow studies

SUSITNA HYDRO STEERING COMMITTEE MEETING

July 17th & 18th, 1980

PERSONS NOTIFIED OF THE MEETING

Al Carson	Department of Natural Resources	279-5577
Bob Lamke	U.S.G.S. - W.R.D.	271-4138
Bill Wilson	AEIDC-University of Alaska	279-4523
Bill Welch	Heritage Conservation & Rec.	277-1666
Pat Beckley	BLM	344-9661
John Rego	BLM	344-9661
Bob Bowker	U.S. Fish & Wildlife	271-4575
Rickki Fowler	Environmental Conservation	274-5527
Gary Stackhouse	U.S. Fish & Wildlife Service	276-3800
Lee Wyatt	Mat-Su Borough	745-4801
Jim Sweeney	Environmental Protection Agency (US)	271-5083
Heinz Noonan	Energy & Power Development	276-0508
Dave Sturdevant	Environmental Conservation	465-2636
Dick Eakins	Div. of Economic Enterprise (send twix via 277-1936)	465-2018
Murray Walsh	Office of Coastal Management	465-3540
Larry Kimball	Comm. & Reg. Affairs (Div. of Comm. Planning)	279-8636

Key Contacts 7/17/80

Agency	Key Contact	Phone	Address
U.S. Geological Survey Water Resources	Bob Lamke	[illegible]	733 W. 4th Ave. Anchorage
Arctic Environmental Information and Data Center (U of AK)	Bill Wilson or Chuck Evans	279-4523	707 A St. Anchorage 9950
U.S. Fish and Wildlife Service	Don McKay	271-4575	733 W 4th, Suite 101 Anc 99501
Dept. Environmental Conservation	Dave Sturdevant	465-2636	Pouch O Juneau, AK 99811
	Rikki Fowler (Southcentral Regional Office)	274-5527	McKay Bldg. 338 Denali St., Anc
Alaska Dept. of Fish and Game	~~Tom Trent~~	344-0541	333 Raspberry Rd Anchorage, Ak. 99502
Ak. Dept. of Natural Resources	Al Carson	279-5577	323 E 4th Ave. Anc, AK. 99501
[illegible]			
Bureau of Land Management Anchorage District Office 4700 E 72nd Ave Anch AK 99502	John Rego	344-9661 x326	
National Marine Fisheries Service 701 C St. Box 43 Anc AK 99513	BRAD SMITH - RON MORRIS -	271-5006	

AGENCY	KEY CONTACT	ADDRESS AND PHONE
ACRES AMERICAN, INC.	JOHN D. LAWRENCE, PROJECT DIRECTOR	LIBERTY BANK BUILDING SUITE 900 MAIN AT COURT STREETS BUFFALO, NY (716) 853-7525

Name		Phone no
Don Easton	[illegible]	
Bob Lamke	[illegible]	
Chuck Evans	AEIDC [illegible] U of A	
Don McKay	USFWS	
~~Tom Trent~~	~~AOF+G~~	
Al Carson	DNR	279-5577
[illegible]	[illegible]	
Dave Stivdevant	ADEC	465-2636
[illegible]	[illegible]	(716) 853-7525
J. Mark Robinson	FERC	202/376-9062
Dean L. Shumway	FERC	202-376-1909
Vince Juied	TES	315/695-7228
Bob KROGSENG	TES	276-5054
Gary STACKHOUSE	USFWS	276-3800
Bob WILLIAMS	TFS	907/465-1543
BRAD SMITH	NMFS	271-5006
John Rego	BLM	344 9661
Nancy Cliff	Trustees for Alaska	276-4244
[illegible]	[illegible]	[illegible]
JIM LANDMAN	ACRES AMERICAN	276-4888
Loran Baxter	Corps of Engineers	752-8461

Susitna Hydro Steering Committee
7/15/80

Name	Affiliation
Don Baxter	[illegible]
Keith Young	AAI
Robert Wellstein	TES
Milo Bill	TES
Grant T. Dreyer	R&M
Dean L. Shumway	FERC
J. Mark Robinson	FERC
Peter S. Foote	FERC
Al Carson	ONR
Tom Trent	~~AOF&G~~
Kara La Marche	ADOR
Jeffrey Barnes	TES
Vince Lucid	TES
Dave Sturdevant	
Bob [illegible]	TES
James D. Gill	ARI
[illegible]	[illegible]
Bob Lamke	USGS
Dan McKay	USFWS
BRAD SMITH	NMFS
ROBERT MARTIN	HPA
Gary [illegible]	[illegible]
Heinz W. Nowack	Div. of Energy & Power Development

July 28, 1980

Mr. W. James Sweeney, Director
U.S. Environmental Protection
Agency
Room E535, Federal Building
701 "C" Street
Anchorage, Alaska 99501

Dear Mr. Sweeny:

Thank you for your letter regarding the Susitna Hydro Steering Committee meeting of July 17 and 18. I am sorry to hear you were unable to attend as it was a very informative meeting. The Steering Committee has, as a result of the meeting, evolved into an organization independent of the Power Authority and acting in a review and advisory capacity to the Power Authority. It is now run wholly by the various State and Federal agencies. Al Carson of the Alaska Department of Natural Resources has taken the responsibility of chairman for the committee and Tom Trent of the Alaska Department of Fish and Game is acting as his assistant. I will see to it that your agency is retained on the mailing list for the committee. Unfortunately, no meeting minutes were taken although a tape recording is available at the Power Authority.

I appreciate your continued interest in the committee and encourage your participation at future meetings.

Sincerely,

Eric P. Yould
Executive Director

ALASKA POWER AUTHORITY

January 2, 1981

Robert E. LeResche, Commissioner
Alaska Department of Natural Resources
Pouch M (Mail Stop 1000)
Juneau, Alaska 99811

Dear Commissioner LeResche:

Your organization has been cooperating extensively with the Power Authority in assessing the potential effects of hydroelectric development of the Upper Susitna River Basin. Several different vehicles have been used; meetings, correspondence, and Susitna Hydroelectric Project Steering Committee activities. We feel that the results reflect close consultation and coordination between our organizations.

As the study has progressed, more and more items requiring consultation have emerged, and the future will require a still higher level of involvement. This anticipated level of activity, plus the fact that the Federal Energy Regulatory Commission (FERC) and the Fish and Wildlife Coordination Act require documentation of such consultations, suggests it is now appropriate to be more formal in our exchanges. Accordingly, we advance this suggested procedure to you for your concurrence and/or suggestions for modification.

In general, we propose a two step process. The first step will consist of consultation with the Susitna Hydroelectric Project Steering Committee. That body will perform evaluations and structure recommendations. The Power Authority will consider these recommendations and formulate a position. Upon completion of these actions, the results will be processed through your agency for formal concurrence.

This represents a slight expansion of the original concept under which the Steering Committee was structured; the Committee was to act primarily as an advisory body to the study team while secondarily facilitating agency involvement in the study effort. Member agencies were to be represented by senior staffers of skills appropriate to the matters under consideration. This was considered to be advantageous as it would facilitate responsiveness by virtue of being relatively independent of procedural impediments, while still reflecting to a substantial degree the agency viewpoint.

This proposal hopefully preserves those advantages within an expanded role by permitting attainment of interagency concensus with a relatively low level of input and a high degree of flexibility. It also permits the various agencies to tailor their participation to the specific needs. Finally, the second step of referral of Steering Committee deliberations for formal agency concurrence meets regulatory and statutory requirements.

January 2, 1981

Frances A. Ulmer, Director
Office of the Governor
Division of Policy Development and Planning
Pouch AD (Mail Stop 0164)
Juneau, Alaska 99811

Dear Fran:

The Power Authority is studying and assessing the potential effects of hydroelectric development of the Upper Susitna River Basin. Accomplishment of that task necessitates consultation and coordination with various Federal, State and local organizations, including yours.

As the study has progressed, more and more items requiring consultation have emerged, and the future will require a still higher level of involvement. This anticipated level of activity, plus the fact that the Federal Energy Regulatory Commission (FERC) and the Fish and Wildlife Coordination Act require documentation of such consultations, suggests it is now appropriate to establish a formal procedure for our contacts. Accordingly we advance the following plan to you for your concurrence and/or suggestions for modification.

In general, we propose a two step process. The first step will consist of consultation with the Susitna Hydroelectric Project Steering Committee. That body will perform evaluations and structure recommendations. The Power Authority will consider these recommendations and formulate a position. Upon completion of these actions, the results will be processed through the appropriate organizations for formal concurrence.

I request your written concurrence with this proposal, or, if you have other thoughts on the matter, we are anxious to explore them with you.

Sincerely,

Eric P. Yould
Executive Director

cc: Bill Welch, U. S. HCRS
Larry Wright, U. S. HCRS
Jim Thomson, U. S. HCRS

CONCUR:

DW
RAM
EPY

Sent to:

Alaska Department of Community and Regional Affairs
Alaska Department of Commerce & Economic Development
Office of the Governor, Division of Policy Development and Planning
Matanuska-Susitna Borough
Environmental Protection Agency, Region 10
Alaska District, Corps of Engineers
U. S. Geological Survey

Attachment #2

ALASKA POWER AUTHORITY

RESPONSE SUMMARY

Agency	Respond?	Comment
ADC&RA	Yes	Abstain
ADC&ED	Yes	Concur
DPDP	Yes	Suggest A-95 Procedures
EPA	Yes	Concur w/option preserved
COE	Yes	Does not wish to participa
USGS	Yes	Concur
MAT-SU	No	
ADF&G	Yes	Concur
ADEC	Yes	Concur
ADNR	No	
NMFS	Yes	Concur, w/option preserved
BLM	Yes	Concur, w/option preserved
HCRS	Yes	Concur
USFWS	Yes	Concur, w/option preserved

Attachment #3

United States Department of the Interior

IN REPLY REFER TO:

FISH AND WILDLIFE SERVICE
Western Alaska Ecological Services
733 W. 4th Avenue, Suite 101
Anchorage, Alaska 99501
(907) 271-4575

RECEIVED
JAN 19 1981
ALASKA POWER AUTHORITY

16 JAN 1981

Eric P. Yould
Executive Director
Alaska Power Authority
333 W. 4th, Suite 31
Anchorage, Alaska 99501

Dear Mr. Yould:

The U.S. Fish and Wildlife Service (FWS) has received your letter of 2 January 1981 proposing that the agencies comprising the Susitna Hydroelectric Steering Committee provide formal concurrence to positions developed by the Alaska Power Authority (APA) in response to committee recommendations. We concur with your proposal. However, in the event that we disagree with APA's position, we reserve the option of providing a formal response indicating what is required for FWS concurrence.

Sincerely,

Robert Bowker

Field Supervisor

cc: AOES

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF FISH AND GAME

OFFICE OF THE COMMISSIONER

SUBPORT BUILDING
JUNEAU, ALASKA 99801

January 22, 1981

Mr. Eric P. Yould, Executive Director
Alaska Power Authority
333 West 4th Avenue
Suite 31
Anchorage, Alaska 99501

Dear Mr. Yould:

The Alaska Department of Fish and Game has considered your January 2 proposal for an agency consultation process by the Alaska Power Authority (APA) through the Susitna Hydro Steering Committee. The process for evaluation and recommendation by staff of this agency, and the formal agency concurrence action of APA's developed position is acceptable to this Department.

I suggest APA work further with the Steering Committee to finalize the details of the implementation of your proposed coordination/consultation process at their next meeting. The Steering Committee should be able to do much in the future to eliminate duplication of coordination and consultation effort, on both our parts, for the Susitna Hydroelectric Project.

Sincerely,

Ronald O. Skoog
Commissioner
(907) 465-4100

cc: A. Carson

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Water Resources Division
733 West Fourth Avenue, Suite 400
Anchorage, Alaska 99501

E'9

January 26, 1981

RECEIVED
JAN 28 1981

Eric P. Yould
Executive Director
Alaska Power Authority
333 West Fourth Avenue, Suite 31
Anchorage, Alaska 99501

Dear Eric:

We concur with the two-step process of interagency consultation and coordination in studying the potential effects of the proposed hydropower development of the upper Susitna River basin outlined in your letter of January 2, 1981.

The Water Resources Division has no regulatory functions, so formal concurrence with your agencies actions is not within our field of authority. However, we can assist in advisory capacities. The Geologic Division expertise may also be available for consultation. The Conservation Division is the only Geological Survey division with regulatory authority and they have a section that handles hydropower developments.

Sincerely yours,

Raymond S. George
Acting District Chief

United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Anchorage District Office
4700 East 72nd Avenue
Anchorage, Alaska 99507

IN REPLY REFER TO
2920 (013)

JAN 30 1981

RECEIVED

FEB 2 1981

ALASKA POWER AUTHORITY

Mr. Eric Yould
Alaska Power Authority
333 West 4th Ave., Suite 31
Anchorage, Alaska 99504

Dear Mr. Yould:

This is in reply to your letter dated January 2, 1981, questioning the official nature of the suggestions given during meetings with the Susitna Hydroelectric Project Steering Committee.

All statements made at these meetings with the Steering Committee are at a working level and are not to be construed as BLM's official stand or policy.

All official Bureau policy and positions concerning the Susitna Project will originate from this office in writing with my signature or the signature of an acting District Manager.

Sincerely yours,

Richard W. Tindall
District Manager

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, CORPS OF ENGINEERS
P.O. BOX 7002
ANCHORAGE, ALASKA 99510

REPLY TO
ATTENTION OF:

NPAEN-PL-EN

FEB 02 1981

RECEIVED
FEB 4 1981
ALASKA POWER AUTHORITY

Mr. Eric P. Yould
Executive Director
Alaska Power Authority
333 West 4th Avenue Suite 31
Anchorage, Alaska 99501

Eric

Dear Mr. Yould:

This is in response to your letter of 2 January 1981 concerning consultation with the Corps of Engineers on your study of the Upper Susitna River Basin.

As stated in our letter to you of 12 June 1980, we are unable to participate in the Susitna Hydroelectric Project Steering Committee because of funding and manpower constraints, and we will only be able to conduct the necessary reviews required for the issuance of permits under our regulatory program.

I would suggest that the scoping process prescribed in the regulations of the Council on Environmental Quality (see 40 CFR 1501.7) be initiated. This process, which would involve the Federal Energy Regulatory Commission (FERC), would help to define the scope of issues to be addressed and to identify the significant issues to be analyzed in depth in the Environmental Impact Statement (EIS). The Corps could participate in the scoping process and, possibly, become a cooperating agency with FERC in the preparation of the EIS.

If further details are desired by your staff, Mr. Harlan Moore, Chief, Engineering Division, can be contacted at 752-5135.

Sincerely,

Lee

LEE R. NUNN
Colonel, Corps of Engineers
District Engineer

United States Department of the Interior
HERITAGE CONSERVATION AND RECREATION SERVICE
ALASKA AREA OFFICE
1011 E. Tudor, Suite 297 Anchorage, Alaska 99503
Tele.(907) 277-1666

IN REPLY REFER TO:

A800
1201-03a RP

FEB 4 1981

Mr. Eric P. Yould
Executive Director
Alaska Power Authority
333 West 4th Avenue, Suite 31
Anchorage, Alaska 99501

RECEIVED
FEB 6 1981
ALASKA POWER AUTHORITY

Dear Mr. Yould:

We concur with your recommendation of January 2, 1981, concerning the expanded role of the Susistna Hydroelectic Project Steering Committee. However, we would remind you that we also have a separate coordination and review function associated with the license application Exhibit R.

Thank you for the opportunity to consider and comment on the proposal.

Sincerely,

Janet McCabe

Janet McCabe
Regional Director

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION X
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101

REPLY TO ATTN OF: M/S 443

FEB 05 1981

Eric P. Yould, Executive Director
Alaska Power Authority
333 West 4 Avenue, Suite 31
Anchorage, Alaska 99501

Subject: Susitna Hydroelectric Project Coordination Procedures

Dear Mr. Yould:

Thank you for your letter proposing a two-step process for the coordination required under the Federal Energy Regulatory Commission regulations and the Fish and Wildlife Coordination Act. We basically concur with your proposals. However, we may have further comments on the issues dealt with in this coordination process once more information on each subject is available and the combined effects of the project become more visible.

It is our understanding that so far the Susitna Hydroelectric Project Steering Committee has worked on the procedures manual for the 1981 field studies and is now in the process of starting up a subcommittee to deal with possible mitigation for wildlife impacts. Other issues, including possible mitigation for fisheries impacts, are to be dealt with later when more information on the resources to be affected will be available.

We would like to be kept informed of both the steering committee and subcommittee meetings and agendas so that we can participate more actively when items affecting EPA's areas of responsibility or expertise will be considered. For now, most of our involvement will have to be by letter and telephone due to personnel and travel constraints. Within our limitations, we will try to be as responsive and helpful as possible.

EPA's coordinator for this project will continue to be Judi Schwarz, of my staff. She can be reached at (206) 442-1285.

We look forward to working with you in the future. If we can be of assistance, please do not hesitate to ask.

Sincerely yours,

Elizabeth Corbyn

Elizabeth Corbyn, Chief
Environmental Evaluation Branch

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P. O. Box 1668, Juneau, Alaska 99802

FEB 9 1981

RECEIVED
FEB 10 1981
ALASKA POWER AUTHORITY

Mr. Eric P. Yould
Executive Director
Alaska Power Authority
333 West 4th Ave. Suite 31
Anchorage, Alaska 99501

Dear Mr. Yould:

We have received your letter of January 2, 1981, regarding the involvement of the National Marine Fisheries Service (NMFS) in the planning and study of the proposed Susitna River Hydroelectric Project. We recognize the need for a "higher level of involvement" on the part of our agency, not only due to certain procedural requirements but the fact that the proposal has reached a more advanced stage of study. To this end we have been participating as a member of the Steering Committee since July 1980. We feel this involvement affords us the opportunity to evaluate project studies and provide any input we may feel is necessary.

Regardless of our status with the Steering Committee, we feel formal agency concurrence with all policy matters and deliberations should be obtained and therefore, agree with the process you have suggested.

Sincerely,

Robert W. McVey
Director, Alaska Region

STATE OF ALASKA

OFFICE OF THE GOVERNOR

DIVISION OF POLICY DEVELOPMENT AND PLANNING

JAY S. HAMMOND, Governor

POUCH AD
JUNEAU, ALASKA 99811
PHONE: 465-3573

February 19, 1981

Mr. Eric Yould
Executive Director
Alaska Power Authority
333 West Fourth Avenue
Suite 31
Anchorage, Alaska 99501

Dear Eric:

On January 3, you sent a letter referring to consultation and coordination with various federal, State and local organizations in the study and assessment of potential effects of hydroelectric development in the Upper Susitna River Basin. Your letter requested my concurrence with your plan or suggestions for its improvement.

Frankly Eric, the paragraph in your letter that describes your plan is somewhat brief and general, making concurrence rather difficult at this time. I agree, however, that the study being undertaken is one that should have a very high level of involvement by interested State and federal agencies as well as potentially affected local communities.

I suggest that a more detailed description of the workings of the Susitna Hydroelectric Project Steering Committee be provided. What may also be appropriate is the use of your public participation staff to serve a state government coordination as well as a public involvement function. The staff could document and disseminate the proceedings of the steering committee to a wider governmental audience. Such communication could occur prior to formal Authority position formulation and smooth the process of required formal concurrence with such positions.

As for meaningful involvement of State and federal agencies in your assessment, I am enclosing a copy of Administrative Order No. 55, describing the Major Project Review (MPR) process. This process might be appropriate for the Steering Committee. The process described can be used by any unit of State government and is designed to ensure that appropriate State agencies are involved in analyses from the outset and that each assessment is highly issue oriented. The technique can be used to involve federal agencies and the public as well.

The MPR questions can be modified as needed and a schedule can be prepared that indicates points at which cooperators are to tie in to the process. We generally include a public review draft in the time line for an analysis. We have also found that it is essential to the success of the MPR process for the lead unit to be able to sufficiently detach itself from its own project goals and objectives to administer the analysis in a neutral and objective fashion. One solution is, of course, to have the analysis administered by a separate agency.

Eric, I hope that at least some of these ideas are useful to you. From your letter, we are not too certain as to what involvement process you had in mind.

Please let me know if we can be of any assistance.

Sincerely,

Frances A. Ulmer

Enclosure

State of Alaska

Administrative Order No.: 55

Subject: State Major Project Review Process

Under the authority of Art. III, Sections 1 and 24 of the Alaska Constitution, and AS 44.19.880, and given the need for timely, consistent, and thorough evaluation of proposed major projects or activities, I order that the following review process be instituted:

1. Certain projects, because of their statewide or regional significance will be designated by me as major projects subject to a Major Project Review.

2. Any state agency to which I assign the lead responsibility for conducting a Major Project Review shall prepare and submit to me the information contained on the Project Analysis Summary Sheet (Attachment A) within 10 days of the assignment.

3. By the assigned date, the lead agency shall prepare and submit to me a preliminary Project Analysis which addresses the evaluation factors specified by me (Attachment B).

4. Immediately upon receipt of the preliminary Project Analysis, the Division of Policy Development and Planning (DPDP), Office of the Governor, shall forward informational copies to each affected or interested governmental agency. By the assigned dates each agency shall submit to DPDP its review and comment.

5. During the period of agency review of the preliminary Project Analysis, the Public Forum or DPDP, in consultation with the lead agency, shall conduct one or more public meetings in the affected area(s) for the purpose of receiving public comments on the project or actions.

6. By the assigned date, DPDP shall submit in writing to the lead agency, a summary of the review along with recommendations for the final Project Analysis.

7. By the assigned date, the lead agency, in conjunction with DPDP, shall prepare and submit to me, in writing and verbally, a final version of the Project Analysis. The Project Analysis shall include dissenting views, recommendations for further action and, where appropriate specific conditions or mitigation measures necessary for state approval of the project or action.

8. No designated major project or action will be approved prior to the completion of the process described above, unless a prior written waiver of necessity has been obtained from me.

9. The review specified in this order shall be coordinated with procedures contained in AS 46.35, Environmental Procedure Coordination Act, and other state review processes, as applicable.

10. No provision above is to be interpreted to interfere with the statutory requirements of any agency in the issuance of permits.

11. This order shall take effect immediately.

Signed: _____
Jay S. Hammond
Governor

Date: June 5, 1981

Attachment A

Summary Sheet

STATE MAJOR PROJECT ANALYSIS

Project Title

Description

Brief description of scope, nature, and objectives of project or action, including location of project, estimated start and completion date, estimated cost of project, state interest in project.

State Action Requested/Required

Permits sought, by agency; resources necessary; public facilities to be constructed; mineral or other rights, contracts, leases, etc.

Lead Agency

Lead Agency responsibility, including designated person responsible for Project Analysis.

Agency Participation

Other agencies and individuals assigned to the project analysis effort and their responsibilities. Proposed contractual assistance.

Estimated Completion Dates

Preliminary Project Analysis_____(____ days from Governor's assignment)
Agency and Public Review_____(____ days from Preliminary Project Anal
Summary Report_____(____ days from Agency and Public Revie
Final Project Analysis_____(____ days from Summary Report)

Project Evaluation Factors

Economic

1. What changes would be generated in real per capita personal income for current resident Alaskans over the life of the project (construction and operational phases)?

2. What are the employment and population changes expected to result from the project?

   a. What proportion of jobs are expected to be occupied by current Alaskans?

   b. What are the characteristics of these jobs (seasonality, skill level, occupational category, short-term, long-term)?

3. Does the project contribute to long-run economic stability? What short or long-term price effects are expected to result from the project?

4. What administrative roadblocks exist which would affect the economic feasibility of a project?

Community Well-Being

1. What changes are expected in the quality, availability, or demand for governmental goods, services or facilities?

2. Are changes in housing conditions expected (e.g., availability, price, quality)?

3. What local population changes are expected (e.g., amount and rate of change, characteristics of expected in-migrants)? Are populati changes expected to cause significant value or lifestyle conflicts Is displacement from traditional occupations expected?

4. Do adequate local growth management capabilities (land use plans, ordinances, revenue-generating mechanisms) exist?

5. What is public sentiment (local and statewide) toward the proposed project?

Fiscal

1. What effect would the project have on the net balance of state and local expenditures versus revenues over time?

2. Are there explicit or implicit state subsidies associated with the project? If so, what is the extent of such subsidies?

Resource Utilization

1. What effect will the project have on resource industry potentials or other resource values? Will the project result in irreversible resource commitments?

2. Will the project affect fish and wildlife populations or their habitat? Will these effects be short-term or long-term in nature?

3. Will the project affect subsistence resources? For example, are changes in migration patterns, loss of species, dislocation, or availability changes expected?

4. Will the project affect designated or specifically defined wildern historic, watershed, recreational or scenic areas?

Environmental Quality

1. What are the anticipated effects of the project on the environment health or safety of the populace?

2. What are the provisions for environmental monitoring, surveillance and quality control?

1. Does the project involve technological, environmental, financial, or economic factors which have a high degree of uncertainty or risk

2. To what extent is the existing data base adequate to answer the above questions?

3. Are there external factors (e.g., national or international) which figure prominently in the success or failure of the project?

Alternatives

1. Are there economically feasible and socially acceptable alternatives for accomplishing the objectives of the project?

2. What would be the implications of non-approval of the project?

Miscellaneous

1. Is the proposed project or action compatible with local and state plans or policies?

2. What permits, licenses and/or governmental (state, local and/or federal) approvals are necessary?

3. What is the timetable for various stages of the project? How flexible is this schedule?

4. What mitigation measures or stipulations can be identified to minimize the conflicts or problems identified above?

STATE OF ALASKA

DEPT. OF ENVIRONMENTAL CONSERVATION

JAY S. HAMMOND, GOVERNOR

POUCH O – JUNEAU 99811

March 2, 1981

Mr. Eric P. Yould
Executive Director
Alaska Power Authority
333 West 4th Avenue, Suite 31
Anchorage, Alaska 99501

Dear Mr. Yould:

Your letter of January 2, 1981 proposes to expand the function of the Susitna Steering Committee from that of an advisory body to the study team to one of performing evaluations and structuring recommendations. I am happy to offer the resources of this agency to serve in that capacity to a reasonable extent.

It is not clear to us, however, precisely what may constitute "items requiring consultation," as the only substantive matters to come before the Steering Committee have been review of the field procedures manuals regarding Task 7 of the Plan of Study, and review of the preliminary screening of potential hydro sites. Apparently, a more direct link with the Power Authority is anticipated, rather than simply with the study team, since your letter indicates that Steering Committee recommendations will be considered by the Power Authority. We will look forward to additional information, at an appropriate time, concerning matters that may be brought before the Steering Committee, and the action requested of the committee.

Bob Martin will be the representative of this agency to the Steering Committee as of this date. Bob is the new supervisor of ADEC's Southcentral Regional Office. Bob will receive whatever support he needs from Dave Sturdevant, who has been our representative in the past and who will continue as Bob's alternate.

Sincerely,

Ernst W. Mueller
Commissioner

cc: Deena Henkins, EQM
Bob Martin, SCRO

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF RESEARCH & DEVELOPMENT

323 E. 4TH AVENUE
ANCHORAGE, ALASKA 99501

279-5577

RECEIVED
JUN - 9 1981
ALASKA POWER AUTHORITY

June 5, 1981

Eric Yould
Executive Director
Alaska Power Authority
333 W. 4th Avenue, Suite 31
Anchorage, AK 99501

Dear Mr. Yould:

The purpose of this letter is to transmit to you a proposed revision in your June 3, 1980 letter stating the role and objectives of the Susitna Hydro Steering Committee. The Steering Committee members feel the following more accurately describes the role and function of the Committee.

"The Alaska Power Authority through its consultant, Acres American Incorporated, is carrying out a 30-month feasibility study of the proposed Susitna Hydroelectric Project. Because of the magnitude of this study, effective interagency coordination will be best accomplished through formation of a Susitna Hydroelectric Steering Committee. The function of this committee would be to provide coordinated exchanges of information between the Alaska Power Authority and interested resource management agencies. Through this exchange, the concerns of all agencies involved would be identified early and hopefully prevent unnecessary delays in the progress of these feasibility study, application for the Federal Energy Regulatory Commission license to construct, and Environmental Impact Statement review.

As proposed, the Steering Committee would be composed of representatives of resource agencies with responsibilities pertaining to the Susitna Hydroelectric Feasibility Studies and/or the project's environmental consequences. We therefore invite your agency's participation.

The committee would provide for interagency coordination through joint review of project related materials and development of more informed and uniform positions representing all resource interests. We believe this will provide a more efficient process of information exchange.

Proposed objectives for this committee are to:

1. Review and comment on study approaches throughout each phase of the planning process;

2. Provide a forum for continued project review of all aspects of the studies, for a timely exchange of information, and for recommendation of study redirection, should the accomplishment of specific objectives be in jeopardy;

3. Comment on compliance of the studies with state and federal laws, regulations, Executives Orders, and mandates as they apply to fish and wildlife resources; and

4. Provide unified steering committee comments to the Power Authority.

Should your agency elect to participate in the committtee, we recommend that your representative have a technical background enabling him to comment on the adequacy and approach of ongoing and future feasibility studies, and be able to speak knowledgeably on the policies and procedures of your agency with respect to the review of the Federal Energy Regulatory Commission license application for the project and the subsequent Environmental Statement (ES)."

If you have comments or suggestions concerning these proposed revisions, please advise.

Sincerely,

Al Carson

Al Carson
Chairman
Susitna Hydro Steering Committee

cc: Steering Committee

ALASKA POWER AUTHORITY

334 WEST 5th AVENUE - ANCHORAGE, ALASKA 99501

Phone: (907) 277-7641
(907) 276-0001

December 10, 1981

Mr. Al Carson
Alaska Department of
Natural Resources
Research and Development
555 Cordova
Anchorage, Alaska 99501

Dear Al:

In late November, 1981 you approached me with some concerns relative our on-going effort to solicit formal coordination on various aspects of the Susitna Hydroelectric Project. This led to a series of meetings between ourselves and the Susitna Hydroelectric Project Steering Committee. To broadly summarize those events:

1. Acres American Incorporated, acting for the Power Authority, has commenced circulation for formal coordination certain building blocks of the studies that will form the basis for a project licensing recommendation.

2. In most instances the agency heads (addressees of the formal requests for coordination) referred the request to staff for analysis. Almost without exception the staff involved also had been serving on the Susitna Hydroelectric Project Steering Committee. Largely due to this relationship, the individual agency staff members elected to use the Steering Committee structure as a vehicle to discuss their formal coordination concerns. As a result of multiple interactions between the Steering Committee and the Power Authority, a number of issues have been clarified and options for agency response to the Acres request for formal coordination have been identified.

The Steering Committee has summarized its concerns as follows:

1. In some cases, the documentation of field study results is not available coincident with the request for agency comment on aspects of the project.

2. There has been no decision made yet by the Power Authority, the State legislature and the administration as to whether there will be an application to the FERC for the construction of the project.

3. Some of the agencies are concerned about responding to bits and pieces of the proposed project without being able to evaluate the entire proposal.

To clarify the Power Authority intentions relative the request for formal coordination, it is appropriate to look to basic intentions and objectives. The present and proposed FERC regulations clearly encourage pre-application coordination; First, to assure that the project planning process has taken into account policies and guidelines of local, state and federal agencies, and second, to assure that the applicant has solicited agency comments and concerns and has attempted to address them. Specifically, the proposed FERC regulations (anticipated to be in effect by time of license application, July 1, 1982) require a request for formal coordination from agencies, provision of up to of sixty (60) days response time to those agencies, and inclusion of applicant response to agency formal comments in the license application. Therefore, one major purpose for the request currently circulating is to comply with FERC regulations.

The Power Authority is anxious to accommodate agencies and the Steering Committee in the decision process. We have demonstrated this in the past and wish to continue that policy. Our requests for formal coordination are very much intended to accommodate consideration of agency comments in the formulation of the project and in the decision process leading to the Power Authority project licensing recommendation. Clearly, our ability to use comments in this fashion is very much a function of when we receive them.

In response to regulatory requirements, and to our best judgement of when agency comment will be most productive we perforce must persist in our requests for formal coordination. We hasten to add, however, that we willingly accept interim comment, informal comment, or any other variant that gets the information to us in a timely fashion. Meanwhile, we will attempt to make available pertinent documentation of field studies as early as possible so as to assist your review.

I hope this summary assists you and your colleagues in deciding how to respond to our requests for formal coordination. If other facets to this action emerge, I would welcome an opportunity to further discuss them with you.

Sincerely,

FOR THE EXECUTIVE DIRECTOR

David D. Wozniak
Project Engineer

DDW/blm

cc: John Lawrewnce, Acres American, Buffalo

ALASKA POWER AUTHORITY

334 WEST 5th AVENUE - ANCHORAGE, ALASKA 99501

Phone: (907) 277-7641
(907) 276-0001

December 17, 1981

Mr. Al Carson
State of Alaska
Department of Natural Resources
323 E. 5th Avenue
Anchorage, Alaska 99501

Dear Al:

Just a quick note to advise you we will be meeting with the Cook Inlet Acquaculture Association on January 21, 1982, 5:30 p.m. in the Kenai Borough Building. This meeting will also be open to other special interest groups and the public, who will be notified via direct mailing and newspaper notices. We will be discussing the probable impact of the Susitna Hydroelectric Project to the anadromous populations.

You might want to pass this information to your colleagues on the Steering Committee. Your, as well as their, attendance would be welcome.

Sincerely,

FOR THE EXECUTIVE DIRECTOR

David D. Wozniak
Project Manager

DDW:mlj

cc: R. Mohn, APA
N. Blunck, APA
J. Lawrence, Acres

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF RESEARCH & DEVELOPMENT

JAY S. HAMMOND, GOVERNOR

Pouch 7-005
~~XXXXXXXXXXXXXX~~
ANCHORAGE, ALASKA ~~XXXXX~~ 99510
276-2653

January 14, 1982

Dave Wozniak
Project Manager
Alaska Power Authority
334 West 5th Avenue
Anchorage, AK 99501

Dear Dave:

Per our earlier discussion, this memo identifies the topics the Steering Committee members believe to be of mutual interest to Dr. Leopold and ourselves.

I want to emphasize that the Steering Committee members recognize that Dr. Leopold s role on the External Review Panel is oversight in nature. Thus, the Steering Committee members will be leading the discussion on the topics listed below. Our objective is to review what we believe to be the most important Susitna Hydro-related issues in Dr. Leopold's area of interest and expertise.

The issues and brief descriptions follows:

1. Fish and Wildlife Studies. Discussion of scope, timing and current status in relation to Susitna hydro feasibility decision making schedule.

2. Fish and Wildlife Mitigation. Current status and summary of mitigation Review Group meeting of 1/20/82 (I understand that Dr. Leopold will attend 1/20 meeting).

3. Instream Flow Studies. Relationship to mitigation, downstream impact assessments and power generation-related flow regimes.

4. Access to Proposed Dam Sites. Implications of route alternatives and public access on caribou, moose, and waterfowl.

5. External Review Panel's Role in the Future. What are plans, schedule, and products? Is it useful for Dr. Leopold and Steering Committee to continue a dialogue? If yes, at what frequency and level?

Sincerely,

Al Carson

Al Carson, Chairman
Susitna Hydro Steering Committee

cc: Steering Committee Members
Reed Stoops

November 24, 1981
P5700.11.92
T.1297

WILLETT
WITTE
BERRY
HAYDEN
LAMB
LAWRENCE
SINCLAIR
VANDENBURGH
CARLSON
FRETZ
JEX
LOWREY
SINGH
HUSTEAD
BOVE
CHASE

Mr. David Haas
Office of the Governor
Division of Policy Development and Planning
Pouch AW
Juneau, AK 99811

Dear Mr. Haas:

Susitna Hydroelectric Project
Formal Agency Coordination

copy

As discussed yesterday, I am enclosing a list of all people within state and federal agencies to whom we are sending Susitna Hydroelectric Project Reports. The list is keyed to explain who gets which reports. We are attempting to insure that each agency has the opportunity to review reports dealing with resources or issues for which it has jurisdiction.

If I can be of further help, please let me know.

Sincerely,

John D. Lawrence
Project Manager

JDL:dlp

Enclosure

xc: Alaska Power Authority

WILLETT
WITTE
BERRY

HAYDEN
LAMB
LAWRENCE
SINCLAIR
VANDERBURGH

CARLSON
FRETZ
JEX
LOWREY
SINGH

HUSTEAD
BOVE

CHASE

SUSITNA HYDROELECTRIC PROJECT
REPORTS CIRCULATED FOR FORMAL AGENCY COORDINATION

NAME	NUMBER KEY
Plan of Study	1
1980 Environmental Summary Report	2
1980 Fish Ecology Annual Report	3
1980 Plant Ecology Annual Report	4
1980 Big Game Annual Report	5
1980 Furbearer Annual Report	6
1980 Birds and Non-Game Mammal Annual Report	7
1980 Land Use Annual Report	8
1980 Socioeconomic Annual Report	9
1980 Cultural Resources Annual Report	10
Transmission Line Coeridor Screening Report	11
Development Selection Report	12
1981 Final Subtask Report	13
Draft Feasibility Report	14

	Reports sent/to be sent
Regional Administrator Region X U.S. Environmental Protection Agency 1200 South Avenue Seattle, WA 98101	1, 2, 11, 12, 13, 14
Col. Lee Nunn District Engineer U.S. Army Corps of Engineers Anchorage District P.O. Box 7002 Anchorage, Alaska 99510	1, 2, 11, 12, 13, 14
Mr. Keith Schreiner Regional Director, Region 7 U.S. Fish and Wildlife Service 1011 E. Tudor Road Anchorage, Alaska 99503	1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 14
Mr. Robert McVey Director, Alaska Region National Marine Fisheries Service NOAA P.O. Box 1668 Juneau, Alaska 99802	1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 14
Mr. John E. Cook Regional Director Alaska Office National Park Service 540 West Fifth Avenue Anchorage, Alaska 99501	1, 2, 9, 10, 11, 12, 13, 14
Mr. John Rego Bureau of Land Management 701-C Street Anchorage, Alaska 9950	1, 2, 8, 11, 12, 13, 14
Mr. Larry Wright National Park Service 1011 E. Tudor Road, Suite 297 Anchorage, Alaska 99503	1, 2, 11, 12, 13, 14
Ms. Judy Schwarz U.S. Environmental Protection Agency Mail Stop 443 Region X EPA 1200 South 6th Avenue Seattle, Washington 98101	1, 2, 11, 12, 13, 14
Mr. Ron Morris Director, Anchorage Field Office National Marine Fisheries Service 701 C Street Box 43 Anchorage, Alaska 99513	1, 2, 11, 12, 13, 14

	Reports sent/to be sent
Mr. Ronald O. Skoog Commissioner State of Alaska Department of Fish and Game Juneau, Alaska 99801	1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 14
Mr. Ernest W. Mueller Commissioner Alaska Department of Environmental Conservation Juneau, Alaska 99801	1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 14
Mr. Lee Wyatt Planning Director Matanuska-Susitna Barough Box B Palmer, Alaska 99811	1, 2, 11, 12, 13, 14
Mr. Tom Barnes Office of Coastal Management Division of Policy Development & Planning Pouch AP Juneau, Alaska 99811	1, 2, 11, 12, 13, 14
Mr. Roy Huhndorf Cook Inlet Region Corporation P.O. Drawer 4N Anchorage, Alaska 99509	1, 2, 8, 11, 12, 13, 14
Mr. Thomas Trent State of Alaska Department of Fish & Game 333 Raspberry Road Anchorage, Alaska 99502	1, 2, 11, 12, 13, 14
Mr. Bob Martin Alaska Department of Environmental Conservation 437 E. Street, 2nd Floor Anchorage, Alaska 99501	1, 2, 11, 12, 13, 14
Mr. Alan Carson Alaska Department of Natural Resources 323 East 4th Avenue Anchorage, Alaska 99501	1, 2, 11, 12, 13, 14
Ms. Lee McAnerney Commissioner Department of Community & Regional Affairs Pouch B Juneau, Alaska 99811	1, 2, 9, 11, 12, 13, 14
Mr. Robert Shaw State Historic Preservation Officer Alaska Department of Natural Resources Division of Parks 619 Warehouse Avenue, Suite 210 Anchorage, Alaska 99501	1, 2, 9, 10, 11, 12, 13, 14
Mr. John Katz Alaska Department of Natural Resources Pouch M Juneau, Alaska 99811	1, 2, 8, 11, 12, 13, 14

STATE OF ALASKA

OFFICE OF THE GOVERNOR

DIVISION OF POLICY DEVELOPMENT AND PLANNING
GOVERNMENTAL COORDINATION UNIT

JAY S. HAMMOND, Governor

POUCH AW (MS - 0165)
JUNEAU, ALASKA 99811
PHONE: (907) 465-3562

December 2, 1981

RECEIVED

DEC 7 1981

ACRES AMERICAN INCORPORATED

Mr. John D. Lawrence
Project Manager, Susitna Hydroelectric Project
Acres American Incorporated
The Liberty Bank Building, Main at Court
Buffalo, New York 14202

Dear Mr. Lawrence:

This letter should clarify a telephone conversation we had on November 23, 1981 and the role of this office in reviewing subsequent materials relating to the Susitna Hydroelectric Project.

Our office recently received copies of correspondence addressed to Tom Barnes, formerly of the Alaska Office of Coastal Management (OCM). We conduct Alaska Coastal Management Program (ACMP) consistency reviews for OCM as well as unified State responses on many major projects. Thus, OCM notified us of this correspondence. In this regard, we'd first like to inform you that Ms. Wendy Wolf has replaced Tom Barnes at OCM and will handle any future reviews of the Susitna proposal for OCM.

As for future reviews, we would like to receive a mailing list of all agencies contacted and a copy of the particular report. We would like to do an informational review of the feasibility study when it is available. We would expect that an Environmental Impact Statement (EIS) would also be prepared for this major project and that we would conduct an ACMP consistency review of it. If you do prepare such an EIS, we would like to coordinate the mailing of such document with you to simplify our review procedures. We would, of course, like to know if there won't be an EIS.

Please advise us if you can clarify any of the review process and if you have any questions.

Sincerely,

David W. Haas

David W. Haas
State-Federal Assistance Coordinator

cc: Eric Yould, APA

ALASKA POWER AUTHORITY
SUSITNA
FILE P5700 .11.92
SEQUENCE NO F.2159

ACTION	INFORM.	DISTRIB.	INITIAL
		DSW	
	✓	[illegible]	
		CWD	
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		DWL	
		MRV	
		HRC	
	✓	FILE	

December 9, 1981
P5700.11.92
T.1338

WILLETT
WITTE
BERRY
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LAWRENCE
SINCLAIR
VANDERGRIGH
CARLSON
FRETZ
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LOWREY
SINGH
HUSTEAD
BOVE
CHASE

Mr. David Haas
State-Federal Assistance Coordinator
State of Alaska
Office of the Governor
Division of Policy Development
and Planning
Pouch AW
Juneau, Alaska 99811

Dear Mr. Haas:

Susitna Hydroelectric Project
Formal Agency Coordination

This will hopefully address the issues raised in your letter of December 2, 1981.

1) We will send future correspondence to Ms. Wendy Wolf at the Alaska Office of Coastal Management. Thank you for notifying us of change in personnel.

2) We will send you copies of all future reports issued formally for agency review. My letter to you of November 24, 1981 listed all recipients and the reports they will receive.

3) This formal agency review process we are conducting is for several purposes. Although we have had many meetings with agency personnel, we have been informed their views do not necessarily represent those of their agencies. To insure concerns of the agencies are addressed and incorporated, where possible, into project planning and to receive agency input on the studies, we have implemented this formal process whereby project reports are sent to agency Commissioners and/or Directors. In addition, the Federal Energy Regulatory Commission requires documentation of agency input into project planning and mitigation.

4) The Feasibility Report will be issued by the Alaska Power Authority (APA). By copy of this letter, I will request you be placed on the distribution list.

5) The Environmental Impact Statement for this project will be prepared and issued by the Federal Agency Regulatory Commission, on the basis of a license application to be submitted by APA, should a decision be made to do so by the state. If you wish to coordinate mailing of this document, I suggest you contact Mr. Quentin Edson, Chief of the Environmental Division in Washington, D.C.

I hope this clarifies matters. Ifyyou have further questions, please call.

Sincerely,

John D. Lawrence
Project Manager

MMG/jmh

cc: E. Yould, APA

November 25, 1981
P5700.11.92
T.1301

WILLETT
WITTE
BERRY
HAYDEN 12/1
LAMB
LAWRENCE
SINCLAIR
VANDERBURGH
CARLSON
FRETZ
JEX
LOWREY
SINGH
E. Yould
HUSTEAD
BOVE
xc M Grubb done
xc P Hoover
CHASE

Mr. Tom Trent
Alaska Department of Fish and Game
2207 Spenard Road
Anchorage, AK 99503

Dear Mr. Trent:

Susitna Hydroelectric Project
Report Review

As you discussed with Michael Grubb on November 24, 1981, I am enclosing the following Susitna Hydroelectric Reports which were also sent to Mr. Skoog for ADF&G review and comment:

1. 1980 Environmental Summary Report
2. 1980 Big Game Annual Report
3. 1980 Fish Ecology Annual Report
4. 1980 Plant Ecology Annual Report
5. 1980 Furbearer Annual Report
6. 1980 Bird and Non-Game Annual Report

As you suggested we will in the future send reports both to Mr. Skoog and directly to you.

Sincerely,

John D. Lawrence
Project Manager

MMG:dlp

xc: E. Yould/APA
R. Skoog/ADF&G

Enclosures

RECEIVED
DEC 14 1981
ALASKA POWER AUTHORITY

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF RESEARCH & DEVELOPMENT

323 E. 4TH AVENUE
ANCHORAGE, ALASKA 99501

December 9, 1981

Eric Yould, Executive Director
Alaska Power Authority
333 West 4th Avenue, Suite 31
Anchorage, AK 99501

Dear Mr. Yould:

Several state and federal agencies in recent weeks have been asked to formally review and provide comments on several documents relating to the proposed Susitna Hydroelectric Project. Although the Susitna Hydroelectric Steering Committee is an organization that is designed to provide informal advice and comment on matters pertaining to the Susitna Hydroelectric Project, most of the steering committee members received the formal agency response request that was sent to the agency directors and commissioners by Acres. It is primarily because of that fact that the steering committee feels that it is appropriate and necessary to send a letter to you at this time with respect to the Alaska Power Authority's request for formal agency coordination and review on elements of the Susitna Hydroelectric Power Project.

As a result of concerns expressed by members of the steering committee, we convened a meeting on December 2, 1981 of the steering committee with Robert Mohn and Dave Wozniak of the Alaska Power Authority attending. At this steering committee meeting, we were provided with our first glimpse of how the Alaska Power Authority intends to conduct the formal consultation and coordination required for this project. The formal coordination process that is proposed in the August 12, 1981 Acres document to Eric Yould, subject, "Susitna Hydroelectric Project Formal Coordination Plan", is conceptually appropriate but incomplete and deficient. The following are problem areas in the proposed formal coordination plan as described above:

1. The formal coordination plan as proposed by Acres has not been formally or informally discussed and reviewed with the agencies from which the Power Authority requires responses. This is probably the most significant objection we have with the approach of Acres. The contractor sent letters to heads of state and federal agencies requesting specific comments on detailed studies and reports associated with the Susitna Hydroelectric Project without having a complete understanding of the responsibilities and concerns of agencies.

2. Some of the reports which agencies will be requested to formally respond to will not be preceeded by the relevant data and study findings from which the summary report and formal agency comments should be based. An obvious example is the review of the 1981 draft annual reports is required 2 months after the draft feasibility report review.

3. The proposed formal coordination plan, as described in the August 12, 1981, document from Acres to APA does not accurately describe all the parties and agencies who should receive certain documents.

The steering committee feels that the formal consultation process should proceed in a more coordinated and organized fashion in order to avoid unnecessary consequences caused by the problems we have identified above. We offer the following suggestions and comments:

1. We recommend that the APA, as soon as possible, convene a formal meeting with agencies to establish the schedule and the process for formal coordination for this project. In light of the proposal to have a complete draft feasibility plan available on March 15, 1982, we urge that the Power Authority convene this meeting and get this matter sorted out with the agencies before January 1, 1982.

2. The formal coordination list that will be used for this project needs to be reviewed and approved by agency representatives to ensure that it is complete and comprehensive. Attached to this letter please find a series of additions to the 8/12/81 Acres list.

3. Review of the proposed F.E.R.C. regulations in volume 46 number 219 of the Federal Register dated 11/23/81 identified a list of information categories to be included in Exhibit E. Comparing these requirements to the 9/12/81 proposed coordination plan, we find the following agency review categories missing:

   i) Socioeconomic studies

   ii) Alternative designs, locations and energy sources

   iii) Geological and soils studies

We agree with the APA approach of requesting early formal review and comments on policy related documents that are required in order to put the project proposal together. For example, the request for review of the fish and wildlife mitigation policy before the specific mitigation proposal for the project is submitted to agencies for review and comment.

In summary, the members of the steering committee found the proposed formal coordination plan to be revealing and useful to better understand how agencies will have to respond in order to meet the needs of APA. We are particularly encouraged to see that the instream flow study plan is planned to be available for review and comment by agencies in December of 1981. Since this is such a critical element of the Susitna Study Plan, this deserves attention and response from the agencies as soon as possible.

The steering committee hopes that you will find these comments and recommendations useful and constructive and is anxious to continue to provide informal review and advice to the Power Authority.

Sincerely yours,

Al Carson

Al Carson, Chairman
Susitna Hydroelectric Steering Committee

AC:db

cc: Steering Committee
Reed Stoops
Quentin Edson, Director, Division of Environmental Analysis, F.E.R.C.
A. Starker Leopold

12/9/81

Recommended additions to the 8/12/81 agency coordination list for Susitna Hydroelectric Project.

Water Quality and Use

Alaska DNR, DF & G
" DEC
U.S. Army, Corps of Engineers
" EPA, NPS
" F & WS, GS
" BLM, NMFS
AEIDC

Fish, Wildlife and Botanical

Alaska DF & G
" DEC
" DNR
U.S. F & WS, GS
" NMFS, EPA
" BLM
AEIDC

Historical and Archeological

Alaska DNR (SHPO), DF & G
" DCRA
U.S. NPS
" BLM
AEIDC

Recreation

Alaska DNR, DF & G
U.S. NPS
" F & WS, NMFS
Mat-Su Borough
AEIDC

Aesthetics and Land Use

Alaska DNR, DF & G
U.S. BLM, F & WS, NPS
CIRI
AEIDC

General

DPDP, OCM, Governor's Office

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1011 E. TUDOR RD.
ANCHORAGE, ALASKA 99503
(907) 276-3800

IN REPLY REFER TO:
WAES

RECEIVED
DEC 21 1981
ACRES AMERICAN INCORPORATED

15 DEC 1981

Mr. Eric Yould
Executive Director
Alaska Power Authority
333 W. 4th Avenue
Anchorage, Alaska 99501

Dear Mr. Yould:

The U.S. Fish and Wildlife Service (FWS) has been contacted by Acres American regarding formal coordination of certain aspects of the feasibility study for the Federal Energy Regulatory Commission (FERC) license application for the Susitna Hydroelectric Project. To date four document packets have been submitted to us for formal review. These are the 1980 Environmental Studies Annual Reports, Transmission Line Corridor Screening Report, Development Selection Report, and the Fish and Wildlife Mitigation Policy.

Initially, some confusion arose over these requests. In his letter of November 16, 1981, Mr. John D. Lawrence (Acres) identified the sources of confusion, explained which documents were to be reviewed and extended the comment period to 45 days. While we appreciate this clarification, we feel a more formal and explicit plan for formal coordination of the Susitna Project must be developed. Mr. David D. Wozniak of your staff addressed the Susitna Hydroelectric Steering Committee on this subject at their meeting of December 2, 1981, and presented the coordination plan developed by Acres (letter of August 12, 1981, from John D. Lawrence to Eric Yould). Mr. Wozniak's briefing was very beneficial to our understanding of this process; however, we feel it is important that the Alaska Power Authority (APA) understand the position of the FWS on this issue. The FERC regulations (Federal Register Vol. 46, No. 219, November 13, 1981) require a FERC license application to document coordination with federal resource agencies in the Exhibit E. These agencies must be afforded a minimum of 60 days for review and comment. As such we disagree with the 45-day comment period suggested by your contractor. Additionally, there are several deficiencies within the Acres coordination plan which concern us; the first of these being the fact that no formal discussion as to this coordination has occurred. Thus, the contractor arbitrarily decides which documents are of concern to a particular agency, and what level of coordination will take place. Formal contact should work to insure that all agency concerns and consultations are met so as to comply with the intentions of the FERC regulations. With the exception of certain policy statements (e.g. Mitigation), the Acres plan calls for formal agency input before necessary background reports and data are available. An obvious example of this is found in the formal coordination plan-product list

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(attached to the aforementioned letter dated August 12, 1981) where the Draft Feasibility Report will be released for agency review two months prior to release of the 1981 Annual Reports. It is unrealistic to assume that meaningful comment can be generated in the absence of such information.

We believe a meeting should be arranged by your office to define the objectives of the required coordination and to develop a plan suitable to both the APA and the federal resource agencies. In the interim we wil attempt to respond in a timely manner to all appropriate project documents, but will withhold comment on those documents which must be supported or clarified by the results of other studies.

Sincerely,

John A. Morrison

Acting Assistant Regional Director

cc: FWS/ROES, WAES
Quentin Edson, Director, Div. of Env. Analysis, FERC
NMFS, EPA, NPS, BLM, USGS, ADEC, ADF&G
Carson/ADNR
Lawrence/Acres American

STATE OF ALASKA

DEPT. OF ENVIRONMENTAL CONSERVATION

JAY S. HAMMOND, GOVERNOR

POUCH O – JUNEAU 99811

December 21, 1981

Mr. Eric P. Yould
Executive Director
Alaska Power Authority
334 West 5th Avenue
Anchorage, AK 99501

Dear Eric:

The Department of Environmental Conservation has been contacted by Acres American requesting formal coordination and review on five Susitna Hydroelectric Project documents. These requests were received in October and November, 1981. There apparently is some confusion as to what exactly was being requested. In his letter of November 16, 1981, Mr. John D. Lawrence of Acres clarified the situation and extended the review period to 45 days. On December 2, 1981, the Susitna Hydroelectric Steering Committee met with Mr. Dave Wozniak of your staff. Dave presented the Acres coordination plan. This document, plus Dave Wozniak's briefing, provided a clearer understanding of what we must do to be responsive to the needs of APA for the Susitna project.

As noted by the steering committee's letter to you on December 9, 1981, there are several problem areas with the formal coordination process outlined by Acres. We are particularly concerned that DEC was not included in the water quality and use group. Since DEC sets State Water Quality Standards and regulates water quality throughout Alaska, I feel our inclusion on the water quality review group is necessary.

Review of the coordination plan leads me to recommend that it would be useful for APA and the appropriate agencies to design a single continuing process for review and comment on the Susitna Hydroelectric Project. Since we are dealing with a State-sponsored project, I believe it is appropriate and timely that the State agencies and APA also determine the funding and personnel needed for these efforts. Our contacts for this matter are Bob Martin or Steve Zrake of our Anchorage Regional Office. They can be reached by phone at 274-2533.

Sincerely,

Ernst W. Mueller
Commissioner

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 1668
Juneau, Alaska 99802

December 23 , 1981

Mr. Eric Yould, Executive Director
Alaska Power Authority
333 W. 4th Avenue
Anchorage, Alaska 99501

Dear Mr. Yould:

The National Marine Fisheries Service has been contacted by ACRES American regarding formal coordination of certain aspects of the feasibility study for the Federal Energy Regulatory Commission (FERC) license application of the Susitna Hydroelectric Project. To date four (4) documents have been submitted to us for formal review. These are the 1980 Annual Reports, Transmission Line Corridor Screening Report, Development Selection Report and the Fish and Wildlife Mitigation Policy.

Initially, some confusion arose over these requests. In his letter of November 16, 1981, Mr. John D. Lawrence (ACRES) identified the sources of confusion, explained which documents were to be reviewed and extended the comment period to 45 days. While we appreciate this clarification, we feel a more formal and explicit plan for formal coordination of the Susitna Project must be developed. Mr. David Wozniak of your staff addressed the Susitna Hydroelectric Steering Committee on this subject at their meeting of December 2, 1981, and presented the coordination plan developed by ACRES (letter of August 12, 1981, from John D. Lawrence to Eric Yould). Mr. Wozniak's briefing was very beneficial to our understanding of this process, however we feel it is important that the Alaska Power Authority understands the position of the NMFS on this issue. The FERC regulations require a FERC license application to document coordination with concerned federal agencies under Exhibit E. Agencies must be afforded a minimum of 60 days for review and comment. 18 CFR §4.41(f) (46 FR 55926, 55937; November 13, 1981). We interpret this requirement to apply to each document submitted to us for consultation, including in particular the drafts of Exhibit E and the license application itself. Moreover, we expect that while there may be documents which can be reviewed by us in less than 60 days, there are very likely going to be instances where we will need more time than that in order to perform a thorough review.

One reason we expect to be accorded longer than 60 days for consultation in some instances, is that formal agency input is often to be solicited before necessary background reports and

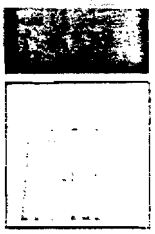
data are available. An obvious example of this is found in the formal coordination plan-product list, where the Draft Feasibility Report will be released for agency review two months prior to release of the 1981 Annual Reports. It is unrealistic to assume that meaningful comment can be generated in the absence of such information.

We are also concerned about another apparent deficiency in the proposed coordination plan. The decisions as to how coordination is to proceed are left to the contractor, who has discretion to decide which documents are of concern to a particular agency, and what level of coordination will take place. This approach has the potential for having the concerns of some agencies overlooked, and we would urge that the contractor make a special effort to insure that the consultations are as inclusive as possible.

We believe a meeting should be arranged by your office to define the objectives of the required coordination and to develop a plan suitable to both the APA and the federal resource agencies. In the interim we will attempt to respond in a timely manner to all appropriate project documents, but will withhold comment on those documents which must be supported or clarified by the results of other studies.

Sincerely,

Robert W. McVey
Director, Alaska Region



January 8, 1982
P5700.11.92
T1415

Mr. Ernest W. Mueller
Commissioner
Alaska Department of Environmental Conservation
Juneau, Alaska 99801

Susitna Hydroelectric Project
Formal Agency Coordination Program

Dear Mr. Mueller:

As you are aware, Acres American has, on behalf of the Alaska Power Authority, instituted a Formal Agency Coordination Program for the Susitna Hydroelectric Project. This program has apparently resulted in some confusion among various agencies as to its intent and scope.

To resolve this, a meeting has been arranged for 10:00 a.m. on January 21, 1982, at the office of the Alaska Power Authority, 334 West 5th Avenue, Anchorage. The purpose of this meeting will be to explain the rationale, intent, scope, and regulatory requirements for this program.

If you feel you could benefit from this meeting, your attendance is welcome.

Sincerely yours,

John D. Lawrence
Project Manager

MMG/jgk

ACRES AMERICAN INCORPORATED

Consulting Engineers
The Liberty Bank Building Main at Court
Buffalo, New York 14202

Preceding Letter Sent To:

Mr. Ernest W. Mueller
Commissioner
Alaska Department of Environmental Conservation
Juneau, AK 99801

Mr. Robert Shaw
State Historic Preservation Officer
Alaska Department of Natural Resources
619 Warehouse Avenue
Anchorage, AK 99501

Mr. Ronald O. Skoog
Commissioner
Alaska Department of Fish and Game
Juneau, AK 99801

Mr. Robert McVey
National Marine Fisheries Service
P.O. Box 1668
Juneau, AK 99802

Mr. Keith Schreiner
Regional Director
U.S. Fish and Wildlife Service
1011 E. Tudor Road
Anchorage, AK 99503

Colonel Lee Nunn
U.S. Army Corps of Engineers
P.O. Box 7002
Anchorage, AK 99510

Regional Adminstrator
U.S. Environmental Protection Agency
1200 South Avenue
Seattle, WA 98101

Mr. John Rego
U.S. Bureau of Land Management
701 C Street
Anchorage, AK 99501

APPENDIX E11B

CORRESPONDENCE RELATING TO PLAN OF STUDY

APPENDIX 11.B

PLAN OF STUDY

The Plan of Study was circulated for review in March 1980 with public and agency meetings being held in April 1980. The Plan of Study was further discussed with the Steering Committee in September 1980 with Environmental Procedure Manuals being circulated for review in October 1980. Comments on the Plan of Study and Procedure Manuals were subsequently received and responded to.

This appendix contains correspondence from APA to the agencies and their responses concerning the Plan of Study and Procedure Manuals. APA's response to these comments are included.

Correspondence is presented primarily in chronological order. However, in some cases, a response to a letter directly follows the letter to facilitate an understanding of the flow of communication. This results in an interruption in the chronological sequence.

August 21, 1980
P5700.11
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RECEIVED

ALASKA POWER AUTHORITY

Alaska Power Authority
333 West 4th Avenue
Suite 31
Anchorage, Alaska 99503

Attention: Eric Yould

Dear Eric:

Susitna Hydroelectric Project
Distribution of TES Procedures
Manuals

Enclosed please find copies of the TES Procedure Manuals as requested by yourselves and the Susitna Steering Committee. A distribution list is attached.

Since Mr. Al Carson, Chairman of the Steering Committee is out of town until August 27, the distribution list for the committee is based on the key contact list as supplied by Don Baxter on July 18, 1980. Please advise if any changes are made in distribution.

Sincerely,

J. D. Lawrence
Project Manager

KY:pg
Enclosures

DISTRIBUTION:

Copies of all procedure manuals to:

APA - E. Yould, R. Mohn

USF&W - Don McKay

DEC - Dave Sturdevant

ADF&G - Tom Trent

ADNR - Al Carson

BLM - John Rego

AEIDC - Chuck Evans

Copies of Fisheries Manual:

NMFS - Brad Smith

Copies of Manuals for Subtasks 7.05, 7.06, 7.07 & 7.08:

HCRS - Larry Wright

MEMORANDUM State of Alaska

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RESEARCH & DEVELOPMENT

TO: SUSITNA HYDRO ELECTRIC
STEERING COMMITTEE MEMBERS
(See Distribution List)

DATE: September 4, 1980

FILE NO:

TELEPHONE NO: 279-5577

FROM: AL CARSON
Steering Committee Chairman

RECEIVED

SUBJECT: Summary of 7/17 and 18 Meetings and Review of Procedures Manuals

ALASKA POWER AUTHORITY

The purpose of this letter is two-fold:

1. To summarize the major points discussed in the July 17 & 18 meeting of the Susitna Hydro Electric Steering Committee.

2. To transmit to you copies of the Acres American contractor's field manuals which describe in detail how they will conduct studies during the 1980 and 1981 field season.

The first item of business on July 17 was discussions and decisions leading to the appointment of a chairman. Those in attendance agreed that Al Carson, Department of Natural Resources, would serve as chairman of the Steering Committee with Tom Trent, Department of Fish and Game, serving as Assistant Chairman. There were two representatives from the Federal Energy Regulatory Commission (FERC), Mr. Dean Shumway and Mark Robinson. A considerable amount of time was spent by Messrs. Shumway and Robertson explaining the role of FERC in the proposed Susitna Hydro Electric Project. The rest of the morning meeting was devoted to contractor briefings about the studies included under Task VII (environmental studies) for the Susitna plan of study. Two significant items were identified by this review. First, it was obvious from the comments from the agency representatives, contractors, and subcontractors present that the agencies were unable to provide a detailed critique of the plan of study. This is because the widely circulated plan of study did not have adequate detail regarding methodology, approach, or scope of the proposed studies to enable the reviewer to make reasoned or useful comments on these matters. Acres American and their subcontractors stated that this level of detail would be found in their yet to be published field manuals which describe in detail the work that the contractors will be doing in the 1980 and 1981 field seasons. The Steering Committee members will be provided with copies of these field manuals for their review when they are available. The significance of this is that the studies that are being accomplished under the Susitna plan of study for the field year of 1980 are being carried out without benefit of review, comments, or approval by the various state and federal agencies. Second, was a concern regarding how the socio-economic studies being conducted under the Susitna plan of study related to the fish

and game impact concerns identified by agency representatives. It was agreed that the Steering Committee will meet with the socio economic consultants to learn how these studies relate.

The meeting on July 18 was devoted exclusively to reviewing in detail and discussing the studies that are necessary in the FERC filing concerning fisheries, hydrology, and instream flow. The most significant issue which appeared from these discussions was the need to insure that mitigation for fish, wildlife and other environmental values are integrated into the project designs, etc. rather than being an add-on or appendage at a later date.

The second purpose of this letter concerns review of the field manuals. Accompanying to this letter you will find copies of the field manuals to be used by the Acres American subcontractors for carrying out various studies as discussed in a general way within the Susitna plan of study documents. Please carefully review these manuals giving proper emphasis to those studies which are included within your field of expertise and your agency's authority and responsibility. The intent is to have all the Steering Committee members review these manuals and forward your review comments to me. I will then synthesize these comments into a draft letter from the Steering Committee to APA. Then we will meet to review and finalize the letter. For the sake of convenience and saving time in synthesizing comments, please place your comments and concerns within the appropriate framework as discussed here: The review of the field manuals is intended to detail problems or concerns within the following six areas:

1. What is the appropriateness and utility of the studies, i.e., do the studies attempt to answer the questions that need answering in light of the proposed Susitna Dam?

2. The scope of the studies, i.e., is the methodology approach and techniques properly formulated to provide valid and germane answer(s) which will apply directly to the proposed Susitna Dam?

3. The study approach and methodology, i.e., does the approach and methodology discussed in the manuals result in findings and recommendations which are or will be scientifically valid?

4. How do the subtasks of the studies "hang together" to give a comprehensive picture of the impact of the project?

5. How do the various disciplines (e.g., fisheries, seismology, engineering, recreation) study findings and recommendations affect the other disciplines? The answer to this question will identify the hierarchy of values that will be attached to various components of the project when the "trade offs" decisions are made.

6. What other issues and concerns did you discover while reviewing these manuals that need the attention of the Steering Committee?

Please provide me your written review comments no later than close of business, Friday, September 26, 1980. If you have questions, comments or revisions on the matters discussed in this letter, please contact me at 279-5577.

cc: E. Yould, APA

Distribution List

Don McKay
U. S. Fish and Wildlife Service
733 W. 4th, Suite 101
Anchorage, AK 99501

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Alaska Dept. of Natural Resources
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Water Resources
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Brad Smith or Ron Morris
National Marine Fisheries Service
701 "C" Street, Box 43
Anchorage, AK 99513

ALASKA POWER AUTHORITY

September 8, 1980

Susitna Hydro Steering Committee
c/o Al Carson
Alaska Department of Natural Resources
323 East 4th Avenue
Anchorage, Alaska 99501

Dear Al:

Last week we forwarded to you for distribution to the Susitna Hydro Steering Committee, copies of the environmental procedures manuals applicable to POS Task 7, as prepared by Terrestrial Environmental Specialists, Inc. (TES). These manuals should answer many of the questions relating to the details of our Plan of Study. We would appreciate it if your committee would review and comment on these manuals at its earliest convenience. We will then prepare written responses to any comments received. If in following this process there are still outstanding questions that require detailed technical responses, we will be pleased to have the appropriate principal investigators make a presentation to your committee.

T.E.S. wishes to maintain positive control over these manuals, and we would like to facilitate that wish. The attached forms might be useful to you towards that goal.

Trusting this procedure meets with your approval.

Sincerely,

FOR THE EXECUTIVE DIRECTOR

Robert A. Mohn
Director of Engineering

cc: J. Lawrence
J. Gill

Enclosures: As stated

DW:et

CONCUR:

EPY:____

TJM:____

DW: ____

ALASKA POWER AUTHORITY
RECORD OF RECEIPT OF
ENVIRONMENTAL PROCEDURE MANUALS

COPIES ASSIGNED TO _____

SUBTASK	TITLE	COPY #
7.05	Socioeconomic Analysis	
7.06	Cultural Resources Investigation	
7.07	Land Use Analysis	
7.08	Recreation Planning	
7.10	Fish Ecology - Impact Assessment and Mitigation ...	
7.11	Wildlife Ecology - Furbearers	
7.11	Wildlife Ecology - Big Game Impact Assessment and Mitigation	
7.11	Wildlife Ecology - Birds and Non-Game Mammals	
7.12	Plant Ecology	
7.14	Access Road Analysis	

SUSITNA STEERING COMMITTEE

Record Of Distribution Of
Environmental Procedure Manuals

SUB-TASK	TITLE	COPY #	RECIPIENT	SUB-TASK	TITLE	COPY #	RECIPIENT
05	SOCIO-ECONOMIC ANALYSIS	10		7.11	WILDLIFE ECOLOGY -FURBEARERS	11	
		12				12	
		13				13	
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		16				15	
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07	LAND USE ANALYSIS	10		7.11	WILDLIFE ECOLOGY - BIRDS AND NON-GAME MAMMALS	11	
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		16				17	
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		21				21	
		22				22	
08	RECREATION PLANNING	10		7.12	PLANT ECOLOGY	13	
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		16				19	
		17				21	
		18				23	
		22				24	
10	FISH ECOL-OGY IMPACT ASSESSMENT AND MITIGATION PLANNING	11		7.14	ACCESS ROAD ANALYSIS	15	
		12				16	
		13				19	
		14				21	
		15				22	
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		17				24	
		18				25	
		19				26	

COPY 20 OF ALL MANUALS RETAINED BY ADA.

September 29, 1980

AN OPEN LETTER TO THE PUBLIC AT LARGE AND TO ALL INTERESTED AGENCIES AND ORGANIZATIONS

On February 4, 1980, Mr. Eric Yould, Executive Director of the Alaska Power Authority, prepared a forwarding letter introducing the detailed Plan of Study for the Susitna Hydroelectric Project. He noted at the time that the plan did not permanently fix the manner in which the proposed work would be accomplished and expressed his desires that your assistance would contribute to its steady improvement.

The Project Team has been heavily engaged during the past nine months in accomplishing the many tasks and subtasks which together will ultimately lead to the basis upon which the State of Alaska can make an informed decision as to whether it can or should proceed with the Susitna Hydroelectric Project. Construction of a camp was completed in April 1980 near the Watana dam site. Field crews have operated since then from the Watana Camp and from a number of other locations. Important information has been and continues to be collected. We know much more now about the geology, hydrology, seismology, environment, and especially about the concerns and interests of the public.

Even while the work has progressed, Eric Yould's prophetic desires have been realized. A number of important changes have been made to the plan. This volume documents the revisions and briefly describes their genesis. Once again, your careful review and comments would be very much appreciated. I sincerely hope you will take the time to address them to:

Ms. Nancy Blunck
Public Participation Officer
Alaska Power Authority
333 West 4th Avenue, Suite 31
Anchorage, Alaska 99501

On behalf of the entire Project Team, I want to express our appreciation for the strong interest you have expressed to date. With your assistance, the revised plan will continue to be a dynamic document.

Sincerely,

John D. Lawrence
Project Manager

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF RESEARCH & DEVELOPMENT

323 E. 4TH AVENUE
ANCHORAGE, ALASKA 99501

279-5577

November 21, 1980

Eric Yould
Executive Director
Alaska Power Authority
333 W. 4th Avenue, Suite 31
Anchorage, AK 99501

Dear Mr. Yould:

The purpose of this letter is to provide you with the Susitna Hydro Steering Committee review comments regarding the procedures manuals which describe the Task 7 studies being done under the contract between APA and Acres American. As you know the Susitna Hydro Steering Committee is composed of representatives from state and federal agencies and the University of Alaska. Function of this committee is to provide coordinated exchanges of information between APA and the interested resource management agencies.

The Steering Committee met with representatives from Acres American and its subcontractors on July 17 and 18, 1980. The purpose of this meeting was to review the environmental studies portion of the contract with Acres American and their subcontractors. It soon became apparent that the subcontractors were unable to provide the Steering Committee members with an adequate level of detail concerning the scope and methodology which would be used to carry these studies out. The Acres American representative stated that the level of detail that we were looking for would be found in their yet to be published procedures manuals. We agreed that it would be appropriate for Acres American to provide copies of these procedures manuals to members of the Steering Committee for their review and comments. The following procedures manuals were provided by Acres American for our review:

Subtask 7.05 Socioeconomic Analysis

Subtask 7.06 Cultural Resources Investigation

Subtask 7.07 Land Use Analysis

Subtask 7.08 Recreation Planning

Subtask 7.10 Fish Ecology Impact Assessment and Mitigation Planning

Subtask 7.11 Wildlife Ecology (Big Game Impact Assessment and Mitigation Planning, Fur Bearers, and Birds and Non-Game Mammals)

Subtask 7.12 Plant Ecology

Subtask 7.14 Access Road Analysis

The following agencies were provided copies of the procedures manuals and have responded with review comments: Alaska Department of Environmental Conservation, Alaska Department of Fish and Game, Alaska Department of Natural Resources, U.S. Geological Survey, National Marine Fishery Service, Heritage Conservation and Recreation Service, U.S. Fish and Wildlife Service, and the Arctic Environmental Information and Data Center. The following is a synthesis of the comments from these agencies. Appended to this letter are copies of the written comments which were received from those agencies identified above.

SUBTASK 7.05 SOCIOECONOMIC ANALYSIS

Review of the procedures manuals indicates that this study may not address the indirect but highly significant impact of construction and operation of the project on residents living in the region. The boom that occurred during the construction of the Trans-Alaska Oil Pipeline (TAPS) gives us an insight into the sorts of impacts that may be expected. For example, traffic congestion, strip development of small communities, stores out of necessary goods and materials because of accelerated demand by construction. In order that the socioeconomic impact studies may be more comprehensive and address these sorts of impacts we make the following seven recommendations:

1. Local and regional recreational facilities and opportunities should be assessed to determine the ability of those facilities to handle additional users in light of increased demand.

2. The study should address the probability of additional industrialization of the region as a result of power from the project. Then the study needs to assess the impacts and socioecomomic implications of industrialization scenarios that would be driven by this project.

3. The study should address the cost and availability of products and services. This should also address the inflationary impacts that are usually associated with a boom type cyclical expansion such as construction of a project of this magnitude may cause.

4. The study should address the cultural opportunities and how they may be affected in both positive and negative ways by the proposed project.

5. The study needs to address the implications of the project on a composition of the people who live in the region. An obvious first step would be to establish baseline survey data in the preconstruction era so that we know what the population composition is in this area before construction begins.

6. An assessment of the changes in the sociopolitical structure of the region that could be expected result from the change in the economy as a result of construction an operation and subsequent developments that would be driven by this project.

7. The analysis does not address the impacts of the project on users of fish and wildlife resources. I refer you here specifically to memos included in the Department of Fish and Game review submittal which indicate that Acres and others deemed it inappropriate for the Department of Fish and Game to carry these studies out. However, in our review of all the studies identified above we find that neither Acres American nor any of other of the sub-contractors have included this important issue in their plan of work. The scope of the analysis does not include any work designed to mitigate the project impacts on fish and wildlife.

SUBTASK 7.06 CULTURAL RESOURCES INVESTIGATION

Although this study was not formatted or laid out in a way similar to the others the review comments indicate that the approach in the scope and methodology proposed is appropriate and sufficient for the task at hand.

SUBTASK 7.07 LAND USE ANALYSIS

The following comments were made:

1. The scope of the land use analysis needs to be expanded so that the downstream impacts all the way to salt water are adequately addressed. As an example of a downstream impact which is not included but needs to be addressed is the issue of navigability on the Susitna River below the proposed dam.

2. There is no apparent linkage or coordination between the land use analysis and the socioeconomic and recreational studies.

3. APA should seriously reconsider the decision that has been made to delay future land use analysis. The contractors state that data from other disciplines may be needed to "fine tune" this study. However, we can assume most of these values or issues and get on with one of the most critical studies that could provide data to be used in making the decision as to whether Susitna should be built or not. It is recommended that APA consider the use of scenarios to describe future land use with and without the project.

A recommended way to begin addressing downstream impacts is to become informed about the work currently being done in this area by local, state, and federal agencies. This will help to eliminate any duplication of work. Once APA is aware of what studies agencies have done the APA contractors can be tasked to synthesize the existing studies and complete only additional studies needed to complete the scenarios.

SUBTASK 7.08 RECREATION PLANNING

1. Scope of the recreation planning appears to be incomplete. The total thrust of the study appears to focus on recreational opportunities in the impoundment area with the obvious underlying assumption that Susitna Dam will be built. What is absent is any sort of assessment of the proposed project impacts on existing recreation navigation and land use in the river valley above, within, and below the proposed project. There is no question that we have to carefully plan for reservoir recreation development assuming there is a project. It is also obvious that the compelling need that needs to be met today is a valid and accurate determination of existing recreational values so that this decision can be factored into the ultimate decision as to whether Susitna should be built or not. An equally important result would be identification of those values for mitigation which will be required if the project is built.

2. This study needs to include a documentation of the flowing water resources and uses that would be impacted by the project.

3. This study needs to document the existing upstream uses of Susitna.

SUBTASK 7.10 FISH ECOLOGY IMPACT ASSESSMENT AND MITIGATION PLANNING

1. It is acknowledged that none of the reviewers had a comprehensive picture of how this task will be carried out. The reason is the Department of Fish and Game will be actually doing much of this work as a subcontractor to Acres American and has not had the staff or the resources necessary to put together its procedures manual for this facet of the work. The comments given below should be qualified with acknowledgement of this fact.

2. The contractors need to broaden their scope of mitigation concepts tha are included in the studies. There are other options available for mitigation planning above and beyond what is included in the procedures manual as it is now written. I refer you to the detailed comments made by ADF&G.

3. We recommend that an assessment of effectiveness of mitigation used on other projects to reduce impacts also be studied before we determine what sorts of mitigation techniques will be applied to the proposed Susitna project. The reason for recommending this is to enhance the probability that the mitigation we apply to the Susitna project will be successful.

4. Table 2 should be amended to identify the issue of the effect of the project on rearing, fish passage and egg incubation in the Susitna River from its mouth upstream to the proposed dam site.

5. The mitigation alternatives should include a cost benefit analysis in phase 2.

6. There is a lack of adequate participation by resource management agencies in the impact assessment or mitigation planning as proposed in this procedures manual.

7. The water quality subtask within this study needs further review regarding the extent of data required and details about timing of the data collection.

SUBTASK 7.11 WILDLIFE ECOLOGY

A. Big Game Assessment and Mitigation Planning

1. This study does not describe the methodology that will be used for assessing impacts to be mitigated. The procedures manual discussion of formation of a mitigation team and a series of meetings and conferences as a methodology is inadequate.

2. The scope of mitigation concepts needs to be broadened in this study. The National Environmental Policy Act (NEPA) defines mitigation in five different ways:

   a. Avoiding impact all together by not taking a certain action of parts of an action.

   b. Minimizing impacts by limiting the degree or magnitude of the action and its implementation.

   c. Rectifiying the impact by repairing, rehabilitating, or restoring the effected environment.

   d. Reducing or limiting the impact over time by preservation and maintenance operations during the life of the action.

   e. Compensating for the impact by replacing or providing substitute resources for environments.

   Since the Sustina project will be subject to an environmental impact statement the Alaska Power Authority should assure that the contractors preparing the application adequately address all aspects of mitigation in order that the submittal will be adequate for the E.I.S.

B. Wildlife Ecology - Fur Bearers

1. Scope of these studies needs to be extended to salt water. The reason is the proposed Susitna hydropower project will have impacts all the way to salt water.

2. This manual does not acknowledge the need for mitigation for these living resources. It is recommended that the procedures manual be revised to reflect the need for mitigation for fur bearers.

3. The manual describes surveys which will be done only in the winter. The seasonality of this approach will result in certain data biases and lack of data for the intervening months.

4. The studies state that radio collaring of animals will be done. How will the radio collar data be used?

C. Wildlife Ecology - Birds and Non-game Mammals

1. The scope of these studies needs to extend to salt water.

2. The procedures manual fails to acknowledge the need for mitigation of birds and non-game animals. It is recommended that the procedures manuals be revised to reflect this need.

General comments on wildlife ecology procedures manuals.

There is a compelling need to integrate the wildlife and the plant ecology studies so that the end results are meaningful and useful to the decisions which will be made. Each of these study elements should apply appropriate quantitative methodologies to evaluate animal habitats. The methodology used may depend on the characteristics of the species or group of species they are dealing with. Whatever method is adopted, it must be biologically justifiable and provide a relative estimate of the habitat value per area unit for the study area.

SUBTASK 7.12 PLANT ECOLOGY

1. The scope of these studies needs to be expanded from the dam site all the way to salt water. The reason for this is that construction and operation of the dam will impact vegetation to that extent.

2. There needs to be a high level of integration and coordination between the plant ecology, hydrology, and the wildlife impact assessment studies. This is because a great part of the wildlife impact mitigation will be based on vegetation.

3. The definition of wetlands used for classifying habitats should be compatible with data already collected in the Susitna Basin by the cooperative study underway with DNR, ADF&G, and SCS. We recommend that the classification system developed by the U.S. Fish and Wildlife Service and described in "Classification of Wetlands and Deep Water Habitats of the United States" (FWS/OBS79/31) be considered as the wetland classification for these studies.

SUBTASK 7.14 ACCESS ROAD ANALYSIS

1. The analysis of alternatives does not indicate whether stream crossings will be reviewed to determine extent of icing and adverse environmental impact as a result of crossing these streams. Stream crossing and structures should be designed to avoid creating icing and erosion problems.

2. This analysis should include assessing the effects of an increase in fishing due to newly opened road access as part of its scope of work.

3. There is an obvious linkage between access roads for this project and land use/fish and wildlife studies. Review of the manuals does not indicate that the appropriate process or mechanism is in place to see that this occurs.

GENERAL COMMENTS

It is the consensus of the Steering Committee that each study task procedures manual should include two maps:

1. A map that delineates the boundaries of the specific study tasks described in the respective manual.

2. A second map delineating the overall study area, ie from the mouth of the Susitna River to the Denali Highway.

SUMMARY

In conclusion, the above comments should be considered as summary comments designed to flag the most significant and compelling issues which require correction or rectification in order to assure that the procedures and approaches used in the studies will yield the answers necessary to make the most informed and best decision regarding the proposed Susitna project. The Steering Committee members believe the most compelling need is for a well-conceived process to improve the linkage and coordination of the various studies. This is particularly true in several of these studies where one element is dependent upon findings of other studies. An example is the need for fisheries impact mitigation to be built upon the assessment of the existing fishery resources and the instream flow/hydrology studies. The recognition of the sequential nature of this process is lacking in the procedures manuals reviewed.

We also would like to emphasize the importance of the relationship between the ultimate design of the procedural manuals and a particular study product; that product being identification of and development of mitigation measures for the human and natural resources being studied. We have recommended several times above that mitigation be added or broadened in scope on a resource by resource basis. This concern is based on our collective experience in assessing the adequacy of the mitigative features of countless environmental statements; they are often very weak in this critical area. As the mitigation efforts may be a key to assessing the feasibility of this project and a key to the success of the environmental statement that may follow, we urge you to integrate "mitigation" into all systems designed to assess human and natural resource impacts.

Sincerely,

Al Carson

Al Carson
Chairman Susitna Hydro Steering Committee

cc: Steering Committee Members
Reed Stoops

MEMORANDUM

State of Alaska
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RESEARCH & DEVELOPMENT

TO: SUSITNA HYDRO ELECTRIC
STEERING COMMITTEE MEMBERS
(See Distribution List)

DATE: October 29, 1980

FILE NO.

TELEPHONE NO.

FROM: AL CARSON
Steering Committee Chairman

SUBJECT: November 5, 1980 Meeting

There will be a meeting of the Steering Committee at 8:30 A.M. on Wednesday, November 5, 1980 at the University of Alaska Anchorage Campus Center Executive Conference Room. The Campus Center is located approximately 3 blocks east of the corner of 36th Avenue and Lake Otis off Providence. Attached is a sketch showing the location of the conference room on the lower level.

The purpose of this meeting is:

(1) To finalize Steering Committee review comments on the procedures manuals used by ACRES and their contractors.

(2) To comment upon ACRES approach to identification of power alternatives in the railbelt. Attached please find a packet of information for your review before the meeting.

(3) To identify any other tasks or actions that the members of the steering committee wish.

The 8:30 A.M. to Noon session will be devoted to items 1 and 3. The 1:00 to 5:00 P.M. session will address item 2.

Please give this meeting your highest priority for 11/5/80. Your participation is vital if our effort is to be successful.

DISTRIBUTION LIST

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333 Raspberry Road
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Recreation Service
1011 E. Tudor Road, Suite 297
Anchorage, Alaska 99503

Brad Smith or Ron Morris
National Marine Fisheries Service
701 "C" Street, Box 43
Anchorage, Alaska 99513

Attachments

bcc: R. Stoops - R&D
D. Wozniak - A.P.A.

Susitna Hydro Steering Committee meeting 11/5/80 @ UAA

Name	Phone	Organization
Bob Lamke	271-4138	USGS-Anch.
Dave Sturdevant	465-2636	ADEC - JNU
LARRY WRIGHT	277-1666	HCRS
Jim THOMSON	"	"
MIKE KASTERIN	344-9661	BLM
PAT BECKLEY	344-9661	BLM
Floyd Hemlock	262-4111	CE Fairbanks
Tom McKay	271-4575	USFWS
Gary Stackhouse	276-3800	USFWS
BRAD SMITH	271-5006	NMFS
Tom Trent	276-4888	ADF&G
Chuck Burns	279-4523	AEIDC
DAVID D WOZNIAK	276-7641	APA
Bruce R. BEDARD	277-7642	APA
Karl Schneider	344-0541	ADF&G
Peg Wilson	274-3621	ACE
CHRISTOPHER ESTES	344-0541	ADF&G
Al Carson	279-5577	ADNR

ALASKA POWER AUTHORITY

November 26, 1980

Mr. John Lawrence
Attn: Kevin Young
Acres American, Inc.
900 Liberty Bank Building
Main @ Court
Buffalo, New York 14202

Dear Kevin:

Attached is the finished version of the Susitna Hydroelectric Steering Committee findings to the Task 7 Procedures Manuals. A working draft was presented to us during the November 5, 1980 meeting; this version incorporates comments made at that meeting. AS you will see, it differs from that working draft in minor detail only. Also attached are agency source documents, resources previously unavailable to us.

As I summarized to the Steering Committee at the November 5 meeting, the Power Authority considers the majority of the comments to be reasonable, helpful, and worthy of immediate incorporation. We accordingly solicit your positive approach to accommodation of the Steering committee comments and recommendations.

I suggest we very quickly address the acceptable recommendations and then move on to focus our energies on those that require detailed evaluation. To insure we are in agreement, I suggest you advise us on a point by point basis those comments you recommend accepting, with narrative as to method of incorporation. In separate correspondence, advise us of those comments for which you have reservations, and your recommendations thereto. In view of the fact that we have been privy to the Steering Committee thinking since early November, you should be able to do this well before the Christmas Holidays. Such a timetable will hopefully facilitate early resolution of all the comments in time for a report to the Steering Committee at their next convening.

Sincerely,

FOR THE EXECUTIVE DIRECTOR

David Wozniak
Project Engineer

Attachment: As noted

CONCUR

RAM

cc: J. Hayden, Acres Buffalo w/o attachment
J. Gill, Acres, Anchorage, w/o attachment
A. Carson, Department of Natural Resources, Anchorage, w/o attachment
Mark Robinson, FERC, 825 N. Capitol St., NE, Washington, D. C. 20426

MFR: Next convening tentatively scheduled for Februrary, 1981.

ALASKA POWER AUTHORITY

November 26, 1980

Mr. Al Carson
State of Alaska
Department of Natural Resources
323 E. 4th Avenue
Anchorage, Alaska 99501

Dear Al:

Thank you for your efforts in pulling together the Susitna Hydroelectric Steering Committee review of the Task 7 Procedures Manuals. I have formally forwarded the comments to Acres American, Inc., with instructions to act promptly on the recommendations. I anticipate the vast majority will be considered by the end of the year, with the remainder addressed shortly thereafter. I am planning on giving a report on their disposition at the next convening of the committee, which I am assuming will be in February, 1981.

Once again, thanks to you and your committee members.

Sincerely,

FOR THE EXECUTIVE DIRECTOR

David Wozniak
Project Engineer

cc: Don McKay
U. S. Fish & Wildlife Service
733 W. 4th Ave., Suite 101
Anchorage, Alaska 99501

Tom Trent
Alaska Department of Fish & Game
333 Raspberry Road
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CONCUR

RAM

Bob Lamke
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Brad Smith or Ron Morris
National Marine Fisheries Studies
701 "C" Street, Box 43
Anchorage, Alaska 99513

ALASKA POWER AUTHORITY

March 25, 1981

Mr. Al Carson
Chairman, Susitna Hydro
Steering Committee
Alaska Department of Natural Resources
323 East 4th Avenue
Anchorage, Alaska 99501

Dear Mr. Carson:

I regret that it has taken so long to react to the Steering Committee's suggestions on improving the Susitna hydroelectric project environmental plan of study. It took a number of months for Acres and its subcontractors to develop and transmit their set of responses and plan of action. The Power Authority received that transmittal on March 2, 1981. We have not been able to make any final decisions on scope changes, however, for two reasons. First, Acres has not yet provided the program modification suggestions in any detail of scope or cost. Secondly, the Power Authority has had to wait for other program components (such as Tasks 4 and 5) to be evaluated for necessary scope changes. It is only in reviewing the entire first year program that we can identify areas for improvement, assess their cost impact, evaluate their relative merit and established priorities among the myriad competing needs.

The Power Authority will have prepared its set of recommended scope changes and resultant supplementary budget request by April 3, 1981. It remains to be seen whether all, none or a portion of the supplemental funds will be forthcoming.

I have requested previously that you organize a Steering Committee meeting for either April 13, 14, or 15. At this meeting, we will present our proposed program modifications, which I trust you will find go a long way toward satisfying the Committee's concerns. In preparation for that meeting, I have attached a copy of the Acres response to the Steering Committee comments. The detailed recommendations, while not contained in the attachment, will be presented at the Steering Committee meeting.

Sincerely,

FOR THE EXECUTIVE DIRECTOR

Robert A. Mohn
Director of Engineering

Attachment: As stated

cc: Susitna Hydro Steering Committee Members
with attachment

In response to the Susitna Hydro Steering Committee's review of the TES procedure manuals we submit the following:

Introduction

We appreciate the time and effort expended by all the members of the Steering Committee in their review of our procedure manuals. In general our responses are directed towards each of the specific comments as presented in the sythesis prepared by Mr. Al Carson. Comments presented in the introduction and conclusion are addressed first. As appropriate our response to some comments are combined to present a clarification regarding subtask interactions.

General Comments

1) In defense of our subcontractors it was not our understanding that the purpose of July 17, 1980 meeting was to review the environmental studies but rather to compare the requirements of FERC to other federal and state government permitting agencies. In this context an overview of our environmental program was presented. We concur that in some of the more controversial areas i.e. socioeconomics, adequate study details were not available.

   The offer was then extended, and agreed to by the Steering Committee, that procedure manuals be made available for review.

2) As the Steering Committee have stated "the most compelling need is for a well-conceived process to improve linkage and coordination of the various studies." We concur that this is essential and have expended considerable effort in this direction. Some misunderstanding may have precipitated from the review of the procedure manuals as these manuals were prepared as practical subtask - specific documents designed for (1) exchange of program design details (2) control of adherence to the study program (3) and assurance of continuity in the event of changes in project personnel.

   Our coordination efforts will concentrate on the following areas:

   1) interaction among study participants
   2) informal interaction with government agencies to acquire insight into concerns and general policies
   3) formal interaction with government agencies to allow input and review of study design, development selection, project design and mitigation planning
   4) interaction with the public in the form of information supply and input into the decision making process

Documentation of coordination to date will be included in the environmental annual reports to be available in April 1981. In addition we have requested TES to prepare an outline of their coordination process which will be supplemented by Acres and supplied to the Steering Committee for review if desired.

3) An area of primary concern appears to be the extent of effort directed towards studying the Lower Susitna Basin between Talkeetna and Cook Inlet during the Phase I period.

Our approach to date as outlined under Subtask 3.10 of our POS is "to estimate the flow regime, sediment regime and morphological characteristics of the lower Susitna River under natural conditions and (prepare) a preliminary determination of morphological impacts which could result from flow regulation and sediment trapping at the Susitna Project." "A preliminary evaluation of the potential morphological changes, and impact on the river characteristics due to flow regulation will be made during the early part of 1981. If considered necessary at this stage, an expanded field data collection and study program aimed at evaluating impacts in more detail will be developed in conjunction with the DNR and presented for consideration to APA."

It is our opinion that the results of this study are necessary before the merits of any detailed downstream studies can be fully assessed.

It is obvious that we require a more comprehensive understanding of the resource agencies concerns, the reasons for these concerns and the study approach they would like us to adopt. To facilitate this TES during the month of March 1981 will contact the respective agencies directly, to discuss these and any other concerns that may exist.

7.05 Socioeconomic

Although major projects like the Trans-Alaska Oil Pipeline provide justification for the need of adequate preproject soicoeconomic analysis, care must be taken in making direct comparison as to the types of impacts associated with a large centralized project such as Susitna vs a transient type construction associated with a pipeline. Susitna should produce a relatively self contained, controlled, centralized work camp established for a 10 - 15 year period. For this reason a first step in our socioeconomic program, through a review of other similar type projects, is to identify the most probable types of impacts to be anticipated. Our studies will then concentrate on these areas of most probable impact.

We have, however, for some time been considering the need to advance some of the Phase II socioeconomic studies into Phase I. The extent of changes in scope and timing of our studies will be discussed in more detail with the Steering Committee and FERC following their review of these responses.

To present a clarification as to the comprehensiveness of our socioeconomic program a listing of categories and variables being incorporated into our socioeconomic profiles is attached (Exhibit 1). This listing is refered to in our response to the seven Steering Committee comments.

Comment 1:

> Local and regional recreational facilities and opportunities should be assessed to determine the ability of those facilities to handle additional users in light of increased demand.

Response:

> Recreational facilities will be addressed on two fronts within the context of the Socioeconomic Analysis during Phase I. Work Package 2 entails development of a detailed socioeconomic profile, the methodology for which is described on pages 7-10 in the Procedures Manual.
>
> "... The profiles will include...public facilities, availability, adequacy, and cost...". This includes public recreation facilities. To the extent applicable in Phase I, this analysis will address the "ability of those facilities" at local and regional levels to handle additional users" as suggested by the Steering Committee.
>
> Additionally, we have become aware of a special study currently underway by Mat-Su Borough, the results of which will be considered as an aid in our analysis. Recreational categories and variables to be investigated are shown in Section VIII Exhibit I.

Comment 2:

> The study should address the probability of additional industrialization of the region as a result of power from the project. Then the study needs to assess the impacts and socioeconomic implications of industrialization scenarios that would be driven by this project.

Response:

In our evaluation of the economic base we will be developing a profile of the major basic industry components. (Exhibit I section V) We will review potential incentives for industrial development created by stable energy availability and assess the socioeconomic implications of having these incentives materialize.

Comment 3:

The study should address the cost and availability of products and services. This should also address the inflationary impacts that are usually associated with a boom type cyclical expansion such as construction of a project of this magnitude may cause.

Response:

The availability of products will be addressed under the headings of wholesale trade, retail trade, services etc. as indicated in Exhibit I section V. The cost and relationship of cost to income will be addressed through our assessment of the Consumer Price Index, income and employment patterns (Exhibit I section VI).

Comment 4:

The study should address the cultural opportunities and how they may be affected in both positive and negative ways by the proposed project.

Response:

Our present study addresses cultural opportunities under the categories of:

1) Community organizations, social interaction, entertainment etc. (Exhibit I section II)
2) Public services - parks, recreation, libraries, education. (Exhibit I section IV)
3) Recreation - Exhibit I section IV)

We do appreciate, however, through your comments and comments from the general public that cultural aspects, especially at the local level, are not being fully addressed. We are preparing the details of a program to respond to this and will present it to the Steering Committee an outline of our scope as soon as it is available.

Comment 5:

The study needs to address the implications of the project on a composition of the people who live in the region. An obvious first step would be to establish baseline survey data in the preconstruction era so that we know what the population composition is in this area before construction begins.

Response:

As stated in the procedure manual, a purpose of Phase I socioeconomic studies is to "identify and describe the existing socioeconomic conditions and to determine which are most likely to be impacted by the Susitna Hydroelectric Project". Sections I and II of Exhibit I identify the categories for which secondary data on the composition of the people who live in the region will be collected. The adequacy of this data base will be reviewed prior to making any decisions regarding program modifications.

Comment 6:

An assessment of the changes in the sociopolitical structure of the region that could be expected (to) result from the change in the economy as a result of construction...(and) operation and subsequent developments that would be driven by this project.

Response:

Our study efforts are directed towards an assessment of the socioeconomic changes that could result from the project. In this context we will be assessing impacts on local government services, revenues and expenditures. In our opinion, however, an assessment as to changes in the sociopolitical structure of the region resulting from these socioeconomic changes would be very speculative, not cost effective and beyond the requirements for a license application.

Comment 7:

(a) The analysis does not address the impacts of the project on users of fish and wildlife resources.
(b) I refer you here specifically to memos included in the Department of Fish and Game review submittal which indicate that Acres and others deemed it inappropriate for the Department of Fish and Game to carry these studies out.
(c) However, in our review of all the studies identified above we find that neither Acres American nor any of other of (sic) the subcontractors have included this important issue in their plan of work.
(d) The scope of the analysis does not include any work designed to mitigate the project impacts on fish and wildlife.

Response:

(1) Due to the sequential nature of our studies the analysis of the impacts of the project on users of fish and wildlife resources cannot be accomplished until the impacts on the resources themselves have been identified. As indicated in the procedure manual, work packages 8 and 9 dealing with these topics will be performed in detail during Phase II.

(2) We did deem it inappropriate that ADF&G, or any other permitting agency conduct the impact assessment and mitigation planning components of our study. To do otherwise would have compromised the legitimacy of agency objectivity during license review. However under all the components of our study we intend to provide a format for review and consideration of all potential concerns from appropriate State and Federal agencies

(3) Refer to response 1.

(4) Fish and wildlife mitigation is not considered as a socioeconomic component of our study but is addressed in detail under Subtasks 7:10 and 7:11 as indicated in the procedure manuals.

Subtask 7.06 Cultural Resources Investigation

Comment:

Although this study was not formatted or laid out in a way similar to the others the review comments indicate that the approach in the scope and methodology proposed is appropriate and sufficient for the task at hand.

Response:

No comment.

Subtask 7.07 Land Use Analysis

Comment 1:

(a) The scope of the land use analysis needs to be expanded so that the downstream impacts all the way to salt water are adequately addressed.

(b) As an example of a downstream impact which is not included but needs to be addressed is the issue of navigability on the Susitna River below the proposed dam.

Response:

(a) As stated in our procedure manual our study area for land use is concentrated in the Upper Susitna Basin and extends downstream as far as Gold Creek. In our opinion the majority of land use impacts directly related to a Susitna development will occur in this area. Certain land use components outside this study area are being addressed as part of our socioeconomic, fisheries and wildlife studies.

(b) As you are aware concern has been raised regarding recreational navigation, and riverine based recreational/land use activities in the section of the river between Talkeetna and Cook Inlet. We are in the process of assessing these concerns and foresee the possibility as an extension to our fisheries and hydrology studies a program to identify: 1) access to the river by water, air and land and 2) movement within the river itself. Any such study would provide input into the land use, recreation, socioeconomic and fish/wildlife resource utilization components of our study. The details of any such program modification will be submitted to the Steering committee for review as soon as available.

Comment 2:

There is no apparent linkage or coordination between the land use analysis and the socioeconomic and recreational studies.

Response:

There is a definite linkage and coordination between land use, socio-economic, recreation, hydrology, and fish and wildlife components of our study. Although this coordination exists at the study team level it is obvious that a lack of communication does exist between the study team and the resource agencies.

Throughout the remainder of the Susitna studies we will be exerting considerable effort to bridge this gap and will be soliciting your advice on means of establishing efficient avenues of communication.

Comment 3:

APA should seriously reconsider the decision that has been made to delay future land use analysis. The contractors state that data from other disciplines may be needed to "fine tune" this study. However, we can assume most of these values or issues and get on with one of the most critical studies that could provide data to be used in making the decision as to whether Susitna should be built or not. It is recommended that APA consider the use of scenarios to describe future land use with and without the project. A recommended way to begin addressing down-stream impacts is to become informed about the work currently being done in this area by local, state, and federal agencies. This will help to eliminate any duplication of work. Once APA is aware of what studies agencies have done the APA contractors can be tasked to synethesize the existing studies and complete only additional studies needed to complete the scenarios.

Response:

We accept the Steering Committee's recommendation that we review and synthesize the information available from existing studies being conducted by local, state and federal agencies. This has been accomplished to some extent by our socioeconomic, land use and recreation consultants however, we will ensure, through additional contact, that all available information has been acquired. Once obtained we will assess the applicability of these studies to the Susitna Project, incorporate the information into our studies as appropriate and determine if additional studies during Phase II are required.

We do, however, identify the need for a recognition of the differences in objectives and scope between a Susitna Project Environmental Assessment study and studies conducted by agencies under their mandate of overall Susitna Basin Resource Management.

Subtask 7.08 Recreation Planning

Comments:

1. Scope of the recreation planning appears to be incomplete. The total thrust of the study appears to focus on recreational opportunities in the impoundment area with the obvious underlying assumption that Susitna

Dam will be built. What is absent is any sort of assessment of the proposed project impacts on existing recreation navigation and land use in the river valley above, within, and below the proposed project. There is no question that we have to carefully plan for reservoir recreation development assuming there is a project. It is also obvious that the compelling need that needs to be met today is a valid and accurate determination of existing recreational values so that this decision can be factored into the ultimate decision as to whether Susitna should be built or not. An equally important result would be identification of those values for mitigation which will be required if the project is built.

2. This study needs to include a documentation or the flowing water resources and uses that would be impacted by the project.

3. This study needs to document the existing upstream uses of Susitna.

Response:

We have made a clear distinction between 1) FERC requirements for the development of a recreation plan within the project boundaries and 2) an overall assessment of recreation resources and impacts on these resources.

Subtask 7:08 responds directly to FERC requirements and is directed towards a reservoir recreation plan that would be implemented if a Susitna development is approved. Thus the study focus is on recreational opportunities in the impoundment and surrounding area and does assume that the plan would only be implemented if the Susitna dam is built.

The assessment of existing and planned recreation resources and programs and the impacts upon them are addressed under appropriate subtasks, specifically 7:07 - Land Use Analysis and 7:05 Socioeconomic.

Subtask 7:10 Fish Ecology Impact Assessment and Mitigation Planning

Comment 1:

It is acknowledged that none of the reviewers had a comprehensive picture of how this task will be carried out. The reason is the Department of Fish and Game will be actually doing much of this work as a subcontractor to Acres American and has not had the staff or the resources necessary to put together its procedures manual for this facet of the work. The comments given below should be qualified with acknowledgment of this fact.

Response:

ADF&G have made substantial progress in their fisheries data collection program. The present emphasis is to establish the basis of their program and to implement the field studies. Following this, detailed procedure manuals will be prepared and should be available for Steering Committee review by April 1981.

Comment 2:

The contractors need to broaden their scope of mitigation concepts that are included in the studies. There are other options available for mitigation planning above and beyond what is included in the Procedures Manual as it is now written. I refer you to the detailed comments made by ADF&G.

Response:

We view mitigation planning as a dynamic process and are prepared to consider any additional options available. As a means of obtaining agency input and review we plan to establish a fisheries mitigation task force similar to that organized under Subtask 7.11.

Comment 3:

We recommend that an assessment of effectiveness of mitigation used on other projects to reduce impacts also be studied before we determine what sorts of mitigation techniques will be applied to the proposed Susitna project. The reason for recommending this is to enhance the probability that the mitigation we apply to the Susitna project will be successful.

Response:

The intent of our review and evaluation of mitigation measures used on other projects is to assess their effectiveness and to determine their applicability to the Susitna Project.

Comment 4:

Table 2 should be amended to identify the issue of the effect of the project on rearing, fish passage and egg incubation in the Susitna River from its mouth upstream to the proposed dam site.

Response:

It is our intent to address these issues and Table 2 will be ammended accordingly.

Comment 5:

The mitigation alternatives should include a cost benefit analysis in Phase II.

Response:

The costs associated with recommended mitigation will be identified in Phase I with actual cost-benefit analysis considered in Phase II.

Comment 6:

There is a lack of adequate participation by resource management agencies in the impact assessment or mitigation planning as proposed in this Procedures Manual.

Response:

See response to comment 2.

Comment 7:

The water quality subtask within this study needs further review regarding the extent of data required and details about timing of the data collection.

Response:

R&M Consultants has prepared a Procedures Manual for the water quality program. Review of this document may provide the required details about timing and data collection.

Subtask 7.11 Wildlife Ecology

A. Big Game Assessment and Mitigation Planning

Comment 1:

This study does not describe the methodology that will be used for assessing impacts to be mitigated. The Procedures Manual discussion of formation of a mitigation team and a series of meetings and conferences as a methodology is inadequate.

Response:

The methodology for impact assessment and mitigation was not developed in detail because it was believed that a more effective program could be prepared following the collection of data in 1980. Rather than develop more than a general approach, it was considered to be preferable first to gain an understanding of the relative population levels of various species and also identify critical habitat types. In this manner a detailed approach to impact assessment and mitigation will be prepared based on at least a preliminary understanding of the wildlife/habitat realtionships operative in the project area. The Procedures Manual will be amended as soon as approach details are finalized.

Comment 2:

The scope of mitigation concepts needs to be broadened in this study. The National Environmental Policy Act (NEPA) defines mitigation in five different ways:

a. Avoiding impact all together by not taking a certain action...(or) parts of an action.
b. Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
c. Rectifying the impact by repairing, rehabilitating, or restoring the...(affected) environment.
d. Reducing or limiting the impact over time by preservation and maintenance operations during the life of the action.
e. Compensating for the impact by replacing or providing substitute resources...(or) environments.

Since the Susitna project will be subject to an environmental impact statement the Alaska Power Authority should assure that the contractors preparing the application adequately address all aspects of mitigation in order that the submittal will be adequate for the E.I.S.

Response:

To date we have concentrated our mitigation efforts on approaches a) and b) (avoiding or minimizing impacts) through providing environmental input into development selection and preliminary design. This approach will be expanded to include approaches c, d and e following development selection.

8. Wildlife Ecology - Furbearers

Comment 1:

Scope of these studies needs to be extended to salt water. The reason is the proposed Susitna hydropower project will have impacts all the way to salt water.

Response:

The scope of the furbearer studies that concern aquatic furbearers (e.g. muskrats, beaver, and river otters) have already been extended on a limited basis downstream to the Delta Islands. At the present time there does not appear to be justification for extending the study effort any further downstream. Should the results of Phase I indicate that further extension is in order, it will be proposed for Phase II.

Comment 2:

This manual does not acknowledge the need for mitigation for these living resources. It is recommended that the Procedures Manual be revised to reflect the need for mitigation for furbearers.

Response:

Although mitigation was not mentioned in the Procedures Manual, it will certainly be addressed in the furbearer studies. In order to strengthen the interdisciplinary coordination concerning mitigation, the Principal Investigator of the furbearer studies has been added to the mitigation task force as described in the Big Game Procedures Manual.

Comment 3:

The manual describes surveys which will be done only in the winter. The seasonality of this approach will result in certain data biases and lack of data for the intervening months.

Response:

As indicated on page 12 of the Furbearer Procedures Manual, field activities will be conducted throughout the year and are not restricted to the winter months. Some of the survey activities that are being conducted during the non-winter months include locating fox dens, collecting furbearer scats, and monitoring of radio-collared animals.

Comment 4:

The studies state that radio collaring of animals will be done. How will the radio collar data be used?

Response:

Radio telemetry data will be used to determine the home range size of key furbearers. This information, in conjunction with the vegetation maps, will enable the generation of an estimate of how many animals the area can normally support. The radio telemetry data are also being used to determine seasonal distribution and habitat utilization of key furbearers.

Note Concerning Furbearer Procedures Manual:

Since it was impossible, prior to the initiation of these studies, to establish specific techniques that would be highly effective in sampling the furbearers, many of the techniques outlined in the Procedures Manual have been modified following the first field season. An amendment to the furbearer manual will be produced in spring, 1981, and will reflect the refined approach that is now being used.

C. Wildlife Ecology - Birds and Non-game Mammals

Comment 1:

The scope of these studies needs to extend to salt water.

Response:

At the present time, bird and non-game mammal studies are being conducted as far downstream as Sherman. With the exception of a bald eagle nest survey, there are no studies planned for this discipline downstream of Talkeetna. Insufficient data exist to support the conclusion that major terrestrial impacts will take place downstream from Talkeetna. At the present time, the expenditure of funds to study birds and non-game mammals in this area does not appear warranted. Should the results of the Phase I hydrology studies indicate that major changes in terrestrial habitat are likely to occur, an intensive Phase II program will be implemented.

Comment 2:

The Procedures Manual fails to acknowledge the need for mitigation of birds and non-game animals. It is recommended that the Procedures Manuals be revised to reflect this need.

Response:

Although mitigation was not mentioned in the Procedures Manual, it will certainly be addressed in the birds and non-game mammal studies. In order to strengthen the interdisciplinary coordination concerning mitigation, the Principal Investigator for bird and non-game mammal studies has been added to the mitigation task force as described in the Big Game Procedures Manual.

General Comments on Wildlife Ecology Procedures Manuals

Comment:

There is a compelling need to integrate the wildlife and the plant ecology studies so that the end results are meaningful and useful to the decisions which will be made. Each of these study elements should apply appropriate quantitative methodologies to evaluate animal habitats. The methodology used may depend on the characteristics of the species or group of species they are dealing with. Whatever method is adopted, it must be biologically justifiable and provide a relative estimate of the habitat value per area unit for the study area.

Response:

The assessment of impacts will be based to a very large degree on project-related disturbance of wildlife habitat. Although the interrelationships between the plant ecology studies and the various wildlife studies were not emphasized in the Procedures Manuals, there has been, and will continue to be, a highly coordinated effort between Subtasks 7.11 and 7.12.

Subtask 7.12 Plant Ecology

Comment 1:

The scope of these studies needs to be expanded from the dam site all the way to salt water. The reason for this is that construction and operation of the dam will impact vegetation to that extent.

Response:

Under Phase I, the present intent is to extend certain of the plant ecology studies downstream to Delta Islands. The degree and extent of impact downstream, especially below Delta Islands, has not as yet been defined. The impact downstream will depend, to a considerable degree, on the facility design and hydrological information which is not currently available or not finalized. For this reason, it was initially decided that it would be best to wait until the extent of hydrologic impact is known below the Delta Islands, before specific vegetation studies are performed for this region. If studies are warranted below Delta Islands, then they would be proposed for Phase II.

Comment 2:

There needs to be a high level of integration and coordination between the plant ecology, hydrology, and the wildlife impact assessment studies. This is because a great part of the wildlife impact mitigation will be based on vegetation.

Response:

We agree that a high level of integration and coordination between the plant ecology, hydrology, and the wildlife impact assessment studies is needed. The need for this integration and coordination is stated in several places in the Plant Ecology Procedures Manual. There is a major section entitled "Input Required From Other Sources" in which subsections entitled "Hydrology" and "Wildlife Information" are included. The need for coordination among disciplines is also stated in several of the Wildlife Procedures Manuals and was discussed in detail under the response to the general comments under Subtask 7.11 Wildlife Ecology. In summary, we believe that the need for coordination has been recognized from the outset. We feel that we have fulfilled this need to date and plan to continue to do so throughout the study.

Comment 3:

The definition of wetlands used for classifying habitats should be compatible with data already collected in the Susitna Basin by the cooperative study underway with DNR, ADF&G, and SCS. We recommend that the classification system developed by the U.S. Fish and Wildlife Service and described in "Classification of Wetlands and Deep Water Service Habitats of the United States" (FWS/OBS79/31) be considered as the wetland classification for these studies.

Response:

The classification system developed by the USF&WS for wetlands and deepwater habitats will be used for the wetlands mapping effort. There has been some coordination with the SCS concerning wetlands and there are plans for additional coordination with ADF&G and DNR.

Subtask 7.14 Access Road Analysis

Comment 1:

The analysis of alternatives does not indicate whether stream crossings will be reviewed to determine extent of icing and adverse environmental impact as a result of crossing these streams. Stream crossing and structures should be designed to avoid creating icing and erosion problems.

Response:

Stream crossings are an important part of the access route environmental analysis and will definitely be considered in routing and later in impact and mitigation planning for the selected route. Included in impact assessment and mitigation planning will be analysis of designs to avoid potential ice dam problems during break-up, and associated erosion problems. Consideration will also be given to minimizing erosion problems. Consideration will also be given to minimizing impacts associated with actual construction of bridge facilities and culverts, i.e. habitat disturbance and erosion potential.

Comment 2:

This analysis should include assessing the effects of an increase in fishing due to newly opened road access as part of its scope of work.

Response:

The analysis will include assessing the effects of an increase in fishing due to newly opened road access. The potential impacts on the fish community and habitat from a biological standpoint will be addressed under Subtask 7.10, Fish Ecology Studies, and the recreational impacts or conditions resulting from increased access to this area will be handled under Subtask 7.07, Land Use Analysis. In like manner, other environmental subtasks (e.g. vegetation, cultural resources, wildlife) will deal with increased access as it affects these specific disciplines.

Comment 3:

There is an obvious linkage between access roads for this project and land use/fish and wildlife studies. Review of the manuals does not indicate that the approoriate process or mechanism is in place to see that this occurs.

Response:

Subtask 7.14 (Access Road Environmental Analysis) is essentially a coordination subtask for this specific project component since it has obviously far-reaching impacts. The Procedures Manual states that the actual analysis is to be done by Principal Investigators within each environmental subtask. A major coordination effort was felt to be necessary due to the interplay of roles between APA, Acres, R&M, TES, ADF&G and the various environmental subcontractors. To this end, correspondence exchange and maps and information exchange has occurred since April, 1980. In November, a meeting was held in Anchorage at which time representatives of APA, Acres, R&M, TES, ADF&G, and other environmental subcontractors discussed various alternative routes. Information exchange continues on a daily basis, and will continue through route selection and preparation of the FERC application.

General Comments

Comment:

It is the consensus of the Steering Committee that each study task Procedures Manual should include two maps:

1. A map that delineates the boundaries of the specific study tasks described in the respective manual.

2. A second map delineating the overall study area, i.e., from the mouth of the Susitna River to the Denali Highway.

Response:

1. Maps of specific study areas would certainly be useful. In several subtasks, part of the work performed during the first year was a determination of the appropriate study area. Such maps are thus planned for the 1980 Annual Reports and will be incorporated into the respective Procedures Manuals with the next required amendment to each manual.

2. A composite map showing the relationship of specific study areas will be presented in our summary annual report.

APPENDIX EXHIBIT 1
COMPREHENSIVE LIST OF
SOCIOECONOMIC CATEGORIES AND VARIABLES

I. POPULATION

A. Population levels

1. Historical
2. Present
3. Projected
4. Component of Change (births, deaths, in-out migration)

B. Ethnicity, Culture, Religion

C. Population Distribution (city, borough, state) by:

1. Age
2. Sex
3. Race
4. Occupation (general)
5. Education
   a. Retired, wage, salary
   b. Sector, activity
   c. Employment

D. Population Density

E. Family/Household Characteristics
1. Extent
2. Marital Status
3. Migration patterns
   a. mobility/stability
   b. point of origin
   c. out/in migration
4. Length of Residence
   a. in house
   b. in community
   c. in state
5. Place of work (commuting distance)

F. Attitudes Toward Change/Economic Development

G. Projections

[1] Each of these categories and variables will be addressed to the extent that data and information allow and to the extent that they are relevant for the purposes of this analysis

III. HOUSING

A. Historical Info (growth rate)

B. Type
   1. Single family
   2. Multi-family
   3. Mobile home
   4. Recreation Facilities
   5. Transient Facilities

   * Variables to be considered for above

      a. number of units
      b. quality
      c. cost/prices
      d. vacancy rate

C. Vacancy Rate

D. Status
   1. Renting
   2. Buying
   3. Own
   4. Other

E. Land availability

F. Zoning/Building Regulations (& patterns)

G. Financial Climate (incentives/disincentives)

H. Real Estate Activity
   1. Sales
   2. Construction
   3. Plans

I. Projections

IV. PUBLIC SERVICES & GOVERNMENT REVENUE

A. Government Structure/Organization
   1. Towns
   2. Cities
   3. Boroughs

B. Government Services
   1. Water Supply and Treatment
   2. Waste Water Treatment
   3. Solid Waste Disposal
   4. Police Protection
   5. Legal System (courts, retention facilities)
   6. Fire Protection
   7. Health Care (including Social Services)
   8. Parks and Recreation
   9. Libraries
   10. Education (day care, vocational, others)
   11. Public Transportation
   12. Roads and Highway System
   13. Telephone Service/Communication
   14. Electric Power Service

   * Variables to be considered for above

      a. Service area
      b. Usage figures
      c. Deployment patterns (distances/response times)
      d. Capacity figures
      e. Condition/quality
      f. Relevant standards
      g. Occurrence rates
      h. Plans for expansion
      i. Government expenditures

C. Tax Base and Revenues

   1. Taxes
      a. personal
         i. rates
         ii. base

      b. industry
         i. rates
         ii. base

      c. Sales
         i. rates
         ii. base

      d. other

IV. C. (cont.)

2. Other revenue sources
3. Government debt (borrowing capacity)

D. Projections

ECONOMIC BASE

A. General Description (History and Area Trends)

B. Total Work Force

C. Employment Multiplier

D. Output Multiplier

E. Major Basic Industry Description
   1. Construction
   2. Mining
   3. Agriculture
   4. Timber and related products
   5. Manufacturing
   6. Fishery
   7. Oil and gas
   8. Transportation
      i. Rail
      ii. Air
      iii. Motor transport
      iv. Marine
   9. Public Utilities
   10. Communications
   11. Wholesale trade
   12. Retail trade
   13. Finance, insurance, real estate
   14. Services
   15. Public Administration (Federal, State, Local)
   16. Tourism

   * Variables to be considered for above

      a. history
      b. statistics (present sales, prod., etc.)
      c. employment
         1. labor force
         2. percent of total work force
         3. payroll
         4. average wage rate
      d. resource base (land use)
      e. service area
      f. usage figures
      g. capacity
      h. condition/quality
      i. product value
      j. marketing patterns
      k. relative to state and U.S.
      l. future outlook

V. (cont.)

F. Conclusions

G. Projections

VI. HUMAN RESOURCES (Labor & Income)

A. Historical Labor Changes

B. Employment
   1. Present Profile (employment by sector)
      a. absolute
      b. percentage

   2. Multipliers
      a. basic industry to
      b. export trade sector
      c. services

   3. Length of work week

   4. Seasonality

C. Occupational Staffing Patterns by

   1. Sector/Industry
   2. Ethnicity
   3. Sex
   4. Unemployment
   5. Percentage of work force
   6. Wages (selected occupations)

D. Working Conditions and Absenteeism

E. Union Presence

F. Unemployment for Area
   1. Age
   2. Sex
   3. Race

G. Income
   1. History
   2. Per Capita Income
      a. General
      b. Sex
      c. Ethnicity
   3. Source
      a. Wages/salaries
      b. Social Security
   4. Subsistence income (moderate standard of living)
   5. Consumer Price Index (CPI)

H. Projections

VII. LAND USE

A. Historical/General

B. Land Tenure (ownership)

C. Existing
   1. Forestry
   2. Agriculture
   3. Mining
   4. Timber
   5. Native Lands
   6. Federal
   7. State
   8. Parks
   9. Oil and Gas
   10. Unexploited Natural Resources
   11. Industry/Commercial
   12. Urban
   13. Rural
   14. Residential
   15. Military
   16. Transportation

   * Variables to be considered for above

      a. acres
      b. value
      c. ownership
      d. management plans
      e. historical trends
      f. percentage of total

D. Population Density

E. Land Use Plans and Control
   1. Public
   2. Private
   3. Municipalities
   4. Borough
   5. Flood plains

F. Projections

VIII. RECREATION

A. Utilizing Fish & Wildlife Resources
   1. Sport Fishery

      a. All species
   2. Wildlife
      a. Caribou
      b. Moose
      c. Black Bear
      d. Brown Bear
      e. Mountain Goats
      f. Sheep
      g. Wolverine
      i. Waterfowl, Birds
      j. Other Furbearers

   * Variables to be considered for above
      1. Historical
      2. Present
         a. area (acres and location)
         b. effort (visitor days/# of visitors) -
         c. Success (harvest)
         d. Resident (pt. of origin/% of total)
         e. Non-Resident (gen. geo. pt. of origin/ % of total)
         f. Species (stats relative to State)
         g. Subsistence (personal consumption/ business)
         h. Trophy
         i. Management Plans
            i. Regulations
            ii. Revenues (total/relative to state/flow of money)
            iii. Enforcement (ways/numbers/capacity)

B. Not Related to Fish & Wildlife Reserves

   1. Water Sports (canoe, kayak, rafting)

      a. Historical
      b. Area
         1. effort
         2. resident/non-resident pt. of origin
   2. Land Sports (hiking, picnicing, climbing)
      a. Historical
      b. Area
         1. effort
         2. resident/non-resident pt. of origin

C. Other

VIII. (cont.)

D. Related Business
   1. Guides (#/$)
   2. Air Taxi Operators (#/$)
   3. Lodge Owners (#/$)
   4. Land Owners (#)

E. Projections

23 JUN 1980

Mr. Eric P. Yould
Executive Director
Alaska Power Authority
333 West 4th Avenue, Suite 31
Anchorage, Alaska 99501

Dear Mr. Yould:

This letter transmits to the Alaska Power Authority (APA) comments of the U.S. Fish and Wildlife Service (FWS) relative to fish and wildlife aspects of the Susitna Hydroelectric Feasibility Study. Our comments are based on a review of the February 1980 Plan of Study (POS) developed by Acres American, Inc., coordination with Acres, other federal and state resource agencies involved in the Susitna project, and field review of habitats of the project area potentially affected by a hydroelectric project.

Generally we believe that most of the environmental studies outlined in the February 1980 POS are adequate to obtain data from which to assess the impacts of a hydroelectric project on the Susitna River to fish and wildife resources. However, the studies outlined in the POS provide a general overview of goals and expected results. There is little reference to the specific methodologies of research design, specific timings of study initiation, methods of data analysis, and anticipated format of results. Consequently, we are unable to fully evaluate study plans. Apparently, more specific information is available in study-specific procedures manuals. Review of these manuals may clarify some of the concerns expressed herein. At this time, we formally request a copy of the procedures manuals for the fisheries, wildlife ecology, and plant ecology studies for our review.

Based on our review of the POS and discussions with Acres, we believe that the following deficiencies of the environmental studies require attention. The schedule for license application and submittal of an Exhibit S to the Federal Energy Regulatory Commission (FERC) does not allow sufficient time to include a rigorous evaluation of project impacts to fish and wildlife resources or preparation of a plan to mitigate and compensate impacts to those resources.

Although wildlife ecology studies are comprehensive in that they include avifauna and big game, furbearer, and nongame mammal investigations, much less emphasis is placed on obtaining data on nongame mammals and avifauna than selected game and furbearer species. In

addition, no mitigation plan, or study of these animals downstream from the damsite is mentioned in the POS. Discussions with representatives of Terrestrial Environmental Specialists (TES) indicate that they intend to develop mitigation plans for nongame wildlife and establish study areas downstream from the damsites. It is imperative that we review these tasks for adequacy. The National Environmental Policy Act (NEPA), Fish and Wildlife Coordination Act, and other guidelines require that impacts to all fish and wildlife resources be identified and mitigated. Furthermore, we believe that the assessment of project impacts be based on the overall value of habitats to endemic species which includes but is not solely dependent on population data.

Comments and questions specific to tasks described in the February 1980 POS follow:

Subtask 2.10 - Access Roads

- Please provide us a map of the alternative access routes as soon as available and indicate if the selected route(s) will be temporary or permanent.

Subtask 2.16 - Hydrographic Surveys

- Why are river profiles limited to Talkeetna and above? In order to establish background data to measure potential change in the river configuration and habitats downstream from Talkeetna, should profiles also be taken in this area in conjunction with data to be collected under Subtask 3.10?

Subtasks 6.09 and 6.10 - Establish Design Criteria for the Watana and Devil Canyon Development

- Are designs of potential mitigation structures included here?

Subtask 6.14 - Spillway Design Criteria

- Do these criteria include contingency measures to avoid water quality problems such as nitrogen supersaturation?

Task 7 - Environmental Studies

- Because the FWS is involved in a number of permitting and review functions relative to the Susitna Hydroelectric project, we would appreciate being kept informed of project progress. Thus, we are requesting copies of reports prepared for environmental disciplines (hydrology, fisheries, wildlife ecology, plant ecology, habitat analysis) as they are reviewed by APA.

Subtask 7.2 - Monitoring of Field Activities for Environmental Acceptability.

- Several study activities will potentially impact migratory birds including waterfowl and raptors. We suggest that the Acres or APA field representative contact the FWS to be certain that he is aware of data on bald eagle nesting locations, trumpeter swan nesting habitats, and other pertinent data. Also, we would like to be provided the opportunity to periodically monitor activities that may disturb raptors and other migratory birds. Therefore, we request a schedule of the timing and duration of study events that include activities that potentially disturb waterfowl and raptors. We are particularly concerned with survey and aerial photography activities requiring helicopter support.

Subtask 7.09 - Susitna Transmission Line Assessment

- Remote lakes in the Matanuska-Susitna Valley are utilized by trumpeter swans for nesting and rearing cygnets during summer and fall. Recent data indicate that continued development and disturbance on lakes used for nesting is causing birds to abandon certain areas. The selection of a transmission corridor should be accomplished cognizant of the habitat requirements and movement patterns of migratory birds.

Subtask 7.10 - Fish Ecology Studies

- Major comments concerning fishery investigations were provided to APA in previous correspondence. From the information provided in the February 1980 POS, we are uncertain of the precise timing of initiation of study tasks. We would appreciate receipt of the present schedule of fishery related studies at your convenience.

Subtask 7.11 - Wildlife Ecology Studies

- Data collected for habitat analysis should be done in a manner to accommodate all terrestrial wildlife. This will permit an evaluation of the effects of habitat alteration on wildlife in terms of habitat unit values.

- Any mitigation plan developed must be developed in cooperation with resource agencies as defined in the Fish and Wildlife Coordination Act. Also, the mitigation plan should be incorporated into the Exhibit S of the FERC license application.

- Because many of the field studies have been initiated or are scheduled to commence soon, it is imperative that an intense survey of the project area be conducted for peregrine falcons prior to the initiation of potentially disturbing activities.

Under the FERC process, sufficient data must be obtained to develop a biological assessment of endangered species relative to the potential impacts of project activities. Based on the biological assessment, the FERC may be required to consult with the FWS concerning endangered species under Section 7 of the Endangered Species Act. The consultation process will be greatly expedited if sufficient data have been gathered and evaluated in the initial study phase.

- The outlines for avifauna and nongame mammal studies are quite general and it is difficult to determine what will be accomplished. The objectives and goals need to be presented in more detail.

- Recent surveys of the Susitna River and tributaries located more bald eagle nests along the main river below the damsite than previously expected. Consequently, the impact of altered flow on eagles needs to be assessed.

Subtask 7.12 - Plant Ecology Studies

- An important objective of the plant ecology studies is to measure potential habitat change over time. Habitats in the area of project influence should be mapped at 1:63,360. This scale should be expanded to 1:25,000 in riparian habitats downstream from the damsite(s) that will potentially be altered by the project.

- Vegetation cover maps and habitat requirement characteristics of wildlife should be compared to determine the quantity and quality of habitat lost for wildlife groups and to predict impacts on species of wildlife. This implies that wildlife and vegetation studies be conducted in a complementary manner and that the purpose of plant ecology studies be kept in full view. Cover type maps are of little use for predicting impacts if the habitat requirements of wildlife species are not known.

Subtask 8.04 - Tower, Hardware, and Conductor Studies

- Studies should include design of a transmission line to avoid electrocution of raptors and collisions with migratory birds.

Subtask 9.02 - Prepare Preliminary Cost Estimate

- Cost estimates should include the costs of added features to mitigate impacts to fish and wildlife resources.

As you are aware, the FWS is required by federal laws and policies to ensure that decisionmakers are provided information whereby wildlife values can be fully considered and weighed equally with

other features in the planning of water resource development projects. As a result of these responsibilities, we have an obligation for insuring that an adequate Exhibit S is prepared. Exhibit S is paramount to the designing of an environmentally sound project since its purpose is: (1) to identify and evaluate the effect of alternative project proposals; and (2) to describe measures necessary to conserve and enhance fish and wildlife resources. Exhibit S, therefore, should contain a mitigation plan and functional design drawings or other project features as may be determined necessary for the protection, conservation, improvement, and mitigation of losses to fish and wildlife resources.

We can see no advantage in presenting an application to FERC, which will be reviewed by FWS, that does not contain an adequate assessment of project impacts to fish and wildlife resources and practical mitigation plan. Submission of an Exhibit S under a compressed time frame can only hinder the designing of an environmentally sound project. The FWS recommends that the license application be delayed until sufficient biological data are available.

Thank you for the opportunity to comment on this project.

Sincerely,

Original Signed by
Keith M. Schreiner
Area Director

cc: ACES, WAES
BLM, ADF&G, NMFS, Anchorage
FWS/OEC, FERC, Washington D.C.

ALASKA POWER AUTHORITY

September 12, 1980

Mr. Keith Schreiner
Area Director
Fish & Wildlife Service
Department of the Interior
1011 East Tudor Road
Anchorage, Alaska 99503

Dear Mr. Schreiner:

This is a response to your letter dated June 23, 1980 transmitting comments relative to fish and wildlife aspects of the Susitna Hydroelectric Project Feasibility Study. We would have wished that you had been able to provide your written comments sooner in as much as our Plan of Study (POS) was published and distributed in February. It was difficult to alter our first field season program with your comments arriving as they did in late June. Despite the lack of timeliness, we definitely appreciate your comments and have given them careful consideration. My responses are keyed to the page numbers and paragraphs of your letter, a copy of which has been attached for easy reference.

Page 1, Paragraph 2

The study-specific procedure manuals for the majority of the environmental subtasks have been completed and were submitted to the Susitna Steering Committee during the week of September 1, 1980. A complete set has been designated for Mr. Don McKay, F&WS.

Page 1, Paragraph 3

We view our POS as a two-phased effort with impact analysis and mitigation planning (as well as data collection) extending beyond the date of license application. In the Plan of Study (POS) and Procedures Manuals, pre-license application and post-license application studies are referred to as Phase I and Phase II, respectively. The anticipated post-license application studies are summarized in Section A-6 of the February 1980 Plan of Study and were described in even greater detail in the Technical Appendix of the September 1979 POS; these plans will be refined on the basis of Phase I findings.

Page 1, last Paragraph, continuing onto
Page 2, Paragraph 1

The nongame studies cannot be rigidly compared to game and furbearer studies. Differences in study effort, as reflected in budget allotments, result from a variety of reasons, including equipment and logistic expenses,

differences in home range and habitat use, recreation and economic importance, and life span. The nongame studies will allow a thorough evaluation of impact and, if necessary, sufficient data to develop a mitigation plan.

At the present time, limited furbearer surveys are planned downstream of the Devil Canyon dam site as far as Delta Islands. Some avian studies will be conducted downstream as far as Gold Creek. No avian studies are planned for the area south of Gold Creek other than an aerial survey for raptor nests, which will be conducted in 1981 if deemed necessary (as discussed in the response to the comment of Page 4, Paragraph 3). The approach of Phase I studies is to concentrate in areas where impact will definitely occur, such as the impoundment zones. Since the extent of impact on downstream habitats, particularly those south of Talkeetna, cannot be predicted until further progress is made on the hydrology and engineering design studies, only limited effort was appropriated for this aspect of the project. If the results of the Phase I hydrology and engineering work indicate that major changes will occur downstream, the Phase II ecology studies will be designed to evaluate in more detail the downstream habitats.

Page 2, Subtask 2.10 - Access Roads

As soon as available we will provide a map of the alternative access routes. The question of whether the selected route(s) will be temporary or permanent is part of our ongoing studies which will require input from various disciplines and government agencies including F&WS. F&WS advice will be sought in this regard during the impact/mitigation phase of our studies.

Page 2, Subtask 2.16 - Hydrographic Surveys

As discussed and agreed to in the Susitna workshop of July 17-18, 1980, the question regarding the necessity or feasibility of establishing detailed river profiles downstream of Talkeetna would be postponed until the spring of 1981. Following the acquisition of 1980/81 winter fisheries data and a reconnaissance assessment of the Susitna hydraulic characteristics, a decision on the development of river profiles downstream of Talkeetna will be made.

Page 2, Subtask 6.09 and 6.10 - Design Criteria for Watana and Devil Canyon Development

These subtasks will include the establishment of design criteria for mitigation structures as required.

Page 2, Subtask 6.14 - Spillway Design Criteria

These criteria will include contingency measures to avoid or alleviate water quality problems such as nitrogen supersaturation.

Page 2, Task 7 - Environmental Studies

It is our intention to keep F&WS and other appropriate government agencies informed of our progress and will forward copies of environmental reports to you in a timely fashion.

Page 3, Subtask 7.2 - Monitoring of Field Activities for Environmental Acceptability

As part of our program to acquire existing information, F&WS will be contacted regarding data on bald eagle nesting locations, trumpeter swan nesting habitat and other pertinent data. Nest locations discovered are now on file at Watana Base Camp and helicopter pilots are kept informed of areas to avoid. Detailed records are being maintained of activities requiring helicopter support. These records can be acquired by contacting Mr. Jim Gill, Acres American Incorporated, Anchorage.

A listing and general schedule of study events that may disturb waterfowl and raptors can be supplied; however, a detailed meaningful schedule would be difficult to develop since location-specific scheduling is done on a day-to-day basis as study needs dictate. If F&WS desire an activity listing, please advise. Upon request, we could then provide F&WS (with short notice) the actual timing of specific events.

Page 3, Subtask 7.09 - Susitna Transmission Line Assessment

Available biological data, such as F&WS data on breeding areas for trumpeter swans, will be used in the environmental assessment to be performed for the transmission corridor.

Page 3, Subtask 7.10 - Fish Ecology Studies

As F&WS are aware, the fisheries field studies are to be conducted by ADF&G. As soon as ADF&G acquire the staff to conduct these studies a detailed schedule and procedures manual will be prepared. Upon receipt, we will forward this information to F&WS. A general schedule for impact assessment and mitigation planning is included in the TES procedures manual.

Page 3, Subtask 7.11 - Wildlife Ecology Studies

We share the F&WS concern for applicability of habitat analysis to all terrestrial wildlife. As described in the various Procedures Manuals, habitat data specific to each wildlife group are being collected in the various subtask disciplines, and in the plant ecology subtask in a manner that will be applicable to all groups of wildlife.

Cooperation with resource agencies in the mitigation planning process is proposed in the Procedures Manual for Big Game Impact Assessment and Mitigation Planning. The extent to which the mitigation plan will need to be further developed during Phase II is also discussed in this Procedure Manual.

An aerial survey was conducted for peregrine falcons in early July 1980, and none were found. Other study team members have been advised to report any incidental observations to the TES Field Representative. If any peregrines are seen in the course of the study, team members will insure that all potentially disturbing activities are scheduled to avoid areas known to be used by the peregrines. We are confident that our endangered species program will provide adequate data and analysis thereof for review of the Susitna Project by both F&WS and FERC.

The Procedures Manual for Birds and Non-game Mammals provides many additional details concerning the study effort.

The aerial survey for raptors, conducted in the impoundment zone during 1980, will be evaluated and if deemed necessary altered or expanded to cover the downstream area. Serious consideration will be given to extending the 1981 aerial raptor survey to Talkeetna. A more intensive analysis will probably not be conducted until sufficient hydrology and engineering work has been performed to determine whether the expenditure of additional funds is warranted.

Page 4, Subtask 7.12 - Plant Ecology Studies

The plant ecology mapping efforts are in exact agreement with those recommended by F&WS. These mapping scales were identified in the February 1980 Plan of Study, having been determined on the basis of a coordination meeting held in October 1979 at which F&WS was representated.

One of the major purposes of the plant ecology studies is to allow a comprehensive evaluation of habitat alteration that may result from the Susitna Project. Habitat data are being collected in conjunction with cover type mapping that is being performed in Phase I; plant succession studies are being conducted in Phase I; and an in-depth moose habitat study is planned for Phase II. In addition, ADF&G is collecting habitat data throughout the study.

Page 4, Subtask 8.04 - Tower, Hardware, and Conductor Studies

The transmission design team will review literature on design consideration to avoid raptor electrocution and incorporate this, as required, into the design criteria. If the transmission corridor routing analysis to be performed under Subtask 7.09 indicates a potential collision problem at any specific location, special mitigation efforts will be incorporated.

Page 4, Subtask 9.02 - Prepare Preliminary Cost Estimate

Cost estimates for mitigation efforts will be prepared on a preliminary basis during Phase I. Cost estimates will be refined during Phase II.

Page 5 - Exhibit S

As outlined in our POS it is our objective to submit the FERC an adequate license application by June 1982. Our application will contain an assessment of impacts to fish and wildlife resources and practical mitigation measures. It is realized that Phase II studies will be required to confirm some aspects of our assessment and to finalize mitigation plans. If for unforeseen reasons it is determined in 1982 that an adequate application cannot be prepared on schedule, we will reassess our position. Once again your timeliness in the future would be very much appreciated.

Sincerely,

Eric P. Yould
Executive Director

Attachment:
Letter from Keith Schreiner dated June 23, 1980

cc: Tom Trent, ADF&G
Brad Smith, NMFS
Curt McVee, BLM
Dean Shumway, FERC

APPENDIX E11C

CORRESPONDENCE RELATING TO DATA COLLECTION AND PROJECT ASSESSMENT

APPENDIX 11.C

DATA COLLECTION AND PROJECT ASSESSMENT

All big game and fisheries baseline data were collected by the Alaska Department of Fish and Game (ADF&G) under a Reimburseable Services Agreement with the Alaska Power Authority. ADF&G had a major influence on the direction, scope, and schedule for these studies. Annual reports for all the environmental subtasks were distributed in April-May 1981.

This appendix contains correspondence concerning transmittal of documents to resource agencies and their response to these documents. Subjects include review of access road reports, transmission line siting reports, annual environmental reports, and the Susitna Hydroelectric Project Mid-Study Report.

Correspondence is presented primarily in chronological order. However, in some cases, a response to a letter directly follows the letter to facilitate an understanding of the flow of communication. This results in an interrpution in the chronological sequence.

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
1011 E. TUDOR RD
ANCHORAGE, ALASKA 99503
(907) 276 3800

IN REPLY REFER TO:

24 SEP 1979

Mr. Eric P. Yould
Executive Director
Alaska Power Authority
333 West 4th Avenue, Suite 31
Anchorage, Alaska 99501

	ACTION	INFORM.	DISTRIB.	INITIAL
			DCW	
			MRV	
			JPS	
			JDL	
	X		CAD	
	X		JON	✓
		✓	JWH	
		✓	SDG	
		✓	KAT	

FILE

Dear Mr. Yould:

We were informed by your letter of August 28, 1979, that the Alaska Power Authority (APA) is preparing an application for license to the Federal Energy Regulatory Commission (FERC) for the proposed Hydroelectric Power Development within the Upper Susitna River Basin, Alaska. The purpose of this letter is to point out federal fish and wildlife responsibilities and to insure adequate consideration of fish and wildlife resource loss prevention, mitigation, compensation, and enhancement throughout the planning and decision-making process associated with the Susitna project.

The pre-application planning period associated with the proposed Susitna Hydroelectric Power Development is very critical considering the magnitude of the project, limited existing data for fish and wildlife resources, and amount of effort required for the filing of a well-conceived application for license with FERC. In addition, comprehensive early planning is requisite to the designing of an environmentally sound project and optimal use of the planning period, thereby minimizing the potential for delay in the processing of necessary permit and license applications and complying with various environmental review requirements.

Federal agencies involved in the analysis and/or approval of a non-federal water-related project have many responsibilities under various Executive Orders (EO), laws, and policies to prevent and mitigate impacts to fish and wildlife resources, as well as to enhance those resources. To identify and insure recognition of directives of utmost importance and relevance to the protection of fish and wildlife resources, we list the following and include a brief summary of measures required:

(1) The Fish and Wildlife Coordination Act, draft Uniform Procedures for Compliance, May 18, 1979, standardizes procedures and interagency relationships to insure, "that wildlife conservation is fully considered and weighed equally with other project features in agency decision-making processes by integrating such considerations into

project planning, National Environmental Policy Act (NEPA) compliance procedures, financial and economic analyses, authorization documents, and project implementation."

(2) The Council on Environmental Quality's (CEQ) Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR, Parts 1500-1508, July 30, 1979) specifies provisions requiring the integration of the NEPA process into early planning, the integration of NEPA requirements with other environmental review and consultation requirements, and the use of the scoping process.

(3) Section 404 of the Clean Water Act of 1977 and resulting final rules for implementation of the regulatory permit program of the Corps of Engineers (33 CFR, Parts 320-329, July 19, 1977) requires that a Department of the Army permit(s) be obtained for certain structures or work in or affecting waters of the United States. The application(s) for such a permit(s) will be subject to review by wildlife agencies.

(4) Executive Order 11990 (Wetlands) was issued "in order to avoid to the extent possible the long-term and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative," and Executive Order 11988 (Floodplains) was issued "to avoid to the extent possible the long-term and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative." All federal agencies are responsible to comply with these EO's in the planning and decision-making process.

(5) Section 7(c) of the Endangered Species Act, 87 Stat. 884, as amended, requires FERC to ask the Secretary of the Interior, acting through the U.S. Fish and Wildlife Service, whether any listed or proposed endangered or threatened species may be present in the area of the Susitna Hydroelectric Power Project. If the Fish and Wildlife Service advises that such species may be present in the area of the project, FERC is required by Section 7(c) to conduct a Biological Assessment to identify any listed or proposed endangered or threatened species which are likely to be affected by the construction project. The assessment is to be completed within 180 days, unless a time extension is mutually agreed upon.

No contract for physical construction may be entered into and no physical construction may begin until the Biological Assessment is completed. In the event the conclusions drawn from the Biological Assessment are that listed endangered or threatened species are likely to be affected by the construction project, FERC is required by Section 7(a) to initiate the consultation process.

(6) Water Resources Council, Principles and Standards for Planning Water and Related Land Resources (18 CFR, Part 704, April 1, 1978) were established for planning the use of the water and related land resources of the United States to achieve objectives, determined cooperatively, through the coordinated actions of the Federal, State, and local governments, private enterprise and organizations, and individuals. These principles include providing the basis for planning of federal and federally assisted water and land resources programs and projects and federal licensing activities as listed in the Standards.

It is our understanding that your agency has contracted with three independent consultant firms for each to develop a comprehensive plan of study (POS) to include biological studies associated with the Susitna project and that from the three independent POS's and the existing Corps of Engineers' Plan of Study, an ultimate comprehensive POS will be derived. The actions necessary to comply with the aboved listed laws, policies, and EO's demonstrate the necessity for close consultation with federal and state wildlife agencies throughout project planning and implementation.

It is imperative that coordinated planning be initieted now with all appropriate parties, and that such planning include the convening of scoping meetings to include participation by state and federal wildlife agencies. The purpose of the scoping meetings should include: developing a comprehensive POS which insures full wildlife agency participation throughout each phase of the planning and review processes; determining who, among the federal and state wildlife agencies or the applicant, will undertake and oversee the required studies and investigations; insuring adequate and timely funding of those performing the studies; and establishing mutually acceptable target dates for the initiation and completion of studies. The adherence to these suggestions will insure that adequate information is collected to enable the determination of project impacts and develop measures to prevent, mitigate, and compensate for fish and wildlife losses.

We look forward to working closely with your agency and others involved in this study, and trust that this letter will serve as notice of the necessity for early involvement of and consultation with wildlife agencies.

Sincerely yours,

Area Director

cc: AOES, WAES
FERC, Washington
ES, Washington
OEC, Washington
CE, ADPAG, Anchorage
NMFS, BLM, ADNR, Anchorage
ADEC, EPA, SCS, USGS, Anchorage

Mr. Gary Hickman
Area Director
United States Department of
the Interior
Fish and Wildlife Service
1011 E. Tudor Road
Anchorage, AK 99503

Dear Mr. Hickman: Susitna Hydroelectric Project

Thank you for your letter dated September 24 concerning federal fish and wildlife responsibilities for FERC licensing of the Susitna Project. We wholeheartedly concur that all activities related to licensing of the project require careful planning and coordination with all local, state and federal agencies involved. We also agree that the environmental baseline studies, and the ensuing assessments and development of appropriate investigation, compensation and enhancement measures are of particular concern. We fully intend to address these matters in as comprehensive and thorough a manner as possible either through the Corps of Engineers or our consultants, Acres American Inc. Selection of the Corps or Acres is anticipated in November.

Some preliminary scoping meetings have already been initiated on our behalf by Acres American Inc and Terrestrial Environmental Specialists Inc with the Alaska Departments of Fish and Game and Natural Resources, the U.S. Fish and Wildlife Service and National Marine Fisheries Service. We have also been in touch with Ron Corso of the FERC to solicit his views on the approach we should take in obtaining the necessary licenses for the project. It is our understanding that a key factor in the license application will be a valid demonstration to the FERC that all involved agencies have been consulted and that plans for compliance with the appropriate regulations have been agreed. We have every intention of meeting this requirement to the complete satisfaction of FERC. Referring to the list of regulations in your letter we have been advised by Mr. Corso as follows:

(1) Fish and Wildlife Coordination Act: FERC's own regulations will govern for federal licensing of the Susitna Project.

(2) CEQ Regulations: FERC's own regulations will govern for federal licensing.

(3) Section 404 of the Clean Water Act: compliance is necessary.

(4) Executive Order 11990 (Wetlands), and Executive Order 11988 (Floodplains): FERC's own regulations are expected to govern in the case of Susitna.

(5) Endangered Species Act: compliance is necessary.

(6) Water Resources Council, Principles and Standards: these only apply for federal projects, and would not apply if the state selects a private consultant to undertake the Susitna Feasibility Study.

You should also be aware that we are planning to directly involve the ADF&G, ADNR, and possibly other state and federal agencies in appropriate areas of study. We will gladly keep you informed of progress in all aspects of the study which are subject to your jurisdiction and look forward to a close and mutually productive relationship.

Sincerely yours,

Eric P. Yould
Executive Director

RECEIVED APR 6 1981

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF RESEARCH & DEVELOPMENT

323 E. 4TH AVENUE
ANCHORAGE, ALASKA 99501

279-5577

March 26, 1981

Eric Yould
Executive Director
Alaska Power Authority
333 West 4th, Suite 31
Anchorage, AK 99501

Dear Mr. Yould:

The purpose of this letter is to transmit to you the findings and recommendations of the Susitna Hydro Steering Committee in response to APA's request for input and recommendations on the selection of an access road to the Susitna Hydro Dam sites. On March 6, 1981, Alaska Power Authority staff, contractors and subcontractors provided several agency representatives with a briefing and a request for comments in order to make a determination for surface access to the dam sites. It was requested that our comments be provided to APA by March 23, 1981. As a result of comments and concerns expressed by agency representatives at the March 6 meeting, I agreed to convene the Susitna Hydro Steering Committee in order to identify and coordinate the concerns of those agency representatives regarding access to the Susitna Hydro sites. The Susitna Hydro Steering Committee met on Friday, March 20, 1981. We spent the afternoon discussing various issues and concerns surrounding access to the dam sites with the subcontractors to Acres American. As a result of these discussions and review of the pertinent documents, report studies, etc., the Susitna Hydro Steering Committee makes the following comments and recommendations:

1. The Steering Committee representatives recommend coordination between the decision about access road routes and transmission line routes. Until this issue was raised by a Steering Committee member at the March 20 meeting there had been little discussion. The documents reviewed indicate that this was not a criterion for establishing potential access routes.

2. There needs to be a systematic decision-making process explicitly laid out for determining an access route for the Susitna dams. This decision-making process should be straight forward so that agency participants can understand and effectively participate in establishing proposed access routes. There needs to be a broad range of criteria established for determining the acceptability or nonacceptibility of various route alternatives. Information provided by Acres and their subcontractors to date indicates that

the criteria used to determine access roads were eight in number and are roadway and railroad technical design parameters exclusively. It is the recommendation of the Steering Committee members that there are numerous other criteria which are critical and need consideration along with the technical road and railroad design parameters. I would refer you to an attached document entitled "Suitability for Haul Roads" to give you an example of a more comprehensive lists of criteria that need to be incorporated in any decision with respect to access to the dam sites.

3. There needs to be a clearer explanation and understanding of the decisions regarding the timing of building access roads vs. FERC approval for the project. We were advised by subcontractors that the timing depends on which access mode and route is determined. The time of construction and design of these routes varies from one to three years. The agencies on the Steering Committee need to have a better understanding of how these facts and assumptions interrelate to each other in order to make informed recommendations to APA.

4. There are numerous specific decisions that will be required regardless of which access mode and route is ultimately determined the most appropriate. The location and development of these facilities could significantly affect the preference and recommendations from agencies. For example, identification of gravel sites, spoil sites, stream crossings, construction camp service and maintenance facilities will be needed. The members of the Susitna Hydro Steering Committee unanimously felt that it was important and necessary for APA to provide an understanding of how these decisions will be made and how a quality control system will be in effect to ensure that tasks are accomplished in accordance with approvals and designs.

5. The Susitna Hydro Steering Committee members in reviewing the March 6 and 20 meetings and discussing with subcontractors have determined that data gathering planned for this summer should be carried out on several access routes in order to make the final decision as to which one is most acceptable. To make a determination on a specific route with the lack of data/information that we are currently dealing with and then send researchers and data gatherers into the field this summer to gather site specific data on only one route is of questionable utility and logic. The primary reason why this is questionable is because unless comparable data on several of the prime routes is provided, the agencies will be unable to provide comments as to which route is most acceptable. In summary, we see the gathering and analysis of data on several proposed routes as the rational basis for making a determination as to which access route should be ultimately chosen.

In summary, the Steering Committee wishes to emphasize that it is willing and anxious to work cooperatively and expeditiously with APA in identifying and resolving the numerous questions which need to be

answered in order to make rational decisions with respect to access to Susitna Hydro sites. Once you and your staff have had an opportunity to review this letter, I would appreciate an opportunity to sit down and discuss the specifics of these comments in further detail.

Sincerely yours,

Al Carson

Al Carson, Chairman
Susitna Hydro Steering Committee

cc: Susitna Hydro Steering Committee Members
R. E. LeResche
Reed Stoops

May 4, 1981
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WILLETT
WITTE
LAMB
HAYDEN
BERRY
GILL
LOWREY
FRETZ
HUSTEAD
BOVE
CHASE

Mr. Al Carson, Chairman
Susitna Hydro Steering Committee
Alaska Department of Natural Resources
323 East 4th Avenue
Anchorage, AK 99502

Dear Mr. Carson:

Susitna Hydroelectric Project
Access Road Studies

I acknowledge receipt of your letter of March 26, 1981, to Eric Yould, APA. Presently, I am in the process of reviewing your comments and recommendations. I appreciate the Steering Committee's willingness to work cooperatively with APA in identifying and resolving the numerous questions relating to access roads and other aspects of the Susitna studies.

We are presently developing a systematic decision-making process that can be utilized for access road selection and for other major decisions that will be made as part of the Susitna studies. The decision has been made to obtain air photos on all three major access corridors, thus, eliminating the necessity of an early decision for a preferred corridor.

Our decision as to which corridor or corridors will receive detailed study will not be made until we complete our evaluation of overall objectives, selection criteria, and data base. The Steering Committee will be given the opportunity to review our selection process and recommendations prior to us making a final decision.

Trusting this meets with your approval.

Sincerely,

Kevin R. Young

KRY:db

ALASKA POWER AUTHORITY

April 15, 1981

Mr. Bill Lawrence
Anchorage Operations Office
Environmental Protection Agency
710 C Street
Anchorage, Alaska 99510

Dear Mr. Lawrence:

Attached is a mid-point report on Susitna Hydroelectric Project. It is forwarded for your information in response to your earlier expression of interest within the context of the Susitna Hydroelectric Project Steering Committee.

I have asked Mr. Allan Carson, the Chairman of that committee, to forward meeting minutes to you and to ensure that you are advised of scheduled meetings.

Sincerely,

FOR THE EXECUTIVE DIRECTOR

David D. Wozniak
Project Engineer

Attachment: As noted

cc: Allan Carson w/o attachment

CONCUR:

DW
RAM

ALASKA POWER AUTHORITY

MEMORANDUM

TO: For the Record

DATE: May 1, 1981

FROM: David D. Wozniak

SUBJECT: Steering Committee Mailings

On April 23, 1981, copies of the APA mid-year report and the Plan of Study were hand carried to USGS and AEIDC. Copies of the mid-year report were earlier mailed to other members of the Steering Committee. With this action, all member of the Steering Committee either possess or have access to both documents.

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF RESEARCH & DEVELOPMENT

323 E. 4TH AVENUE
ANCHORAGE, ALASKA 99501
279-5577

RECEIVED
MAY 18 1981
ALASKA POWER AUTHORITY

May 8, 1981

Eric Yould
Executive Director
Alaska Power Authority
333 W. 4th Avenue, Suite 31
Anchorage, AK 99501

Dear Eric:

The Susitna Hydro Steering Committee has reviewed the Alaska Power Authority's March 1981 Mid Report to Governor Hammond and the Alaska Legislature. Specific comments from the Steering Committe members regarding this report are provided below. In general, however, the Committee was disappointed that APA did not permit our review of this report prior to its circulation, as several members have discovered factual errors in several locations in the text, and most have reservations about conclusions reached by APA regarding environmental feasibility. Dave Wozniak has assured me that, in the future, the Steering Committee will be included as reviewers of all APA documents of this nature on the Susitna Project, and in particular I have been assured that the Steering Committee members will be provided an opportunity to comment upon the draft of the final feasibility report to the Governor and Legislature scheduled for March, 1982.

The following are specific comments on the 1981 Mid Report:

1. There appears to be a great deal of misunderstanding on the part of the External Review Panel (and perhaps others associated with this project) regarding both the scope and the completion date for the feasibility studies. The feasibility studies currently underway will not, as we understand it, terminate in mid-1982 when the Application for License is filed with FERC (assuming the decision is made to file). Feasibility studies will in fact continue for several more years in order to gather sufficient environmental or other information with which a reasoned decision can finally be made whether or not to construct (FERC staff alone will require a great deal more information than will be available in 1982 with which they can prepare a draft environmental impact statement). The March 20, 1981 letter signed by five members of the External Review Panel refers to "...feasibility studies... completion in April, 1982" and "...present studies, supplemented by appropriate additional investigations, to their 1982 completion date." While "Phase I" may end in 1982, "Phase

II" will continue for several more years, as we perceive it. We suggest you make this point clear both with the External Review Panel and with the Governor and Legislature. We also suggest that, via your public participation activities, the public be fully and accurately informed about the length of time required to (a) determine whether or not to apply for a FERC license, (b) finally determine project feasibility, and (c) obtain a FERC license and actually begin construction.

2. The Steering Committee is of the opinion that the report is too much of a "sales document" rather than a balanced assessment of what is known to date regarding Susitna feasibility. For example, it is stated on page 7-6 "whether positive or negative the overall change in the Cook Inlet salmon fishery will probably be slight." Recognizing the paucity of supporting data the committee feels this conclusion, and others like it in the Environmental Implications chapter, are premature.

3. Individual Steering Committee members have found technical errors in various places in this report. Rather than enumerate these detailed comments at this time, you may expect comments from individual Steering Committee members or their agencies in the near future.

Finally, I have been informed that the External Review Panel plans to convene in Alaska in the near future. I request an opportunity for the Steering Committee to meet with the Panel, perhaps when they are briefed on this year's field studies. Also, in order to keep members of this External Review Panel appraised of future Steering Committee concerns and technical comments on the Susitna studies, we feel it appropriate to circulate to Panel members letters, memoranda, etc. generated from the Steering Committee. We believe the Panel members would benefit from Steering Committee comments, particularly since they might not otherwise have an opportunity to gain insights into state and federal agency scientific/technical, regulatory, and public interest concerns.

I hope you find these comments constructive. We will provide Mr. Wozniak a detailed outline of steering committee interests and concerns regarding the Plan of Study at our May 28 meeting.

Sincerely,

Al Carson

Al Carson
Chairman

cc: Dave Wozniak
Steering Committee Members

ALASKA POWER AUTHORITY

June 2, 1981

Mr. Al Carson
Chairman
Susitna Hydroelectric Steering
Committee
Department of Natural Resources
323 E. 4th Avenue
Anchorage, Alaska 99501

Dear Al:

Thank you for your letter dated May 8, 1981 concerning the 1981 Mid Report and associated matters. Regretfully, heavy travel commitments within the office have slowed this response somewhat. Nonetheless, it is important that the points raised by your letter be addressed.

Our current schedule calls for the publishing of a very well developed draft of the final feasibility study report by March 15, 1982. I reaffirm our commitment to provide this draft to you and fellow members of the Steering Committee for review. I think there is some confusion, however, concerning other documents to be reviewed. In principle, the Power Authority welcomes the Steering Committee review of our various efforts. Unfortunately, we have not yet agreed as to the items worthy of Steering Committee review. As I have noted to you on several occasions, we would like to interact with the Committee rather than continue the intermittent, somewhat adversary contacts that have characterized our past discussions. If we are to be truly interactive, your contribution to defining the areas of interaction is essential. To that objective, let me repeat my suggestion that the Steering Committee, utilizing the Plan of Study as its guideline, identify specific areas and/or events and the associated degree of depth with which they wish to be involved. Given a clear understanding of expected areas of interaction, the problem of Steering Committee review or nonreview of the Mid Report might not have occurred.

Insofar as future project milestones are concerned, the effort currently in progress, variously called "Feasibility Study" and/or "Phase I", has as major objectives, determining the technical and economic feasibility of the proposal, and, if feasible, generating the data necessary for a Federal Energy Regulatory Commission (FERC) license application. This step is bounded by a Power Authority contract with Acres American, Inc., a contract which terminates in mid-1982. That date is consistent with a

legislatively mandated Power Authority recommendation to the Governor and Legislature by April, 1982 on project continuation or abandonment. The underlying assumption is that sufficient information will be available by that time to make a reasoned and reasonable judgment on whether or not to submit the license application. (Please note that this is not a decision to "build" or "not build", a point I will address further on.) Strictly speaking then, the "Feasibility Study" will in fact terminate in mid-1982, by virtue of the contract terminating.

If the mid-1982 decision is to continue with the Susitna Hydroelectric Project proposal, we will enter a period frequently referred to as Phase II. It would be characterized by submittal of the FERC license application, commencement of detailed engineering development, and continuance of a substantial amount of investigations of the project area, including such subjects as fish resources. By mid-1984, it is anticipated the license application, as supplemented and modified by the continuing investigations, will be approved. Given FERC approval (and a number of other, lesser regulatory approvals), the question of build or not build will then be referred to the State government, where a decision on construction will emerge through the political process.

Recent discussions with the External Review Panel suggests that they are very clear on this sequence of events, and this same concept, (although worded slightly differently) was advanced in the Mid Report. Accordingly, I must conclude that both the panel and the public have been fully and accurately informed about the project flow. Certainly, there was no intent to be anything less than accurate, and intimations to that effect warrant strong objection.

I regret your letter arrived too late to accommodate a joint convening of the Steering Committee and the External Review Panel. As a partial accommodation to your request for such a joint convening, please let me note that the meetings of June 3-5, 1981 are open to the public, and members of the Steering Committee are more than welcome to observe the proceedings. (The Committee was made aware of this last week.) We agree with your suggestion that the External Review Panel be kept appraised of Steering Committee concerns and technical comments, and have no objection whatsoever to circulating letters, memoranda, etc., generated by the Steering Committee. However, a review of such material indicates the only data generated by the committee to date are comments to the procedures manuals, a letter concerning the access proposals, and your May 8, 1981 letter. Finally, with respect to a joint convening, we are certainly agreeable. I think we need further discussion to define format and attendance; for example, I am not sure that our geotechnical representative would gain greatly from comments advanced by the natural sciences community. Perhaps we will want to focus our efforts on the environmental representative, Dr. Leopold. Further, to be efficient (substantial expense is involved in bringing the

panel members to Alaska and paying their per diem) as well as professional. I am sure you will want to give some thought to the structuring and content of your formal presentations. I would welcome continued dialogue on this subject.

Sincerely,

David D. Wozniak
Project Manager

CONCUR: RAM
EPY

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

JAY S. HAMMOND, GOVERNOR
2207 Spenard Road
Anchorage, Alaska
99503

August 21, 1981

JOB
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RECEIVED

02-V-81-TES-8.0

Mr. Jeffrey O. Barnes
Environmental Study Manager
Terrestrial Environmental Specialists
R.D. 1 Box 388
Phoenix, New York 13135

RE: Anchorage-Fairbanks Preliminary Transmission Route Selection

Dear Jeff:

Attached are the comments by Region II of the Habitat Division to the proposed Anchorage-Fairbanks Transmission Route.

I might note that Sport Fish Division's Regional Supervisor, Russ Redick, indicated in a recent meeting that a State Division of Parks access and wayside development extending from the Parks Highway on the north side of Willow Creek to the Susitna River is envisioned for possible development if funding is approved the Legislature this next session. Consideration should be given to the potential impact of the transmission line to that proposed development, which is expected to receive heavy recreational use.

The Su Hydro Aquatic Studies Team has no additional comments at this time.

Sincerely,

Thomas W. Trent

Thomas W. Trent
Su Hydro Aquatic Studies Coordinator
Telephone: (907) 274-7583

cc: C. Yanagawa
R. Redick
K. Schneider

02-I-81-AFFG-8.
02-J-81-TES-8.

MEMORANDUM State of Alaska

RECEIVED
AUG 1981
Alaska Dept. of Fish & Game
Sport Fish/Susitna Hydro

TO: Thomas W. Trent
Su-Hydro Aquatic Coordinator
Sport Fish Division
Anchorage

DATE: August 6, 1981

FILE NO:

TELEPHONE NO: 344-0541, Ext. 209

SUBJECT: Anchorage-Fairbanks
Preliminary Transmission
Route Selection

FROM: Carl M. Yanagawa
Regional Supervisor
Habitat Division
Anchorage

BY: Thomas J. Arminski, Regional Lands Specialist

Region II has reviewed the preliminary route selection for the proposed transmission line and submits the following comments:

In areas where the line approaches or infringes upon Susitna State Game Refuge, alignment should be adjusted to avoid areas utilized by moose and waterfowl. Clearing and construction near these areas should be scheduled to minimize disturbances to wildlife.

The R-O-W segment from Cook Inlet to Talkeetna especially east of the Parks Highway north of Willow should be cleared and encouraged to regenerate as moose browse. Between Willow and Talkeetna this has the benefit of possibly halting the westward winter migration of moose to the Susitna River. On years with heavy snowfall as many as 200 moose have been killed by motorists and trains as they wander through the area. In addition, R-O-W clearing and construction must be scheduled to prevent conflicts with moose and sport hunting activities.

With respect to stream crossings, most of the streams within the proposed corridor provide spawning and rearing habitat for anadromous fish. We do not expect any significant fisheries impacts from an aerial line, however, R-O-W clearing must be avoided at crossing sites to maintain watershed integrity and preserve riparian wildlife habitats.

We suspect that there will be a great public outcry with respect to the aesthetics-visual impacts related to the proposed alignment, especially where it nears the highway, popular recreation areas and small communities.

We suggest that APA conduct public hearings regarding the proposed alignment and delete or relign those segments of the route that are most objectionable. Most of our concerns can be met through use of timing constraints, stream buffers, selective clearing, helicopter and/or winter construction.

If you have further questions, please contact us.

NOV - 6 1981

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF RESEARCH & DEVELOPMENT

323 E. 4TH AVENUE
ANCHORAGE, ALASKA 99501
276-2653

November 5, 1981

RECEIVED

NOV 0 6 1981

ALASKA POWER AUTHORITY

Mr. Eric Yould, Executive Director
Alaska Power Authority
333 West Fourth Avenue
Anchorage, Alaska 99501

Dear Mr. Yould:

The purpose of this letter is to transmit to the Alaska Power Authority (APA) comments from the Susitna Hydroelectric Steering Committee (SHSC) concerning APA's proposals for access to the proposed Susitna River dam sites. These comments are in response to information provided the SHSC from two access route meetings with APA and their contractors and the documents prepared by APA contractors and distributed during these meetings. At the October 20, 1981 meeting APA requested SHSC comments by November 6, 1981. The SHSC appreciates the fact that APA continued detailed consideration and studies of several access route options this year rather than focusing on a single route.

The SHSC review identified four areas of concern that merited comment. Those four are:

1. A critique of the studies of access routes which provide for construction of the dams.

2. The relationship between timing of access route construction and Federal Energy Regulatory Commission (FERC) approval for dams.

3. The relationship of access route decision and modes of access to regional land use management policies.

4. The issues resultant from land status and land ownership affected by the proposed project.

The assessment of corridor route alternatives should more adequately weigh the potential impacts of borrow sites and access to these sites, and transmission line(s) routing. Access corridors which serve a dual, or triple, purpose in regard to these other project access needs would be highly desirable from all decision-making criteria.

ALASKA POWER AUTHORITY
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The access preferences expressed below pertain to the general locations cited for the corridors and are based upon the environmental data and conclusions contained within the environmental documents prepared for Subtask 2.10, Access Road Assessment. It does not represent our endorsement of a particular 1-mile-wide corridor, as presented.

The SHSC agrees with the Terrestrial Environmental Specialists, Inc. position that access via the Alaska Railroad to Gold Creek is environmentally preferable. Railroad access to at least Devil Canyon would alleviate the need for a staging area at Gold Creek and the consequent human activity, land use, fuel spills, and other impacts on the Gold Creek area. We recognized that a staging area at Devil Canyon would be required in any case. The use of this area as the terminus of a railroad appears to make a great deal of sense. Additionally, we feel that the south side route from Gold Creek to Devil Canyon is preferable since a trail already exists there. From Devil Canyon to Watana, we prefer a route on the north side of the Susitna River. At the October 20, 1981 meeting the SHSC was informed by Mr. David Wozniak of APA that there were two (2) additional railroad route/mode options (a total of 10) . If feasible we generally prefer a rail mode of access to and within the project site.

The SHSC identified three (3) environmentally sensitive areas that should be avoided. Those are:

1. The routes from the Denali Highway.

2. The route crossing the Indian River and through wetlands to the Parks Highway.

3. The route on the south side of the Susitna River from Devils Canyon to the proposed Watana dam site.

In evaluating the access route selection process undertaken by the APA and its contractors, the Steering Committee questions the validity of the power-on-line in 1993 assumption/mandate. The "We've got to hurry up and put in a road to meet the 1993 deadline" approach appears, from currently available reports and the briefings received by the Susitna Hydroelectric Steering Committee on October 20, 1981, to point toward the necessity of a pioneer road constructed before a FERC license is granted, or selection of an apparently environmentally unacceptable Denali Highway access route.

Local utilities are not approaching construction of a project the magnitude of Susitna in 1993 as a foregone conclusion and are making contingency plans to meet projected power needs. Gas and coal generated power options are being examined. In addition, feasibility studies are currently being undertaken by the U.S. Army Corps of Engineers and the APA at numerous potential hydroelectric generating sites. The Battelle Railbelt Electric Power Alternative Study should provide insight into additional power generation options. As such, we believe that the 1993 "deadline" for power-on-line from Susitna may not be that firm and imperative. Thus the SHSC does not believe the 1993 deadline should constrain the overall decision-making process and the orderly progress of various studies on project feasibility and environmental impacts. Permitting and resource agencies, including FERC, should be expected to link a pioneer road to the overall project.

Public access to the dam sites and through the Upper Susitna Valley is complex and a controversial subject and we believe this issue should be given thorough evaluation in the route selection process. How construction-related access is obtained to a great extent determines the project-related wildlife and socioeconomic impacts. The APA has been soliciting the views of local residents (Talkeetna, Trapper Creek, etc.) in regard to the access question. The majority of residents want to minimize impacts to both their community and the Upper Susitna Valley. The APA has solicited the views of the state and federal resource agencies. It has been the predominant view of these agencies, which represent public interests on a state or national level, that project-related wildlife impacts should be limited to the maximum extent practicable. In addition, the APA has expressed the desire to maximize the options for future public access. We believe that these views mesh. Minimizing impacts and maximizing options for future public access can be achieved by mimicking, to the extent possible, the status quo. For example, to provide full public access through a road system, forecloses the future option of maintaining the existing character of the Upper Susitna Valley.

Use of rail as the access mode increases the potential for management and control of socioeconomic and environmental impacts. Maximized rail use provides for the following advantages over road access:

1. Maintains a maximum range of future decision options.

2. Provides for control of worker impacts on local communities and wildlife.

3. Decreases the potential of hazardous material spills due to adverse weather conditions and multiple handling.

4. Disturbance to wildlife adjacent to the route can be more easily controlled.

5. Direct access right-of-way related habitat losses can be significantly limited.

Briefly the land status of the project area has not changed significantly within the last year. There are several complex problems concerning land status that have been brought to your attention by BLM.

Thank you for the opportunity to review and comment on the Access Road Assessment documents. We look forward to receiving the final version of these documents after November 15, 1981, and anticipate providing additional recommendations into this decision-making process.

Sincerely,

Al Carson

Al Carson, Chairman
Susitna Hydroelectric
Steering Committee

cc: D. Wozniak, APA
Steering Committee Members
R. Stoops

November 9, 1981
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WILLETT
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BERRY
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LAWRENCE
SINCLAIR
VANDERBURGH
CARLSON
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LOWREY
SINGH
HUSTEAD
BOVE
CHASE

Mr. John Rego
Bureau of Land Management
701-C Street
Anchorage, Alaska 99501

Susitna Hydroelectric Project
Transmission Corridor Report

Dear Mr. Rego:

As you know, Acres American, Incorporated is under contract to the Alaska Power Authority to conduct a feasibility study and prepare a Federal Energy Regulatory Commission (FERC) license application for the Susitna Hydroelectric Project. The scheduled date for submission of the application is in June of 1982.

Federal law and FERC regulations require that the reports supporting the FERC application be prepared in consultation with Federal and State agencies having managerial authority over certain project aspects. This coordination must be documented in the license application.

A great deal of coordination has taken place at agency staff levels by direct participation in studies or by participation in committees and task groups. This input, however, has been primarily by staff and may not necessarily reflect the views of the agency. For this reason, we are conducting a parallel formal coordination process, by requesting agency comments on key study outputs. The plan of study was the first document coordinated in this manner. Over the next year, there will be several more. This parallel process will affect the other coordination activities of the study.

At this time, we request that the Bureau of Land Management review the attached Report, "Transmission Line Corridor Screening Closeout Report", particularly in the areas of aesthetics, land use, and land management.

Your prompt attention to this matter will enable us to continue planning the best possible development for all interests. A response within thirty days of receipts would be greatly appreciated. Please send a copy of your comments to:

Mr. Eric Yould, Executive Director
Alaska Power Authority
333 West 4th Avenue
Anchorage, Alaska 99501

Very truly yours,

Dorothy Chute
for John D. Lawrence
Project Manager

JDL/MMG:jgk

cc: Eric Yould, Alaska Power Authority

Preceding Letter Sent To:

Mr. Lee Wyatt
Planning Director
Matanuska-Susitna Borough
Box B
Palmer AK 99645

Mr. John Rego
Bureau of Land Management
701 C Street
Anchorage, AK 99501

Mr. Tom Barnes
Office of Coastal Management
Division of Policy Development
and Planning
Pouch AP
Juneau, AK 99811

Mr. John E. Cook
Regional Director
National Park Service
540 West Fifth Avenue
Anchorage, AK 99501

Mr. Ernest W. Mueller
Commissioner
Alaska Department of
Environmental Conservation
Juneau, AK 99801

Ms. Lee McAnerney
Department of Regional Affairs
Pouch B
Juneau, AK 99811

Mr. Ronald O. Skoog
Commissioner
Alaska Department of Fish and Game
Juneau, AK 99801

Mr. Keith Schreiner
Regional Director
U.S. Fish and Wildlife Service
11011 E. Tudor Road
Anchorage, AK 99503

Colonel Lee Nunn
District Engineer
U.S. Army Corps of Engineers
P.O. Box 7002
Anchorage, AK 99510

Mr. John Katz
Alaska Department of Natural
Resources
Pouch M
Junean, AK 99811

Mr. Robert Shaw
State Historic Preservation
Office
Alaska Department of Natural
Resources
619 Warehouse Avenue
Anchorage, AK 99501

Regional Administrator
U.S. Environmental Proection
Agency
1200 South Avenue
Seattle, WA 98101

Mr. Robert McVey, Director
Alaska Region
National Marine Fisheries Service
P.O. Box 1668
Juneau, AK 99802

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF PARKS

JAY S. HAMMOND, GOVERNOR

619 WAREHOUSE DR., SUITE 210
ANCHORAGE, ALASKA 99501

PHONE: 274-4676

December 4, 1981

Re: 1130-13

John D. Lawrence
Project Manager
Acres American, Inc.
The Liberty Bank Building, Main at Court
Buffalo, New York 14202

Dear Mr. Lawrence:

We have reviewed the 1980 reports by the University of Alaska Museum dealing with the cultural resources of the Susitna Hydroelectric project area. The report documents the survey activities conducted during 1980 which adequately accomplish the tasks outlined in the proposed work plan. The sampling plan designed on the basis of geomorphic features and known use areas seems to have surpassed our expectations of site incidence in the area. The report shows that the first level inventory was very competently conducted and recorded. The second year activities as outlined in the procedures manual was accomplished in the 1981 field season according to information gained through verbal communication with the principle archaeological investigators. We understand that the field research strategy was changed slightly from that expected due to information gained during 1980. These changes appear to have more directly addressed problems which surfaced during the course of analysis of the 1980 data. A final review of the 1981 results and reports will have to await receipt of that document.

We feel that the steps taken thus far in the cultural resource management of the project have been excellent and one of the few instances of adequate lead time. We would like to make the observation that the work thus far is only preliminary to the work yet needed for the Susitna Hydroelectric project. Reconnaissance and testing of yet to be examined areas should continue. The clearances of specific areas of disturbance provided as additional survey by the Museum should indicate the continued need for clearances of ancillary projects which could affect cultural resources. Also, a formal mitigation plan for those sites to be affected by the project must be formulated. Once definite decisions on the route of access to the project area from existing road systems are made, those access routes and material sites must be examined for conflicts and needs for mitigation. Issuance of a permit by the Federal Energy Regulatory Commission should and probably will include provisions specifying under federal law the need for such protection.

If you have any questions regarding our comments contained here, please call us. We look forward to receiving the report on 1981 field work.

Sincerely,

Chip Dennelein
Director

By: for Douglas Reger
Robert D. Shaw
State Historic Preservation Officer

cc: Dr. E. James Dixon
Curator of Archaeology
University of Alaska Museum
University of Alaska
Fairbanks, Alaska 99701

Eric Yould
Executive Director
Alaska Power Authority
333 W. 4th Avenue
Anchorage, Alaska 99501

DR:clk

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION X
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101

REPLY TO ATTN OF: M/S 443

DEC 21 1981

John D. Lawrence
Acres American, Incorporated
The Liberty Bank Building
Main at Court
Buffalo, New York 14202

SUBJECT: Susitna Hydroelectric Project, Summary Annual Environmental Report-1980 and Transmission Line Corridor Screening Report

Dear Mr. Lawrence:

Thank you for sending us the above reports for our review. We have also received the Development Selection Report and will be forwarding our comments to you on that report before the end of December.

We appreciate the extensive coordination effort and the opportunity to review and comment on Susitna reports as they are prepared. I further appreciate your attempts to ensure that the views of the Agency are adequately reflected in this process. While we have been coordinating with the Susitna Interagency Steering Committee, our budget restrictions have limited our active participation more than I would like. In this regard, it would be extremely helpful to us if you could provide us an overview of your consultation plan and the schedule for future reviews. This will better enable us to give you timely comprehensive comments on the various segments of the study, with the overall project perspective in mind.

EPA is particularly interested in information on wetland mapping, water quality and water quantity modeling and project alternatives. The 1980 Environmental Report appropriately points out the interrelationships and importance of these areas to wildlife survival and downstream fish ecology. However, it does not cover EPA's areas of interest directly. We would like to review the reports on these subjects when they are available.

We support the emphasis in the Environmental Report and related studies on identifying ways to minimize the environmental impacts of the Susitna project. In particular, selection of the access route and type of access is an issue with long term environmental consequences which offers many opportunities for minimizing impacts. EPA supports the concept of minimizing impacts by use of a single corridor for both access and transmission needs, as pointed out in both the Transmission Line Corridor Screening Report and the Environmental Report. We encourage you to incorporate these kinds of suggestions from agencies and the Steering Committee into the project selection, construction and operation plans. Such commitments will certainly positively influence reviews of any FERC license application.

We have some concerns with the conclusions about the Central Study area in the Transmission Line Corridor Screening Report. There appear to be different opinions on the environmental consequences of selecting Corridor 1 versus Corridor 14. We feel that additional areas should be included in future studies of the central corridor, to provide a broader data base from which such conclusions can be drawn. More specifically, in this area, Corridor One (ABCD), which roughly follows the south side of the Susitna River, is the recommended corridor based on Acre's technical, economic and environmental criteria. Corridor 14 (AJCD) follows the same route as Corridor 1 from Gold Creek to Devils Canyon, but crosses to the north side of the Susitna River for the section from Devils Canyon to the Watana dam site. Corridor 14 has technical and economic ratings as high as Corridor 1, but was not recommended because of environmental and land use conflicts in segment CJ. On solely environmental grounds, it appears that an access route similar to Corridor 14 is preferred to Corridor 1 by both Terrestrial Environmental Specialists, Incorporated (Environmental Report page 73 and 82) and the Susitna Hydroelectric Steering Committee (letter from Al Carson, Chairman, to Eric Yould, dated November 5, 1981.) Therefore, the areas of the central corridor to be further studied should include the north side of the river between Devils Canyon and the Watana dam site to encompass segment CJA as well as segment CBA.

One reason for the different conclusions regarding the environmentally preferable route between Devils Canyon and the Watana Dam site may be the Environmental Report's and the Steering Committee's identification of the most environmentally sensitive areas, which then have the highest priority to be avoided. It may be desirable to use a similar approach during the more detailed route selection studies, especially in areas where wetlands must be crossed. Identifying and then avoiding primary and secondary impacts to the most valuable wetland habitats should be an important part of the more detailed studies of all three transmission study areas.

We appreciate the opportunity to review this report. Please contact me or Judi Schwarz, of my staff, if you would like to discuss our comments. We can be reached at (206) 442-1266 and (206) 442-1096, respectively.

Sincerely yours,

John R. Spencer
Regional Administrator

cc: Eric Yould, Alaska Power Authority
Al Carson, Department of Natural Resources

January 4, 1982
P5700.11.91
T.1390

Mr. John R. Spencer
Regional Administrator
U.S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, Washington 98101

Dear Mr. Spencer;

Susitna Hydroelectric Project
Formal Agency Coordination

Thank you for your letter of December 21, 1981; your constructive suggestions are very much appreciated. I will attempt to respond to the issues you raised:

1. I am enclosing a description of our formal agency coordination plan, indicating which agencies will receive which reports. Regarding schedule, EPA will be receiving the following reports on or around the following dates:

   a) Fish and Wildlife Mitigation Options - January 1982

   b) Instream Flow Study Plan - February 1982

   c) Susitna Feasibility Study - March 1982

   Under separate cover you will be receiving an invitation to attend a meeting in Anchorage on January 21, 1982 explaining our Formal Agency Coordinaation Program.

2. Wetland mapping has been conducted as part of the study. For your information, I am enclosing the 1980 Plant Ecology Summary Report and a set of vegetation maps. All wetlands within the proposed impoundment zones (including a one half mile buffer) and within known borrow area were mapped, utilizing the new U.S. Fish and Wildlife Service Classification (Cowardin et. al. 1979).

3. Project alternatives are discussed in the Development Selection Report which you have received and will be disaussed further in the Feasibility Study.

4. Water quality issues and water quantity modeling results will be found in the Feasibility Study.

5. Following selection of the access route, the transmission line corridor in the central study area has been expanded (as indicated on page 7-4 of the Transmission Line Corridor Screening Report) to include a larger area on the north side of the Susitna River. This will result in a single corridor being used for both the access route and the transmission line corridor. This was done both to eeduce impacts via access and to avoid the large wetland areas on the south side of the Susitna River.

6. Transmission line routing studies are currently being conducted. Wetlands is a parameter in the selection process. I think you can appreciate, however, it will not be possible to avoid all wetlands in the area, simply because there are so many.

Again, thank you for your comments. If you have further questions, please let me know.

Sincerely yours,

John D. Lawrence
Project Manager

MMG/jh

cc: E. Yould, APA

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 1668
Juneau, Alaska 99802

December 31, 1981

Mr. John D. Lawrence, Project Manager
ACRES American Incorporated
Consulting Engineers
The Liberty Bank Building Main at Court
Buffalo, New York 14202

Dear Mr. Lawrence:

We have received the Susitna Hydroelectric Project Environmental Report prepared by Terrestrial Environmental Specialists (TES). We have limited our review of this series of documents to those concerning the fisheries studies, i.e., the Summary Annual Report and Fish Ecology Annual Report.

The presentation of 1980 work done by TES towards assessing the impacts of development and operations of the project on the fishery and proposing measures to minimize or mitigate adverse impacts was reviewed without substantial comment, as much of it was very preliminary. Also, no review was made of the 1980 fish ecology program due to delay in publishing the detailed procedures manual. In addition to the lack of substantial information presented in these reports, we believe the timing of this review request makes an in-depth agency review inappropriate. The main benefit derived from this review would have been to allow changes or redirection of efforts to be made in the 1981 field studies. However, as of this date, the 1981 environmental studies have been completed.

We look forward to receiving the 1981 Environmental Studies Annual Reports, as these documents should provide the basis for our review of the draft Feasibility Report.

Sincerely,

Robert W. McVey
Director, Alaska Region

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1011 E. TUDOR RD.
ANCHORAGE, ALASKA 99503
(907) 276-3800

IN REPLY REFER TO:

WAES

05 JAN 1982

Mr. Eric Yould
Executive Director
Alaska Power Authority
334 W. Fifth Avenue
Anchorage, Alaska 99501

Dear Mr. Yould:

Mr. John Lawrence of Acres American, in his letter of November 9, 1981, requested that we review the Transmission Corridor Report. We offer the following comments:

Although we realize that the Anchorage-Fairbanks Transmission Intertie was assessed by Gilbert/Commonwealth and not Acres American, the two studies need to be fully compatible, coordinated, and unified in a single document for submission to the Federal Energy Regulatory Commission (FERC).

The conclusion of the Intertie study was that it is justifiable in the absence of the Susitna Hydroelectric Project. However, the Susitna Project is not viable without the Intertie. In that we anticipate reviewing the Intertie as a component of the Susitna Hydroelectric FERC license application, we believe it should be included in the pre-license coordination process.

The extensive public participation workshops undertaken for the Intertie were well done and provided for an effective interagency and public dialogue. We highly commend the Alaska Power Authority (APA) for that program. We recommend that a similar effort be undertaken for the Susitna Transmission corridors selection process.

Land ownership is a potential major issue and needs to be fully explored. It is not evident from this report that a sufficient effort was expended. The list of authorities contacted (p 8-3) does not list representatives of either the Bureau of Land Management or the Alaska Department of Natural Resources, the principal state and federal land management agencies.

Remote lakes, such as those in the Matanuska-Susitna Valley, are utilized by trumpeter swans for nesting and rearing cygnets during summer and fall. Recent data indicate that continued development and disturbance on lakes used for nesting is causing birds to abandon certain areas. Selection of a transmission corridor should be accomplished cognizant of the habitat requirements and movement patterns of waterfowl and other migratory birds.

As required by the Endangered Species Act (87 Stat. 884, as amended), the FERC, or their designee, should formally request a list of threatened or endangered species from this agency. If the list indicates that these species are present in the project area, FERC is required under Section 7(c) to conduct a Biological Assessment. This assessment would identify any listed or proposed threatened or endangered species and discuss potential project related impacts. The assessment is to be completed within 180 days after receipt of the official list, unless a time extension is mutually agreed upon. It should be noted, that this work toward the assessment may have already been completed through your previous investigations, and should be included as part of the Environmental Impact Statement for the project. In any event, no contract for physical construction may be entered into and no physical construction may begin until the Biological Assessment is completed. If the conclusions drawn from the Biological Assessment indicate that endangered or threatened species are likely to be affected by the construction project, FERC is required by Section 7(a) to request formal consultation.

Management of the transmission line right-of-way (ROW) could result in positive or negative habitat value impacts. In certain situations clearing of the entire ROW width can be undertaken to enhance moose browse. In other places minimal habitat disturbance may be the most appropriate management. Once transmission corridors have been agreed to, discussions as to appropriate habitat management practices should be initiated with the FWS and the Alaska Department of Fish and Game (ADF&G). Clearing for the purpose of enhancing moose browse should only be done after an on-ground evaluation by the ADF&G and Alaska Plant Materials Center to ensure that vegetation within that corridor can be enhanced by clearing.

Where the proposed alignment follows the existing highway, railroad, or utility corridors, the potential for disturbances to wildlife habitats would be minimized. Access to the dams should be fully coordinated with transmission line routing. Access corridors which serve a dual purpose in regard to project access needs would be highly desirable from several decision-making criteria.

Public access to the damsites and through the Upper Susitna Valley is a complex and a controversial subject and we believe this issue should be given thorough evaluation in the selection of access routes, mode of access, transmission line routing, and method of maintenance access for the transmission lines. How construction- and maintenance-related access is obtained to a great extent determines the project-related wildlife and socioeconomic impacts. Construction and maintenance of transmission lines should not provide for additional public access over that provided by the dam access route.

We concur with the report conclusion that of the three corridor alternatives presented for Healy to Fairbanks, segment ABC is the most acceptable. Our preference would be for the transmission line to closely parallel and whenever possible to share the existing Healy-Fairbanks transmission line ROW. Also, we believe that an additional alternative, that of sharing the railroad ROW, should be evaluated.

We concur with the Acres American position that segment AEF is the least desirable alternative of those presented for the Willow to Anchorage

segment. We also agree that segment AB would have extensive adverse environmental impacts. However, we believe further study should be undertaken to evaluate corridor options from Willow to Palmer which are closely aligned with the highway or other existing ROW's.

Mitigation for transmission line construction and maintenance impacts would need to be incorporated into the overall mitigation program for the project. In addition to recommendations emanating from aforementioned points we would expect recommendations such as the following to be incorporated into the plan:

(1) Should any eagle nest be found in specific siting of the line, a 330-foot windfirm buffer would be established around the nest trees;

(2) winter construction would be used in wetlands to minimize adverse impacts and in the vicinity of rivers so crossing can be by ice bridges;

(3) helicopters would be used to construct and maintain the transmission line in areas not easily accessible from existing roads, trails, railroads, or planned ground access for which the primary purpose would not be related to the transmisson line;

(4) where overland maintenance access is adopted, such access would be minimized to no more than one route between major stream crossings or other geographic barriers; and

(5) 100-foot-wide vegetation buffers remain along all streams and rivers crossed by the transmission lines.

Specific comments:

1.2 Existing Transmission Systems in the Railbelt: The implication of including the Glennallen-Valdez transmission system is that the Susitna Hydroelectric Project would serve this area. If this is the intention, then transmission line corridor alternatives to interconnect with the Glennallen-Valdez system need to be evaluated and circulated for review.

5.6 Description of Corridors

(c) Northern Study Area

(i) Corridor One - Healy to Fairbanks via Parks Highway: Paragraph 4. We do not believe that the option of closely paralleling and sharing rights-of-way with the existing Healy-Fairbanks transmisson line should have been dropped from further consideration prior to public and agency participation.

Table 5.1 Technical, Economic, and Environmental Criteria Used in Corridor Selection: Additional environmental selection criteria should be: minimize wetland impacts; minimize river crossings; minimize visual, esthetic impacts; minimize impacts on natural systems; minimize erosion; and minimize impacts on existing life styles.

6.4 Reliability - Access: The proposed construction and maintenance access needs to be presented. Also a discussion of the proposed method of construction for the different segments.

6.5 Screening Criteria

(a) Technical Screening Criteria

(i) Primary Aspects: Topography: Steep terrain would increase erosion potential and would thus be a negative environmental factor.

(ii) Secondary Aspects: Vegetation and Clearing: Heavily forested areas need not be cleared. Selective cutting and topping of trees are environmentally and esthetically more acceptable. Habitat modification to enhance values for target species should be thoroughly evaluated. Also, clearing of bankside vegetation is not generally considered an acceptable procedure.

(b) Economic Screening Criteria

(i) Primary Aspects: Right-of-Way: Paragraph 3. Refer to comments above (6.5(a)(ii)).

(c) Environmental Screening Criteria: Enhancement opportunities as well as potential negative impacts to fish and wildlife resources should be evaluated in relationship to habitat modification. In addition, refer to comments above (Table 5.1).

(ii) Secondary Aspects: Length: The consideration that the longer the transmission line the greater the environmenal constraints is not borne out by experience. Minimizing adverse environmental impacts can usually be achieved by closely paralleling or sharing existing transportation or utility ROW's. This rarely results in the shortest transmission line.

Soils: It should be recognized that scarification of the land would not be considered an environmentally acceptable procedure.

Cultural Resources: Contacts should be made with the appropriate state and federal agencies. Contact should be initiated with the National Park Service and the Alaska Department of Natural Resources.

Vegetation: Proper timing of construction would help to minimize impacts.

Fishery Resources: Refer to comments immediately above. Secondary impacts related to increased access also need to be examined.

Wildlife Resources: Increased access could have serious secondary impacts such as increased hunting pressure and increased human/ wildlife conflicts.

7. Conclusions and Recommendations: The Anchorage-Fairbanks Transmission Intertie study should be fully integrated into the Susitna Hydroelectric Project Transmission Line Corridor report. The entire package should be circulated for public and agency review.

Thank you for the opportunity to review and comment on the Transmission Corridor Report.

Sincerely,

Acting Regional Director

cc: FWS-ROES, WAES, NAES
Quentin Edson/FERC
NMFS, EPA, NPS, BLM, USGS, ADEC, ADF&G, AEIDC
Carson/ADNR
Lawrence/Acres American

April 14, 1982
P5700.11.71
T.1647

Mr. John A. Morrison
Acting Assistant Regional Director
U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, AK 99503

Dear Mr. Morrison:

Susitna Hydroelectric Project
Transmission Line Corridor
Screening Report

Thank you for your letter of January 5, 1982, to Mr. Eric Yould, commenting on the Transmission Line Corridor Report. The flurry of activity in producing the Susitna Hydroelectric Project Feasibility Report has delayed this response for which I apologize.

I will attempt to address, in the same order, the issues you raised in your letter:

1. The intertie is a separate transmission line and does not require an FERC license. The intertie will be constructed, operating, and carrying non-Susitna generated power prior to completion of the Susitna Project. The Susitna Project will only require additional of lines to the existing intertie right-of-way. We are currently discussing with FERC if these new lines will be under FERC jurisdication.

2. The transmission line route selection is not being addressed through separate meetings but through the public and agency meetings occurring in March and April. The results of these meetings will provide input to the decision making process as to final route selection.

3. Land ownership by major category was provided for the entire transmission line study area on maps developed by the resource planners of CIRI/HN. This material was utilized in the corridor screening and route selection process. TES discussed the location of the transmission lines with Art Hosterman and John Rego of BLM and Dean Brown, Michael Franger, and Linda Arndt, among others, of DNR.

4. ADF&G and the U.S. Fish and Wildlife Service were contacted during this study. ADF&G was provided a copy of the preliminary routing study and their comments incorporated in the final route selection. Bruce Conant of the U.S. Fish and Wildlife Service in Juneau, who conducted recent swan nesting surveys, was also contacted and the information provided utilized in the corridor selection.

5. With regard to endangered species, ADF&G personnel were contacted to obtain information on known location and habitats of these species within the study area. The corridors reflect consideration of this data. FERC will conduct the Section 7 consultation process.

6. Resource agency requirements regarding right-of-way management will be incorporated into construction and maintenance activities through the permitting process.

7. Since publication of the transmission line corridor screening report, further studies on both the corridors between the dam sites and the access route studies have been conducted. The access route report, to be issued in April, concludes the most environmentally acceptable route between the two dam sites is on the north side of the Susitna River. In order to utilize a common corridor, it is now planned to place the transmission lines on the north side of the Susitna River; this routing is contained in the Susitna Draft Feasibility Report. Should proposed access routing change, consideration will be given to moving the transmission line route to maintain the common corridor concept.

8. We agree that public access is a complex and controversial subject. We experienced the wide range of opinions on this subject when conducting public meetings on the access route. Decisions on extent of public access will be made in the broader forum of the permitting process which includes concerns of the resource management agencies.

9. Due to existing land use, aesthetic and lifestyle constraints, consideration was given to paralleling existing rights-of-way and utilizing existing access points whenever possible. The existing Healy-Fairbanks transmission line was the focus of studies in the northern study area. Closely paralleling this line, the Parks Highway or the railroad right-of-way was considered but rejected due to the extent and severity of resultant impacts. These impacts were: the need to remove buildings located adjacent to these corridors; placement of conspicuous transmission facilities in the foreground viewshed of existing houses; and placement of transmission facilities in the foreground viewshed of the major travel corridors of the railbelt region.

10. Consideration of alternatives south and east of Willow, including those aligned with existing rights-of-way, was undertaken in the corridor selection process. Due to the presence of the proposed capital site, topographic limitations, and existing land use limitation, especially in the area from Eklutna to Anchorage, it was concluded routing options to the south and west of Willow would result in fewer environmental impacts.

11. As mentioned above, the permitting process will incorporate resource agency requirements regarding right-of-way clearing and maintenance. The techniques you mention may be stipulations to construction with which the Power Authority would comply.

12. It is not the intention for the Susitna Hydroelectric Project to provide service to the Glennallen-Valdez area in the near future. If service was provided, it would be based on economics and need; current load forecasts indicate no such needs until after the year 2000.

13. See response number 9 regarding the Healy-Fairbanks line.

14. With the exception of existing lifestyle, all the technical environmental criteria you suggest be added to Table 5.1 for corridor selection were utilized in the corridor screening process as discussed on Pages 6-5 through 6-9 and displayed in Tables 6.4, 6.5, and 6.6.

15. Access for construction and maintenance will be defined following final right-of-way selection. The corridor selection process has resulted in much of the proposed corridor being located in close proximity to existing secondary roads, survey lines, tractor trails, or existing transmission lines, thereby reducing access needs.

16. Steep terrain was considered as a negative environmental factor as discussed on Page 6-7.

17. Clearing needs will be more fully evaluated following right-of-way selection.

18. The result of the corridor screening report was the selection of corridors several miles in width. A final right-of-way, 400-700 feet wide, will be selected at a later date. Enhancement opportunities will be considered when selecting this final right-of-way.

19. We agree that longer length of a transmission line does not necessarily mean greater environmental impacts. TThe wording on Page 6-6 reflects this, stating "A longer line will require more construction activity than a shorter line, will disturb more land area, and will have a greater inherent (underlining added) probability of encountering environmental constraints."

20. Construction procedures will be designed to minimize scarification. The permitting process may result in stipulations to prevent or mitigate scarification.

21. The National Park Service and the State Historic Preservation Offices will be contacted regarding cultural resources.

22. I assume your comment regarding proper timing of construction would minimize vegetation impacts refers to winter construction in wetlands. This is recommended as a mitigation technique on Page 7-6 of the report.

23. The opportunities for increased access, where desirable, and for restricted access (through use of discontinuous access roads, physical barriers, etc.) will be considered during right-of-way selection. The requirements of the resource management agencies will be included in the permitting process which will result in a decision on the extent of public access to be allowed.

I appreciate your comments on our report and hope these responses are satisfactory. In summary, additional studies and mitigation planning will be conducted in the near future; this reviewed report and the Feasibility Report mark the beginning of this process.

Sincerely,

John Lawrence
Project Manager

JL:ccv

Dear

I am enclosing for your review the following reports prepared by the Alaska Department of Fish and Game for the Susitna Hydroelectric Project:

1. Final Draft Report, Adult Anadramous Fisheries Project

2. Resident and Juvenile Anadramous Fish Investigations on the Lower Susitna River

3. Aquatic Habitat Investigations.

These reports are provided for your information only; they are not part of our formal Agency Coordination Program. Comments are not requested but will certainly be accepted.

Sincerely,

Preceding Letter Sent To:

Mr. Al Carson
Division of Research & Development
Department of Natural Resources
323 East Fourth Avenue
Anchorage, Alaska 99501

Mr. Bradley Smith
Environmental Assessment Division
National Marine Fisheries Service
Federal Building & U.S. Court House
701 C Street, Box 43
Anchorage, Alaska 99513

Mr. Michael Scott
District Fisheries Biologist
U.S. Bureau of Land Management
4700 East 72nd Street
Anchorage, Alaska 99507

Mr. Gary Stackhouse
U.S. Fish & Wildlife Service
1011 East Tudor Road
Anchorage, Alaska 99502

Mr. Carl Yanagawa
Regional Supervisor for Habitat Division
Alaska Department of Fish & Game
333 Raspberry Road
Anchorage, Alaska 99502

Ms. Judi Schwarz
Environmental Evaluation Branch
U.S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, Washington 98101

ALASKA POWER AUTHORITY

April 15, 1981

Mr. Gary Stackhouse
U. S. Fish & Wildlife Service
1101 E. Tudor Road
Anchorage, Alaska 99501

Dear Gary:

Attached is a copy of our report to the Legislature as promised by me earlier this week. I am also sending a copy to Bruce Apple.

Bruce tells me he has a copy of the Plan of Study. Since these are an endangered species, I would appreciate it if you would share his copy as you structure your shopping list of areas of concern.

Sincerely,

FOR THE EXECUTIVE DIRECTOR

David D. Wozniak
Project Engineer

Attachment: As noted

CONCUR:

DW
RAM

ALASKA POWER AUTHORITY

April 15, 1981

Ms. Judy Schwartz
Environmental Evaluation Branch
Mail Stop 443
Region 10, EPA
1200 6th Avenue
Seattle, Washington 98101

Dear Ms. Schwartz:

Attached is a mid-point report on Susitna Hydroelectric Project. It is forwarded for your information in response to your earlier expression of interest within the context of the Susitna Hydroelectric Project Steering Committee.

I have asked Mr. Allan Carson, the Chairman of that committee, to forward meeting minutes to you and to ensure that you are advised of scheduled meetings.

Sincerely,

FOR THE EXECUTIVE DIRECTOR

David D. Wozniak
Project Engineer

Attachment: As noted

cc: Allan Carson w/o attachment

CONCUR:

DW
RAM

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF PARKS

JAY S. HAMMOND, GOVERNOR

619 WAREHOUSE DR., SUITE 210
ANCHORAGE, ALASKA 99501

PHONE: 274-4676

December 4, 1981

Re: 1130-13

John D. Lawrence
Project Manager
Acres American, Inc.
The Liberty Bank Building, Main at Court
Buffalo, New York 14202

Dear Mr. Lawrence:

We have reviewed the 1980 reports by the University of Alaska Museum dealing with the cultural resources of the Susitna Hydroelectric project area. The report documents the survey activities conducted during 1980 which adequately accomplish the tasks outlined in the proposed work plan. The sampling plan designed on the basis of geomorphic features and known use areas seems to have surpassed our expectations of site incidence in the area. The report shows that the first level inventory was very competently conducted and recorded. The second year activities as outlined in the procedures manual was accomplished in the 1981 field season according to information gained through verbal communication with the principle archaeological investigators. We understand that the field research strategy was changed slightly from that expected due to information gained during 1980. These changes appear to have more directly addressed problems which surfaced during the course of analysis of the 1980 data. A final review of the 1981 results and reports will have to await receipt of that document.

We feel that the steps taken thus far in the cultural resource management of the project have been excellent and one of the few instances of adequate lead time. We would like to make the observation that the work thus far is only preliminary to the work yet needed for the Susitna Hydroelectric project. Reconnaissance and testing of yet to be examined areas should continue. The clearances of specific areas of disturbance provided as additional survey by the Museum should indicate the continued need for clearances of ancillary projects which could affect cultural resources. Also, a formal mitigation plan for those sites to be affected by the project must be formulated. Once definite decisions on the route of access to the project area from existing road systems are made, those access routes and material sites must be examined for conflicts and needs for mitigation. Issuance of a permit by the Federal Energy Regulatory Commission should and probably will include provisions specifying under federal law the need for such protection.

If you have any questions regarding our comments contained here, please call us. We look forward to receiving the report on 1981 field work.

Sincerely,

Chip Dennelein
Director

By: Robert D. Shaw
State Historic Preservation Officer

cc: Dr. E. James Dixon
Curator of Archaeology
University of Alaska Museum
University of Alaska
Fairbanks, Alaska 99701

Eric Yould
Executive Director
Alaska Power Authority
333 W. 4th Avenue
Anchorage, Alaska 99501

DR:clk

February 19, 1982
P5700.11.92
T1519

Colonel Lee R. Nunn
Department of the Army
Alaska District, Corps of Engineers
P.O. Box 7002
Anchorage, AK 99510

Dear Colonel Nunn:

Susitna Hydroelectric Project
Plant Ecology Report

Thank you for your letter of February 1 regarding your review of the following reports: Environmental Summary Annual Report - 1980, Development Selection Report, and Transmission Line Corridor Screening Close Out Report.

As a result of your comment concerning wetlands, I am enclosing for your information a copy of the 1980 Plant Ecology Report which more specifically addresses the wetlands issue. Also enclosed is a copy of the vegetation and wetlands maps which are referred to in ~~their~~ this report.

Thank you again for your letter.

Sincerely,

John Lawrence
Project Manager

MG:ccv
Enclosures

cc: E. Yould - APA

ACRES AMERICAN INCORPORATED
Consulting Engineers
The Liberty Bank Building Main at Court
Buffalo, New York 14202
Telephone 716/853-7525 Telex 91-6423 ACRES BUF

LGL REC'D 8/19/82 PGBS
cc: MIKE GRUBB
JOHN HAYDEN
JIM PLUMMER
STEVE FANCY

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1011 E. TUDOR RD.
ANCHORAGE, ALASKA 99503
(907) 276-3800

IN REPLY REFER TO:
WAES

17 AUG 1982

Eric P. Yould
Executive Director
Alaska Power Authority
334 W. 5th Avenue, 2nd Floor
Anchorage, Alaska 99501

Dear Mr. Yould:

The Alaska Power Authority (APA), by letter dated 29 July 1982, requested comments from the Fish and Wildlife Service (FWS) regarding construction access alternatives for the proposed Susitna Hydroelectric Project. We hope, with this letter, to convey our immediate concerns regarding this subject to facilitate your decision-making. This letter should not be construed as providing in toto our concerns related to project access. We fully intend to provide substantive comments on this, and related issues, upon receipt of the draft Federal Energy Regulatory Commission (FERC) license application Exhibit E. (Federal Register Vol. 46, No. 219, November 13, 1981).

The FWS has expressed, through our participation on the Susitna Hydroelectric Steering Committee (SHSC) (letters dated 26 March 1981 and 5 November 1982), concerns as to the direction and emphasis which this issue has taken. It is apparent that the APA has been lead to the present 3 access alternatives by the conclusion that power must be the forthcoming in 1993. Presently, the 1993 deadline is constraining the overall decision-making process and the orderly progress of various studies on project feasibility and environmental impacts and alternatives. The External Review Panel, in their Report, presented to the Board of Directors, Alaska Power Authority on 15 April 1982, did not acknowledge the 1993 mandate, prefering to state that:

> "The arrival of any opportune time to proceed with construction will depend on critical issues of finance and marketing of power which cannot now be accurately forecast. Our recommendation is that tender documents with all supporting geotechnical investigations and design studies be developed. We estimate that a total period of three to four years will be required for this phase of work. The project will then be ready to be implemented whenever the financial climate for contracting becomes favorable. The advantages of proceeding in this manner are:
>
> (1) The economic benefits of being ready for financing;
> (2) the momentum of the ongoing study and an informed staff; and
> (3) the ability to avoid a crash design program.

The disadvantage is the small risk of loss of the design costs in the event that, for some reason, the project is never built.

. . . This Panel is of the opinion that the economic climate will eventually indicate that it is advisable to proceed with the construction of the Susitna project and at that time it will be in the best interests of the State of Alaska to develop this important natural resource."

Given the above the FWS continues to endorse the views expressed in the Steering Committee letter dated 5 November:

"The SHSC agrees with the Terrestrial Environmental Specialists, Inc. position that access via the Alaska Railroad to Gold Creek is environmentally preferable. Railroad access to at least Devil Canyon would alleviate the need for a staging area at Gold Creek and the consequent human activity, land use, fuel spills, and other impacts on the Gold Creek area. We recognize that a staging area at Devil Canyon would be required in any case. The use of this area as the terminus of a railroad appears to make a great deal of sense. Additionally, we feel that the south side route from Gold Creek to Devil Canyon is preferable since a trail already exists there. From Devil Canyon to Watana, we prefer a route on the north side of the Susitna River . . . . If feasible we generally prefer a rail mode of access to and within the project site.

The SHSC identified three (3) environmentally sensitive areas that should be avoided. Those are:

1. The routes from the Denali Highway.

2. The route crossing the Indian River and through wetlands to the Parks Highway.

3. The route on the south side of the Susitna River from Devil Canyon to the proposed Watana dam site.

. . . Use of rail as the access mode increases the potential for management and control of socioeconomic and environmental impacts. Maximized rail use provides for the following advantages over road access:

1. Maintains a maximum range of future decision options.

2. Provides for control of worker impacts on local communities and wildlife.

3. Decreases the potential of hazardous material spills due to adverse weather conditions and multiple handling.

4. Disturbance to wildlife adjacent to the route can be more easily controlled.

5. Direct access right-of-way related habitat losses can be significantly limited."

We believe that rail, in conjunction with air access, would provide dependable service and that a redundant system of rail and road is not a necessary project feature and, as stated above, is environmentally undesirable.

An assessment of corridor route alternatives must weigh the potential impacts of borrow sites and access to these sites, and transmission line(s) routing and maintenance. Access corridors which serve a dual, or triple, purpose in regard to those other project access needs would be highly desirable from all decision-making criteria.

Public access to the damsites and through the Upper Susitna Valley is a complex and a controversial subject and we believe this issue should be given thorough evaluation in the selection of access routes, mode of access, transmission line routing, and method of maintenance access for the transmission lines. How construction and maintenance related access is obtained to a great extent determines the project-related wildlife and socioeconomic impacts.

The following comments are provided in light of our concerns and are not an endorsement of these routing alternatives.

Alternative 17

Terrestrial Environmental Specialists, Inc. expressed the opinion that the Denali Highway alternatives should not be considered. The view that the risk of substantial negative impact to the Nelchina caribou herd from a Denali Highway route is high has also been expressed by Karl Schneider, Research Coordinator, Susitna Hydroelectric Big Game Studies, Alaska Department of Fish and Game. We concur. There may be a difference of opinion amongst participants in the Susitna Hydroelectric Project Study as to the extent of the risk. However, we must conclude that the Nelchina caribou herd could be substantially negatively impacted by an access route connecting the Denali Highway to the Watana camp; and that these risks are avoidable.

In addition to potential risk to the caribou, the Denali route cuts across valuable moose, brown bear, and black bear habitat between the Watana camp and Deadman Lake. Although no major river crossings would be involved, numerous small river and tributary crossings would need to occur along this route and could pose extensive problems to numerous virgin grayling fisheries.

Alternative 16

A southern routing between the dam sites could intersect movements of large numbers of brown bears to and from Prairie Creek. The upper Prairie Creek, Stephan Lake, and the Fog Lakes regions support large year-round moose concentrations. Impacts to furbearers and waterfowl also appear to be less avoidable in a southern routing between Watana and Devil Canyon in comparison to a northern access route.

Alternative 13

We favor an access route to the north of the Susitna River between the two dam sites. However, we cannot endorse the proposed routing. Given the stated rationale that the siting of the Devil Canyon dam was partially an attempt to avoid adversely impacting the important salmonid fishery of Portage Creek we are highly concerned with any plans to place a road in close proximity to the creek for approximately 1 mile. This places the fishery in a highly vulnerable position in respect to erosion and hazardous spills.

In summary, the FWS recommends:

1. That justification for the power-on-line in 1993 planning objective be clarified.

2. Rail access into the project site, to the exclusion of a road connection, with routing north of the Susitna River between the two dam sites.

3. That alternatives for borrow sites and their access, and transmission line(s) routing be provided so that they can be considered in conjunction with construction access routing.

4. That public access to the upper Susitna basin should be evaluated within the context of the project's need to minimize, to the extent possible, adverse impacts to fish and wildlife, and their habitats.

Thank you for the opportunity to comment.

Sincerely,

Acting Assistant Regional Director

cc: FWS-ROES,WAES
Quentin Edson/FERC
APA, NMFS, EPA, NPS, USGS, ADEC, AEIDC
ADF&G, Hab. Div., Su Hydro/Aquatic Studies
Robin Sener/LGL
APA Board Members

United States Department of the Interior
NATIONAL PARK SERVICE
Alaska Regional Office
540 West Fifth Avenue
Anchorage, Alaska 99501

IN REPLY REFER TO:

L7621(ARO-PCR)

OCT 22 1982

Dr. E. James Dixon, Jr.
Curator of Archeology
University of Alaska Museum
University of Alaska
Fairbanks, Alaska 99701

Dear Dr. Dixon:

Our staff has examined the Susitna Hydroelectric Project cultural resources final report, in particular the identification and testing program elements of the research design, and find these and their field application to be very adequate methods and procedures for the discovery and evaluation of archeological and historical resources in the project area. Consultation between our staff archeologists and project personnel from the University of Alaska Museum and Acres American, as you well know, have occurred several times since the project's inception, and we have thus been kept abreast of most developments relating to cultural resources management matters. We hope that the level of identification, testing, and evaluation conducted to date continues as the project proceeds, to assure the highest levels of resource protection and compliance with Federal and State historic preservation law.

We look forward to evaluating your mitigation plan for cultural resources occurring in the project area.

Sincerely,

Regional Director
Alaska Region

cc:
Floyd Sharrock, Alaska Regional Office

NOV - 2 1982

United States Department of the Interior

NATIONAL PARK SERVICE
Alaska Regional Office
540 West Fifth Avenue
Anchorage, Alaska 99501

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Regional Director
Alaska Region

cc:
Floyd Sharrock, Alaska Regional Office

ALASKA POWER AUTHORITY
SUSITNA
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ACTION	INFORM.	DISTRIB.	INITIAL
		JDG	
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XC	✓	APA	
XC	✓	BUFF.	
		FILE	

NOTES OF MEETING

DATE: April 6, 1981 PROJECT NUMBER: AAI 218

LOCATION: DNR, Division of Minerals and Energy Management; 703 W. Northern Lights Blvd., Anchorage

ATTENDEES: Glenn Harrison, Director; Division of Minerals and Energy Management. J.O. Barnes, R.J. Krogseng, TES

SUMMARY OF DISCUSSION:

Mr. Barnes gave a short presentation summarizing the history of the Susitna Project and the role of Acres and TES in the present studies being conducted for the Alaska Power Authority.

Mr. Harrison responded that his divisions main interests involved coal, oil and gas and that he foresaw few problems that the Susitna project would cause in his areas of interest.

Mr. Harrison felt that the project "sounds good" and was well thought out.

Mr. Harrison also commented that it would be good, as far as his division was concerned, to have some roads built into the Susitna area.

Mr. Harrison stated that he appreciated the meeting and that he would like to be kept informed on a periodic basis.

Prepared by R.J. Krogseng, TES

NOTES OF MEETING

DATE: April 6, 1981 PROJECT NUMBER: AAI 218

LOCATION: Alaska Department of Transportation, Aviation Building, Anchorage

ATTENDEES: Jay Bergstrand, DOT, Area Planner; J.O. Barnes and R.J. Krogseng, TES

SUMMARY OF DISCUSSION:

Jeff Barnes outlined the history of the Susitna Project and Acres and TES's role in the present studies. Mr. Bergstrand was familar with the project and had been present at some of the Susitna project meetings.

Mr. Bergstrand requested a copy of the Environmental Annual Reports, and he was referred to Nancy Blunck's office at APA.

Mr. Bergstrand asked about transmission line high voltage effects, fish passage problems around the dams; what was planned for disposing of the timber in the impoundment areas, and was burning being considered as a mitigation measure for moose?

Mr. Bergstrand was particularly interested in the planning process for Access Roads, Transmission Line routes and transportation corridors. He showed us proposed routes for new roads in the Lower Susitna Basin and we discussed where they would cross the proposed transmission lines.

Mr. Bergstrand requested more information regarding the impact and amount of flying activity during the study and construction periods the Susitna Project would have on the Talkeetna Airport. This information would be used to ascertain if the state would have to provide more services at the Talkeetna airport. (A letter requesting this information was sent to Mr. Brownfield of Acres on April 16, 1981).

Prepared by R.J. Krogseng, TES

Mr. Baya inquired about the status of legislative funding to cover the rest of Phase I studies and the transition period.

Mr. Baya wanted to know if any incremental instream flow work was being done on the Susitna River by the state.

Mr. Baya feels that more attention needs to be paid to instream flow impacts, the effects can be far-reaching. He pointed out that the move of the state capitol, urban growth of Anchorage and the Mat-Su, the proposed causeway to Point MacKenzie, all could cause serious impacts and need to be considered in a regional planning effort. He also pointed out the need to recognize the secondary impacts that a large supply of hydroelectric power would cause.

Mr. Baya pointed out that the Fish and Wildlife Service will be asked by the Secretary (of Interior) to respond with comments during the FERC review process. The F&WS also has the requirement to coordinate fish and wildlife view points from the different agencies. Mr. Baya feels that the Susitna project has moved forward too far without funding for Fish and Wildlife Service participation. He would like to have a man assigned full time to the Susitna project to monitor the studies and keep him up to date because in the near future he will have to ask himself "can I sign off on that?"

Mr. Baya feels that the APA needs to find a way to get the F&WS actively involved. They need money to finance a staff position (approximately $50 - 60,000 a man year). Normally when the Corps of Engineers have a project they would give the F&WS money every six months through an allocation transfer.

Mr. Baya commented that recent cutbacks have caused problems and will probably result in a reduction in staff. In spite of these problems Mr. Baya said "we want to help plan a sound program.....we don't want to be obstructionists." "...but without funding for a full time position it will be virtually impossible to completly review the study in a short period of time.

Mr. Baya commented that in projects in the Lower 48 states they have found that often they had not looked far enough down the road to be aware of all of the impacts. For instance, along the Mississippi River the State of Mississippi is losing 16 miles of Delta every year, because river channelization is dumping sediments in deep water instead of spreading them over the delta areas.

NOTES OF MEETING

DATE: April 6, 1981 PROJECT NUMBER: AAI 218

LOCATION: DNR Office, 323 East 4th Ave., Anchorage

ATTENDEES: Mr. Ted Smith, Director, State Division of Forrest, Land & Water Management, ADNR. Mr. J.O. Barnes, Mr. R.J. Krogseng, TES

SUMMARY OF DISCUSSION:

Jeff Barnes outlined the history of the Susitna Project and TES's role in the studies.

Mr. Smith had recently talked to Brent Petrie (now of APA) about the Susitna project and he appreciated the briefing and the concerns shown for his departments interests.

Mr. Smith expects to get relief from the Legislative mandates which he feels are causing many of the problems in the state land disposal program.

Mr. Smith feels that the access roads for the Susitna Project will help to open up and provide access for more state disposal lands.

Mr. Smith strongly feels that the Alaska Power Authority should file applications for water rights as soon as possible to both reserve the water rights and to help DNR plan. (Alaska has recently adopted a water rights law similar to that of Montana and other Western states). He also would like to see applications from APA designating approximate routes for access roads and transmission lines so they can be included in DNR's planning at the earliest possible date.

Prepared by R.J. Krogseng, TES

NOTES OF MEETING

DATE: April 7, 1981 PROJECT NUMBER: AAI 218

LOCATION: State Parks Headquarters, 619 Warehouse Avenue, Anchorage

ATTENDEES: Jack Wiles, Robert Shaw, Doug Reger, Alaska State Parks; Kevin Young, Acres; Jeff Barnes, Lew Cutler, R.J. Krogseng, TES.

SUMMARY OF DISCUSSION:

Mr. Barnes gave a short presentation covering the history of the Susitna Project and the role played by Acres, TES, and other subcontractors in the present study for the Alaska Power Authority.

Mr. Shaw and Mr. Reger requested a copy of the Plan of Study and the Archaeology Procedures Manual. (Mr. Cutler will go over the Annual Report with Mr. Reger on the 8th of April).

Mr. Wiles was concerned that if the State Parks Department would be the manager around the reservoir area, how big was the area going to be, or would it just be the 200 foot buffer strip.

Mr. Reger wanted to know what was in the FERC application. He also wanted to know if the FERC people would consult with his staff office. He also commented that they hadn't been involved up till now.

Mr. Shaw wanted to know what the overall construction schedule would be.

Mr. Wiles inquired about the status of the access road and what the present plans were.

It was also established that artifacts that came from native owned ground are usually placed in the University of Alaska Museum to be held in trust for the natives.

All attendees agreed that the Susitna Project "sounds good" and they were satisfied with the planning that had gone into the studies.

Prepared by _____
R.J. Krogseng, TES

NOTES OF MEETING

DATE: April 7, 1981 PROJECT NUMBER: AAI 218

LOCATION: USF&WS, Tudor Road, Anchorage

ATTENDEES: Keith Baya, Assistant Area Director F&WS; Kevin Young, Acres; J.O. Barnes and R.J. Krogseng, TES.

SUMMARY OF DISCUSSION:

Mr. Baya was recently assigned to Alaska so Mr. Barnes's presentation covered the history of the Susitna Project, the role of Acres and TES in performing the studies for the Alaska Power Authority, and an outline of the studies in progress to help bring Mr. Baya up-to-date on the project.

Mr. Baya appreciated the briefing on the project and commented that he would like to see the Susitna River studied all the way down to the esturary to be sure there were no unforeseen problems. He acknowledges that effects on the lower river may be difficult to measure. He also felt that another question that will arise is "why isn't it like other hydro projects?"

Mr. Baya felt that the NEPA decision making process should be followed.

Mr. Baya believes that the Susitna study is going to be one of the major studies for the next few years. He feels that the Fish and Wildlife Service needs to be involved in these studies and that his people have some expertise, but they need to be on the ground to be able to see and supervise the studies. If they are not included Mr. Baya believes the "----FERC coordination may take longer than felt politically wise or timely."

Mr. Baya expressed an interest in what studies were planned for the coming year.

If there is an early June tour for Starker Leopold, Mr. Keith Baya would like to be included.

Mr. Baya wanted to know if Habitat Evaluation Procedures (HEP) were being used in the studies. He felt that it may be necessary to do a HEP analysis later on.

Mr. Baya inquired about Dr. B. Kessel's Avian and Small Mammal Studies and what was scheduled for the summer field studies.

Mr. Baya also commented on the EIS that will be written on the Beluga Coal fields in the next few months, and how they plan to build a model to help figure out what (data) is driving the system. They also will be looking at the question of whether it would be better to build a port at Tyonek or haul the coal by railroad to Seward.

Prepared by _____
R.J. Kroogseng, TES

NOTES OF MEETING

DATE: April 7, 1981 PROJECT NUMBER: AAI 218

LOCATION: Department of Community & Regional Affairs, 225 Cordova, Building B, Anchorage

ATTENDEES: Ed Busch, Senior Planner; Lamar Cotten, Associate Planner; Kevin Young, Acres; J.O. Barnes and R.J. Krogseng, TES.

SUMMARY OF DISCUSSION:

Mr. Barnes gave an overview of the history of the Susitna project, Acres and TES's involvement in the present studies and our reason for talking to people from their department.

Mr. Busch was aware of the steering committee through Al Carson. Mr. Busch's department provides planning assistance to communities upon request. The Department also has a management program. One of their programs provides coastal zone management for the Matanuska-Susitna Borough. This could extend up the Susitna River.

Mr. Busch's office has had sporadic involvement with the Susitna project. He was on the review committee on contractor selection and also attended some of the workshops.

Mr. Busch voiced some concerns that his office has about planning for the Susitna project. He feels there will be a number of impacts on local governments, and he wanted to know if their concerns had been considered? Mr. Busch believes that the Matanuska-Susitna Borough will bear the brunt of the impacts (positive and negative) caused by the Susitna project. A major problem will be providing increased services.

Mr. Busch wanted to know if the access roads would be kept open after the project was finished and who will maintain them. He also wanted to know, if the railroad is built, has anyone considered the impact to Talkeetna caused by people driving to Talkeetna, parking and taking the train?

Mr. Busch recommended that TES do community profiles on the towns and villages that would receive most of the impact. As a minimum he suggested community profiles on Talkeetna, Cantwell, Paxson and Gold Creek. A community profile is a collection of information with photos and a map of the community. (examples were provided). The profiles have been costing $10-11,000 to produce with the majority of the expenses going for per diem expenses and cartography.

(Northwest Gas Pipeline Company produced some of the examples).

Mr. Busch pointed out that if a village is incorporated into a second class city (such as Talkeetna) they are able to have more input in planning and governing themselves. For the smaller villages the State Legislature is the governing body, with the actual planning done by Mr. Busch's department. Wildlife planning is done by the ADF&G,and the Matanuska-Susitna Borough provides the schools. Mr. Busch does not speak for the Borough unless he has been requested to do so.

Mr. Busch feels the number of construction workers has been under-estimated, as an example, the Alyeska pipeline was under-estimated.

Mr. Busch recommended that a permanent construction camp be built for the project. The temporary camps built for the pipeline are still being used and it would have been cheaper in the long run to build permanent camps.

Mr. Busch commented that people from Frank Orth and Associates have talked to personnel in his office.

Mr. Busch also pointed out that the only way his office gets involved is when they have been asked to by the community.

Prepared by _____
R.J. Krogseng, TES

NOTES OF MEETING

DATE: April 8, 1981 PROJECT NUMBER: AAI 218

LOCATION: Department of Public Safety, Division of Fish and Wildlife Protection, 5700 E. Tudor Road, Anchorage

ATTENDEES: Colonel Robert J. Stickles, Director; Lt. Col. Tetzlaff, Capt. Wayne Fleek, Lt. Rod Mills, Department of Public Safety; Kevin Young, Acres; J.O. Barnes and R.J. Krogseng, TES.

SUMMARY OF DISCUSSION:

Mr. Barnes presented an overview of the history of the Susitna project and the part played by Acres and TES in the present studies being conducted for the Alaska Power Authority.

Col. Stickles requested that his department receive copies of the annual reports for Fish, Big Game and Access Roads.

Col. Stickles asked what effect the dams would have on the flow of the Susitna River below Talkeetna. He also wanted to know what water temperature changes may occur. He was very interested in the possible effects the project would have on moose and caribou. Col. Stickles also wanted to know how many miles of access roads were planned.

Col. Stickles wanted to know what ice effects were expected in the impoundment area and also the effects expected in the downstream reaches of the river. He also wanted to know what the construction time table was and when it would start. He needed this information to help plan for the placement of officers. He will probably assign an officer to Chulitna when construction starts.

Capt. Fleek asked about the amount of helicopter useage during the studies. He also wanted to know where the transmission line routes would be and if there would be access roads along them.

Capt. Fleek wanted to know how many people would be living near the dams for maintenance and operation of them.

Capt. Fleek wanted to know if the impoundment areas were going to be logged. He also was concerned that ice shelving might cause caribou crossing problems. Capt. Fleek commented on the large number of bear in the area and wanted to know if we had had any bear problems. He also requested that Fish and Wildlife Protection Division be sent the results of the Mitigation Committee. Their division would like to be in on mitigation planning.

All agreed that Protection Division's greatest concern would be the access provided to the area. They wanted to know if a landing strip was going to be built. They would also be interested in getting permission to store extra gas for their helicopter at Camp Watana later on.

Lt. Mills said that they could tell us the number of guides using the area, and he agreed to send Krogseng a list of the guides and their best guess on the number of hunters using the area.

Reported by R.A. Krogseng, TES

NOTES OF MEETING

DATE: April 8, 1981 PROJECT NUMBER: AAI 218

LOCATION: Department of Energy, Federal Building, Anchorage

ATTENDEES: Fred Chiei, Deputy Regional Representative; Kevin Young, Acres; J.O. Barnes and R.J. Krogseng, TES.

SUMMARY OF DISCUSSION:

Mr. Barnes made his presentation covering the history of the Susitna project and the role of Acres and TES in the present studies being conducted for the Alaska Power Authority.

Mr. Chiei appreciated being kept informed on the status of the project.

Mr. Chiei commented that his office is an off-shoot of the Secretary's office and that he deals primarily with energy'policy'.

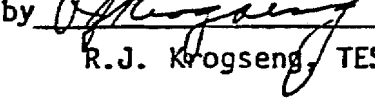
Mr. Chiei noted that the FERC people operate out of his office when they are in town, while the FERC engineers operate out of San Francisco. He also commented on the need for energy planning.

Mr. Chiei said that his office tries to stay out of the states territory in energy matters, although a lot of things have not surfaced yet. He prefers it to be more of a state project and is happy to see state funding for it.

Mr. Chiei commented that hydroelectric projects like the Susitna project release energy like coal, oil and gas that can be shipped elsewhere in the U.S. which helps to distribute the country's energy more evenly.

Mr. Chiei said that he doesn't see any problems at this point and periodic reports (like this meeting) would be sufficient. He would also be interested in seeing the development scenario when it is developed.

Mr. Chiei would like to receive information from Acres on the Tidal Power Study.

Reported by 

R.J. Krogseng, TES

NOTES OF MEETING

DATE: April 8, 1981 PROJECT NUMBER: AAI 218

LOCATION: National Park Service, 540 West 5th Avenue, Anchorage

ATTENDEES: Howard R. Wagner, Associate Director, Carl Stoddard, Terry Carlstrom, Ross Cavenaugh, National Park Service; Kevin Young, Acres; J.O. Barnes, R.J. Krogseng, TES.

SUMMARY OF DISCUSSION:

Mr. Barnes outlined the history of the Susitna project and the role Acres and TES have in the present studies being conducted for the Alaska Power Authority.

Mr. Cavenaugh asked how the Fish and Wildlife studies fit into the overall planning process. He also asked what was being done about cultural resources. Mr.Cavenaugh also wanted to know what effect the project would have on the proposed Denali Scenic highway.

Mr. Wagner said that he would be very interested in the transmission line route, especially where it is near the park (Denali). If the route passes through park boundaries, the right-of-way approval may need congressional level approval. They want to keep the transmission line out of the park.

Mr. Carlstrom wanted to know what range of considerations or options were available. He commented that access could be a direct problem. The Denali National Park is only on the west side of the Parks highway, but the transmission line would have a direct impact on the land across the road. He also wanted to be sure that someone was looking at indirect impacts caused by the project.

Mr. Wagner also commented that USGS would soon have 1:250,000 scale maps with the new park boundries marked on them.

Reported by: R.J. Krogseng, TES

NOTES OF MEETING

DATE: April 8, 1981 PROJECT NUMBER: AAI 218

LOCATION: U.S. Army Corps of Engineers, Elmendorf AFB, Anchorage

ATTENDEES: Lt. Col. Perkins, Deputy District Engineer; Kevin Young, Acres; J.O. Barnes and R.J. Krogseng, TES.

SUMMARY OF DISCUSSION:

Mr. Barnes briefly covered the role of Acres and TES in the present studies of the Susitna project being performed for the Alaska Power Authority.

Lt. Col. Perkins stated that the Corps has no funding for any work on the Susitna project.

Lt. Col. Perkins strongly feels that the state should be asking the Corps; What permits will be required? The state should also inquire about getting one blanket permit for the project.

Lt. Col. Perkins wanted to know if we knew what permits would be needed, in particular any section 404 classification of wetlands would be filled in. He recommended that the head of his environmental group be contacted.

Lt. Col. Perkins also noted that the access roads will require permits to cross wetlands; also any dredging or filling that is required. Permits will also be required for constructing the transmission lines, especially if access roads are built.

Lt. Col. Perkins pointed out that it takes a minimum of 200-220 days to process a permit, and if there are any objections they may have to be resolved in Washington, which will require even more time.

Reported by R.J. Krogseng, TES

NOTES OF MEETING

DATE: April 9, 1981 PROJECT NUMBER: AAI 218

LOCATION: NOAA National Marine Fisheries Service, Federal Building, Anchorage

ATTENDEES: Ronald Morris, Supervisor, Anchorage Field Office, Brad Smith, NOAA Fisheries Biologist; J.O. Barnes and R.J. Krogseng, TES.

SUMMARY OF DISCUSSION:

Mr. Barnes gave a presentation covering the history of the Susitna project and the role of Acres and TES in the present studies being conducted for the Alaska Power Authority.

Mr. Morris and Mr. Smith are both members of the Susitna Hydro Steering Committee and they will coordinate their work with the state fisheries people.

Mr. Smith will be in contact with Dr. Dana Schmidt of TES concerning the fisheries studies.

Mr. Morris asked about dam design features and said that he will be in contact with NOAA engineers in the Oregon office.

Mr. Morris said that they appreciated the contact.

Reported by R.J. Krogseng, TES

NOTES OF MEETING

DATE: April 9, 1981 PROJECT NUMBER: AAI 218

LOCATION: Alaska Department of Environmental Conservation, 437 E. Street, Anchorage

ATTENDEES: Bob Martin, Regional Environmental Supervisor, Steve Zrake, DEC; Kevin Young, Acres; J.O. Barnes and R.J. Krogseng, TES

SUMMARY OF DISCUSSION

Mr. Barnes outlined the history of the Susitna Project and the role of Acres and TES in the present studies being conducted for the Alaska Power Authority.

Mr. Martin asked what impacts or changes were expected on water quality or air quality. He also wanted to know if the studies were long enough to establish a proper baseline period.

Under socioeconomic, Mr. Martin wanted to know if we had studied power generation needs. He was referred to the ISER study.

Mr. Martin wanted to know if the studies would continue after the FERC application has been made. Mr. Martin also wanted to know "why the FERC application date was set so soon". As an example, Mr. Martin wanted to know why the decision on the access road had to be made so soon; he wasn't even "comfortable" with how the three routes had been selected. He stated that his department would like to keep access down because it would be easier to manage.

The Department of Environmental Conservation's interests in the Susitna area are administered out of Mr. Martins Anchorage office. His major point of contact is the Susitna Hydroelectric Project Steering Committee.

DEC's direct regulatory responsibility is waste water, drinking water, and solid waste disposal. DEC also has an interest in instream activities.

Mr. Martin recommended applying for a variance to build the construction camps to provide for drinking water and waste water and solid waste disposal.

Mr. Martin feels that the major impacts of construction activities are going to be the access roads and the locations of construction camps.

Mr. Martin said that it may be easier to have just one transportation corridor. As an example, in transportation and handling of fuel, accidents are bound to happen, like a truck may roll off the road. He feels that it is important to avoid as many critical habitat areas as possible.

Mr. Martin was also interested in the water quality studies. He feels it is very important to get a complete water quality series before road construction starts. He wants to be able to measure construction effects, such as the run off into streams from road building.

Mr. Martin is also interested in the smaller feeder streams that would be impacted by roads. He feels that 2-3 years of data from studies would be sufficient.

Mr. Martin expressed a concern about communities along the river disposing of wastes in the Susitna River.

Mr. Martin was especially concerned about the fuel transportation and storage system and the amount of fuel that would be used in a large project like Susitna. He feels it is necessary to plan to avoid or minimize accidents or spills.

Mr. Martin commented on the need to maintain ecological integrity through land use and public use planning, and to have a voice in other areas that he can't regulate. He wants to see rational land use development, something that doesn't interfere with habitat.

Mr. Martin also wants to see more attention paid to using energy alternatives such as Retherford's recommendation to use electricity to run pipeline pumps instead of using oil or gas.

Mr. Martin strongly recommended building a centralized construction camp. He also recommended building where the permanent facilities will be located.

Mr. Zrake wanted to know if under sociocultural impacts we were looking at individual desires too? He also wanted to know if this would cover the transmission line too.

Mr. Martin stated that DEC does not have any studies in progress that affect Susitna. They are working on a wetlands study with specific Alaska guidelines.

Prepared by Krogseng
R.J. Krogseng

NOTES OF MEETING

DATE: April 9, 1981 PROJECT NUMBER: AAI-218
LOCATION: U.S. Fish and Wildlife Service, Tudor Road, Anchorage, Alaska
ATTENDEES: Mel Munson, Chief Ecological Services; Gary Stackhouse, F&WS; Kevin Young, ACRES; J. O. Barnes and R. J. Krogseng, TES.

SUMMARY OF DISCUSSION:
Mr. Barnes outlined the history of the Susitna Project and the role of Acres and TES in the present studies being conducted for the Alaska Power Authority.

Mr. Munson asked what ADF&G's role was in the studies. He also wanted to know what the time frame was for all of the studies and when the EIS came into the picture. Mr. Barnes outlined the FERC process and where the different parts fit in.

Mr. Munson wanted to know if we had a preliminary permit for the project. He felt that it was important that the state file soon.

In 1952 Mr. Munson looked at 20 different proposed dams for River Basin Studies. Devil Canyon and Watana Dams were part of that study. At that time he did not find any salmon in the upper Susitna River.

Mr. Munson wanted to know if ADF&G was looking at winter moose range in the study area. From personal experience in the area, he felt that the south facing slopes on the north side of the canyon from half way between Devil Canyon to Watana were important to the moose population during the winter.

Mr. Munson has watched caribou swim the river in many different places in the Watana area, they appear to get out any place they can get up the canyon wall.

Mr. Munson commented that during peak numbers of caribou he has seen 6-8000 caribou on Mt. Watana alone. Also during peak numbers be has watched them crossing the Susitna River where many trying to swim the river would be carried down-stream and drown. He has seen hundreds of dead caribou washed up on shore.

Mr. Munson wanted to know what was planned to mitigate for losses of moose habitat. He also commented that he opposed the Denali Dam because it would flood a highly productivity area.

Mr. Munson also wanted to know if we were looking at the area above the Tyone River.

Mr. Young outlined the various dam schemes that had been considered and why the Devil Canyon - Watana scheme had been selected. Mr. Munson commented that it was a good choice.

Mr. Munson said that one of the things he was interested in was what we were going to do to mitigate for lost moose habitat. He felt that there was a need for habitat development on upper Watana Creek. Mr. Munson also suggested burning, cutting or even sprigging willows as things to consider on Tsusena Creek.

Mr. Munson was interested in the mitigation task force and its review group, although he commented that there is not much you can do for caribou.

Mr. Stackhouse asked what the status of the mitigation policy was. He hoped the group would be able to produce a policy for APA. Mr. Stackhouse also wanted to know what the basis for mitigation would be, was it going to be based on an acre for an acre or an animal for an animal?

Mr Stackhouse also asked about the vegetation analysis that was being performed;he was concerned that the studies be of a high enough quality to be able to use HEP (Habitat Evaluation Procedures) on the vegetation studies at a later date.

Mr. Stackhouse wanted to know if any hydraulic changes were expected in the river or if any icing problems were anticipated. He was also concerned about the possibility of any vegetation changes.

Mr. Stackhouse felt there was a possibility of some problems below Devil Canyon and he wanted to know if a re-reg dam was going to be put in. Mr. Stackhouse wanted to know what the planned construction periods for the dams were going to be, and if the Devil Canyon Coffer Dam would be big enough to serve as a daily re-reg dam.

Mr. Munson asked about the expected water quality for the Susitna River between Devil Canyon and Talkeetna. He commented that it probably would have similar conditions to that found in Tazlina Lake. Mr. Munson wated to know if any

enhancement of the fisheries was expected, like in Kenai or Skilak Lake.

Mr. Munson would like to receive a copy of R&M's Hydrology Report. He was interested in their prediction of winter ice conditions.

Mr. Stackhouse commented that he felt that one of the biggest problems in the study was the fact that ADF&G hadn't published a procedures manual for the fisheries study yet. He was also concerned that one person from ADF&G wore two hats; he worked on the Susitna project and was also involved in the state permitting process.

Mr. Stackhouse was very concerned that APA had not filed a preliminary permit yet. He commented that without the permit the F&WS has no official position to initiate a formal scoping process under their normal NEAPA-FERC procedures.

Mr. Munson commented that under standard conditions the state and federal F&WS work together on Exhibit S.

Mr. Stackhouse pointed out that they need to tie in with the work being done on transmission corridors and they also need to work with the Steering Committee.

Mr. Stackhouse feels that time is the over-riding factor in the studies. For instance, if a railroad is constructed for the access method, it would cost an extra year.

Mr. Munson summed up his comments on a recreational standpoint by pointing out that the reservoirs were not going to be good for fishing; that the Devil Canyon reservoir would provide some recreational boating, but that the main uses for the reservoirs would be to provide access for hunting.

Mr. Stackhouse commented that he would like to see a copy of the instream flow studies.

Prepared by R.J. Krogseng

NOTES OF MEETING

DATE: April 9, 1981 PROJECT NUMBER: AAI 218

LOCATION: Bureau of Land Management, District Office, Anchorage

ATTENDEES: Art Hosterman, Lou Carufel, Gary Seitz, Bob Ward, John Rego, BLM; Kevin Young, Acres; J.O. Barnes and R.J. Krogseng, TES

SUMMARY OF DISCUSSION

Mr. Barnes made a presentation covering the history of the Susitna Project and the role of Acres and TES in the present studies being conducted for the Alaska Power Authority. He also covered the studies and reports that are being prepared as part of the study.

Mr. Seitz wanted to know if FERC was responsible for the EIS. He also wanted to know if FERC would be asking BLM for permits or when BLM would get a chance to outline their requirements.

Mr. Rego wanted to know if FERC would be the lead agency. The present permit is good for three (3) years of studies. After that construction permits would probably be necessary.

Mr. Rego stated that he would like to see all three access routes studied; the Denali route north, the south route to Devil Canyon and the north service road between both dams. He commented that their Mr. Beckley has built a lot of roads and that he ought to take a look at the different routes.

Mr. Hosterman wanted to know "what are the biggest problems?" Also, what is the role of the State Fish and Game Department in the studies. He also wanted to know about Cultural Resources and how they were being taken care of. Mr. Hosterman also asked about Human Resources and the Natives and their interests.

Mr. Hosterman wanted to know if induced seismicity caused by the weight of the dam and reservoir was being considered. Also asked the question of how much permafrost was in the area and whether or not it was being studied.

The group also felt that public participation in study changes was a good idea.

It was also felt that "if you are going to do one right_____this is the one."

Prepared by Krogseng

R.J. Krogseng

NOTES OF MEETING

DATE: April 9, 1981 PROJECT NUMBER: AAI 218

LOCATION: Alaska Department of Fish & Game, 333 Raspberry Road, Anchorage

ATTENDEES: Carl Yanagawa, Regional Supervisor, Habitat Protection; Kevin Young, Acres; J.O. Barnes and Robert J. Krogseng, TES

SUMMARY OF DISCUSSION:

Mr. Barnes gave a short presentation outlining the history of the Susitna project and the role of Acres and TES in the present studies being conducted for the Alaska Power Authority.

Mr. Yanagawa outlined the state permit system in which Mr. Trent is still the State Coordinator for the Department of Fish and Game for permits, although Mr. Yanagawa issues the permits. Mr. Trent gathers the data and other information that Mr. Yanagawa uses to issue the permits. The normal procedure is for Mr. Yanagawa to get a consensus from the different departments to help make the final decision.

Mr. Yanagawa commented that he is presently short-handed in his department. He has a position number but no funding for it.

Mr. Yanagawa had some questions about the access roads. He especially wanted to know when the road was going to be used. He said the Department of Fish and Game would be prepared to make recommendations and trade off in regards to the access roads, but they did not have any real hang-ups about them.

As a result of a decision made in Juneau in March, Mr. Yanagawa will not be a member of the Steering Committee. The policy of the department is that Mr. Trent is the coordinator for ADF&G. The coordinator helps make the departments decisions. Mr. Trent is the only one who can raise official questions on the Susitna project.

Drawing from his pipeline experience, Mr. Yanagawa commented that this was the wrong job for a total preservationist, because sometimes you just have to get in and do your best to find the best route or method available and go with that, that not everything will be perfect. He recommended getting in and looking at routes early. Sometimes a problem can be solved by just moving the road 20 feet left or right.

Mr. Yanagawa also feels that you need to keep asking yourself "if you spend another million dollars, how much more information are you going to get"? He also feels that it is important to make everyone aware of the assumptions that you are making up front.

Mr. Yanagawa also feels that you need to pick a starting place, because you cannot wait for all the answers to come in before you start.

Also, drawing on his experience in building the pipeline, Mr. Yanagawa recommended forgetting about building a constrcution camp for temporary use and go ahead and design for permanent use, because you will save money in the long run.

Prepared by Krogseng
R.J. Krogseng

NOTES OF MEETING

DATE: April 10, 1981 PROJECT NUMBER: AAI-218

LOCATION: University of Alaska, Arctic Enviromental Information and Data Center, 707 A Street, Anchorage, Alaska 99501 (907) 279 - 4523

ATTENDEES: William J. Wilson, Fisheries Biologist AEIDC; Kevin Young, Acres; J. O. Barnes and R. J. Krogseng, TES.

SUMMARY OF DISCUSSION:

Mr. Barnes gave a short presentation covering the history of the Susitna Project and the role Acres and TES have in the present study being conducted for the Alaska Power Authority.

Mr. Wilson was the project Leader for the Terror Lake project on Kodiak Island, and he discussed his experience in filing the FERC license application.

Mr. Wilson was concerned about the slow start by ADF&G on the fisheries study. He felt that FERC's immediate reaction will probably be to reject the application and ask for more information. He also felt that organizations like "Susitna Now" should be aware of this and be expecting the request for more information.

Mr. Wilson feels that some of the fishery study tasks will require alot of work, because some drainages in the Susitna basin do not have very much that is known about them.

Mr. Wilson also commented that the instream flow studies may be a problem, because there is not much expertise available capable of doing the studies.

On the Terror Lake Project Mr. Wilson said that they used joint participation where USGS, F&WS and AEIDC crew members walked the streams together to pick out the study sites, because you can't pick them off from a map. Mr. Wilson feels that you have to know what the project is going to do to the stream flows and that incremental instream flow studies will give you that flexibility.

Mr. Wilson commented that FERC would like to see an agreement between State and Federal agencies over policies and requirements.

As a member of the Susitna Hydroelectric Project Steering Committee, Mr. Wilson is concerned about the lack of information on what is going on. He felt that it took too long to hear back on the Steering Committee's comments on the procedure manuals, and that Acres should have responded sooner. Mr. Wilson also felt that the Steering Committee should have seen the access road report earlier. He feels that preliminary information should be made available to the Steering Committee as soon as possible.

Mr. Wilson feels that Acres should publish more data in a "this is what we found" format and not just "this is what we conclude".

Mr. Wilson feels that the Steering Committee should be a competent and helpful sounding board for the project. He feels that the Steering Committee can help save steps by pointing out pitfalls and other regulation mandates that need to be complied with as part of their advisory capacity. The Steering Committee cannot play a part in policy decisions, but they can give feedback on what was discussed to both sides.

As part of a University of Alaska policy, Mr. Wilson would like to see more knowledge made available to the public. He would also like to see a centralized depository or library of information on the project that would make available the procedures manuals, maps, photos, charts, diagrams, and reports from the project.

Mr. Wilson is also interested in seeing an informal Steering Committee meeting at Acres to provide an opportunity to open a dialogue with the Acres engineers.

Prepared by Krogseng

R.J. Krogseng

NOTES OF MEETING

DATE: April 10, 1981 PROJECT NUMBER: AAI 218

LOCATION: Alaska Division of Natural Resources, 323 East 4th Avenue, Anchorage

ATTENDEES: Al Carson, Deputy Director, Division of Research and Development, DNR; Kevin Young, Acres; J.O. Barnes and R.J. Krogseng, TES

SUMMARY OF DISCUSSION:

Mr. Barnes summarized the ideas and concerns that had been expressed during the series of meetings with the various agencies.

The primary request from those who were also members of the Steering Committee was the request to get information to the Steering Committee in time for them to review it before the meeting.

Also high on the list was the desire for a central depository at the library where all of the information would be available to more people.

Not everyone was knowledgeable about access roads; more information has to be distributed to get people up to speed. It should also be understood that some areas are incremental, that some minor impacts may work together to cause a major impact. It is also felt that it is important to send out the criteria on objectives that are to be used in making decisions to the Steering Committee members and ask for their comments on the fitness of the criteria.

It is also important to get the ground rules set up before a dispute has started in order to avoid tunnel vision or having people argue about different parts of a question.

There is still some confusion on how the FERC process works. It also appears necessary to get docketed or to put in a preliminary license application which will also authorize the Fish and Wildlife service to become involved in the study.

Mr. Carson said he would be willing to help reinforce any concerns such as engineering disputes that may arise.

Mr. Carson commented that he liked his meeting with APA, Acres and TES. He felt that it was open and not defensive. He also said that he is willing to start having Steering Committee meetings for discussion of problems, instead of fighting over problems.

Mr. Carson would like to see a copy of the Acres and TES monthly progress reports sent to the Steering Committee because it provides an overview of what is happening.

Mr. Carson said the Steering Committee would like to know the decision making time lines. They also would like to know when studies and reports come in.

Mr. Carson said that a critical need which he feels needs attention is the need for an understanding of technical, engineering, and socio-economic information, fed together in a holistic approach to the whole problem. He said that we need to inter-mesh ideas before people such as engineers have a vested interest in their design.

Mr. Young explained how he works closely with the design engineers to bring environmental and social concerns into the design at an early stage to try to avoid future problems.

Mr. Carson commented on the need to get input from the Steering Committee members before certain design milestones are reached.

Mr. Carson said he would like to see EIS scoping procedures and activities used in solving some of the problems.

Another suggestion Mr. Carson made was for Acres and TES to touch base with the Steering Committee with a conceptual type outline. To ask the Steering Committee members "do you think this will do it?" "will it achieve our purpose?" He feels it is important to make sure you are using the right process before you go out and do all the work.

Mr. Carson also commented that enlightened engineers are better to work with than biologists.

Prepared by: Krogseng

R.J. Krogseng

APPENDIX E11D

CORRESPONDENCE RELATING TO DEVELOPMENT SELECTION

APPENDIX 11.D

DEVELOPMENT SELECTION

In March 1981, the Development Selection Report was circulated to agencies for review and comment. This report compared various development scenarios within the Middle and Upper Susitna Basin as well as alternatives outside the basin. The following are comments received on the Development Selection Report.

Correspondence is presented primarily in chronological order. However, in some cases, a response to a letter directly follows the letter to facilitate an understanding of the flow of communication. This results in an interruption in the chronological sequence.

November 14, 1980
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T.546

Mr. Al Carson
Chairman, Susitna Hydro Steering Committee
Department of Natural Resources
619 Warehouse Drive
Suite 210
Anchorage, Alaska 99501

Dear Al:

Susitna Hydroelectric Project
Steering Committee Review of Potential
Hydroelectric Development Sites

Thank you for the opportunity of meeting with the Steering Committee on November 5, 1980. I personally found it disappointing that my objective of establishing a workshop atmosphere where the members of the Steering Committee could have a positive input into our selection of candidate hydro sites did not materialize. However, I realize that our objectives for this component of the Susitna studies may not have been adequately explained. In this regard I have attached a further explanation of our objectives as prepared by Robert Mohn of APA.

I have accepted your suggestion that the most efficient means of obtaining input from the Steering Committee is to 1) identify in-house the short list of candidate sites we propose for further study; 2) present this list to the Steering Committee for review and comment, and 3) incorporate these comments into our final selection and review.

Presented on Table 1 is our short list of candidate sites proposed for further study. As mentioned on November 5 it is essential for planning purposes to retain 4-6 sites within each of the size categories listed. These sites were selected from the list presented on Table 2. Table 2 represents sites that have passed through our rough economic and environmental screening. Although I realize that the Steering Committee disagreed with our rough screening criteria it is my opinion that using this criteria allowed us to eliminate the least environmentally acceptable schemes.

ACRES AMERICAN INCORPORATED

I would appreciate receiving the Steering Committee's review and comments on the sites presented in Table 1. If for any reason you find that any of these sites are totally unacceptable, I request that you recommend a replacement of similar size from the sites listed in Table 2. This replacement is essential so that we can retain 4-6 candidate sites in each size category. Information relating to location and design parameters for each site was included in the information packets distributed prior to our November 5 meeting.

Trusting this approach meets with your approval.

Sincerely,

Kevin Young
Environmental Coordinator

KRY/jmh
Attachments

Table I

Candidate Sites for Future Study

Size	<25 MW	25-100 MW	>100 MW
	Tustumena	Snow	Chakachamna
	Allison Creek	Hicks	Johnson
	Silver Lake	Cache	Browne
	Strandline Lake	Keetna	Land
		Talkeetna-2	Tokichitna
		Lower Chulitna	

Table 2

Sites Passing Rough Screening

Size	<25 MW	25-100 MW		>100 MW
	Strandline L.	Whiskers	Snow	Lane
	Lower Beluga	Coal	Kenai Lower	Tokichitna
	Lower Lake Cr.	Chulitna	Gerstle	Yentna
	Allison Cr.	Ohio	Tanana R.	Cathedral Bluffs
	Grant Lake	Lower Chulitna	Bruskasna	Johnson
	McClure Bay	Cache	Kantishna R.	Browne
	Upper Nellie Juan	Greenstone	Upper Beluga	Tazilna
	Power Creek	Talkeetna 2	Coffee	Kenai Lake
	Silver Lake	Granite Gorge	Gulkana R.	Chakachamna
	Solomon Gulch	Keetna	Klutina	
	Tustumena	Sheep Creek	Bradley Lake	
		Skwentna	Hick's Site	
		Talachulitna	Lowe	

ALASKA POWER AUTHORITY

MEMORANDUM

TO: Susitna Steering Committee Members

DATE: November 25, 1980

FROM: Robert A. Mohn
Director of Engineering
Alaska Power Authority

SUBJECT: Environmental screening of hydroelectric sites

There has been some measure of frustration and disappointment on all sides associated with the attempt by Acres American to solicit input from the Steering Committee at the committee's last meeting. It seems to me that an important factor in the lack of success may stem from misunderstanding or uncertainty about this exercise in relation to an "alternatives study".

As you probably remember, the original Acres plan of study (POS) called for a study of alternatives to Susitna as the primary element of Task 1. Information about alternatives was to be developed, a screening mechanism was to be employed to narrow the range of acceptable options, and the Susitna project was to be compared against the preferred alternative. This work was to be conducted in parallel with the detailed studies of the Susitna project, and its goal was to formulate several optimized "without Susitna" plans. In other words, Task 1 was meant to be a thorough search for a plan that would be preferable to Susitna development.

The Power Authority requested supplemental funding to adequately fund Task 1 after some early criticism of the funding level and study scope. The requested $1.3 million was appropriated but with the caveat that the alternatives study would be performed by someone other than Acres. The Governor's 4-person policy review committee (Ulmer, Lehr, Quinlan and Conway) selected Battelle to do the work.

The elimination of Task 1 from our study plan left a significant hole. This was the case because information that was to be developed in Task 1 was critical to the formulation of the preferred Susitna basin development plan and to the economic evaluation of the Susitna plan. River basin planners cannot formulate an optimal Susitna plan without knowing what the remainder of the Railbelt power system components are likely to be, and the economic analysts cannot evaluate benefits and costs without having a "without Susitna" plan to compare to.

So, the Power Authority and Acres responded to the termination of Task 1 by augmenting the design development work in Task 6. This permitted the Susitna study to stay on track by incorporating that portion of Task 1 needed for Susitna plan formulation. The objective of this work is not to formulate an optimal set of alternatives; that is being done by Battelle. Instead the purpose is to gather information about likely components of a future Railbelt power system as a frame of reference for Susitna project formulation.

ALASKA POWER AUTHORITY

MEMORANDUM

TO: Susitna Steering Committee
Members
DATE: November 25, 1980

It is in this gathering of information about likely system components and in establishing the frame of reference that your assistance has been sought. To reiterate, the exercise is in support of Susitna project formulation; it is not meant to replace the Battelle alternatives study or be the final word on alternatives.

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF RESEARCH & DEVELOPMENT

323 E. 4TH AVENUE
ANCHORAGE, ALASKA 99501
279-5577

December 11, 1980

Don McKay
U. S. Fish & Wildlife Service
733 W. 4th Ave., Suite 101
Anchorage, Alaska 99501

Dear Mr. McKay:

Enclosed please find a 11/14/80 letter from Kevin Young of Acres American concerning review of potential hydroelectric sites. You will recall that we discussed this with Mr. Young during our afternoon session on November 5, 1980. There is also a memorandum from Robert Mohn of the Alaska Power Authority which describes why A.P.A. has contracted ACRES to do this task.

Please review the documents as explained in Mr. Young's letter and forward your comments to me either in writing or by phone by December 31, 1980.

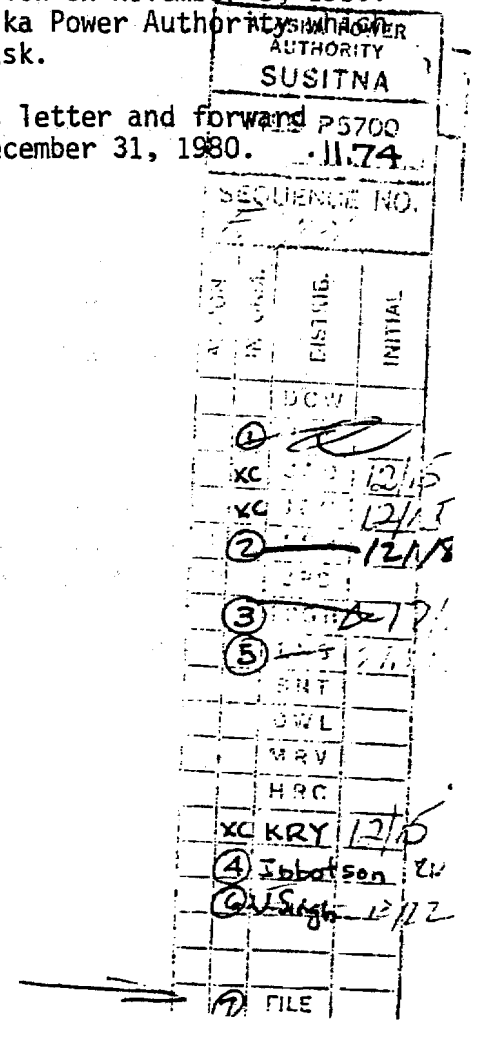
Sincerely,

Al Carson

Al Carson, Chairman
Susitna Hydro Steering Committee

Enclosures

cc: Eric Yould - A.P.A.
Kevin Young - ACRES



STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF RESEARCH & DEVELOPMENT

323 E. 4TH AVENUE
ANCHORAGE, ALASKA 99501

279-5577

December 11, 1980

Tom Trent
AK Department of Fish & Game
333 Raspberry Road
Anchorage, Alaska 99502

Dear Mr. Trent:

Enclosed please find a 11/14/80 letter from Kevin Young of Acres American concerning review of potential hydroelectric sites. You will recall that we discussed this with Mr. Young during our afternoon session on November 5, 1980. There is also a memorandum from Robert Mohn of the Alaska Power Authority which describes why A.P.A. has contracted ACRES to do this task.

Please review the documents as explained in Mr. Young's letter and forward your comments to me either in writing or by phone by December 31, 1980.

Sincerely,

Al Carson

Al Carson, Chairman
Susitna Hydro Steering Committee

Enclosures

cc: Eric Yould - A.P.A.
Kevin Young - ACRES

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF RESEARCH & DEVELOPMENT

323 E. 4TH AVENUE
ANCHORAGE, ALASKA 99501
279-5577

December 11, 1980

John Rego
Bureau of Land Management
Anchorage District Office
4700 E. 72nd Avenue
Anchorage, Alaska 99502

Dear Mr. Rego:

Enclosed please find a 11/14/80 letter from Kevin Young of Acres American concerning review of potential hydroelectric sites. You will recall that we discussed this with Mr. Young during our afternoon session on November 5, 1980. There is also a memorandum from Robert Mohn of the Alaska Power Authority which describes why A.P.A. has contracted ACRES to do this task.

Please review the documents as explained in Mr. Young's letter and forward your comments to me either in writing or by phone by December 31, 1980.

Sincerely,

Al Carson

Al Carson, Chairman
Susitna Hydro Steering Committee

Enclosures

cc: Eric Yould - A.P.A.
Kevin Young - ACRES

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF RESEARCH & DEVELOPMENT

323 E. 4TH AVENUE
ANCHORAGE, ALASKA 99501

279-5577

December 11, 1980

Bob Lamke
U. S. Geological Survey
Water Resources
733 W. 4th Ave., Suite 400
Anchorage, Alaska 99501

Dear Mr. Lamke:

Enclosed please find a 11/14/80 letter from Kevin Young of Acres American concerning review of potential hydroelectric sites. You will recall that we discussed this with Mr. Young during our afternoon session on November 5, 1980. There is also a memorandum from Robert Mohn of the Alaska Power Authority which describes why A.P.A. has contracted ACRES to do this task.

Please review the documents as explained in Mr. Young's letter and forward your comments to me either in writing or by phone by December 31, 1980.

Sincerely,

Al Carson

Al Carson, Chairman
Susitna Hydro Steering Committee

Enclosures

cc: Eric Yould - A.P.A.
Kevin Young - ACRES

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF RESEARCH & DEVELOPMENT

323 E. 4TH AVENUE
ANCHORAGE, ALASKA 99501
279-5577

December 11, 1980

Bill Wilson or Chuck Evans
Arctic Environmental Information
and Data Center (U of A)
707 "A" Street
Anchorage, Alaska 99501

Dear Messrs. Wilson & Evans:

Enclosed please find a 11/14/80 letter from Kevin Young of Acres American concerning review of potential hydroelectric sites. You will recall that we discussed this with Mr. Young during our afternoon session on November 5, 1980. There is also a memorandum from Robert Mohn of the Alaska Power Authority which describes why A.P.A. has contracted ACRES to do this task.

Please review the documents as explained in Mr. Young's letter and forward your comments to me either in writing or by phone by December 31, 1980.

Sincerely,

Al Carson

Al Carson, Chairman
Susitna Hydro Steering Committee

Enclosures

cc: Eric Yould - A.P.A.
Kevin Young - ACRES

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF RESEARCH & DEVELOPMENT

323 E. 4TH AVENUE
ANCHORAGE, ALASKA 99501
279-5577

December 11, 1980

Dave Sturdevant
Department of Environmental
Conservation
Pouch "O"
Juneau, Alaska 99811

Dear Mr. Sturdevant:

Enclosed please find a 11/14/80 letter from Kevin Young of Acres American concerning review of potential hydroelectric sites. You will recall that we discussed this with Mr. Young during our afternoon session on November 5, 1980. There is also a memorandum from Robert Mohn of the Alaska Power Authority which describes why A.P.A. has contracted ACRES to do this task.

Please review the documents as explained in Mr. Young's letter and forward your comments to me either in writing or by phone by December 31, 1980.

Sincerely,

Al Carson

Al Carson, Chairman
Susitna Hydro Steering Committee

Enclosures

cc: Eric Yould - A.P.A.
Kevin Young - ACRES

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF RESEARCH & DEVELOPMENT

323 E. 4TH AVENUE
ANCHORAGE, ALASKA 99501
279-5577

December 11, 1980

Larry Wright or Bill Welch
Heritage Conservation and
Recreation Service
1011 E. Tudor Road, Suite 297
Anchorage, Alaska 99503

Dear Messrs. Wright & Welch:

Enclosed please find a 11/14/80 letter from Kevin Young of Acres American concerning review of potential hydroelectric sites. You will recall that we discussed this with Mr. Young during our afternoon session on November 5, 1980. There is also a memorandum from Robert Mohn of the Alaska Power Authority which describes why A.P.A. has contracted ACRES to do this task.

Please review the documents as explained in Mr. Young's letter and forward your comments to me either in writing or by phone by December 31, 1980.

Sincerely,

Al Carson

Al Carson, Chairman
Susitna Hydro Steering Committee

Enclosures

cc: Eric Yould - A.P.A.
Kevin Young - ACRES

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF RESEARCH & DEVELOPMENT

323 E. 4TH AVENUE
ANCHORAGE, ALASKA 99501
279-5577

December 11, 1980

Brad Smith or Ron Morris
National Marine Fisheries Service
701 "C" Street, Box 43
Anchorage, Alaska 99513

Dear Messrs. Smith & Morris:

Enclosed please find a 11/14/80 letter from Kevin Young of Acres American concerning review of potential hydroelectric sites. You will recall that we discussed this with Mr. Young during our afternoon session on November 5, 1980. There is also a memorandum from Robert Mohn of the Alaska Power Authority which describes why A.P.A. has contracted ACRES to do this task.

Please review the documents as explained in Mr. Young's letter and forward your comments to me either in writing or by phone by December 31, 1980.

Sincerely,

Al Carson

Al Carson, Chairman
Susitna Hydro Steering Committee

Enclosures

cc: Eric Yould - A.P.A.
Kevin Young - ACRES

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Water Resources Division
733 W. Fourth Ave., Suite 400
Anchorage, Alaska 99501

July 27, 1981

Al Carson
State of Alaska
Department of Natural Resources
323 E. Fourth Avenue
Anchorage, Alaska 99501

Dear Mr. Carson:

I have reviewed the Draft Development Selection Report for the proposed Susitna Hydroelectric Project as requested in the APA transmittal of June 18, 1981. The review was limited to the evaluation process used by Acres, the relative impacts of several alternative development plans of Susitna hydroelectric resources, and the conclusion that the Watana-Devil Canyon plan is the preferred basin alternative.

There were no problems involved in understanding the selection process used by Acres and there were enough data and information presented to compare the final candidate (alternative) plans. The relative impacts of the candidates were presented in an understandable and credible manner. Although only a qualitative evaluation of impacts is presented (pending reports of on-going studies), a reasonable conclusion is that the Watana-Devil Canyon plan is the preferred candidate for Susitna hydroelectric development.

Robert D. Lamke

cc: David D. Wozniak, Project Engineer, APA, Anchorage, AK

...onmental Information and Data Center
707 A Street
Anchorage, Alaska 99501

PHONE (907) 279-4523

UNIVERSITY OF ALASKA

RECEIVED
AUG 5 1981
ALASKA POWER AUTHORITY

August 4, 1981

Dave Wozniak
Alaska Power Authority
333 W. 4th AVenue, Suite 31
Anchorage, AK 99501

Dear Dave:

Per your request to the members of the Susitna Steering Committee, I have quickly reviewed the Development Selection Report prepared by Acres. In general I found it logical in approach and complete in regards to the relevant factors one should evaluate when reducing multiple options.

I have only the following specific comments:

1. The location and environmental effects of developing borrow material sites is not well documented and incorporated into the first part of the report. Enormous qunatities would be required for most of the dams, and the removal, stockpiling, and transport of this material could be a significant factor influencing the decision-making process.

2. Significant efforts are currently being expended in environmental study of this region, the results of which are not yet available. Factoring this new knowledge into the decision-making process could have influenced the nature of the final scheme; or is the current environmental study effort geared only toward the effects of the "selected plan (page 9-1)" and not for input to the overall selection process? In general I found the environmental effects of the alternative options addressed very superficially.

I hope my comments are of interest.

Sincerely,

William J. Wilson
Supervisor, Resource and Science
Services Division
Senior Research Analyst in Fisheries

WJW/g

cc: Al Carson

United States Department of the Interior

NATIONAL PARK SERVICE
ALASKA STATE OFFICE
334 West Fifth Avenue, Suite 250
Anchorage, Alaska 99501

IN REPLY REFER TO:

1201-03a

AUG 5 1981

RECEIVED
AUG 7 1981
ALASKA POWER AUTHORITY

Mr. David D. Wozniak
Susitna Hydro Project Engineer
Alaska Power Authority
333 West 4th Avenue, Suite 31
Anchorage, AK 99501

Dear David:

In response to your request I have reviewed the Draft Development Selection Report for the Susitna Project. Based upon the information presented in the report, I would judge the evaluation process to be satisfactory. However, I would not want to recommend or otherwise comment on a preferred basin alternative prior to the completion of ongoing studies which will further quantify the anticipated environmental impacts. I assume the final report will reflect a more precise comparison of environmental impacts for the dam sites under consideration.

An additional item of interest which should perhaps be included in the final report is a comparison of the expected life of the project for each alternative dam site considering the effect of silt accumulation in the reservoirs.

Thank you for the opportunity to review the report. The above comments are my own and should not be interpreted as representing the official position of the National Park Service.

Sincerely,

Larry M. Wright

Larry M. Wright
Outdoor Recreation Planner

CONSERVE AMERICA'S ENERGY

Save Energy and You Serve America!

STATE OF ALASKA

DEPT. OF ENVIRONMENTAL CONSERVATION

SOUTHCENTRAL REGIONAL [illegible]

437 E Street
Second Floor
Anchorage, AK 9950[illegible]

P.O. Box 1207
Soldotna, Alaska 99669
(907) 262 5210

P.O. Box 1064
Wasilla, Alaska 99687
(907) 376-5038

August 14, 1981

Dave Wozniak
Project Engineer
Alaska Power Authority
333 W. 4th Avenue, Suite 31
Anchorage, Alaska 99501

Dear Mr. Wozniak:

We have reviewed sections 7 and 8 of the Susitna Hydroelectric Project Development Selection Report (second draft June 1981). We find that the plan selection methodology used in section 8 meets the objectives of determining an optimum Susitna Basin Development Plan and of making a preliminary assessment of a selected plan by an alternatives comparison. The increased emphasis over previous analyses of the environmental acceptability of the alternatives is good.

At this time, this Department does not endorse any particular plan. We would, however, recommend the Steering Committee openly discuss the Watana Dam - Tunnel option because of its reduced environmental and aesthetic impact.

Thank you for the opportunity to review this document. We appreciate your effort in soliciting Su-Hydro Steering Committee involvement. If you have any questions regarding these comments please contact Steven Zrake of this office.

Sincerely,

Bob Martin
Regional Environmental Supervisor

cc: Steve Zrake
Dave Studevant
Al Carson - DNR

BM/SZ/mn

October 21, 1981
P5700.10

Mr. Lee Wyatt
Planning Director
Matanuska-Susitna Barough
Box B
Palmer, Alaska 99645

Susitna Hydroelectric Project
Development Selection Report

Dear Mr. Wyatt:

As you know, Acres American, Incorporated is under contract to the Alaska Power Authority to conduct a feasibility study and prepare a Federal Energy Regulatory Commission (FERC) license application for the Susitna Hydroelectric Project. The scheduled date for submission of the application is in June of 1982.

Federal law and FERC regulations require that the reports supporting the FERC application be prepared in consultation with Federal and State agencies having managerial authority over certain project aspects. This coordination must be documented in the license application.

A great deal of coordination has taken place at agency staff levels by direct participation in studies or by participation in committees and task groups. This input, however, has been primarily by staff and may not necessarily reflect the views of the agency. For this reason, we are conducting a parallel formal coordination process, by requesting agency comments on key study outputs. The plan of study was the first document coordinated in this manner. Over the next year, there will be several more. This parallel process will affect the other coordination activities of the study.

At this time, we request that the Matanuska-Susitna Barough review the attached Report, particularly in the areas impacting on the environment.

ACRES AMERICAN INCORPORATED
Consulting Engineers
The Liberty Bank Building Main at Court
Buffalo, New York 14202
Telephone 716-853-7525 Telex 91-6423 ACRES BUF
Other Offices: Columbia, MD Pittsburgh, PA Raleigh, NC Washington, DC

Your prompt attention to this matter will enable us to continue planning the best possible development for all interests. A response within thirty days of receipts would be greatly appreciated. Please send a copy of your comments to:

Mr. Eric Yould, Executive Director
Alaska Power Authority
333 West 4th Avenue
Anchorage, Alaska 99501

Very truly yours,

John D. Lawrence
Project Manager

JDL:jgk

cc: Eric, Yould, Alaska Power Authority

Preceding Letter Sent To:

Mr. Lee Wyatt
Planning Director
Matanuska-Susitna Borough
Box B
Palmer AK 99645

Mr. John Rego
Bureau of Land Management
701 C Street
Anchorage, AK 99501

Mr. Tom Barnes
Office of Coastal Management
Division of Policy Development
and Planning
Pouch AP
Juneau, AK 99811

Mr. John E. Cook
Regional Director
National Park Service
540 West Fifth Avenue
Anchorage, AK 99501

Mr. Ernest W. Mueller
Commissioner
Alaska Department of
Environmental Conservation
Juneau, AK 99801

Ms. Lee McAnerney
Department of Regional Affairs
Pouch B
Juneau, AK 99811

Mr. Ronald O. Skoog
Commissioner
Alaska Department of Fish and Game
Juneau, AK 99801

Mr. Keith Schreiner
Regional Director
U.S. Fish and Wildlife Service
11011 E. Tudor Road
Anchorage, AK 99503

Colonel Lee Nunn
District Engineer
U.S. Army Corps of Engineers
P.O. Box 7002
Anchorage, AK 99510

Mr. John Katz
Alaska Department of Natural
Resources
Pouch M
Junean, AK 99811

Mr. Robert Shaw
State Historic Preservation
Office
Alaska Department of Natural
Resources
619 Warehouse Avenue
Anchorage, AK 99501

Regional Administrator
U.S. Environmental Proection
Agency
1200 South Avenue
Seattle, WA 98101

Mr. Robert McVey, Director
Alaska Region
National Marine Fisheries Service
P.O. Box 1668
Juneau, AK 99802

November 9, 1981
P5700.06

Mr. Ronald O. Skoog
Commissioner
State of Alaska Department of Fish and Game
Juneau, Alaska 99801

Susitna Hydroelectric Project
Development Selection Report

Dear Mr. Skoog:

As you know, Acres American Incorporated is under contract to the Alaska Power Authority to conduct a feasibility study and prepare a Federal Energy Regulatory Commission (FERC) license application for the Susitna Hydroelectric Project. The scheduled date for submission of the application is in June of 1982.

Federal law and FERC regulations require that the reports supporting the FERC application be prepared in consultation with Federal and State agencies having managerial authority over certain project aspects. This coordination must be documented in the license application.

A great deal of coordination has taken place at agency staff levels by direct participation in studies or by participation in committees and task groups. This input, however, has been primarily by staff and may not necessarily reflect the views of the agency. For this reason, we are conducting a parallel formal coordination process by requesting agency comments on key study outputs. The plan of study was the first document coordinated in this manner. Over the next year, there will be several more. This parallel process will affect the other coordination activities of the study.

At this time, we request that the Department of Fish and Game review the attached Report, "Development Selection Report", particularly in the areas impacting on the fish and game resources.

ACRES AMERICAN INCORPORATED
Consulting Engineers
The Liberty Bank Building, Main at Court
Buffalo, New York 14202
Telephone 716-853-7525 Telex 91-6493 ACRES BUF
Other Offices: Columbia, MD Pittsburgh, PA Raleigh, NC Washington, DC

Your prompt attention to this matter will enable us to continue planning the best possible development for all interests. A response within thirty days of receipts would be greatly appreciated. Please send a copy of your comments to:

Mr. Eric Yould, Executive Director
Alaska Power Authority
333 West 4th Avenue
Anchorage, Alaska 99501

Very truly yours,

John Lawrence/dip

John D. Lawrence
Project Manager

JDL/MMG:jgk

cc: Eric Yould, Alaska Power Authority
Mr. Thomas Trent, Department of Fish & Game

December 4, 1981
P5700.11.92
T.1330

WILLETT
WITTE
BERRY
HAYDEN
LAMB
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SINCLAIR
VANDERBURGH
CARLSON
FRETZ
JEX
LOWREY
SINGH
HUSTEAD
BOVE
CHASE

Mr. Lee Wyatt
Planning Director
Matanuska-Susitna Barough
Box B
Palmer, Alaska 99645

Susitna Hydroelectric Project
Document Transmittal Form

Dear Mr. Wyatt:

Enclosed is a document transmittal form which should have accompanied our package dated November 10 containing copies of the Development Selection Report and its appendices. The document transmittal form is part of a newly-implemented procedure at Acres which is intended to verify the arrival of documents shipped via various carriers and thus alleviate as quickly as possible any problems which may arise due to documents being misplaced during transit.

If you have any questions, please do not hesitate to call.

Sincerely yours,

JE McBee

for John D. Lawrence
Project Manager

JEM/jh
Enclosures

ACRES AMERICAN INCORPORATED
Consulting Engineers
The Liberty Bank Building Main at Court
Buffalo New York 14202
Telephone 716-853-7525 Telex 91-6423 ACRES BUF

Preceding Letter Sent To:

Mr. Lee Wyatt
Planning Director
Matanuska-Susitna Borough
Box B
Palmer AK 99645

Mr. John Rego
Bureau of Land Management
701 C Street
Anchorage, AK 99501

Mr. Tom Barnes
Office of Coastal Management
Division of Policy Development
and Planning
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Juneau, AK 99811

Mr. John E. Cook
Regional Director
National Park Service
540 West Fifth Avenue
Anchorage, AK 99501

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Commissioner
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Alaska Department of Natural
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Junean, AK 99811

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State Historic Preservation
Office
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Resources
619 Warehouse Avenue
Anchorage, AK 99501

Regional Administrator
U.S. Environmental Proection
Agency
1200 South Avenue
Seattle, WA 98101

Mr. Robert McVey, Director
Alaska Region
National Marine Fisheries Service
P.O. Box 1668
Juneau, AK 99802

17 DEC 1981

Mr. Eric Yould
Executive Director
Alaska Power Authority
333 W. 4th Avenue
Anchorage, Alaska 99501

Dear Mr. Yould:

Mr. John Lawrence of Acres American, by letter of November 9, 1981, requested that the Fish and Wildlife Service review the Development Selection Report for the Susitna Hydroelectric Feasibility Study. We offer the following comments:

1. The decision-making methodology (selection process) does not provide an equitable basis for comparison of all study elements. The problem that we have identified is that at the time major decision points are reached, information is much more detailed in regard to engineering and economic factors than environmental considerations. We recommend that the process be modified so that all study elements are equal (scope and depth), before they are presented to the decision-maker.

2. Although alternatives to Susitna are being studied separately by Battelle, comparisons were drawn within the selection report. The comparison of Susitna development to alternative hydroelectric power development is stated as economic only. The comparison to thermal generation is, although not noted as such, solely based on an economic evaluation.

   In regard to sensitivity testing of the all thermal versus Susitna power development options the report states (p. 9-11), "A comparison of alternatives to Susitna is outside the realm of these studies...." The following conclusion is, however, offered on p. 9-1, "...the future development of Railbelt electric power generation sources should include a Susitna Hydroelectric Project." These statements are in apparent conflict.

The following statement addresses the Susitna development environmental studies and review (p. 9-11), "Identifying compensation measures and the actual prediction of environmental impacts are the subject of ongoing studies. The results of these studies will be included in our 1982 feasibility report to be available prior to making the decision as to whether or not to proceed with FERC licensing." It should be noted that much of the information for inclusion in the feasibility report will be preliminary. It is our opinion that the rudimentary nature of this information would preclude a credible impact analysis at that time.

Thank you for the opportunity to review and comment on the Design Selection Report.

Sincerely,

/s/ John Morrison

Acting
Assistant Regional Director

cc: FWS-ROES, WAES
NMFS, Anchorage
Quentin Edson, FERC
Lawrence, Acres American

The preceding letter was received and reviewed. Although no formal response was prepared, our comments are as follows:

(1) It was most efficient to determine if a site could technically be developed and it it would be economically attractive prior to collecting environmental information. Once a site passed the initial economic and engineering screening, full consideration was given to environmental considerations. Figures E.10.1 and E.10.4 depict the selection process.

(2) Environmental factors were considered when comparing Susitna to other sources of power. This information is included in an expanded form in Chapter 10, Section 4 of Exhibit E of the license application.

(3) The schedule for filing the license application was developed from June 1982 to February 1983 to allow incorporation of additional environmental data and to refine the impact analysis and mitigation planning. In addition, the Alaska Power Authority will be funding continuing environmental studies.

L7619(ARO-F)

30 DEC 1981

Mr. Eric Yould, Executive Director
Alaska Power Authority
334 W. Fifth Avenue
Anchorage, Alaska 99501

Dear Mr. Yould:

In response to a November 16, 1981 letter from the Acres American Inc. Project Manager, Mr. John D. Lawrence, we have the following comments concerning three Susitna project reports. The reports reviewed include: 1980 Environmental Summary Report (May 1981); Transmission Line Corridor Screening Report (September 1981); and the Development Selection Report (October 1981).

Provision for cultural resource identification and management appears to be appropriate and adequate. Also, it would appear that recreation is being adequately addressed by the planning process.

The evaluation process described in the Development Selection Report appears to be very adequate. This agency does not recommend a particular basin power development plan. However, we do note on page 8-26 that the tunnel scheme is recognized by the report as being environmentally superior, and would preserve many of the resource values currently associated with the Devil Canyon.

It would be helpful to the reader if an index could be included with each report or perhaps prepared separately for the entire series of project reports.

We look forward to the opportunity to review subsequent project reports. In addition to being included in the historical and archeological, and recreation groups identified for formal coordination, this agency should perhaps also be included within the water quality and use, aesthetics and land use groups as we are interested in project related recreation impacts that will occur within and beyond the project boundary.

Sincerely,

/s/ Douglas G. Warnock

Acting Regional Director
Alaska Region

cc:
John D. Lawrence, Acres American Inc., 900 Liberty Bank Building, Buffalo, New York 14202

LWright:pms:12/29/81

March 1, 1982
P5700.11
T.1425

Mr. Douglas G. Warnock
Assistant Regional Director
Alaska Region
National Park Service
540 West Fifth Avenue
Anchorage, Alaska 99501

Dear Mr. Warnock: Susitna Hydroelectric Project

I thank you for your December 30, 1981 response to our request for review and comment on Susitna project reports forwarded to your agency.

I am pleased that you are satisfied to date with our cultural resource identification and management, recreation planning and Development Selection evaluation process.

In regards to the review of subsequent reports we are receptive to including your agency in the water quality and use, aesthetics and land use groups if you consider this information beneficial in performing your formal review of project related recreation impacts. We are enclosing the 1980 Land Use Annual Report.

Sincerely yours,

John D. Lawrence
Project Manager

KRY/jmh

Enclosure

xc: Eric Yould, APA

ACRES AMERICAN INCORPORATED
Consulting Engineers
Tha[illegible], Bank Building [illegible]
Buffalo, New York 14203

APPENDIX E11E

CORRESPONDENCE RELATING TO MITIGATION PLANNING

APPENDIX 11.E

MITIGATION PLANNING

Mitigation planning for the Susitna Project has involved APA, its consultants, and the state and federal resource agencies. A Fisheries Mitigation Core Group, Wildlife Mitigation Core Group, and Fish and Wildlife Review Group were established. A Fish and Wildlife Mitigation Policy was developed, revised three times following receipt of comments, and finalized during the 1981-1982 period. Various mitigation options papers were also drafted, circulated for comments, and discussed in meetings with the agencies.

This section contains correspondence and meeting notes of the above activities. Correspondence is presented primarily in chronological order. However, in some cases, a response to a letter directly follows the letter to facilitate an understanding of the flow of communication. This results in an interruption in the chronological sequence.

It should be noted that correspondence and meeting notes, regarding the modeling workshops, are not included. Although this workshop relates to mitigation planning, it also relates to ongoing studies. Hence, it is in the Additional Studies and Project Refinement section.

SUSITNA WILDLIFE MITIGATION TASK FORCE

NOTES OF MEETING

January 30, 1981

Anchorage, Alaska

Compiled by: Edward T. Reed
Wildlife Ecology Group Leader
Terrestrial Environmental
Specialists, Inc.

The meeting was commenced at 9:00 a.m.

Mr. Reed gave a brief introduction and requested that all participants (see attached list) introduce themselves and indicate the organization they represented. In his introduction, Mr. Reed identified the major problem associated with the development of a Susitna wildlife mitigation program as the fact that in some cases data collection will not be complete until after the submittal of a license application to FERC (July 1, 1982). Thus the level of detail that can be incorporated into a program at the end of Phase I will vary among the various components of the wildlife studies, and in some cases there will be insufficient data available to develop a finely-tuned mitigation plan.

. Carson asked what the relationship was between this meeting and the Steering Committee comments on the Task 7 Procedures Manuals. Dr. Lucid and Mr. Reed responded that, although mitigation planning was among the topics commented upon by the Steering Committee, this Task Force had been planned prior to the Steering Committee's comments and was not in response to the comments.

Mr. Wozniak explained some of the history that preceded this meeting, including the role of the Steering Committee and indicated that this meeting represented a formal consultation between the Power Authority (including the Power Authority's representatives, i.e. Acres and TES) and federal and state agencies as called for by the Fish and Wildlife Coordination Act.

Mr. Reed presented a brief outline (attached) describing the organization and functioning of the task force. At the request of Mr. Carson, the word "procedures" (Purpose of the Task Force, Item #1) was changed to "options".

dual role of Mr. Schneider as a representative of ADF&G was discussed by Schneider, Trent, Reed, Lucid, Carson, and Wozniak. A concensus was reached that Mr. Schneider's participation in the core group was appropriate due to his technical participation on the Susitna Study Team as leader of the big game studies. All official responses from ADF&G as a participant in the review group will be handled by Mr. Trent, who will consult with Mr. Schneider on technical matters. This arrangement was satisfactory to the meeting participants.

There were no comments concerning information on the outline pertaining to the Role of the Core Group, the Role of the Review Group, or the Role of the Task Force Coordinator.

Mr. Carson raised the issue of whether or not members of the review group should be required to prepare a written discussion of concerns, issues and policy statements. Mr. Carson felt that it was the responsibility of TES to prepare such material for review and comment by the review group. Following discussion of this issue, it was agreed that the Task Force Coordinator would draft a policy statement incorporating agency concerns and submit it to the review group for comment. It was suggested that agency concerns could be better identified through personal interviews with representatives of each agency. TES and Acres will consider this approach.

Mr. Wozniak questioned whether or not all appropriate agencies were included in the mitigation task force. The involvement of the U.S. Corps of Engineers, the Environmental Protection Agency, and the National Marine Fisheries Service were raised. TES and Acres will keep these agencies in mind as the task force proceeds, although Mr. Reed indicated that the participation of these agencies may be either premature at this point in time, or be more appropriately included in the fisheries mitigation effort. Mr. Wozniak also raised the question of involvement by special interest groups. Mr. Reed and Dr. Lucid responded that the concerns of special interest groups were more appropriately coordinated through the Power Authority's public participation program. TES will prepare a list of agencies and/or groups that may be considered for consultation in the future if pertinent issues concerning such groups develop.

It was discussed, and generally agreed upon, that there are limitations to the level of detail of mitigation planning that can be performed within the Phase I time frame. Dr. Lucid, Mr. Reed, and Mr. McMullen pointed out, nevertheless, that to comply with FERC regulations, the license application must represent a commitment on the part of the applicant and that identification of "options" may not be sufficient.

It was decided that individual review group members will address all correspondence to the APA, with a copy being sent directly to Mr. Reed, who will back-channel a copy to Mr. Young at Acres. Mr. Wozniak authorized the Task Force Coordinator (Mr. Reed) to represent the core group and correspond directly with members of the review group. Mr. Reed requested written confirmation of this authorization from Mr. Young. Mr. Young indicated that Acres would provide the requested documentation.

Following discussion, it was agreed that Mr. Reed would reevaluate the schedule outlined on the handout. Mr. Carson requested that a meeting be held following preparation of a policy statement and review by the review group members.

Mr. Stackhouse indicated that the USFWS had recently (within the past week) published a statement of mitigation policy in the Federal Register. Mr. Reed thanked Mr. Stackhouse for this information and indicated that the policy statement would be reviewed at the earliest possible date.

Following discussion it was decided that the core group should first prepare a mitigation policy, and following review, proceed with the preparation of a mitigation plan.

Mr. Stackhouse stated that cost effectiveness of mitigation plans is an important concern of the USFWS.

The question was raised by Dr. Lucid as to whether the applicant had any responsibility to enhance a resource, as opposed to avoidance of impacts or compensation. It was agreed that TES, in its mitigation planning, would "identify enhancement opportunities" and stop there.

The subject of compensation of impact on one species (e.g. moose) by enhancement of another (e.g. salmon) was mentioned. No agreement was reached on the validity of this concept.

The question of whether or not the review group should have a chairman was raised. Mr. Reed expressed concern that some details may be lost if one person was responsible for compiling and possibly summarizing agency comments. Mr. Carson also advised against the appointment of a chairman at this time. For the present time, the idea of a review group chairman was dropped.

Mr. Reed requested that a list be prepared with the name, mailing address, and phone number of all review group members. This list was completed and is attached.

The meeting was adjourned at approximately 11:15 a.m.

SUSITNA WILDLIFE MITIGATION TASK FORCE

MEETING OF JANUARY 30, 1981

ANCHORAGE, ALASKA

LIST OF PARTICIPANTS

PARTICIPANT	REPRESENTING
Edward Reed	Terrestrial Environmental Specialists, Inc.
Joseph McMullen	Terrestrial Environmental Specialists, Inc.
Vincent Lucid	Terrestrial Environmental Specialists, Inc.
Robert Krogseng	Terrestrial Environmental Specialists, Inc.
Richard Taber	Terrestrial Environmental Specialists, Inc.
Jay McKendrick	University of Alaska
William Collins	University of Alaska
Brina Kessel	University of Alaska
Steven McDonald	University of Alaska
Philip Gipson	University of Alaska
Karl Schneider	Alaska Department of Fish and Game
Thomas Trent	Alaska Department of Fish and Game
Kevin Young	Acres American, Inc.
David Wozniak	Alaska Power Authority
Bruce Bedard	Alaska Power Authority
Alan Carson	Alaska Department of Natural Resources
Mike Scott	United States Bureau of Land Management
Gary Stackhouse	United States Fish and Wildlife Service
Bruce Apple	United States Fish and Wildlife Service

Terrestrial Environmental Specialists, inc.
R.D. 1 BOX 368 PHOENIX, N.Y. 13135 (315)695-7228

RECEIVED JUN 17 1981

ALASKA POWER AUTHORITY
SUSITNA
FILE P5700
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MEMO

TO Members of the Susitna Wildlife Mitigation Task Force

FROM: Edward T. Reed, Task Force Coordinator

DATE: June 16, 1981; 218.683

RE: Comments concerning the preliminary policy outline.

Enclosed please find another copy of the preliminary outline for the wildlife mitigation policy statement. I have inserted review comments that have been received todate. The comments have been placed immediately following the appropriate item. In the case of those comments that pertain to an entire section, they follow the last item of each section. In most cases, comments have been transcribed verbatum, although some comments had to be extracted from the correspondence and minor editorial changes were made.

It should be noted that this was a detailed outline and some of the comments would have been unnecessary if a fleshed out text version was available for review. It was impossible to totally explain all of the details and ramifications of each item within the context of an outline.

Please review the comments made by other task force members and be prepared to discuss possible adjustments to the policy statement. As noted in my memo of May 8, 1981, the next meeting of the mitigation task force will be held at 9:00 a.m. on Monday, June 29th, in the Acres Anchorage Office. Hopefully a final version of the policy statement can be agreed upon during that meeting and we can move forward with a discussion of how best to develop a mitigation plan based upon the policy statement.

WILDLIFE MITIGATION
A STATEMENT OF POLICY
PRELIMINARY OUTLINE

1 - BACKGROUND

1.1 - The Need

Included will be a general discussion of the value of the environment and why it is necessary to reduce or avoid negative impacts while still permitting reasonable energy development.

Comment
USF&WS:

This section should include a discussion of the need to adequately assess the environmental resources of the study area to determine the compatibility of the proposed project and to evaluate mitigation to adequately reduce or avoid negative impacts to environmental resources, including fish and wildlife resources, so that no net loss of habitat value occurs.

1.2 - Legal Mandates

The Federal Energy Regulatory Commission regulations, the Fish and Wildlife Coordination Act, and the National Environmental Policy Act will be discussed, as well as a consideration of the role of state and federal natural resource agencies whose task it is to protect and manage wildlife resources.

1.3 - Definition of Mitigation

This will be the 5 part NEPA definition.

2 - GENERAL POLICIES TO BE CARRIED OUT BY THE APPLICANT

2.1 - Basic Intent of the Applicant

(a) The goal of the applicant is to strive, within the bounds of feasibility and reasonable costs, to minimize the negative impacts of the Susitna Project and compensate for unavoidable losses of wildlife and wildlife habitat.

Comment
USF&WS:

The goal of the applicant should be to develop a plan to fully mitigate unavoidable impacts which would result from the construction and operation of the project with full compensation for unavoidable losses to fish and wildlife resources.

(b) The success of the mitigation effort will be considered the difference between impacts without mitigation and impacts with mitigation. A "no net loss of habitat value" will serve as the benchmark for measuring both the success of the mitigation effort and project impacts.

Comment
USF&WS:

Success of the mitigation effort should be assessed through comparison of habitat value of the study area with the project, including the mitigation plan, vs. without the project, over the project life. No net loss of habitat value, as determined by pre- and post-project studies is the goal. Acceptable habitat evaluation procedures (such as the Fish and Wildlife Service's Habitat Evaluation Procedures and Instream Flow Methodology) should be used to accomplish this goal.

McMullen:

"No net loss of habitat value" looks good, but it must be decided how to assess habitat value. Also, are with and/or without project scenarios going to be considered?

Gipson:

Good statement.

(c) The applicant will provide assurances that the agreed upon mitigation plan will be a stipulated part of the construction and operation plans of the project and will be executed by either the applicant or any other organization charged with managing the project.

Comment
USF&WS:

The mitigation plan should be developed by the applicant, in coordination with the state and federal resource agencies. The plan, as agreed upon by the coordinating agencies, should be submitted by the applicant to the Federal Energy Regulatory Commission (FERC) as a component of the application to be incorporated into the license.

2.2 - Input From Agencies and the Public

(a) The applicant will provide opportunities for the review and evaluation of concerns and recommendations presented by the public as well as by federal and state agencies.

Comment
USF&WS:

Additional review and evaluation of the project will be provided through formal agencies comments in response to state and/or federally administered licensing and permitting programs.

(b) Agency comments and recommendations will be provided by those members of the Mitigation Task Force that represent agencies, while the concerns of the public and special interest groups will be coordinated through other means.

Comment
Gipson:

You may wish to spell out how input will be obtained from the public and how to weight the recommendations from individuals, interest groups, and governmental agencies.

McMullen:

One of the comments at the Steering Committee meeting was that the agency representatives in many instances cannot "officially" represent their agency.

2.3 - Avoidance and Reduction of Impacts

(a) During the feasibility studies (prior to FERC license submittal) and the subsequent preparation of preliminary engineering specifications (following FERC license submittal), the applicant will take into consideration, and where practical (both from the standpoint of actual feasibility as well as cost), incorporate recommendations to avoid and/or reduce negative impacts on wildlife resources.

Comment
USF&WS:

The project, including mitigation found to be acceptable to the state and federal resource agencies, should be evaluated in regard to reasonable cost; not with and without the mitigation plan. The total cost of mitigation then becomes part of the total project cost.

(b) Also considered under this policy will be operation stipulations that can be implemented to reduce negative impacts on the wildlife resource. Recommendations for operation stipulations will be provided to the design engineer during both the feasibility studies and the preliminary engineering phase as appropriate.

Comment
USF&WS:

Construction and operating stipulations to reduce negative impacts to fish and wildlife resources should be evaluated during the feasibility studies. Stipulations found acceptable by the coordinating agencies should be incorporated into the mitigation plan submitted as part of the license application.

2:4 - Compensation for Unavoidable Losses of Wildlife Resources

(a) Where biologically feasible and cost effective management techniques are available, the applicant will institute management efforts to compensate for unavoidable impacts.

Comment
USF&WS:

Compensation for unavoidable losses to fish and wildlife resources should be in accordance with a plan developed by the applicant, in coordination with state and federal resource agencies. The plan, found acceptable to the coordinating agencies should be submitted to FERC for incorporation into the project license. The compensation plan, a component of the overall mitigation plan, should be the result of a habitat evaluation, utilizing a procedure judged acceptable to the state and federal agencies with primary responsibility for fish and wildlife resources.

(b) Where possible, compensation will be of an in-kind nature. This applies to both wildlife species as well as habitats.

Comment
USF&WS:

In-kind compensation where "possible"; should be mutually determined by the applicant and the coordinating state and federal agencies, prior to licensing.

2.5 - Geographic Coverage of the Wildlife Mitigation Policy

(a) In regard to both impact avoidance and compensation, the mitigation policy will address all wildlife species utilizing the impoundment zone and other project related areas (e.g., borrow sites), as well as the riparian zone downstream to Talkeetna.

Comment

USF&WS:

Determination of the extent of impacts attributable to the project needs to be accomplished. Formulation of a mitigation plan cannot proceed until the extent of the impacts, both direct and indirect, has been identified.

McMullen:

If key or target species are used to evaluate habitat values then this may require rewording.

Gipson:

What treatment will be given to access roads, power line rights-of-way, and possible buffer zones around the impoundments?

(b) Downstream from Talkeetna to Cook Inlet the primary mitigation effort will be directed towards any impacts that might occur in regard to riparian habitats.

Comment

USF&WS:

The mitigation effort should be directed at reducing impacts where they are identified, addressing all primary and secondary impact areas, for all project features.

Taber:

It seems probable that 100% mitigation above the dam will not be feasible, so mitigation below the dam may be one of the next best choices. If a broad view of what "below the dam" consists of is maintained, then more mitigation options will be available than if the view is narrow.

2.6 - Establishment of Priorities

(a) Although all wildlife species will be considered (including big game species, non-game species, and furbearers), it will be necessary to identify the "key" or "target" species and establish some order of priority in regard to the development of a mitigation plan.

Comment

McMullen:

If key or target species are used to evaluate habitat values then this may require rewording.

(b) In order to prepare a mitigation plan that can be successfully implemented while at the same time placing mitigation efforts in perspective, certain wildlife species and/or habitats will be given priority in mitigation planning based on: 1) importance of the species/habitat both to Alaskan residents and the ecosystem; (2) availability of practical mitigation measures; (3) species with special status, such as threatened or endangered; (4) estimated costs required to execute mitigation measures. This list of criteria is not organized in any priority order.

Comment

Gipson:

Possibly something should be added to indicate that some ecological criteria will be used to establish priorities, in addition to human values. For example, those species that contribute significantly to total energy flow through the system (small mammals and nesting birds) and/or those species that make up the bulk of animal biomass (again small mammals) should be considered important.

McMullen:

These criteria could be easily expanded to be utilized in the generation of relative value indicies.

USF&WS: (pertains to 2.6 in general)

Since all wildlife species are to be considered, "key" species should be chosen so that they represent particular segments (guilds) of the community. Species which provide guild representation and are also considered "important" by the resource agencies and/or public should be given priority. Species which are federally listed as threatened or endangered, or proposed for listing, must be handled separately in accordance with Section 7 of the Endangered Species Act. The practicality of the mitigation plan developed, in regard to the concerns of the applicant and coordinating agencies, would be demonstrated through its acceptability to these agencies.

2.7 - Impact-Related Versus Non-Impact-Related Lands

(a) To the greatest extent possible, mitigation measures will be implemented on or immediately adjacent to the area where the impact takes place.

(b) Where this is not possible, priority will be given first to suitable areas as close as possible to the area of impact.

(c) As a last resort, areas totally removed from the impact area will be considered for mitigation efforts.

Comment (pertains to 2.7 in general)

USF&WS:

Statements apply to both direct and indirect impacts.

Schneider:

In sections 2.7 and 2.8, you emphasize mitigation close to the impact area even to the point of enhancement of a different species rather than move to a more distant area. The problem is in definition of such terms as "reasonable proximity". Users of wildlife are fairly mobile and tend to greatly favor one species over another. This, combined with practical considerations, might make it difficult to stick with the policy

I haven't given this a great deal of thought, but an alternate approach might be to direct mitigation measures at the animal population or subpopulation impacted when this is clearly feasible.

When the feasibility of this approach is in doubt, perhaps mitigation measures should be directed at user groups. A series of alternate mitigation masures could be drawn up and submitted for public review.

The point is that the public might agree with your policy, but disagree with your plan when they see what it means in reality. Why not recognize that the issue is complex and subjective from the start?

2.8 - In-Kind Compensation Versus Availability of Areas Suitable For Mitigation

(a) In the event that suitable areas for in-kind compensation for a particular species/habitat do not exist within reasonable proximity to the impact area, the first priority will be to compensate for such loss by enhancement of a different species and/or habitat that is close to the impact area.

(b) If compensation by means of a different species proves impractical or unacceptable, in-kind compensation in areas totally removed from the impact area will be considered.

Comment (pertains to 2.8 in general)
Schneider:

See comment under 2.7.

2.9 - Land Ownership

(a) Interviews will be conducted with private owners as well as pertinent state and federal agencies to preliminarily identify land use policies or ownership that may act as constraints on mitigation efforts.

(b) Where no land use constraints have been identified, the analysis of mitigation alternatives will proceed based on biological factors.

(c) Following review by agencies and private landowners for compatibility with land use policies, the mitigation plan will then be reassessed and adjusted as necessary in order to insure that proposed actions can be legally and practically executed. Where mitigation opportunities exist, the applicant will work closely with land management agencies to insure the successful implementation of the plan.

2.10 - Restoration of Disturbed Areas

The applicant will consider various options (e.g. regrading and revegetation, permitting natural invasion and succession, etc.) in the reclamation of areas that will be disturbed by project activities such as borrow areas and construction camps.

Comment

USF&WS:

Restoration of disturbed areas should be in accordance with a plan developed by the applicant, in coordination with the state and federal resource agencies. The plan, found acceptable to the coordinating agencies should be submitted to FERC for incorporation into the project license.

McKendrick:

I would emphasize that the revegetation, etc., of borrow areas be coordinated with land use policies of owners. Also, considering such areas as prospective browse production sites may be feasible, if there is any soil available after excavation. They may be considered potential sites to compensate for browse losses in the impoundment areas.

Heavy grass seeding will probably retard natural succession of browse species. We really need to examine some of the myriads of highway and seismic disturbances to see if we can identify successional sequences and bypasses and develop some reasonable scheme in habitat formation for this region.

2.11 - Nuisance Animals

In order to avoid altering the natural behavior of animals resident to the project area, rules designed to prevent, or reduce nuisance animal problems will be established. Procedures will also be formulated to relocate problem animals.

Comment

USF&WS:

A plan, found acceptable to the coordination agencies, should be developed and submitted to FERC for incorporation into the project license.

Schneider:

Relocation is generally a poor policy as animals usually return or cause problems in other areas. Animals can be captured only under permits issues by the Commissioner of Fish and Game. He will set policy on this issues, not APA.

Gipson:

Other possibilities may be: 1) strict garbage control and disposal, 2) fencing of semi-permanent camps, 3) education programs for workers to prevent feeding and harassing wild animals in order to reduce impacts and conflicts with people.

2.12 - Access

(a) Since the potential impact of increased human access on wildlife is a major concern, measures will be considered and the most appropriate ones implemented to reduce impacts on wildlife as a result of improved access.

(b) This will include access policies during both the construction and operation phases of the project.

Comment (pertains to 2.12 in general)
USF&WS:

A plan, found acceptable to the coordinating agencies, should be developed and submitted to FERC for incorporation into the project license.

2.13 - Hunting

(a) Acknowledging that sport hunting is an important component of the Alaskan lifestyle and economy, it will be incorporated as a major component in mitigation planning.

(b) Hunting rules and/or recommendations to insure the safety of project personnel and the public will be considered.

(c) For obvious reasons, any policy determination concerning hunting must be integrated with access policy and the applicant will consider both access and hunting policy in a coordinated manner.

Comment (pertains to 2.13 in general)
USF&WS:

This section should be expanded to include other forms of wildlife recreation as well, e.g., bird watching, photography. A plan, found acceptable to the coordinating agencies, should be developed and submitted to FERC for incorporation into the project license.

Gipson:

I would like for you to include trapping and fishing in this section if you feel they are appropriate for inclusion.

Schneider:

Replace "sport hunting" with "hunting and trapping". Many Alaskans would interpret your wording to exclude subsistence hunting. This issue is both difficult to define and highly emotional. There is no need to raise it here. Obviously, we want to preserve all legal hunting and trapping options.

Any hunting rules or policies other than those instituted by an employer on their employees are the responsibility of the Board of Game. APA can make recommendations as can any group or individual, but it is up to the Board of Game to examine all factors and set regulations for dealing with problems.

Reed:

It may be that this section is not appropriate at all for inclusion with a wildlife mitigation policy effort and may be better suited for prime consideration under the recreation planning portion of the Susitna study effort; although coordination between recreation planners and the wildlife mitigation group is certainly necessary.

2.14 - Responsibility For Implementation of the Mitigation Plan

(a) Prior to the initiation of construction an agreement will be reached for determining responsibility for implementation of the mitigation plan.

Comment

USF&WS:

Responsibility for implementation of the mitigation plan rests with the applicant. Any agreements entered into by the applicant for the delegation of direct implementation authority for the mitigation plan would need to include stipulations to prevent deviation from the accepted plan.

Reed:

Due to wording there is some confusion between 2.14 (a) and 2.1 (c). The intent of the wording in 2.1 (c) was to indicate that the applicant (APA) was ultimately responsible for seeing that the mitigation plan is executed as agreed upon. The purpose of 2.14 (c) was not to indicate that any organization other than the applicant would have ultimate responsibility, but to indicate that an agreement would have to be reached as to exactly who (ADF&G, USF&WS, TES, etc.) would actually execute the plan. A rewording, or further explanation is needed to prevent a misunderstanding between these two items.

(b) Realizing that a mitigation monitoring team will be necessary to insure the proper and successful execution of the mitigation plan, part of the plan will detail the structure and responsibilities of such a monitoring body.

Comment

USF&WS:

The mitigation monitoring team should include representatives of the applicant, FERC, and the state and federal agencies with designated responsibility for fish and wildlife resources. The financing, composition, and plan of study should be agreed to by the prospective participants during the formulation of the mitigation plan as a component of the mitigation plan to be submitted to FERC for incorporation into the license.

2.15 - Modification of the Mitigation Plan

(a) As part of the mitigation plan a monitoring program will be established, the purpose of which will be to monitor wildlife populations during the construction and operation of the project in order to determine the effectiveness of the plan as well as to identify problems that were not anticipated during the initial preparation of the plan.

Comment

USF&WS:

See comments above (2.14.b).

Gipson:

This section, 2.15 (a) is good.

(b) The mitigation plan will be sufficiently flexible so that if adequate data secured during the monitoring of wildlife populations indicate that the mitigation effort should be modified, the mitigation plan can be adjusted accordingly; this may involve an increased effort in some areas where the original plan has proven ineffective, as well as a reduction in some cases where impacts failed to materialize as predicted.

Comment

USF&WS:

Any modification to the mitigation plan should be coordinated with, and agreeable to, the state and federal agencies with designated responsibility for fish and wildlife resources.

General Comments

McKendrick:

Bill Collins and I both received and read the Preliminary Outline. Generally, it appears acceptable and comprehensive.

Wozniak:

We have no comments relative to the version of the Mitigation Policy outline transmitted to us by Ed Reed's memo of May 8, 1981. (Note: The APA did review an earlier version and provided suggestions and comments that were incorporated into this review version).

Gipson:

This is a well written outline. You may want a section treating use of 4-wheel drive vehicles and snow machines.

USF&WS:

We appreciate the opportunity to review the preliminary outline "Wildlife Mitigation: A Statement of Policy". We have done so in light of the Fish and Wildlife Service's Mitigation Policy (copy attached) and have provided comments which are consistent with that policy.

Terrestrial Environmental Specialists, inc.
R.D. 1 BOX 388 PHOENIX, N.Y. 13135 (315)695-7228

MEMO

TO: Members of the Susitna Wildlife Mitigation Task Force

FROM: Edward T. Reed, Task Force Coordinator

DATE: July 24, 1981; 218.730

RE: Meeting notes

Enclosed please find a copy of the notes of the June 29, 1981 meeting of the wildlife mitigation task force. I have compiled these notes based on my interpretation of the comments made during the meeting. If you feel that I missed any major items or misunderstood certain statements please let me know and I will prepare a revised version of the notes. I am now moving forward with the preparation of a draft policy statement and the development of a decision making methodology. You will be receiving copies of these as they are completed.

SUSITNA WILDLIFE MITIGATION TASK FORCE
NOTES OF MEETING
June 29, 1981
Anchorage, Alaska

Compiled by: Edward T. Reed
Wildlife Ecology Group Leader
Terrestrial Environmental
Specialists, Inc.

The meeting was commenced at 9:00 a.m. A list of participants is attached.

Mr. Reed gave a brief introduction and description of what had taken place since the last meeting. He then asked if the participants would like to make any general comments concerning the policy outline prior to beginning a detailed discussion of the items contained within the outline.

Mr. Wozniak requested that the purpose of the meeting be to move towards a finalized statement as the next product.

Mr. Trent stated that although the policy addressed federal regulations, there are state regulations concerning mitigation in draft form, and the mitigation effort should stand prepared to include the intent and approach presented in those state regulations. He also indicated that the state regulations would use the five basic forms of mitigation as defined by NEPA, but will go further in stressing the priority of the forms. He indicated that the new regulations would be incorporated under Title 16 law. Mr. Trent also suggested that a matrix type approach be developed to be used in reviewing the various forms of mitigation that might be used on the Susitna Project.

Mr. Trent said that for the purpose of developing mitigation policy it would be advisable to involve the personnel responsible for the fisheries mitigation effort. Mr. Schneider agreed that the policy statements for both fish and wildlife should be basically the same. Mr. Wozniak also indicated that this would be preferable. Mr. Wozniak then requested that Mr. Reed take the appropriate steps to obtain the involvement of the fisheries group. Mr. Reed agreed to contact the appropriate fisheries personnel and request that they accelerate the establishment of a fisheries mitigation task force and be provided with information pertaining to the policy statement currently being prepared by the wildlife task force.

A discussion took place concerning the level of mitigation planning that would be available for inclusion with the FERC license application versus what will have to follow during Phase II. Mr. Wozniak warned that Phase II should not serve as a convenient excuse for not having critical portions of the application prepared for the projected submittal date. Mr. Carson indicated that a commitment to the process that would be used throughout the mitigation effort should be an important item for the application. Since the discussion indicated that at a minimum, it will be possible to have prepared a policy statement, an approach to mitigation, and an outline of the plan, Mr. Reed asked representatives of the U.S. Fish and Wildlife Service if that level of effort would satisfy their review needs as stipulated under the Fish and Wildlife Coordination Act. Mr. Stackhouse replied that in the absence of a complete, detailed mitigation plan, they (USF&WS) would not be able to make a final recommendation.

Mr. Schneider suggested that the next step should be the development of a process, or methodology, to be used in making mitigation decisions. This suggestion was received favorably by the other participants.

In reviewing the meeting to this point, Mr. Reed and Mr. Wozniak agreed that the next steps should be to expand the outline to a draft policy statement, prepare a decision making methodology, and develop an outline of the plan.

At this point it was agreed to review the policy outline, item by item, commenting on the information and determining which items are appropriate for a policy statement and which items might be more suitable for inclusion in other sections The following notes are organized by items corresponding to the outline.

1.1 - Mr. Trent indicated that there is a need to study the resources and for the APA to commit to mitigation. He suggested substituting "mitigate" for "reduce or avoid."

1.2 - Mr. Trent reiterated the need to take into consideration state policies and regulations. Mr. Carson suggested consideration of the DNR Instream Flow Bill and the Coastal Zone Management Group.

1.3 - Mr. Trent suggested that the remaining items discuss mitigation collectively rather than identifying only certain forms of mitigation.

2.1

(a) - Mr. Trent said that a compromise position is needed somewhere between the phrases "agreeable to all agencies" and "feasible and reasonable." Mr. Carson suggested removing the phrase "feasible and reasonable." Mr. Trent suggested using a phrase such as, "to strive to mitigate the negative impacts." Mr. Schneider mentioned that reality should be kept in mind when defining the intent.

(b) - Mr. Wozniak indicated that there was no problem with this item but felt that it should be removed from the policy statement and incorporated at a different point in the mitigation plan. Mr. Carson agreed.

(c) - Mr. Wozniak indicated that this item would be part of the license and indicated that an associated goal would be to reach an agreement between the resource agencies and the applicant.

2.2 - Mr. Carson discussed the roles of the APA and the resource agencies as they pertain to public input. The possibility of agency personnel being available at public workshops to present the position of their respective agencies was discussed. Mr. Wozniak liked the idea of agency personnel being available during public meetings.

2.3
(a) - Mr. Carson reiterated a previously expressed concern about the wording of this item. Mr. Wozniak remarked that the agencies and the APA are polarized in regard to this item. Following discussion it was agreed that what is needed is a rewording that will provide the agencies with stronger assurances, while at the same time not totally committing the APA.
(b) - It was agreed that this item is too specific for a policy statement and might be more appropriately incorporated into a "methodology" section.

2.4 - Mr. Trent suggested that the forms of mitigation be combined under a more general category. It was agreed that this section should be removed from the policy statement and placed elsewhere.

2.5 - Mr. Stackhouse expressed interest in how the coverage would be defined. It was agreed that this section may also be more appropriately covered in a subsequent portion of the mitigation plan.

2.6 thru 2.13 - It was agreed that these sections would also be more appropriately addressed in other portions of the mitigation plan.

2.14 - Mr. Wozniak indicated that the APA is in agreement with this item and has no problem with the wording. Mr. Carson felt that 2.14(b) should be reworded to include the word "funding" and suggested the following wording,"...part of the plan will detail the structure, funding, and responsibilities..." Mr. Wozniak felt that this may be a problem at this time and indicated that funding arrangements are an itemthat would have to be negotiated at a later date. Mr. Wozniak also felt that is was a good idea for the agencies to provide a commitment to cooperate in this effort.

2.15 - Mr. Wozniak stated that the APA is in agreement with this item and has no problem with the wording.

Mr. Carson expressed the opinion that the mitigation effort was going well and he was pleased with the approach being taken so far.

The meeting was adjourned at approximately 11:30 a.m.

SUSITNA WILDLIFE MITIGATION TASK FORCE
MEETING OF JUNE 29, 1981
ANCHORAGE, ALASKA

LIST OF PARTICIPANTS

PARTICIPANT	REPRESENTING
Edward Reed	Terrestrial Environmental Specialists, Inc.
Leonard Corin	United States Fish and Wildlife Service
Gary Stackhouse	United States Fish and Wildlife Service
David Wozniak	Alaska Power Authority
Brina Kessel	TES/University of Alaska
Thomas Trent	Alaska Department of Fish and Game
Joseph McMullen	Terrestrial Environmental Specialists, Inc.
Karl Schneider	Alaska Department of Fish and Game
Philip Gipson	TES/University of Alaska
Alan Carson	Alaska Department of Natural Resources
Robert Krogseng	Terrestrial Environmental Specialists, Inc.
Jay McKendrick	TES/University of Alaska

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 1668
Juneau, Alaska 99802

October 6, 1981

RECEIVED
OCT 15 1981
ALASKA POWER AUTHORITY

Mr. Eric P. Yould
Executive Director
Alaska Power Authority
3334 West 5th Avenue
Anchorage, Alaska 99501

Dear Mr. Yould:

Involvement of this agency with efforts by others to explore the potential for hydroelectric development on the Susitna River dates back to 1973. In 1974, we had contracted Environaid for a study titled "A Hydrologic Reconnaissance of the Susitna River Below Devil's Canyon", and more recently we have been a participant on the Susitna Steering Committee.

We appreciate the opportunity presented in your letter of September 25, 1981 to extend our participation by becoming a member on the Susitna Fisheries Mitigation Task Force, Review Committee. I have directed Brad Smith of our Environmental Assessment Division (EAD), Anchorage Field Office to represent National Marine Fisheries Service (NMFS) on this important committee. Mr. Smith will fully participate on the Review Committee and be responsible for drafting the recommended NMFS' position.

Please continue to send official correspondence through our Regional Office. Delays in NMFS response time associated with our routing of your materials to and from the Anchorage EAD Field Office could be reduced if you would provide a courtesy copy of correspondence directly to Mr. Smith.

Should you have further questions regarding Mr. Smith's involvement, please contact Ron Morris, the supervisor of the Anchorage EAD Field Office:

Bradley K. Smith and Ronald J. Morris
National Marine Fisheries Service
Federal Building & U.S. Court House
701 C Street, Box 43
Anchorage, Alaska 99513
Phone: (907) 271-5006

Sincerely,

for: Robert W. McVey
Director, Alaska Region

ALASKA POWER AUTHORITY

334 WEST 5th AVENUE - ANCHORAGE, ALASKA 99501

Phone: (907) 277-7641
(907) 277-0851
(907) 276-0001

September 25, 1981

Mr. Robert McVey
Director, Alaska Region
Alaska Marine Fisheries Service
P.O. Box 1668
Juneau, Alaska 99802

Dear Mr. McVey:

Integral to our study of the potential effects of hydroelectric development of the Upper Susitna River Basin is the formulation of fisheries mitigation plans. To that goal, a Fisheries Mitigation Task Force, in two parts, is being formed. One part will be a core group of the principal investigators. Their task will be to identify and address impacts, and develop appropriate mitigation plans. A second group will act as a review committee commenting on the efforts of the core group.

You are invited to be a member of the Review Committee. If you agree, your role would be to work in concert with other concerned agencies to assess the adequacy of the impact predicitons and associated mitigative planning. In addition to reaping the benefits of your expertise, your participation would also fulfill key consultation requirements outlined in the Federal Energy Regulatory Commission (FERC) regulations and in the provision of the Fish and Wildlife Coordination Act.

A similar structure was established early this year for wildlife mitigation. An early objective will be to reorganize into one common review committee for mitigation, overviewing separate core groups for fisheries and wildlife. You might consider this when you appoint your organizational representative.

We welcome your participation in this key planning area, and we hope to hear from you soon with the names and telephone numbers of your designated representation.

Sincerely,

Eric P. Yould
Executive Director

cc: John Lawrence
Jim Gill

DEPARTMENT OF THE ARMY
ALASKA DISTRICT. CORPS OF ENGINEERS
P.O. BOX 7002
ANCHORAGE. ALASKA 99510

REPLY TO
ATTENTION OF:

NPAEN-PL-EN

13 OCT 1981

OCT 20 1981

Mr. Eric P. Yould
Executive Director
Alaska Power Authority
334 West 5th Avenue
Anchorage, Alaska 99501

Dear Mr. Yould:

This is in response to your letter of 25 September 1981 concerning Corps of Engineers participation in the Upper Susitna River Basin Fisheries Mitigation Review Committee.

Unfortunately, the continued funding and manpower constraints under which we must operate make it necessary for me to decline your invitation. However, we will provide the reviews required for the issuance of permits under our regulatory program.

If I can be of further assistance, please contact me directly. If further details are desired by your staff, contact can be made with Mr. Harlan Moore, Chief, Engineering Division at 752-5135.

Sincerely,

LEE R. NUNN
Colonel, Corps of Engineers
District Engineer

Rec'd 10/26/81

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF FISH AND GAME

OFFICE OF THE COMMISSIONER

SUBPORT BUILDING
JUNEAU, ALASKA 99801

October 23, 1981

Mr. Eric P. Yould
Alaska Power Authority
334 West 5th Avenue
Anchorage, Alaska 99501

Dear Mr. Yould:

Thank you for your invitation to place a member of my staff on the committee being established to review mitigatory recommendations for the Susitna Hydroelectric project. I have designated Mr. Carl Yanagawa, Regional Supervisor for the Habitat Division, to sit as our representative on the review committee.

I anticipate that Mr. Yanagawa will work closely with the other members of the committee, and with Tom Trent and Karl Schneider, to develop sound policy recommendations for Su-Hydro.

Mr. Yanagawa's office is in the Fish and Game building at 333 Raspberry Road and he can be reached at 267-2138.

Sincerely,

for Ronald O. Skoog
Commissioner
(907) 465-4100

11-K11LH

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION X

1200 SIXTH AVENUE

SEATTLE, WASHINGTON 98101

REPLY TO ATTN OF: M/S 443

RECEIVED

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ALASKA POWER AUTHORITY

RECEIVED

OCT 30 1981

ALASKA POWER AUTHORITY

Eric P. Yould, Executive Director
Alaska Power Authority
534 West 5th Avenue
Anchorage, Alaska 99501

Dear Mr Yould:

The Environmental Protection Agency (EPA) accepts your invitation to participate on the Review Committee for the Fisheries Mitigation Task Force on the hydroelectric development of the Upper Susitna River Basin.

EPA generally relies on the state and Federal fish and wildlife agencies for the technical input and evaluation on such task forces. However, I feel that we may be able to provide as a member of the Review Committee, a different perspective which may help your efforts. Because of our limited resources both in staff and travel money, our participation will have to be somewhat limited.

I have designated Ms. Judi Schwarz as our formal contact for the activities of this Review Committee. Ms. Schwarz is in the Environmental Evaluation Branch in our Seattle Office and has had primary contact with the Susitna project through our EIS review responsibilities. She can be reached at (206) 442-1285. I have also asked Jim Sweeney, Director of our Alaska Operations Office to provide support in this effort because of his proximity and knowledge of the unique Alaska conditions. His telephone number in Anchorage is (907) 271-5083.

We look forward to actively participating on this Review Committee. Any information you can send us on the activities of the wildlife mitigation task force would be appreciated.

Thank you for giving us the opportunity to become actively involved in this important development.

Sincerely,

John R. Spencer
Regional Administrator

cc: Jim Sweeney

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

OFFICE OF THE COMMISSIONER

JAY S. HAMMOND, GOVERNOR

POUCH M
JUNEAU, ALASKA 99811
PHONE: (907) 465-2400

December 1, 1981

Mr. Eric Yould
Executive Director
Alaska Power Authority
334 West 5th Avenue
Anchorage, AK 99501

Dear Eric:

This letter is in response to your September 28, 1981 letter offering an opportunity for DNR participation on the mitigation review committee for the proposed Susitna Hydroelectric Project.

Al Carson of the Division of Research and Development will be our representative for the committee. He can be reached by phone at 276-2653.

Thanks for providing us with the opportunity to participate in this important endeavor.

Sincerely,

John

John W. Katz
Commissioner

cc: Reed Stoops

10-J9 LH

ALASKA POWER AUTHORITY

334 WEST 5th AVENUE - ANCHORAGE, ALASKA 99501

Phone: (907) 277-7641
(907) 276-0001

December 9, 1981

COPY

Mr. Keith Schreiner
Regional Director, Region 7
U.S. Fish & Wildlife Service
1011 E. Tudor Road
Anchorage, Alaska 99503

Dear Mr. Schreiner:

A member of your staff advises me you did not receive my letter of September 25, 1981, inviting your participation to the Susitna Hydroelectric Project mitigation Review Group. Let me hasten to repeat the invitation.

Integral to our study of the potential effects of hydroelectric development of the Upper Susitna River Basin is the formulation of fisheries mitigation plans. To that goal, a Fisheries Mitigation Task Force, in two parts, is being formed. One part will be a core group of the principal investigators. Their task will be to identify and address impacts, and develop appropriate mitigation plans. A Second group will act as a review committee commenting on the efforts of the core group.

You are invited to be a member of the Review Committee. If you agree, your role would be to work in concert with other concerned agencies to assess the adequacy of the impact predictions and associated mitigative planning. In addition to reaping the benefits of your expertise, your participation would also fulfill key consultation requirements outlined in the Federal Energy Regulatory Commission (FERC) regulations and in the provisions of the Fish and Wildlife Coordination Act.

A similar structure was established early this year for wildlife mitigation. An early objective will be to reorganize into one common review committee for mitigation, overviewing separate core groups for fisheries and wildlife. You might consider this when you appoint your organizational representative.

November 19, 1981
P5700.11.92

Mr. Ernest W. Mueller
Commissioner
Alaska Department of Environmental Conservation
Juneau, Alaska 99801

Susitna Hydroelectric Project
Fish and Wildlife Mitigation Policy

Dear Mr. Mueller:

As you know, Acres American, Incorporated is under contract to the Alaska Power Authority (APA) to conduct a feasibility study and prepare a Federal Energy Regulatory Commission (FERC) license application for the Susitna Hydroelectric Project. The scheduled date for submission of the application is in June of 1982.

Federal law and FERC regulations require that the reports supporting the FERC application be prepared in consultation with Federal and State agencies having managerial authority over certain project aspects. This coordination must be documented in the license application.

A great deal of coordination has taken place at agency staff levels by direct participation in studies or by participation in committees and task groups. This input, however, has been primarily by staff and may not necessarily reflect the views of the agency. For this reason, we are conducting a parallel formal coordination process, by requesting agency comments on key study outputs. The plan of study was the first document coordinated in this manner. Over the next year, there will be several more. This parallel process will affect the other coordination activities of the study.

At this time, we request that the Alaska Department of Environmental Conservation review the attached Fish and Wildlife Mitigation Policy, which has been developed by APA, the resource agencies and Terrestrial Environmental Specialists.

ACRES AMERICAN INCORPORATED
Consulting Engineers
The Liberty Bank Building Main at Court
Buffalo New York 14202
Telephone 716-853-7525 Telex 91-6428 ACRES BUF
Other Offices Columbia MD Pittsburgh PA Raleigh NC Washington DC

Your prompt attention to this matter will enable us to continue planning the best possible development for all interests. A response within thirty days of receipts would be greatly appreciated. Please send a copy of your comments to me and to:

Mr. Eric Yould, Executive Director
Alaska Power Authority
333 West 4th Avenue
Anchorage, Alaska 99501

Very truly yours,

John D. Lawrence /MG

John D. Lawrence
Project Manager

JDL/MMG:jgk
Enc.

cc: Bob Martin
(letter only)

November 19, 1981
P5700.11.91

Mr. Robert McVey
Director, Alaska Region
National Marine Fisheries Service
NOAA
P.O. Box 1668
Juneau, Alaska 99802

Susitna Hydroelectric Project
Fish and Wildlife Mitigation Policy

Dear Mr. McVey:

As you know, Acres American, Incorporated is under contract to the Alaska Power Authority (APA) to conduct a feasibility study and prepare a Federal Energy Regulatory Commission (FERC) license application for the Susitna Hydroelectric Project. The scheduled date for submission of the application is in June of 1982.

Federal law and FERC regulations require that the reports supporting the FERC application be prepared in consultation with Federal and State agencies having managerial authority over certain project aspects. This coordination must be documented in the license application.

A great deal of coordination has taken place at agency staff levels by direct participation in studies or by participation in committees and task groups. This input, however, has been primarily by staff and may not necessarily reflect the views of the agency. For this reason, we are conducting a parallel formal coordination process, by requesting agency comments on key study outputs. The plan of study was the first document coordinated in this manner. Over the next year, there will be several more. This parallel process will affect the other coordination activities of the study.

At this time, we request that the National Marine Fisheries Service review the attached Fish and Wildlife Mitigation Policy, which has been developed by APA, the resource agencies and Terrestrial Environmental Specialists.

ACRES AMERICAN INCORPORATED

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The Liberty Bank Building Main at Court
Buffalo, New York 14202

Telephone 716 853-7525 Telex 91-6403 ACRES BUF

Offices: Columbia MD Pittsburgh PA Raleigh NC Washington DC

Your prompt attention to this matter will enable us to continue planning the best possible development for all interests. A response within thirty days of receipts would be greatly appreciated. Please send a copy of your comments to me and to:

Mr. Eric Yould, Executive Director
Alaska Power Authority
333 West 4th Avenue
Anchorage, Alaska 99501

Very truly yours,

John D. Lawrence/MG

John D. Lawrence
Project Manager

JDL/MMG:jgk
Enc.

cc: Ron Morris
(letter only)

November 19, 1981
P5700.11.91

Mr. Keith Schreiner
Regional Director, Region 7
U.S. Fish and Wildlife Service
1011 E. Tudor Road
Anchorage, Alaska 99503

Susitna Hydroelectric Project
Fish and Wildlife Mitigation Policy

Dear Mr. Schreiner:

As you know, Acres American, Incorporated is under contract to the Alaska Power Authority (APA) to conduct a feasibility study and prepare a Federal Energy Regulatory Commission (FERC) license application for the Susitna Hydroelectric Project. The scheduled date for submission of the application is in June of 1982.

Federal law and FERC regulations require that the reports supporting the FERC application be prepared in consultation with Federal and State agencies having managerial authority over certain project aspects. This coordination must be documented in the license application.

A great deal of coordination has taken place at agency staff levels by direct participation in studies or by participation in committees and task groups. This input, however, has been primarily by staff and may not necessarily reflect the views of the agency. For this reason, we are conducting a parallel formal coordination process, by requesting agency comments on key study outputs. The plan of study was the first document coordinated in this manner. Over the next year, there will be several more. This parallel process will affect the other coordination activities of the study.

At this time, we request that the U.S. Fish and Wildlife Service review the attached Fish and Wildlife Mitigation Policy, which has been developed by APA, the resource agencies and Terrestrial Environmental Specialists.

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The Liberty Bank Building Main at Court
Buffalo New York 14202
Telephone 716-853-7525 Telex 91-6423 ACRES BUF
Other Offices Columbia MD Pittsburgh PA Raleigh NC Washington DC

Your prompt attention to this matter will enable us to continue planning the best possible development for all interests. A response within thirty days of receipts would be greatly appreciated. Please send a copy of your comments to me and to:

Mr. Eric Yould, Executive Director
Alaska Power Authority
333 West 4th Avenue
Anchorage, Alaska 99501

Very truly yours,

John D. Lawrence/MG

John D. Lawrence
Project Manager

JDL/MMG:jgk
Enc.

November 19, 1981
P5700.11.92

Mr. Ronald Skoog
Commissioner
State of Alaska Department of Fish and Game
Juneau, Alaska 99801

Susitna Hydroelectric Project
Fish and Wildlife Mitigation Policy

Dear Mr. Skoog:

As you know, Acres American, Incorporated is under contract to the Alaska Power Authority (APA) to conduct a feasibility study and prepare a Federal Energy Regulatory Commission (FERC) license application for the Susitna Hydroelectric Project. The scheduled date for submission of the application is in June of 1982.

Federal law and FERC regulations require that the reports supporting the FERC application be prepared in consultation with Federal and State agencies having managerial authority over certain project aspects. This coordination must be documented in the license application.

A great deal of coordination has taken place at agency staff levels by direct participation in studies or by participation in committees and task groups. This input, however, has been primarily by staff and may not necessarily reflect the views of the agency. For this reason, we are conducting a parallel formal coordination process, by requesting agency comments on key study outputs. The plan of study was the first document coordinated in this manner. Over the next year, there will be several more. This parallel process will affect the other coordination activities of the study.

At this time, we request that the State of Alaska Department of Fish and Game review the attached Fish and Wildlife Mitigation Policy, which has been developed by APA, the resource agencies and Terrestrial Environmental Specialists.

ACRES AMERICAN INCORPORATED
Consulting Engineers
The Liberty Bank Building Main at Court
Buffalo New York 14202
Telephone 716 853-7525 Telex 91-6428 ACRES BUF
Other Offices Cal... MD ...ver PA Raleigh NC Washington DC

Your prompt attention to this matter will enable us to continue planning the best possible development for all interests. A response within thirty days of receipts would be greatly appreciated. Please send a copy of your comments to me and to:

Mr. Eric Yould, Executive Director
Alaska Power Authority
333 West 4th Avenue
Anchorage, Alaska 99501

Very truly yours,

John D. Lawrence /MG

John D. Lawrence
Project Manager

JDL/MMG:jgk
Enc.

cc: Tom Trent
(letter only)

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

OFFICE OF THE COMMISSIONER

JAY S. HAMMOND, GOVERNOR

P.O. BOX 3-2000
JUNEAU, ALASKA 99802
PHONE: (907) 465-4100

December 30, 1981

Mr. John D. Lawrence
Project Manager
Acres American, Inc.
The Liberty Bank Building, Main at Court
Buffalo, New York 14202

Dear Mr. Lawrence:

The Alaska Department of Fish and Game has reviewed the "Susitna Hydroelectric Project Fish and Wildlife Mitigation Policy" dated November 1981 and has several comments to offer. The Department is drafting a mitigation policy approval we intend to use for all hydroelectric projects throughout the State. We appreciate your effort but feel our parallel effort is the alternative we select to take. In the interim, however, I have provided comments to your document that can be used to improve your policy as drafted.

Specific Comments

1. Section 1 - Introduction

In this section which reads as follows, we recommend inclusion of the underlined phrase.

"A mandate of the Alaska Power Authority (APA) charter is to develop supplies of electrical energy to meet the present and future needs of the State of Alaska. APA also recognizes the value of our natural resources and accepts the responsibility of insuring that the development of any new projects is as compatible as possible with the fish and wildlife resources (and the habitat that sustains them) of the State and that the overall effects of any such projects will be beneficial to the State as a whole. In this regard APA has prepared a Fisheries and Wildlife Mitigation Policy for the Susitna Hydroelectric Project as contained herein."

Comment: The primary goal of mitigation is to avoid, minimize, rectify, reduce or compensate for impacts on fish and wildlife habitats.

2. Section 2 - Legal Mandates

In this section which reads as follows, we suggest inclusion of the underlined phrase:

"There are numerous state and federal laws and regulations that specifically require mitigation planning. The mitigation policy and plans contained within this document are designed to comply with the collective and specific intent of these legal mandates. Following are the major laws or regulations that require the consideration (and eventual implementation) of mitigation efforts."

Comment: Consideration of mitigation is not an end in itself, the implementation of mitigation is the eventual goal and obligation which the APA must meet under the terms of State and Federal law and regulation.

3. Section 2 - Protection of Fish and Game

In the first paragraph, first sentence, that reads as follows, we suggest the underlined phrase be inserted:

The Alaska state laws pertaining to the disturbance of streams important to anadromous fish address the need to reduce (or prevent) impacts on fish and game that may result from such action.

Comment: Avoidance as well as minimization of impacts is also of concern to ADF&G.

4. Section 2 - Federal Energy Regulatory Commission, 2nd paragraph

We suggest the paragraph include a statement which indicates measures of mitigation as well as facilities for mitigation be described. To describe only facilities suggests that only engineering solutions for mitigation are considered. It will be necessary to describe any measures for mitigation that may involve, for example, in-kind replacement of habitat or avoidance of impact alternatives.

Comment: For this statement to be an accurate portrayal of FERC regulation, this addition is suggested.

5. Section - 3.3 Implementation of the Mitigation Plan

In the first paragraph of this section, it is stated that, "Prior to implementing the plan; an agreement will be reached as to the most efficient manner in which to execute the plan."

Comment: It should be stated with whom this agreement is to be reached. Perhaps suggestions can be worked out with the Su Hydro Steering Committee.

Also it is stated in the second paragraph of this section, "Realizing that a mitigation monitoring team will be necessary to insure the proper and successful execution of the mitigation plan, part of the plan will detail the structure and responsibilities of such a monitoring body."

Comment: APA should be aware that this monitoring body or its functions will not supersede individual agency mandates.

6. Section 3.4 Modification of the Mitigation Plan

In the second paragraph of this section which reads as follows, we suggest the insertion of the underlined phrases:

"The mitigation plan will be sufficiently flexible so that if data secured during the monitoring of fish and wildlife populations and habitats indicate that the mitigation effort should be modified, the mitigation plan can be adjusted accordingly. This may involve an increased effort where impacts failed to materialize as predicted. Any modifications to the mitigation plan proposed by the monitoring team will not be implemented without consultation (and approval of) appropriate state and federal agencies and approval of APA. The need for continuing this monitoring will be reviewed periodically. The monitoring program will be terminated when the need for further mitigation is considered unnecessary."

Comment: APA approval alone does not supersede the mandates of state and federal agencies to assure that mitigation to be performed is prudent and feasible and in concert with what is known about project impacts.

7. Section 4 - Approach to Developing the Fish and Wildlife Plans

The third paragraph of this section reads as follows:

"Following the identification of impact issues, the Core Group will agree upon a logical order of priority for addressing the impact issues. This will include ranking resources in order of their importance. The ranking will take into consideration a variety of factors such as ecological value, consumptive value, and nonconsumptive value. Other factors may be considered in the ranking if deemed necessary. The impact issues will also be considered in regard to the confidence associated with the impact prediction. In other words, those resources that will most certainly be impacted will be given priority over impact issues where there is less confidence in the impacts actually occurring. The result of this dual prioritization will be the application of mitigation planning efforts in a logical and effective manner. The results of the prioritization process will be sent to appropriate state and federal resource agencies for review and comment."

Comment: The Department of Fish and Game does not consider what appears to be a subjective ranking of resources in their "order of importance" to be a satisfactory approach to addressing impact issues. There is no substitute for a factual assessment of data voids, studies to fill these voids, and a rational approach to impact assessment based on factual evidence. Ranking as suggested here only supports this Department's long-time conviction that adequate information to make reasonable impact analysis and mitigation plan development cannot be done in the time frame established for the FERC license application by the Legislature and APA.

The fifth paragraph of this section states:

"Mitigation for each impact issue will be considered according to the types and sequence identified by the CEQ (Figure 2). If a proposed form of mitigation is technically infeasible, only partially effective, or in conflict with other project objectives, the evaluation will proceed to the next form. All options considered will be evaluated and documented. The result of this process will be an identification and evaluation of feasible mitigation options for each impact issue and a description of residual impacts."

Comment: The statement in the second sentence of this paragraph, "or in conflict with other project objectives," indicates equal consideration of fish and wildlife values would not be given in the mitigation planning effort conducted by Acres American, Terrestrial Environmental Services and APA. It is doubtful that any fish and wildlife impact issue would not be in conflict with APA's primary objective to construct the Su Hydro Project, and automatically mitigation alternatives would generally fall into the compensatory realm of mitigation defined in Section 3.5. This Department will closely examine the products of the impact evaluation and mitigation planning effort to be sure equal consideration is given to fish and wildlife resource values and that summary and arbitrary dismissal of feasible mitigation alternatives which may be in conflict with "project objectives" is not the primary factor in arriving at a mitigation plan.

Paragraph 7 of this section states:

"Additional items that may be addressed by the Core Group include an identification of organizations qualified to execute the mitigation plan and recommendations concerning the staffing, funding and responsibilities of the mitigation monitoring team."

Comment: The Core Group may make its recommendations, but agencies such as this Department with a direct responsibility for the management of fish and wildlife resources will in accord with its resource management and protection responsibilities, make its own recommendations to define staffing or funding levels and responsibilities for the mitigation monitoring team. It is our view that APA and its subcontractors do not have oversight on mitigation alternatives or means of implementation. Mitigation and the final approval of its acceptability lies with this Department and other resource agencies with similar mandates. It will be the obligation of APA to implement mitigation plans in accord with the approval of these agencies. In addition, it appears that the "mitigation review group" is responsible for "informal agency review and comment" on the proposed mitigation options. This informal review is "considered by APA and the Core Group prior to the preparation of . . . mitigation plans." However, the option being reviewed (informally) by the mitigation review group are those developed by the Core group in Step 2. This needs to be clarified.

In paragraph 8 of this section it states:

"During the implementation of the plan, which will include both the construction and operation phases of the project until further mitigation is deemed unnecessary, the mitigation monitoring team will review the work and evaluate the effectiveness of the plan (Step 5). To accomplish this goal, the monitoring team will have the responsibility of assuring that the agreed upon plan is properly executed by the designated organizations. The team will be provided with the results of ongoing monitoring efforts. This will enable the team to determine in which cases the mitigation plan is effective, where it has proven to be less than effective, and also in which cases the predicted impact did not materialize and the proposed mitigation efforts are unnecessary. The monitoring team will submit regularly scheduled reports concerning the mitigation effort, and where appropriate, propose modifications to the plan."

Comment: It should be resolved now as to who pays for the participation by agencies in the mitigation monitoring team. The APA should state its commitment to funding participation by agency team members or mitigation study groups.

General Comments

1. This Department does not believe adequate opportunity will be afforded the natural resource agencies to evaluate or review mitigation plans due to the accelerated nature of APA's schedule.

   To date, for example, the Fisheries Mitigation Task Force Review Group has not been afforded an opportunity to assess ongoing impact assessment and mitigation plans being developed by Terrestrial Environmental Services.

   Also, the Department has relayed to the APA on numerous occasions our concern that a more extended period of fisheries studies needs to be performed before adequate impact analysis is made and thence feasible mitigation alternatives developed.

2. A section outlining the membership and relationships of the Mitigation Task Force, and Core Group will need to be included.

I am interested in obtaining a copy of a plan that clearly sets out the schedules for formal review of specific products by appropriate agencies in order that this Department can adequately respond in a timely and responsible manner to APA.

If you have questions, please do not hesitate to contact us.

Sincerely,

Ronald O. Skoog
for Commissioner

February 23, 1982
P5700.11.92
T.1527

WILLETT
WITTE
BERRY
J. E. Young
HAYDEN
LAMB
LAWRENCE
SINCLAIR
VANDERBURGH
R. Grogg
P. Hoover
CARLSON
FRETZ
JEX
LOWREY
SINGH
STEAD
BOVE
CHASE

Mr. Ronald O. Skoog
Commissioner
Alaska Department of Fish and Game
P.O. Box 3-2000
Juneau, Alaska 99802

Dear Mr. Skoog:

Susitna Hydroelectric Project
Comments on Fish and Wildlife
Mitigation Policy

Dear Mr. Skoog:

We appreciate receiving your comments on the "Susitna Hydroelectric Project Fish and Wildlife Mitigation Policy" dated December 30, 1981. In addition to addressing your comments in our revised edition of the policy, I have elected to respond directly to the concerns you have raised. My comments are organized in the order presented in your December 30 letter.

1. Section 1 - Introduction

Our definition of fish and wildlife resources included the habitat which sustains them but for clarification we will include the phrase "and the habitat that sustains them" as you recommended.

Comment: We accept the CEQ definition and priority sequence for mitigation.

2. Section 2 - Legal Mandates

We accept that the implementation of mitigation is the eventual goal and will include the phrase "and eventual implementation" as you recommended.

Comment: APA is committed to implement appropriate mitigation plans.

3. Section 2 - Protection of Fish and Game

To broaden the perspective of the first sentence in the first paragraph we will substitute the word mitigate for reduce. The definition of mitigate in this context being avoid, minimize, rectify, reduce or

compensate for impacts.

Comment: Avoidance of impacts will be the first mitigation option explored.

4. Section 2 - Federal Energy Regulatory Commission, 2nd paragraph

We will add the phrase "measures and" in the last line of this paragraph.

Comment: This addition meets your request.

5. Section 3.3 - Implementation of the Mitigation Plan

It is our intent to reach an agreement, through FERC, with those resource agencies having the mandate to approve the mitigation plan and the implementation specific agencies have not been stated since it is not considered appropriate for APA to define other agencies mandates. It is also considered inappropriate to discuss such agreements through an informal group such as the Susitna Hydro Steering Committee.

Comment: APA accepts that the proposed monitory body or its function would not supersede individual agency mandate. In fact such monitoring may be conducted through agencies fulfilling their mandates.

6. Section 3.4 - Modification of the Mitigation Plan

APA intends to work with the appropriate state and federal agencies during implementation of the plan, including any modifications. The Federal Energy Regulatory Commission must approve any modification to mitigation stipulation in the license. It is anticipated FERC would not approve these modifications without first consulting with the appropriate agencies.

Comment: It was not intended to imply APA approval superseded the mandate of state and federal agencies.

7. Section 4 - Approach to Developing Fish and Wildlife Plans

Third paragraph:

The intent of the ranking of resources is "order of importance was to direct mitigation efforts towards those resources where, even without an extensive data base, it is predicted the greatest impacts would occur. As an example, the concentration of the fisheries mitigation efforts has been towards the anadromous fisheries between Talkeetna and Devil Canyon, as this is an important reserve and there is higher potential for impact in this section than further downstream.

Comment: The delay in the license application will permit a more detailed mitigation plan to be developed.

Fifth paragraph:

Comment: The intent of this procedure is to consider each impact issue and to review all practicable mitigation options within the intent of the National Environmental Policy Act. If a mitigation option that avoids an impact is identified which is technically feasible, effective and not in conflict with any other project objective, the need to address other alternatives was not considered necessary. The intent of sentence 2, paragraph 5 was to state that if such an option does not exist, we will proceed to evaluate other options.

No mitigation options will be arbitrarily dismissed. As stated in the policy, "ALL options will be evaluated and documented."

The policy will be revised to make this clear.

Paragraph Seven:

Comment: FERC requires APA to prepare a mitigation plan prepared in consultation with appropriate resource agencies. This plan will be based on recommendations from the core groups and review and comment from the agencies via the Fish and Wildlife Mitigation Review Group and the formal agency review process. Subsequent to the FERC filing, the plans will be reviewed by FERC and other agencies and an acceptable plan finalized. It is not APA's intent that the mitigation planning be in conflict in any way with the management and protection responsibility of any agencies.

Paragraph Eight:

Comment: The Susitna project is being prepared by a state agency. As such, it would be premature to commit funding for involvement of other agencies at this time.

General Comments

1. The three month delay in the license application will permit agency review and input to the mitigation plan.

2. The Policy will be revised to include a description of purpose of the core and review groups. You will be receiving a letter with the Feasibility Report outlining what reports will be sent to your department.

We very much appreciate your comments on the policy and hope my responses are satisfactory. If you have any questions, please call.

Sincerely yours,

John D. Lawrence
Project Manager

MMG/jh

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1011 E. TUDOR RD.
ANCHORAGE, ALASKA 99503
(907) 276-3800

RECEIVED
JAN 12 1982
ACRES AMERICAN INCORPORATED

IN REPLY REFER TO:
WAES

30 DEC 1981

Mr. Eric Yould
Executive Director
Alaska Power Authority
333 W. 4th Avenue
Anchorage, Alaska 99501

Dear Mr. Yould:

This letter responds to a request by John Lawrence of Acres American that the Fish and Wildlife Service (FWS) review the Fish and Wildlife Mitigation Policy for the Susitna Hydroelectric Feasibility Study. The request was made by letter dated November 19, 1981. Our review of the Alaska Power Authority's (APA) Policy Statement has been undertaken in light of the FWS Mitigation Policy (Federal Register Vol. 46, No. 15, January 23, 1981). We have enclosed a copy of our Mitigation Policy and have previously transferred a copy to your subcontractor, Terrestrial Enviromental Specialists, Inc. (see enclosed letter dated 4 June 1981). By maximizing consistency between the two policy statements, avoidance of policy disagreements between the APA and the FWS can be accomplished. Long-term benefits would accrue throughout the process including when and if project mitigation monitoring is in place and modifications to ongoing mitigation could be evaluated under one policy.

Briefly, the Service's mitigation policy reflects the goal that the most important fish and wildlife resources should receive the greatest level of mitigation when the environment of a particular area is changed. The FWS policy divides the mitigation planning process into three components: (1) resource category determinations; (2) impact assessment; and (3) mitigation recommendations. By creating four resource categories, the FWS can vary the degree of mitigation it recommends according to the value and scarcity of the habitat at risk.

Our resource category, "...determinations will contain a technical rationale consistent with the designation criteria. The rationale will: (1) outline the reasons why the evaluation species were selected; (2) discuss the value of the habitats to the evaluation species; and (3) discuss and contrast the relative scarcity of the fish and wildlife resource on a national and ecoregion section basis." (F.R. Vol. 46, No. 15, p. 7658). Special consideration would be given to notable, "...aquatic and terrestrial sites including legally designated or set-aside areas such as sanctuaries, fish and wildlife management areas, hatcheries, and refuges, and other aquatic sites such as floodplains, wetlands, mudflats, vegetated shallows, coral reefs, riffles and pools, and springs and seeps." (F.R. Vol. 46, No. 15, pp. 7658-7659). In the aforementioned sites, the mitigation goal to which the Service would strive for is either no loss of existing habitat value (Resource Category 1) or no net loss of in-kind habitat value (Resource Category 2).

The Service intends to recommend mitigation where a biological change constitutes an adverse impact. Our evaluation of project impacts and recommended mitigation would be based, to the extent applicable, on the Service's Habitat Evaluation Procedures and Instream Flow Incremental Methodology. Both of these methodologies have been suggested to APA and its consultants on several occasions. It should be recognized that streamlining the mitigation process can be accomplished by conformance between the Service's and an applicant's impact assessment techniques. The larger the proposal, the greater the potential savings in time. This idea was a principal behind the formulation of our mitigation policy and adoption of official evaluation procedures.

In accordance with our mitigation policy, "The Service may recommend support of projects or other proposals when the following criteria are met: (1) they are ecologically sound; (2) the least environmentally damaging reasonable alternative is selected; (3) every reasonable effort is made to avoid or minimize damages or loss of fish and wildlife resources and uses; (4) all important recommended means and measures have been adopted with guaranteed implementation to satisfactorily compensate for unavoidable damage or loss consistent with the appropriate mitigation goal; and (5) for wetlands and shallow water habitats, the proposed activity is clearly water dependent and there is a demonstrated public need." (F.R. Vol. 46, No. 15, p. 7659).

Specific comments:

1.0 Introduction: This section should include a discussion of the need to adequately assess the environmental resources of the study area to determine the environmental compatibility of a proposed project and to evaluate mitigation to adequately reduce or avoid negative impacts to environmental resources, including fish and wildlife resources, so that no net loss of habitat value occurs.

2.0 Legal Mandates: It should be recognized that the intent of the specified laws and regulations is that project-related adverse biological impacts be fully mitigated. In addition, that a plan be developed, acceptable to the resource agencies with mandated fish and wildlife management responsibilities, and implemented as a component of the proposal.

2.2 National Environmental Policy Act (NEPA): It is the responsibility of the lead federal agency, the Federal Energy Regulatory Commission (FERC), to fully comply with NEPA.

2.3 Federal Energy Regulatory Commission: Regulations for, "Application for License for Major Unconstructed Projects and Major Modified Projects," (F.R. Vol 46, No. 219, November 13, 1981) were adopted December 14, 1981. References in your policy to FERC regulations should reflect this. It should be recognized that within the Exhibit E, "The applicant must provide a report that describes the fish, wildlife, and botanical resources in the vicinity of the proposed project; expected impacts of the project on these resources; and mitigation, enhancement, or protection measures proposed by the applicant. The report must be prepared in consultation with the state agency or agencies with responsibility for these resources, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service (if the proposed project may affect anadromous, estuarine, or marine fish resources), and any state or federal agency with

Mr. Eric Yould

cc: FWS-ROES, WAES
Quentin Edson, FERC
NMFS, EPA, NPS, BLM, USGS, ADEC, ADF&G
Carson/ADNR
Lawrence/Acres American

February 24, 1982
P5700.11.71
T.1528

	WILLETT
	WITTE
	BERRY
✓	HAYDEN
	LAMB
	LAWRENCE
	SINCLAIR
	VANDERBURGH
✓	R. YOUNG
	CARLSON
	FRETZ
	JEX
	LOWREY
	SINGH
	STEAD
	BOVE
	CHASE

Mr. Melvin A. Monson
Acting Assistant Regional Director
U.S. Fish and Wildlife Service
1011 E. Tudor Road
Anchorage, Alaska 99503

Dear Mr. Manson:

Susitna Hydroelectric Project
Fish and Wildlife Mitigation Policy

Thank you for your letter of December 30, 1981, commenting on the Fish and Wildlife Mitigation Policy for the Susitna Hydroelectric Feasibility Study. We appreciated receiving a copy of the F&WS Mitigation Policy and your explanation of it.

I will attempt to respond to each of your comments, numbered as in your letter.

1.0 Introduction:

This section was purposefully kept short so that the policy would not be overbearing. We do not feel it necessary to discuss the issues you mentioned, as they are covered in detail in the Feasibility Report. At the suggestion of the Alaska Department of Fish and Game, we have added the phrase "fish and wildlife resources of the state".

2.0 Legal Mandate:

The entire policy and particularly sections 3 and 4 explain that APA intends to develop and implement a mitigation plan in coordination with the agencies with mandated fish and wildlife mitigation responsibilities.

2.2 National Environmental Policy Act:

Since FERC is a federal agency, they are covered by the statement "Federal agencies shall to the fullest extent possible".

2.3 Federal Energy Regulatory Commission

The policy will reflect the fact these regulations were adopted. Exhibit E will be prepared as described in the regulations.

2.4 Fish and Wildlife Coordination Act

Reference to FERC has been incorporated.

3.1 Basic Intent of the Applicant

The statement "The FERC will resolve any disputes which APA and the agencies cannot resolve" has been added.

3.2 Consultation with Natural Resource Agencies and the Public

A section explaining the mechanism for coordination with the agencies has been added to the beginning of the policy. The agencies will be involved in the plan both prior and subsequent to FERC filing.

3.3 Implementation of the Mitigation Plan

The implementation of the mitigation plan is recognized by APA to be its responsibility.

3.4 Modification of the Mitigation Plan Paragraph 2

It is recognized any modification to or termination of the mitigation efforts would be subject to FERC approval. It is assumed FERC would consult with the agencies during this process.

4.0 Approach to Developing the Fish and Wildlife Mitigation Plan Paragraph 3

The intent of this paragraph was to direct mitigation efforts towards those resources where, even without an extensive data base, it is predicted the greatest impacts would occur. As an example, the concentration of the fisheries mitigation efforts has been towards the anadromous fisheries between Devil Canyon and Talkeetna, as this is an important resource and there is a higher potential for impact in this section than further downstream.

Paragraph 5

The intent of this procedure is to consider each impact issue and to review all practicable mitigation options within the intent of the National Environmental Policy Act. If a mitigation option is identified that avoids an impact, is technically feasible, effective and not in conflict with any other project objectives, the need to address other alternatives was not considered necessary. The

intent of sentence 2, paragraph 5 was to state that if such an option does not exist, we will proceed to evaluate other options. As stated in the policy, "All options will be evaluated and documented." The policy will be revised to make this clear.

Paragraph 7

This paragraph has been expanded to include the Fish and Wildlife Mitigation Review Group involvement in the plan's development.

Paragraph 9

Your statement has been incorporated.

Paragraph 10

We agree with your statement. The FERC must approve any modification to mitigation stipulations in the license. It is anticipated FERC would not approve the modifications without first consulting with the appropriate agencies.

Thank you again for your time. If you have any questions regarding my responses, feel free to contact me.

Sincerely yours,

John D. Lawrence
Project Manager

MMG/jmh

cc: E. Yould, APA
K. Schreiner

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 1668
Juneau, Alaska 99802

December 31, 1981

Mr. John D. Lawrence
Acres American, Inc.
900 Liberty Bank Building
Main at Court
Buffalo, New York 14202

Dear Mr. Lawrence:

We have received your letter of November 19, 1981, requesting the comments of the National Marine Fisheries Service (NMFS) on the Fish and Wildlife Mitigation Policy for the Susitna Hydroelectric Project. Having reviewed the statement we offer the following comments.

The statement adequately reflects the intent of such a mitigation policy and presents an accurate overview of those legal mandates which require mitigation to be considered in designing hydroelectric projects. We have several specific comments dealing with the operation of the proposed mitigation plan, which follow.

3.1 Basic Intent of the Applicant

The last paragraph states that this methodology outlines a process for resolving conflict between the Power Authority and resource agencies. We do not feel this has been satisfactorily accomplished within the general policy statement (Sec. 3) and suggest additional effort be made to establish such a conflict resolution methodology.

3.2 Consultation with Natural Resource Agencies & the Public

Realizing that Section 4, step 3, development of an acceptable mitigation plan, is to be completed by March 1982, we assume that steps 1 and 2 of the same section are by now substantially completed. Yet, contrary to the second sentence of 3.2, "During the early stages of planning, representatives of state and federal agencies will be encouraged to consult with the applicant and the applicants representatives, as members of the Mitigation Task Force.", we have yet to be contacted regarding the status of this important element, and the Mitigation Task Force review committee has not met as of this date.

3.3 Implementation of the Mitigation Plan

We are pleased to see the plan include provisions for post-construction monitoring of mitigation measures and opportunities.

The applicant should note, however, that such a provision will be integral to the mitigation plan and the associated costs should be included with the license application, and not "resolved through parties after the mitigation plan is complete." This is supported in the FERC regulations, 4.41 (F)(3)(iv)(D), which require Exhibit E to contain an estimate of the costs of construction, operation, and maintenance of any proposed facilities or implementation of any (mitigation) measures.

3.4 Modification of the Mitigation Plan

The last sentence, dealing with termination, should state that termination of any mitigation measure stipulated in the FERC license will require an amendment to that license.

4 Approach to Developing the Fish and Wildlife Mitigation Plans

Paragraph 3, sentence 6. Change 'will' to 'may', as priority will be assigned both by the likelihood of impact and sensitivity of the resource.

Paragraph 5, sentence 2. The fact that a form of mitigation is in conflict with project objectives or only partially effective should not prevent it from further consideration. Such a statement strains the term "reasonable alternatives" and does not comply with the spirit or intent of the National Environmental Policy Act.

Paragraph 7. As outlined, no formal agency input into the mitigation plan will occur prior to application to FERC. FERC regulations require Exhibit E to contain a report describing proposed mitigation measures, prepared in consultation with state and federal resource agencies. The process described here falls short of this required consultation. We suggest formal agency review of the draft fisheries and wildlife mitigation plans occur prior to license application.

We appreciate this opportunity to comment.

Sincerely,

for Robert W. McVey
Director, Alaska Region

February 23, 1982
P5700.11.91
T.1424

WILLETT
WITTE
BERRY
HAYDEN
LAMB
LAWRENCE
SINCLAIR
VANDERBURGH
CARLSON
FRETZ
JEX
LOWREY
SINGH
STEAD
BOVE
CHASE

Mr. Robert W. McVey
Director, Alaska Region
National Marine Fisheries Service
P.O. Box 1668
Juneau, Alaska 99802

Dear Mr. McVey:

Susitna Hydroelectric Project
Fish and Wildlife Mitigation Policy

I thank you for your December 31, 1981 response to our request for comments on the Susitna Fish and Wildlife Mitigation Policy. I have responded to your comments in the order in which they were presented.

3.1 - Basic Intent of the Applicant

Our approach to resolving fish and wildlife mitigation conflicts between APA and the resource agencies is outlined in Step 3, Section 4, of the Mitigation Policy. As stated, it basically involves review and comment by the Fish and Wildlife Mitigation Review Group representing the resource agencies. In addition, although not specifically stated in our policy, any draft mitigation plans will be submitted to resource agencies for formal comment and review prior to the submission of a FERC license application. Our policy will be modified to include this.

3.2 - Consultation with Natural Resource Agencies and the Public

Section 4, Step 3, Development of an Acceptable Mitigation Plan, will not be completed by March of 1982. However, mitigation options will be assessed and preferred options together with their technical feasibility and potential effectiveness will be presented in the March 1982 Feasibility Report.

The first meeting of the Mitigation Review Group will occur in March.1982. An invitation will be sent to Bradley Smith as a representative of your agency. This meeting will provide the resource agencies with an opportunity to discuss, with the Mitigation Core Groups, the various mitigation options presently being considered. The details of a draft mitigation plan will be completed subsequent to the Feasibility Report and prior to the FERC license application.

3.4 - Modification of the Mitigation Plan

We agree that the termination of any mitigation measure stipulated in the FERC license would require FERC approval. In regards to the monitoring program, we anticipate that the FERC license will allow for

the termination of the monitoring program when the need for further mitigation is considered unnecessary. We have modified the policy to state termination would be subject to FERC approval.

4.4 - Approach to Developing the Fish and Wildlife Mitigation Plans

Paragraph 3, sentence 6, refers to the functioning of the Mitigation Core Group which will be concentrating its efforts towards resources most likely to be impacted.

Paragraph 5, sentence 2. This sentence is contained under Step 2 entitled "Option Analysis Procedure". The intent of this procedure is to consider each impact issue and to review all practicable mitigation options within the intent of the National Environmental Policy Act. If a mitigation option that avoids an impact is identified which is technically feasible, effective, and not in conflict with any other project objectives, the need to address other alternatives was not considered necessary. The intent of sentence 2, paragraph 5, was to state that if such an option does not exist, we will proceed to evaluate other options. "All options considered will be evaluated and documented. The result of this process will be an identification and evaluation of feasible mitigation options for each impact issue and a description of residual impacts."

The selection of which options are to be further considered in the development of an acceptable mitigation plan is addressed under Step 3. Paragraph 7. Mitigation options will be forwarded to the Fish and Wildlife Mitigation Review Group allowing for agency review and comment. In addition, our mitigation policy will be modified to reflect our intent to have the draft mitigation plan formally reviewed by agencies prior to application to FERC.

I appreciate your comments and trust our response satisfies the concern you have expressed.

Sincerely,

John D. Lawrence
Project Manager

KRY/jmh

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION X
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101

REPLY TO ATTN OF: M/S 443

4 FEB 1982

Kevin R. Young
Acres American Incorporated
The Liberty Bank Building
Main at Court
Buffalo, NY 14202

Subject: Susitna Hydroelectric Project Fish and Wildlife Mitigation Policy and Draft Analyses of Mitigation Options

Dear Mr. Young:

Thank you for sending us copies of the above papers for our review. From conversations with Mike Grubb, of your staff, we understand that Acres American has decided that further work is necessary on the mitigation options papers before agency comments will be solicited. Therefore, this letter will address EPA's comments on the mitigation policy paper only.

In general, we believe that the overall mitigation approach is good. In particular, the use of the CEQ definition of mitigation encourages the most satisfactory types of mitigation to be considered first. This is reflected in Figure 2, Option Analysis. The establishment of a long-term monitoring plan and acknowledgment that the mitigation plan will be changed if necessary is also commendable.

We do have some concerns about implementation of this policy, especially over the next year while the mitigation plan for the FERC license application is still being developed. Some issues and mitigation measures must be incorporated into the preliminary engineering and design stages of the projects and, from our review of the Acres American reports, we are aware that this is being done. One good example is spillway design to avoid nitrogen supersaturation. However, there are a great many other issues where the agencies and the public do not have sufficient information yet on the impacts to judge either how much mitigation will be needed or what sort of mitigation might be successful. For example, EPA will not have any pre- and post-project water quality data until the feasibility study is circulated (letter from John D. Lawrence to John R. Spencer, January 4, 1982.) Development of an option analysis which reflects the possible successful mitigation measures for the entire range of potential impacts, including the worst case, appears to be a useful step at this time. However, the agencies and the public may have difficulty evaluating the

adequacy of a mitigation plan until more impact information is available. EPA would have been faced with this situation in reviewing the fishery mitigation plan if Acres American had wanted our comments at this time. We have one other suggestion for your consideration. Because of the location and magnitude of the impacts, new mitigation methods or methods new to this region of Alaska may eventually be identified. Because it will be several years before the mitigation plan is finalized, it may be possible to test the feasibility of some of these ideas before mitigation itself must start. Such an approach may have long-term environmental and economic benefits.

Some additional minor comments are presented in the attachment.

We look forward to reviewing the option papers. If you would like to discuss our comments, Judi Schwarz of the Environmental Evaluation Branch may be contacted for more information. She can be reached at (206) 442-1096.

Sincerely,

Gary O'Neal

Gary O'Neal, Director
Environmental Services Division

cc: Al Carson, DNR
Dave Wozniak, APA

Susitna Fish and Wildlife Mitigation Policy

Attachment

FERC Regulations

For your information, FERC published the new regulations on license applications on November 13, 1981. The section of fish and wildlife mitigation can be found at 46 FR 55938. FERC has made some wording changes, but the substance is essentially unchanged.

Definitions

The policy statement refers to a Mitigation Task Force, a Mitigation Review Group, and a Core Group of the Mitigation Task Force. The composition and method of selection of each group should be described.

February 23, 1982
P5700.11.91
T.1526

	WILLETT
	WITTE
	BERRY
✓	HAYDEN
	LAMB
✓	LAWRENCE
	SINCLAIR
	VANDERBURGH
✓	Young
X ✓	Grubb
	CARLSON
	FRETZ
	JEX
	LOWREY
	SINGH
	JSTEAD
	BOVE
	CHASE

Mr. Gary O'Neal, Director
Environmental Services Division
U.S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, Washington 98101

Dear Mr. O'Neal:

Susitna Hydroelectric Project
Fish and Wildlife Mitigation Policy

Thank you for your letter of February 4, 1982 regarding the Susitna Fish and Wildlife Mitigation Policy.

We will be discussing Mitigation further in early March meetings with the Core and Review Groups and attempting to focus in on the major impact issues and define further studies necessary to develop adequate mitigation. You will be invited to this meeting.

Thank you again for your comments.

Sincerely,

John D. Lawrence
Project Manager

MMG/jh

cc: E. Yould, APA
J. Spencer, EPA

Terrestrial Environmental Specialists, inc.
R.D. 1 BOX 388 PHOENIX, N.Y. 13135 (315)695-7228

MEMO

TO: Members of the Fisheries Mitigation Technical Group

FROM: Russell J. Nemecek

DATE: November 25, 1981; 218.880

RE: Mitigation Options

Enclosed are initial evaluations of impacts and mitigation options available for operational flows on the downstream fisheries and the flooding of streams in the impoundment zones. Please review this material before our December 10th meeting in Seattle, since this will be the essence of our discussions. If you have any comments or additional input to make prior to our meeting, please contact me.

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF RESEARCH & DEVELOPMENT

JAY S. HAMMOND, GOVERNOR

323 E. 4TH AVENUE
ANCHORAGE, ALASKA 99501

December 9, 1981

Mr. David Wozniak
Alaska Power Authority
334 West 5th Avenue, 2nd Floor
Anchorage, Alaska 99501

Dear Mr. Wozniak:

The Susitna Hydroelectric Steering Committee (SHSC) would like to receive additional information from your office regarding the status and progress of the Mitigation Task Force. As you know, preparation of an adequate Federal Energy Regulatory Commission (FERC) license application requires that Exhibit E identify the proposed measures to mitigate impacts or to protect and enhance the resources. We believe coordination of this vital study item should occur early and on a continuing basis. I am aware that the APA has also recognized this need by creating two Mitigation Task Force core groups composed of principal investigators and a Mitigation Review Committee composed of representatives of various concerned agencies. While several members of the Review Committee sit on the SHSC, they have received no information on the progress of either core group. Additionally, the Fish and Wildlife Mitigation Policy recently developed by APA for the Susitna Hydroelectric Project stresses the need for close coordination. Although no time schedule is established in this mitigation plan, it is obvious that steps 1 and 2 (identification of impacts, ranking of impacts and identification and review of mitigative alternatives) should be substantially completed by now if step 3 (development of an acceptable mitigation plan) is to be achieved by the March 15, 1982 draft feasibility report deadline.

Therefore, I am requesting that you provide any applicable information regarding the Mitigation Task Force groups and their progress to date. The minutes from past meetings would be particularly helpful here. As the SHSC is eager to discuss these concerns, I believe a short briefing may be most effective. I will be contacting you to arrange for such a meeting, hopefully during the week of 12/13/81.

Sincerely,

Al Carson

Al Carson
Chairman, Susitna Hydroelectric Steering Committee

AC:db

cc: Steering Committee
R. Stoops
Quentin Edson, F.E.R.C.

ALASKA POWER AUTHORITY

334 WEST 5th AVENUE - ANCHORAGE, ALASKA 99501

RECEIVED

DEC 21 1981

ACRES AMERICAN INCORPORATED

Phone: (907) 277-7641
(907) 276-0001

December 15, 1981

Mr. Al Carson
Department of Natural Resources
Division of Research and
Development
555 Cordova
Anchorage, Alaska 99501

Dear Al:

I am in receipt of your letter of December 8, 1981 soliciting (on behalf of the Susitna Hydroelectric Project Steering Committee) additional information concerning the Mitigation Task Force. I am happy to comply, in part because it affords me an opportunity to correct some apparent misconceptions.

First, while I have no objection to Steering Committee participation on our mitigation planning, I am somewhat surprised. As was made clear early on, mitigation planning (and specifically the Mitigation Task Force Review Group activities) is being done within the formal coordination and consultation framework of the Fish and Wildlife Coordination Act and F.E.R.C. Regulations. By contrast, the Steering Committee has worked vigorously to remain informal commentators to the Sustina Hydroelectric Project proposal. If the Steering Committee elects to join us in mitigation planning, it should be understood that we will treat their participation as "formal". That in turn leads to other minor procedural concerns, such as what to do about dual representation, etc.

Second, you misjudge slightly our timetable on mitigation planning. We are just now in the midst of identification of impacts. Physical constraints have led to this timetable: Field studies had to be completed and summarized, hydrology data formulated so that power generation simulation (which leads to water release/stage information) could be done, etc. We have by no means fully scoped impact yet, but we are rapidly advancing.

Which leads me to the key point; when will an assessment be possible? The most comprehensive will appear in the draft feasibility report, to be published March 15, 1982. A less comprehensive, but

nonetheless fairly rigorous, assessment will be provided to the Review Group when they convene January 20, 1982. I know you are a member of that Review Group. You should be receiving your formal invitation very soon, if not by now. I suggest Steering Committee involvement, if any, be subsequent to that convening.

Sincerely,

FOR THE EXECUTIVE DIRECTOR

David D. Wozniak
Project Manager

DDW/blm

cc: John Lawrence, Acres American (w/cy of Carson letter)
Quentin Edson, F.E.R.C.

December 18, 1981
P5700.11.91
T.1355

Ms. Janet McCabe
Area Director
U.S. Geological Survey
1011 E. Tudor
Suite 297
Anchorage, AK 99501

Dear Ms. McCabe:

Susitna Hydroelectric Project
Fish and Wildlife Mitigation
Review Group

In September of this year the Alaska Power Authority (APA) invited you or a member of your staff to participate in a Fish and Wildlife Mitigation Review Group for the Susitna Hydroelectric Project. To date, APA has received no response.

The first Review Group meeting is to be held January 20, 1982, at 10:00 a.m. at the offices of APA. Please inform APA if you will be attending this meeting and if you wish to participate in future mitigation planning efforts. If so, we will send material for your review prior to this meeting.

Thank you.

Sincerely,

Kevin Young /MG

Kevin Young
Environmental Coordinator

MG:adh

cc: APA

ACRES AMERICAN INCORPORATED
Consulting Engineers
The Liberty Bank Building Main at Court
Buffalo, New York 14202
Telephone 716-853-7525 Telex 91-6481 ACRES BUF
Other Offices: Columbia, MO Pittsburgh, PA Raleigh, NC Washington, DC

December 18, 1981
P5700.11.92
T1360

Mr. Carl Yanagawa
Regional Supervisor for Habitat Division
Alaska Department of Fish & Game
333 Raspberry Road
Anchorage, Alaska 99502

Dear Mr. Yanagawa:

As a member of the group established to review fish and wildlife mitigation recommendations on the Susitna Hydroelectric Project, I request your attendance at a meeting on January 20, 1982, at 10:00 a.m., in the office of the Alaska Power Authority. In the first week of January, I will forward for your review, a preliminary outline of project operations, impact issues, and mitigation options as prepared by our design team and the fish and wildlife mitigation technical core groups. I would appreciate receiving by January 30, 1982, any written comments you may have regarding our approach, results, or evaluations to date.

Following the preparation of the Feasibility Report, which will contain more detailed information on project operations and our evaluation of these operations, an opportunity will be provided for you to perform a more thorough review.

If you have any questions relating to this meeting or the proposed functions of the review group, please contact Mr. Dave Wozniak of APA or myself at 716-853-7525.

Sincerely,

Kevin Young/MG

Kevin Young
Susitna Environmental Coordinator

MG/jk

ACRES AMERICAN INCORPORATED
Consulting Engineers
The Liberty Bank Building, Main at Court
Buffalo, New York 14202

Telephone 716-853-7525 Telex 91-6423 ACRES BUF

Other Offices: Columbia, MD Pittsburgh, PA Raleigh, NC Washington, DC

Preceding Letter Sent To:

Mr. Carl Yanagawa
Regional Supervisor for Habitat
Division
Alaska Department of Fish and Game
333 Raspberry Road
Anchorage, AK 99502

Ms. Juli Schwarz
Environmental Evaluation Branch
U.S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, WA 98101

Mr. Bradley Smith
Environmental Assessment Division
National Marine Fisheries Service
Federal Building and U.S. Court House
701 C Street, Box 43
Anchorage, AK 99513

Mr. Al Carson
Department of Natural Resources
323 East Fourth Avenue
Anchorage, AK 99501

Mr. Michael Scott
U.S. Bureau of Land Management
4700 East 72nd Street
Anchorage, AK 99507

Mr. Gary Stackhouse
U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, AK 99502

January 7, 1982
P5700.11.70
T.1395

Mr. Carl Yanagawa
Regional Supervisor for Habitat Division
Alaska Department of Fish & Game
333 Raspberry Road
Anchorage, Alaska 99502

Dear Mr. Yanagawa:

Susitna Hydroelectric Project
Fish and Wildlife Mitigation
Review Group Meeting

Enclosed for your review:

1) Susitna Hydroelectric Project Fish and Wildlife Mitigation Policy.

2) Draft Analysis of Wildlife Mitigation Options.

3) Draft Analysis of Fisheries Mitigation Options.

These documents will be discussed at the Fish and Wildlife Mitigation Review Group Meeting to be held at 9:00 a.m. (note change of time from letter of December 18, 1981) on January 20, 1982 at the office of the Alaska Power Authority, 334 West 5th Avenue, Anchorage. I hope you will be able to attend the meeting.

Sincerely yours,

Kevin R. Young
Susitna Environmental Coordinator

MRG/jmh

Enclosures

Preceding Letter Sent To:

Mr. Carl Yanagawa
Regional Supervisor for Habitat
Division
Alaska Department of Fish and Game
333 Raspberry Road
Anchorage, AK 99502

Ms. Juli Schwarz
Environmental Evaluation Branch
U.S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, WA 98101

Mr. Bradley Smith
Environmental Assessment Division
National Marine Fisheries Service
Federal Building and U.S. Court House
701 C Street, Box 43
Anchorage, AK 99513

Mr. Al Carson
Department of Natural Resources
323 East Fourth Avenue
Anchorage, AK 99501

Mr. Michael Scott
U.S. Bureau of Land Management
4700 East 72nd Street
Anchorage, AK 99507

Mr. Gary Stackhouse
U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, AK 99502

February 26, 1982
P5700.11.70
T.1543

Mr. Carl Yanagawa
Regional Supervisor for Habitat Division
Alaska Department of Fish & Game
333 Raspberry Road
Anchorage, Alaska 99502

Dear Mr. Yanagawa:

Susitna Hydroelectric Project
Fish and Wildlife Mitigation

As discussed through Vern Smith of our Anchorage office, meetings to review fish and wildlife mitigation efforts are scheduled for March 11 and 12, 1982 in the offices of Acres American, 1577 C Street, Suite 305, Anchorage, Alaska.

As these meetings are expected to be in the form of technical workshops, a complete day on each of the topics of fish and wildlife is considered necessary. Proposed agendas are enclosed. I will also forward, within the week, updated information packets addressing fish and wildlife impact issues and mitigation options.

As fisheries issues are being discussed on a separate day from wildlife issues, please feel free to have different technical personnel attend each of the meetings if you consider it appropriate.

As we consider these meetings to be an important component in improving the coordination between your agency and our fish and wildlife mitigation core groups, your attendance is encouraged.

If you have any questions relating to these meetings please contact myself or Vern Smith (907-276-4888).

Sincerely,

Kevin Young
Environmental Coordinator

KRY:dlp

Enclosures

Preceding Letter Sent To:

Mr. Carl Yanagawa
Regional Supervisor for Habitat
Division
Alaska Department of Fish and Game
333 Raspberry Road
Anchorage, AK 99502

Ms. Juli Schwarz
Environmental Evaluation Branch
U.S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, WA 98101

Mr. Bradley Smith
Environmental Assessment Division
National Marine Fisheries Service
Federal Building and U.S. Court House
701 C Street, Box 43
Anchorage, AK 99513

Mr. Al Carson
Department of Natural Resources
323 East Fourth Avenue
Anchorage, AK 99501

Mr. Michael Scott
U.S. Bureau of Land Management
4700 East 72nd Street
Anchorage, AK 99507

Mr. Gary Stackhouse
U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, AK 99502

March 2, 1982
P5700.11.70
T.1552

Mr. Carl Yanagawa
Regional Supervisor for Habitat Division
Alaska Department of Fish & Game
833 Raspberry Road
Anchorage, Alaska 99502

Dear Mr. Yanagawa:

Susitna Hydroelectric Project
Fish and Wildlife Mitigation
Review Group Meeting

Enclosed for your information are:

1. The Susitna Hydroelectric Project Fish and Wildlife Mitigation Policy (Revised)

2. Wildlife Mitigation Options (Revised)

3. Fisheries Mitigation Options (Revised)

Please review these documents prior to the meeting of the Fish and Wildlife Mitigation Review Group on March 10, 1982 at 8:30 am in the offices of Acres American, 1577 C Street, Anchorage. We will discuss the Policy and Wildlife Mitigation Options on the 10th and the Fisheries Mitigation Options on the 11th, as referred to in the invitation letter of February 25, 1982.

Thank you very much.

Sincerely,

Kevin Young
Susitna Environmental
Coordinator

KRY:dlp

Enclosures

Preceding Letter Sent To:

Mr. Carl Yanagawa
Regional Supervisor for Habitat
Division
Alaska Department of Fish and Game
333 Raspberry Road
Anchorage, AK 99502

Ms. Juli Schwarz
Environmental Evaluation Branch
U.S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, WA 98101

Mr. Bradley Smith
Environmental Assessment Division
National Marine Fisheries Service
Federal Building and U.S. Court House
701 C Street, Box 43
Anchorage, AK 99513

Mr. Al Carson
Department of Natural Resources
323 East Fourth Avenue
Anchorage, AK 99501

Mr. Michael Scott
U.S. Bureau of Land Management
4700 East 72nd Street
Anchorage, AK 99507

Mr. Gary Stackhouse
U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, AK 99502

SUSITNA HYDROELECTRIC PROJECT

FISH AND WILDLIFE MITIGATION REVIEW GROUP MEETING

March 10, 1982

Held at the Offices of Alaska Power Authority, Anchorage
Attendees: See attached list.

The meeting followed the attached agenda. The revised Fish and Wildlife Mitigation Policy was discussed. Agreement was reached on all areas where further revisions were suggested. The policy will be modified and circulated to the review group members by April 15, 1982.

Ed Reed and Karl Schneider presented the results of the wildlife baseline studies and impacts prediction. Attendees were provided with the sections of the Feasibility Report addressing these issues.

General mitigation options were discussed. HEP was not dismissed but questioned as to its validity to big game species in Alaska. It was agreed some kind of habitat evaluation, in addition to population studies would have to be conducted. TES has developed a habitat analysis method (used on the access road studies) and this may be modified and used. The question of land set aside was also discussed but no decision reached.

Ed Reed suggested, for discussion purposes, the option of APA funding a permanent research station in the Upper Susitna Basin. It was agreed this was an option but should be considered only if other options (avoid, reduce, etc.) fail, i.e. it would be used on out-of-kind compensation.

Studies for Phase II to quantify impacts and for mitigation planning were reviewed with Attachment A forming the basis for discussion. The BLM burn in the Alphabet Hills may not proceed dur to lack of burn plan being written and possible requirement for an archaeological clearance. APA may contact BLM to determine how a go decision could be reached.

Fish and Wildlife Review Group

3/10/82 Mitigation Meeting -

NAME	REPRESENTING
Brad Smith	NMFS
Al Carson	AK OMR
Don Follows	Acres American - Region
Bob Krogsen	TES
Mike Scott	BLM
Leonard P. Corin	USFWS
Gary L Stackhouse	USFWS
Michael Grubb	Acres American
Frank Banfield	Rangifer Associates - TES consultant
Carl Yanagawa	ADF&G
Tom Arminski	ADF&G
Ed Reed	TES
Joe McMullen	TES
Jay D. McKendrick	U of A. / TES

March 16, 1982
P5700.11.70
T1598

Mr. Karl Schneider
Research Coordinator
Division of Game
Alaska Department of Fish and Game
333 Raspberry Road
Anchorage, AK 99502

Dear Karl:

Susitna Hydroelectric Project
Proposed Phase II Studies

I am enclosigg a copy of the document briefly describing the proposed Phase II Susitna Wildlife and Vegetation studies. This was prepared based on the work of the Core Group and Review Group on March 10-12, 1982.

I wish to thank you for your time and input during both the review and Core Group meetings. I feel we made real progress toward resolving some of the issues that had been hanging, particularly the wildlife/habitat relationship issue. I understand Dr. Taber will be sending you a brief description of a system he proposes and, following your review, we will proceed to discuss the issue with the Core Group and others whom you feel appropriate. As we discussed, TES will take the lead in arranging for the workshop.

Thank you again for your time; I will be in touch.

Sincerely,

Michael Grubb

MG:ccv
Enclosure

cc: E. Yould, APA

March 24, 1982
P5700.11.91
T1610

Ms. Judi Schwarz
Environmental Evaluation Branch
Mail Stop 443
U.S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, WA 98101

Dear Judi:

Susitna Hydroelectric Project
Fisheries Mitigation

As we discussed, I am enclosing a copy of two documents distributed at the March 19th meeting of the Susitna Fish and Wildlife Mitigation Review Group. One document is a revision of the fisheries document provided to you and other members of the group on March 8th. The other document is a summary of wildlife and vegetation studies proposed for Phase II of the project. This document was based on Phase I studies, comments from the Review Group on the 10th, and work of the Wildlife Core Group on March 11th and 12th.

The Fish and Wildlife Mitigation Policy was also discussed on the 10th. You will shortly be receiving what is hopefully the final version of this policy, as the group reached agreement as to the changes and the wordings of these changes during the meeting on the 10th.

Your comments on the two enclosed documents are invited. We are particularly interested in your thoughts as to:

1. Are the proposed studies relevent?

2. Do the proposed studies address the issues in question?

3. Which studies should receive priority, should funding become a constraint?

Thank you for your continued role in this aspect of the project.

Sincerely,

Michael Grubb

MG:ccv
Enclosures

cc: E. Yould - APA

April 1, 1982
P5700.11.87
T1633

Mr. Max Brewer
Office of the Director
Special Assistant for Alaska
U.S. Geological Survey
218 East Street
Anchorage, AK 99501

Susitna Hydroelectric Project
Fish and Wildlife Mitigation
Policy

Dear Mr. Brewer:

Enclosed is the Susitna Hydroelectric Fish and Wildlife Mitigation Policy. This policy is the culmination of a cooperative effort between the Power Authority, its consultants, and the natural resource agencies.

Originally initiated in January 1981, this policy has been reviewed and commented upon by the Fish and Wildlife Mitigation Review Group and revised and reissued by the Power Authority and its consultants in May, June and November 1981 and March 1982. It has also been discussed at meetings held with the Fish and Wildlife Mitigation Review Group in January and June 1981 and March 1982.

This policy will serve as the foundation for further mitigation planning for the Susitna Project. We look forward to working with you and your staff in this important effort.

Sincerely,

John Lawrence /ah

John D. Lawrence
Project Manager

JDL:ah
Enclosure

cc: E. Yould

ACRES AMERICAN INCORPORATED
Consulting Engineers
The Liberty Bank Building, Main at Court
Buffalo, New York 14202
Telephone 716-853-7525 Telex 91-6423 ACRES BUF

Letter #3

Mr. Max Brewer
Office of the Director
Special Assistant for Alaska
U.S. Geological Survey
218 East Street
Anchorage, AK 99501

Mr. Ernest W. Mueller
Commissioner
Alaska Department of Environmental Conservation
Pouch O
Juneau, AK 99801

Mr. Bob Martin
Alaska Department of Environmental Conservation
437 East Street, 2nd Floor
Anchorage, AK 99501

Mr. John Rego
U.S. Bureau of Land Management
Anchorage District Office
4700 East 72nd Avenue
Anchorage, AK 99503

April 1, 1982
P5700.11.74
T1624

Mr. John Katz
Alaska Department of Natural Resources
Pouch M
Juneau, Alaska 99811

Susitna Hydroelectric Project
Fish and Wildlife Mitigation
Policy

Dear Mr. Katz:

Enclosed is the Susitna Hydroelectric Project Fish and Wildlife Mitigation Policy. This policy is the culmination of a cooperative effort between the Power Authority, its consultants, and the natural resource agencies.

Originally initiated in January 1981, this policy has been reviewed and commented upon by the Fish and Wildlife Mitigation Review Group and revised and reissued by the Power Authority and its consultants in May, June, and November 1981 and March 1982. It has also been discussed at meetings held with the Fish and Wildlife Review Group in January and June 1981 and March 1982.

This policy will serve as the foundation for further mitigation planning for the Susitna Project. We sincerely appreciate your efforts and those of your staff in the review of the various drafts of this document and attendance and input to the meetings. We look forward to working with you on future mitigation efforts. Again, thank you for your assistance.

Sincerely,

John Lawrence/MG

John D. Lawrence
Project Manager

JDL:ah
Enclosure

cc: E. Yould
A. Carson

ACRES AMERICAN INCORPORATED
Consulting Engineers
The Liberty Bank Building, Main at Court
Buffalo, New York 14202
Telephone 716 853-7525 Telex 91-6423 ACRES BUF

Letter #2

Mr. John Katz
Pouch M
Alaska Department of Natural Resources
Juneau, Alaska 99811

Mr. Robert McVey
Director, Alaska Region
National Marine Fisheries Service
NOAA
P.O. Box 1668
Juneau, Alaska 99802

Mr. Ron Morris, Director
Anchorage Field Office
National Marine Fisheries Service
701 C Street, Box 43
Anchorage, Alaska 99513

Mr. Keith Schreiner
Regional Director
U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, Alaska 99503

Mr. Robert Bowker
U.S. Fish and Wildlife Service
Western Alaska Ecological Service
733 West 4th Avenue
Anchorage, Alaska 99501

Mr. Ronald Skoog
Commissioner
Alaska Department of Fish and Game
P.O. Box 3-2000
Juneau, Alaska 99802

Mr. Thomas Trent
Alaska Department of Fish and Game
2207 Spenard Road
Anchorage, Alaska 99502

Mr. John R. Spencer
Regional Administrator
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Mr. Curtis McVee
State Director
Bureau of Land Management
Federal Building and Court House
Anchorage, AK 99513

April 1, 1982
P5700.11.74
T1616

Mr. Al Carson
Department of Natural Resources
Pouch 7-005
Anchorage, AK 99510

Susitna Hydroelectric Project
Fish and Wildlife Mitigation
Policy

Dear Mr. Carson:

Enclosed is the Susitna Hydroelectric Project Fish and Wildlife Mitigation Policy. This version has been revised based upon comments received and agreements reached at the Fish and Wildlife Mitigation Review Group Meeting on March 10, 1982. We would like to consider this version as final and ask your indulgence in any minor wording disagreements. If you have substantial problems with the policy, we will, of course, be glad to discuss them with you.

The plan has been revised to include the following major points:

1. Goals of the mitigation plans will be specified in the plan and the goals considered in the modification and termination decision process.

2. It is the intent of the Power Authority to negotiate directly and resolve conflicts with the resource agencies.

3. The responsibility for implementing the mitigation plans rest with the Power Authority.

4. The mitigation plans will be flexible to accommodate unexpected impacts or shifts in prioritization of mitigation of impacts.

5. Project modifications will be included as a mitigation option to be considered.

6. Alaskan agency involvement is more clearly defined.

To simplify your review, the following sections and paragraphs have been changed from the version discussed at the March 10 meeting:

3.1 - Paragraph 1: The last sentence has been added.

- Paragraph 2, Sentence 4: The words "ultimate" and "insuring" have been deleted.

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Other Offices Columbia MD, Pittsburgh PA, Raleigh NC, Washington DC

3.3 - Paragraph 1, Sentence 1: The words "ultimate" and "insuring" have been delted.

- Paragraph 2: This entire paragraph is new.

- Paragraph 3, Sentence 1: The phrase "and to determine its effectiveness" has been added.

3.4 - Paragraph 2, Sentence 3: The phrase "the Power Authority" has been deleted.

- Paragraph 2, Sentences 4 and 5: These entire sentences are new.

- Paragraph 2, Sentence 7: The sentence has been revised and Sentence 8 added.

4 - Paragraph 3: The last two sentences are new.

- Paragraph 5, Sentence 2: The phrase "including project modification" has been added.

- Paragraph 5, Sentence 3: The second half of this sentence is new.

- Paragraph 6, Sentence 2: The phrase "and an explanation of those deemed infeasible" has been added.

- Paragraph 6, Sentences 4 and 5: These have been revised for clarity.

- Paragraph 7: This has been moved from the original location of two paragraphs earlier. The last sentence is new.

- Paragraph 10: The last three sentences are new.

- Paragraph 11: This last paragraph has been revised to incorporate the issue of obtaining mitigation goals.

Figure 1: Goals of Plan has been added to the first box.

Originally initiated in January 1981, this policy is the culmination of a cooperative effort between the Power Authority, its consultants, and the natural resource agencies. This policy will serve as the foundation for further mitigation planning for the Susitna project.

April 1, 1982

We sincerely appreciate your efforts in the reviews of the various drafts of this document and your attendance and input to the mitigation meetings. We look forward to working with you further on this very important aspect of the Susitna project. Again, thank you for your assistance.

Sincerely,

John D. Lawrence
Project Manager

JDL:ah
Enclosure

cc: John Katz
E. Yould

Letter #1

Mr. Al Carson
Department of Natural Resources
Pouch 7-005
Anchorage, AK 99510

Mr. Bradley Smith
Environmental Assessment Division
National Marine Fisheries Service
Federal Building and U.S. Court House
701 C Street, Box 43
Anchorage, AK 99513

Mr. Michael Scott
District Fisheries Biologist
U.S. Bureau of Land Management
4700 East 72nd Street
Anchorage, AK 99507

Mr. Gary Stackhouse
U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, AK 99503

Mr. Carl Yanagawa
Regional Supervisor for Habitat Division
Alaska Department of Fish and Game
333 Raspberry Road
Anchorage, AK 99502

Ms. Judi Schwartz
Environmental Evaluation Branch
Mail Stop 443
U.S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, WA 98101

Mr. Lenny Corin
U.S. Fish and Wildlife Service
733 West Fourth Avenue
Suite 101
Anchorage, AK 99501

April 2, 1982
P5700.11.70
T.1645

Mr. Ronald O. Skoog, Commissioner
Alaska Department of Fish and Game
P.O. Box 3-2000
Juneau, AK 99802

Dear Mr. Skoog:

Susitna Hydroelectric Project
Fish and Wildlife Mitigation

Thank you for your letter of February 18, 1982, commenting on the Susitna Hydroelectric Project Draft Analysis of Wildlife Mitigation Options and Draft Analysis of Fisheries Mitigation Options. We appreciate the time you and your staff have taken to respond to our request.

A meeting was held with the Susitna Fish and Wildlife Mitigation Review Group on March 10, 1982, to discuss these wildlife mitigation options, proposed Phase II studies, and the revised Fish and Wildlife Mitigation Policy. Mr. Carl Yanagawa, Tom Arminski, and Karl Schneider of your agency attended that meeting. The Wildlife Mitigation Core Group, of which Karl Schneider is a member, met the following two days to formulate studies for Phase II, the purpose of these studies being both to quantify impacts and to plan for mitigation.

The points raised in your letter of February 18 concerning the mitigation options and those raised in your letter of December 30, 1982, concerning the Fish and Wildlife Mitigation Policy, were discussed at these meetings. The results of these meetings, particularly as they refer to the issues in your letter, were as follows:

1. A revised Fish and Wildlife Mitigation Policy, incorporating many of your agency and other agency comments, was discussed at the March 10 meeting. Agreement was reached on further changes; what will hopefully be the final version of the policy will be circulated by April 15, 1982.

2. Utilization of HEP and the issue of replacement lands was discussed at both meetings. No concensus of opinion materialized or final decision reached. It was agreed that some type of big game habitat analysis work would be conducted in Phase II to complement the census and radio collaring studies conducted in Phase I and continuing into Phase II. It was also decided that one goal of this habitat analysis work would be to evaluate lands identified as potential replacement lands. The identification of these lands will be a Phase II task.

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Other Offices: Columbia, MD; Pittsburgh, PA; Raleigh, NC; Washington, DC

3. The issue of burning to provide moose habitat was also discussed at both meetings. It was decided the proposed BLM burn in the Alphabet Hills provides a unique opportunity for assessing the effectiveness of burning as a moose management tool in the Upper Susitna Basin, and as such, pre- and post-burning studies would be proposed as part of Phase II. These studies would, hopefully, provide the information to determine if this option should be further pursued. As you suggested, the Alaska DNR Plant Material Center staff was contacted by members of Terrestrial Environmental Specialists.

I am enclosing, for your information, an Overview of Proposed Phase II Wildlife and Vegetation Studies, which was prepared by the Wildlife Core Group, based on Phase I studies and input from the Fish and Wildlife Mitigation Review Group. This document was circulated to the Mitigation Review Group on March 19, 1982. Detailed scopes, budgets, and schedules for these studies will be submitted to the Alaska Power Authority for their consideration.

A clarification is required regarding the purpose and extent of the Fisheries Mitigation Options package submitted to your agency January 7, 1982. The intent of this document was to list the various fisheries impact issues that had been identified and to indicate the generic type of mitigation options that were being considered by the Fisheries Core Group. The purpose in submitting the document to your agency, which is represented on the Fisheries Mitigation Review Group, was to supply some premeeting information so that your representative would at least have a feeling for the general direction being pursued by the Mitigation Core Group. Considering much of the information on the fisheries resources and project design was not available until December 1981, the document submitted January 7, 1982, was never intended to represent "an adequate assessment of the fisheries resources in the Susitna River or adequate evaluation of project impacts on that resource". We apologize for the misunderstanding if your staff spent time reviewing the document under this context.

Even without a complete assessment of the fisheries resources and complete evaluation of project impacts, we do consider that most, if not all, significant impact issues have been identified. In this context, preliminary mitigation planning is being pursued.

Rather than responding to your specific comments on the Draft Fisheries Mitigation Options Package, I have enclosed updated documents on fisheries impact issues/mitigation options and a listing of fisheries questions and proposed studies. Both these documents were distributed to the Susitna Fish and Wildlife Review Group in early March 1982.

The Fisheries Impact Issues and Mitigation Options Package was prepared by the Fisheries Mitigation Core Group. The purpose of the document is to identify key impact issues, not to present a detailed impact analysis, and to provide a discussion of the various mitigation options presently being

developed, not to provide a detailed assessment as to the suitability of the various options. An impact assessment and draft mitigation plan are forthcoming, however, such are premature until further analysis can be completed.

Thank you again for your time and that of your staff in reviewing these documents and attending meetings. It is very much appreciated. We are most anxious that the review process for the Susitna Project be as constructive and effective as possible. Please do not hesitate to advise us of any difficulties or problems you may encounter in the fulfillment of our agency coordination program.

Sincerely,

Kevin R. Young
Susitna Environmental Coordinator

KRY:ccv
Enclosures

ALASKA POWER AUTHORITY

334 WEST 5th AVENUE - ANCHORAGE, ALASKA 99501

Phone: (907) 277-7641
(907) 276-0001

April 5, 1982

Mr. Mike Small
Bureau of Land Management
P. O. Box 147
Glennallen, Alaska 99588

Dear Mr. Small:

Our efforts in mitigation planning for wildlife losses from the proposed Susitna Hydroelectric Project include exploring possibilities of habitat management in the upper Susitna basin. We have been advised by Karl Schneider of the Alaska Department of Fish and Game (ADF&G) and by our environmental consultants that your agency is planning an experimental burn of approximately 47,000 acres in the Alphabet Hills Region. We have been further advised that this burn provides an excellent opportunity to determine the effectiveness of burning in the upper basin as a habitat management tool, a subject on which little is currently known.

Studies have been proposed to us by ADF&G and by our consultant to conduct both pre- and post-burn vegetation and moose surveys in this area. If the burn is to occur this summer, these studies must be conducted this spring.

During the last meeting of the Susitna Fish and Wildlife Mitigation Review Group, Mr. Scott of your agency indicated the decision to proceed with the burn had not been reached and potential delays included the areas of burn plan and archaeological clearance.

In the spirit of obtaining the best information possible on which to make mitigation decisions, the Power Authority would very much like the burn to proceed. We are prepared to make a substantial commitment of our resources to fund the studies proposed by ADF&G and our consultants. We are also willing to work cooperatively with BLM and provide whatever assistance we can.

We must very shortly make decisions regarding the direction of the coming field season studies, including

spring studies in the proposed burn area. A timely decision from you or indication on how we may assist you would be greatly appreciated.

If you wish to discuss this, please give me a call. Thank you very much.

Sincerely,

FOR THE EXECUTIVE DIRECTOR

David D. Wozniak
Project Engineer

DDW/es

cc: Mike Scott, BLM
Mike Grubb, Acres
Karl Schneider, ADF&G

April 13, 1982
P5700.11.75
T.1660

Mr. John Rego
U.S. Bureau of Land Management
Anchorage District Office
4700 East 72 Avenue
Anchorage, AK 99507

Dear John:

Susitna Hydroelectric Project
Mitigation Planning

Thank you for meeting with me and Don Follows last week. I appreciated your suggestions and input regarding the Susitna project mitigation efforts and how we may help to expedite the Alphabet Hills burn. I have been in contact with Mike Small and Jim Chase to offer our assistance.

Thanks again for your help and input into our studies.

Sincerely,

Michael Grubb
Senior Scientist

MG:ccv

April 12, 1982
P5700.11.70
T.1650

Mr. Carl Yanagawa
Alaska Department of Fish and Game
333 Raspberry Road
Anchorage, AK 99502

Dear Carl:

Susitna Hydroelectric Project
Wildlife Studies

Thank you for meeting with me last week. I am sure you and Tom are busy andsappreciated your time. Your suggestions were helpful and aid in the continued mitigation planning efforts for the Susitna Project.

As discussed, I am enclosing a copy of the Overview of Proposed Phase II Wildlife and Vegetation Studies. This document was distributed at the March 19, 1982 Fish and Wildlife Mitigation Review Group Meeting.

Thank you again for your time.

Sincerely,

Michael Grubb
Senior Scientist

MG:ccv
Enclosure

April 13, 1982
P5700.11.74
T.1655

Mr. Al Carson
Alaska Department of Natural Resources
Pouch 7-005
Anchorage, Alaska 99510

Dear Al:

Susitna Hydroelectric Project
Mitigation Planning

Thank you for meeting with me last week and discussing your concerns regarding the Susitna project. I realize you have a busy schedule and appreciated your time.

As I mentioned, I met last week with all the members of the Fish and Wildlife Mitigation Review Group and received valuable input and suggestions. I look forward to working further with you on mitigation planning for this project.

Sincerely,

Michael Grubb
Senior Scientist

MMG/jh

April 13, 1982
P5700.11.71
T.1657

Mr. Mel Monson
Acting Assistant Regional Director
U.S. Fish and Wildlife Service
1011 E. Tudor Road
Anchorage, Alaska 99503

Dear Mr. Monson:

Susitna Hydroelectric Project
Mitigation Planning

Thank you very much for arranging the meeting with the members of your staff last week. I feel we are making progress in our mitigation planning efforts and look forward to working further with the U.S. Fish and Wildlife Service on this important aspect of the Susitna project.

Thank you again for your help.

Sincerely,

Michael Grubb
Senior Scientist

MMG/jh

April 13, 1982
P5700.11.71
T.1659

Mr. Gary Stackhouse
U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, Alaska 99503

Dear Gary:

Susitna Hydroelectric Project
Mitigation Planning

Thank you for meeting with Don Follows and me last week: I'm sure you were busy reviewing the Feasibility Report and appreciated your time.

Next time we meet we can discuss sugar maples, brook trout, Dickey-Lincoln, Seabrook, lobsters, Meldrim Thompson and other good New England topics. I'm looking forward to it.

Sincerely,

Michael Grubb
Senior Scientist

MMG/jh

April 13, 1982
PB700.11.71
T.1658

Mr. Lennie Corrin
U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, AK 99502

Dear Lennie:

Susitna Hydroelectric Project
Mitigation Planning

Thank you for meeting with Don Follows and me last week. I realize you have Feasibility Report review responsibilities and appreciated your time.

I feel we are makingpprogress in mitigation planning for the Susitna Project and look forward to working further with you on this matter.

Sincerely,

Michael Grubb
Senior Scientist

MG:ccv

April 13, 1982
P5700.11.75
T.1661

Mr. Michael Scott
U.S. Bureau of Land Management
4700 East 72 Street
Anchorage, AK 99507

Dear Mike:

Susitna Hydroelectric Project
Mitigation Planning

Thank you very much for meeting with me and Don Follows last week. I appreciate both your time and help in advising us on the Alphabet Hills burn. I have been in contact with Mike Small and Jim Chase and discussing what we can do to expedite matters.

Thanks again.

Sincerely,

Michael Grubb
Senior Scientist

MG:ccv

April 21, 1982
P5700.11.74
T1665

Mr. Al Carson
Department of Natural Resources
Pouch 7-005
Anchorage, AK 99510

Susitna Hydroelectric Project
Wildlife Mitigation Options
Paper

Dear Mr. Carson:

Enclosed is one copy of the Susitna Hydroelectric Project Draft Wildlife Mitigation Option Paper. This document is part of the continuing process leading to a wildlife mitigation plan.

Please review this paper. I will be contacting you shortly regarding a meeting to discuss this document.

Thank you for your continued cooperation.

Sincerely,

Michael Grubb

Michael Grubb
Senior Scientist

MG:m

Enclosure
cc: D. Wozniak, APA

ACRES AMERICAN INCORPORATED
Consulting Engineers
The Liberty Bank Building Main at Court
Buffalo, New York 14202

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Preceding Letter Sent To:

Mr. Al Carson
Department of Natural Resources
Pouch 7-005
Anchorage, AK 99510

Mr. Bradley Smith
Environmental Assessment Division
National Marine Fisheries Service
Federal Building and U.S. Court House
701 C Street, Box 43
Anchorage, AK 99513

Mr. Michael Scott
District Fisheries Biologist
U.S. Bureau of Land Management
4700 East 72nd Street
Anchorage, AK 99507

Mr. Gary Stackhouse
U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, AK 99503

Mr. Carl Yanagawa
Regional Supervisor for Habitat Division
Alaska Department of Fish and Game
333 Raspberry Road
Anchorage, AK 99502

Ms. Judi Schwarz
Environmental Evaluation Branch
Mail Stop 443
U.S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, WA 98101

Mr. Lenny Corin
U.S. Fish and Wildlife Service
733 West Fourth Avenue
Suite 101
Anchorage, AK 99501

April 26, 1982
P5700.11.91
T1680

Ms. Judi Schwarz
Environmental Evaluation Branch
Mail Stop 443
U.S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, WA 98101

Susitna Hydroelectric Project
Fish and Wildlife Mitigation
Review Group Meeting

Dear Ms. Schwarz:

You are invited to attend the next meeting of the Susitna Hydroelectric Fish and Wildlife Mitigation Review Group, to be held at 8:30 a.m., May 17, 1982, in Room C121 at the Federal Building, 6th and C Street, Anchorage, Alaska.

The purpose of this meeting will be to discuss the Draft Wildlife Mitigation Options Paper mailed to you on April 21, 1982. Please review this document prior to the meeting.

Thank you for your time and input.

Sincerely,

Michael Grubb
Senior Scientist

cc: D. Wozniak, APA

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Consulting Engineers
The Liberty Bank Building, Main at Court
Buffalo, New York 14202
Telephone 716-853-7525 Telex 91-6822 ACRES BUF

April 26, 1982
P5700.11.91
T1682

Mr. Bradley Smith
Environmental Assessment Division
National Marine Fisheries Service
Federal Building and U.S. Court House
701 C Street, Box 43
Anchorage, AK 99513

Susitna Hydroelectric Project
Fish and Wildlife Mitigation
Review Group Meeting

Dear Mr. Smith:

You are invited to attend the next meeting of the Susitna Hydroelectric Fish and Wildlife Mitigation Review Group, to be held at 8:30 a.m., May 17, 1982, in Room C121 at the Federal Building, 6th and C Street, Anchorage, Alaska.

The purpose of this meeting will be to discuss the Draft Wildlife Mitigation Options Paper mailed to you on April 21, 1982. Please review this document prior to the meeting.

Thank you for your time and input.

Sincerely,

Michael Grubb
Senior Scientist

cc: D. Wozniak, APA

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Consulting Engineers
The Liberty Bank Building Main at Court
Buffalo New York 14202
Telephone 716-853-7525 Telex 91-6423 ACRES BUF

April 26, 1982
P5700.11.75
T1681

Mr. Michael Scott
District Fisheries Biologist
U.S. Bureau of Land Management
4700 East 72nd Street
Anchorage, AK 99507

Susitna Hydroelectric Project
Fish and Wildlife Mitigation
Review Group Meeting

Dear Mr. Scott:

You are invited to attend the next meeting of the Susitna Hydroelectric Fish and Wildlife Mitigation Review Group, to be held at 8:30 a.m., May 17, 1982, in Room C121 at the Federal Building, 6th and C Street, Anchorage, Alaska.

The purpose of this meeting will be to discuss the Draft Wildlife Mitigatior Options Paper mailed to you on April 21, 1982. Please review this document prior to the meeting.

Thank you for your time and input.

Sincerely,

Michael Grubb

Michael Grubb
Senior Scientist

cc: D. Wozniak, APA

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Consulting Engineers
The Liberty Bank Building Main at Court
Buffalo, New York 14202
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Other Offices: Columbia MD Pittsburgh PA Raleigh NC Washington DC

April 26, 1982
P5700.11.74
T1679

Mr. Al Carson
Alaska Department of Natural Resources
Pouch 7-005
Anchorage, AK 99510

Susitna Hydroelectric Project
Fish and Wildlife Mitigation
Review Group Meeting

Dear Mr. Carson:

You are invited to attend the next meeting of the Susitna Hydroelectric Fish and Wildlife Mitigation Review Group, to be held at 8:30 a.m., May 17, 1982, in Room C121 at the Federal Building, 6th and C Street, Anchorage, Alaska.

The purpose of this meeting will be to discuss the Draft Wildlife Mitigation Options Paper mailed to you on April 21, 1982. Please review this document prior to the meeting.

Thank you for your time and input.

Sincerely,

Michael Grubb

Michael Grubb
Senior Scientist

cc: D. Wozniak, APA

ACRES AMERICAN INCORPORATED
Consulting Engineers
The Liberty Bank Building, Main at Court
Buffalo New York 14202
Telephone 716-853-7525 Telex 91-6423 ACRES BUF

April 27, 1982
P5700.11.70
T.1684

Mr. Carl Yanugawa
Regional Supervisor for Habitat Division
Alaska Department of Fish and Game
333 Raspberry Road
Anchorage, AK 99502

Dear Carl:

Susitna Hydroelectric Project
Fish and Wildlife Mitigation
Review Group Meeting

You are invited to attend the next meeting of the Susitna Hydroelectric Fish and Wildlife Mitigation Review Group, to be held at 8:30 a.m., May 17 in Room C121 at the Federal Building, 6th and C Street, Anchorage. The purpose of this meeting will be to discuss the Draft Wildlife Mitigation Options Paper mailed to you on April 21, 1982. Please review this document prior to the meeting.

The issue of quantification of habitat loss will be discussed at a workshop on May 18. This workshop will be attended by members of the Susitna Wildlife Core Group and, because of the nature of the subject, the U.S. Fish and Wildlife Service. Mr. Karl Schneider of your agency, a member of the core group, will attend. I have asked him to contact you regarding other members of ADF&G who may wish to attend. To keep the meeting to a workable size, I have asked Karl to limit the number of ADF&G attendees to three.

I look forward to seeing you on the 17th.

Sincerely,

Michael Grubb
Senior Scientist

MG:db

cc: D. Wozniak, APA
E. Reed, TES

MINUTES OF May 13, 1982
Fisheries Mitigation Review Group

The meeting of the Fisheries Mitigation Review Group was held at the Acres American Incorporated conference room on May 13, 1982. Dr. John Hayden, Deputy Project Manager for the Susitna Hydroelectric, called the meeting to order at 9:00 A.M. Those in attendance were:

Mr. Al Carson, Alaska Department of Natural Resources
Mr. Carl Yanagawa, Habitat Divison, Alaska Department of Fish and Game
Mr. Ken Florey, Commercial Fish Division, A.D.F and Game
Mr. Tom Trent, Susitna Hydro Aquatic Studies, A.D.F. and Game
Mr. Mike Scott, Fisheries Biologist, Bureau of Land Management District Office
Mr. Gary Stackhouse, U.S. Fish and Wildlife, Land and Water Department
Mr. Bill Wilson, Arctic Environmental Information and Data Center
Mr. Larry Moulton, Woodward-Clyde
Mr. Allen Bingham, Susitna Hydro Aquatic Studies, A.D.F. and Game
Mr. Christopher Estes, Susitna Hydro Aquatic Studies, A.D.F. and Game
Dr. Dana Schmidt, Susitna Hydro Aquatic Studies, A.D.F. and Game
Dr. John Hayden, Acres American Incorporated
Mr. Don Follows, Acres American Incorporated

Those absent were:

Mr. Brad Smith, National Marine Fisheries Service
Mr. Lennie Corin, U.S. Fish and Wildlife Service
Mr. Paul Krasnowski, Fisheries Rehabilitation Enhancement Development, A.D.F. and Game

PURPOSE

The meeting was called by Dr. John Hayden to review the recent developments in the management and organizational changes prompted by the need to refocus disciplines towards a more productive and cooperative approach of the common goals envisioned. Basically, the attached organizational chart strives for improved coordination of the integrated studies required for FERC licensing by separating primary responsibilities for scientific investigation and data collections (pure science) from the management and time constraints imposed by the Acres American Incorporated on

behalf of the Alaska Power Authority. The new organizational approach strives to allow more flexibility in designing critical data collection programs required by the aquatic studies team while providing objectivity through the data analysis and impact assessments component. This portion of the program will be integrated through the close working relationship of ADF&Game Arctic Environmental Information and Data Center. Working hand-in-hand, this interrelated team will still meet critical production milestones in the project schedule, but should be less pressured by the mitigation planning and Exhibit E preparation deadlines.

To strive for improved data flow and professional integrity, the September 30th milestone for FERC license application is being relaxed. Negotiations are still underway by Acres American Incorporated in the selection of the subcontractor to direct the mitigation planning. This entity will be announced when the final selection is made.

PROBLEM

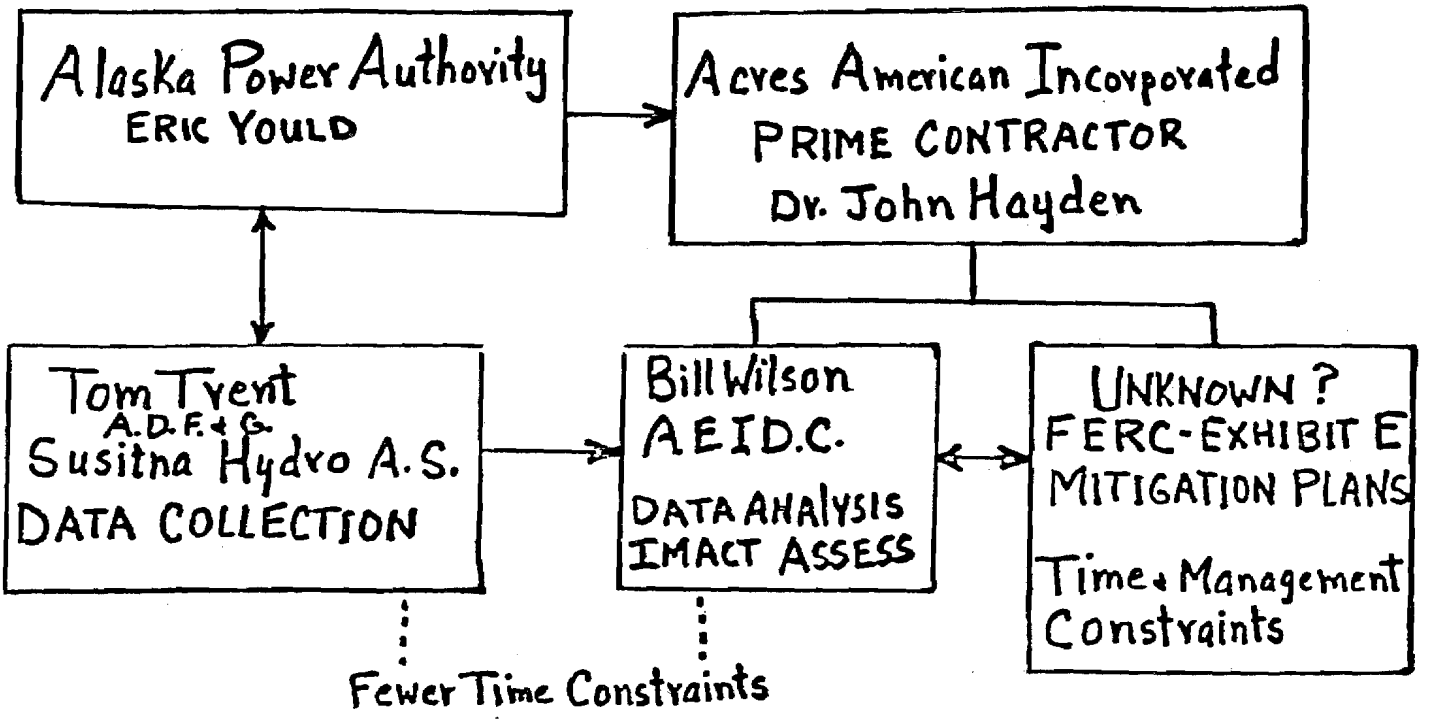
As with any project that deals with the diversity of resource and distance from the various subcontractors, Acres American Incorporated has suffered from poor communications and a rumor mill that operates quicker than actual management decisions.

In a sincere attempt to correct this situation, Dr. John Hayden is personally moving his family to Anchorage, Alaska, for closer contact with the environment program and any potential problems that may need addressing. Additionally, Acres American Incorporated has been actively seeking to strengthen the environmental team by employing companies with previous Alaska experience.

By streamlining the chain of command and personal interactions, it is hoped that the overall effort will become more productive and positive in its approach to the tremendous task ahead. In dealing with personnel problems, an attempt has been made to save individual expertise by encouraging the best placement of the position within the overall framework for professional contribution.

ORGANIZATION FISHERIES

MAY 13, 1982



Because the process deals essentially with a variety of agency policy mandates, both environmentally protective and regulatory in nature, agency representatives have sensed some frustration in providing professional input which goes beyond the administrative norms of the normal review process. Yet the common bond created by this awareness and the sincere efforts already contributed to the process are highly complimented.

Working together to mitigate environmental concerns within a truly unique State resource, while under the umbrella of social, economic, and political realities, requires the full sensitivities and dedication of all involved.

DISCUSSION

In the previous meeting, held on April 20, 1982, in the Acres American Incorporated conference room, Dr. Dana Schmidt presented an excellent paper on the proposed fisheries approach and mitigation plan. Since then, Dr. Schmidt has decided his best input will be as a working member of the Susitna Hydro Aquatic Studies team. He resigned from Acres American Incorporated on May 3. Comments on the paper, either formally or informally, will still be received by Dr. Hayden. It is hoped that they can be sent in by Friday, May 21st.

In a related management decision, Mr. Woody Trihey has submitted his resignation from the company. His plans are still unknown at this time and the status of his fine instream flow work remains in question. As a vital component of the fishery mitigation plan, instream flow work will continue in one form or another.

Recently Dr. Hayden and others attended a FERC workshop in Washington D.C. to discuss the work and informally set the parameters for the studies required. Such discussion was very helpful. Based on the uncertainty of the full field season ahead and the viewpoint of resource agencies, a recommendation is now being formulated for transmittal to the Alaska Power Authority Board which will relax the September submission date for license application.

Acres American in now in the process of pulling together a new fisheries team (reflected in the organizational chart) to address anticipated needs and to maximize benefits from the coming summer field season.

To dispel local rumors that Acres American Incorporated automatically has the right to continue work on the next design and engineering phase of the project, Dr. Hayden pointed out in response to the questions, that a Request for Qualifications for the next phase of the project was released by the Power Authority on May 11, 1982. Acres American will compete with other firms who have the full expertise in a large project of this nature. Selection of the next prime contractor will probably take place this fall. This Pahse II Contract will run from the fall of 1982 to the time that the power is on line. Our company will strive to maintain the continuity of the environmental program so that undue disruption will not take place during changeovers. Acres would hope to stay involved with the pursuit of the FERC license application.

While most of the other environmental studies will wind down in scope, the fisheries and wildlife programs will basically continue towards an acceptable mitigation plan which can be implemented prior to reservoir filling. Lower levels of involvement will be required in the environmental subtasks as the project moves from the larger baseline studies to specific applications of the mitigation plans.

Mr. Al Carson encouraged the continuation of the Susitna Steering Committee as a mechanism to advise the Alaska Power Authority. Their function could be to review and comment on the plans. Hopefully, the steering committee, operating from a higher level of authority, could contribute directly to project decisions. A memorandum to the Alaska Power Authority has been sent out for consideration.

Mr. Tom Trent expressed his past concerns over the "gray" area of responsiblity which he felt had not been adequately defined between subcontractors when it came to addressing fishery data analysis and impact assessments in the past phase. This is an important area of concern. The products need to be defined. Pure data collection alone is not enough. Close coordination with the A.E.I.D.C. will be required to structure these products in a mutually acceptable mode.

Mr. Ken Florey suggested that the previous pattern of review groups, mitigation groups, core teams and what all tended to confuse members as to what their roles actually were.

Without a better understanding of the interrelationships of all these groups and exactly what part each contributes to the overall process, the individual becomes lost in the process. This is an excellent point from the perspective of the prime contractor, who may have encouraged more agency input than what could be realistically achieved. The suggestion was made by the group to focus on the idea for a Steering Committee to advise the A.P.A. at the higher level and to rely on the present Fisheries Mitigation Group for the remainder of the input. Therefore, only two review groups would be needed in the future.

Bill Wilson recognized the need to work closely with the Susitna Hydro Aquatic Studies so as to provide one dynamic organization working from two overlapping boxes of responsibility. This will require teamwork and constant interplay. Bill also expects to add some additional expertise to his team at A.E.I.D.C.

The group discussed various funding problems which are becoming a daily concern. Mr. Trent mentioned that his team has anticipated needs and is ready to run, when and if, the money is appropriated. Mr. Carson encouraged everyone to flesh out the work program at various funding levels so that when funding levels are known, the manager will have an immediate program response. The idea is to "hit the street running."

In summary, the mitigation review group felt that Acres American Incorporated has recently reached more of the "listening" mode of response and that they see an end to the two year period of basic frustration. Mr. Carson expressed his belief that recently he has personally observed a change in attitudes. Hopefully, the group can take that new creation of a positive attitude about the project and carry it forward to its fruitful completion. Only through such positive efforts can the evvironmental concerns of the project reach their achievable goals.

Next week, Dr. Hayden will meet with Tom Trent to scope out the activities of the Susitna Hydro Aquatic Studies for this coming field season.
The group adjourned at 10:50 a.m.

Respectively submitted:
Donald S. Follows, Acres American Incorporated

MINUTES OF MEETING
held at the Federal Building
with the Bureau of Land Management
Anchorage, on Friday, May 21, 1982

May 24, 1982
P5700.13.30

SUSITNA HYDROELECTRIC PROJECT
BLM Burn

PRESENT:

J. McMullen E. Reed	)	TES, Inc.
L. Byrne M. Small	)	BLM - Glennallen
L. Buoy M. See D. Taylor	)	BLM - State Office
K. Rowdabaugh	)	BLM - Anchorage District
R. Fleming	)	APA
S. Fancy	)	LGL Alaska
J. McKendrick	)	University of Alaska
M. Grubb	)	Acres

The purpose of the meeting was to discuss BLM's proposed Alphabet Hills Burn and coordinate Susitna studies with BLM studies.

BLM views this as a management burn, not a research burn. The objective is to kill off the spruce and produce browse for wintering moose. Weather conditions required are 6-7 days of warm weather after August 15. The DEAR is not yet completed, but Michael Small foresees no problem.

BLM will be establishing transects and collect pre- and post-burn data. The data will be species composition and percent cover along each 100 meter long transect. Dr. Verick, from USFS Institute of Northern Forests, will also be collecting vegetation data and measuring fire intensity.

Dr. McKendrick (University of Alaska) outlined his study which is to determine total vegetation response with browse as a priority item. He will monitor soil nutrient response and measure fire intensity at the sample sites. Sampling will be at 15 vegetation sites including 5 outside the burn area. Biomass will be measured by life forms (browse, forbs, etc.). Photos for the area have been ordered, and mapping will be done at a 1:24,000 scale.

A meeting will be arranged for BLM/INF/University of Alaska to coordinate location of study plots and data collection.

BLM requested a letter of agreement be drawn up between BLM and the Power Authority. This should, basically, state who is doing what, where and why, what information will be available, and what support will be provided. This should be sent to Michael Small. For support, BLM requests:

1. Twenty hours of helicopter time before mid-July for cultural resource personnel.

2. Helicopter support for vegetation studies. It is believed this can be done concurrently with helicopter support required by University of Alaska people.

3. Helicopter support (approximately two 100 mile round trips by a 206 to sling load and install a weather station between June 15 and July 1).

Michael Small will provide Michael Grubb with a list of BLM approved helicopter contractors. Michael Small will also supply a copy of the BLM DEIS relating to mining, settlement options for BLM land south of the Alaska range, and east of the Parks Highway.

Reported by M. Grubb

M. Grubb

MG:ccv

ALASKA POWER AUTHORITY

JUN 25 1982

334 WEST 5th AVENUE - ANCHORAGE, ALASKA 99501

Phone: (907) 277-7641
(907) 276-0001

ALASKA POWER AUTHORITY
SUSITNA
FILE P5700
SEQUENCE NO. F11611

ACTION	INFORM.	DISTRIB.	INITIAL
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		COL.	

File

June 22, 1982

Mr. Mike Small
Bureau of Land Management
P.O. Box 147
Glennallen, Alaska 99588

Subject: Draft Memorandum of Understanding Alphabet Hills Burn

Thank you for your input during our telephone conversation on June 16, 1982. I have included your suggestions on the revised draft of the Memorandum of Understanding (MOU). We should proceed to have the MOU executed as rapidly as possible, so that studies can get underway. If the MOU is adequate, please initiate its being executed. If you have any questions or comments, please contact Richard Fleming at (907) 277-7641.

Sincerely,

Richard S. Fleming

FOR THE EXECUTIVE DIRECTOR

Richard S. Fleming
Environmental Analyst

Attachment: As noted.

cc: John Hayden, Acres, Anchorage
Karl Schneider, AK Dept. of Fish & Game
Jay McKendrick, Agricultural Experiment Station

ALASKA POWER AUTHORITY

MEMORANDUM OF UNDERSTANDING
BETWEEN THE
ALASKA POWER AUTHORITY
AND THE
U.S. BUREAU OF LAND MANAGEMENT
PERTAINING TO COOPERATIVE INVESTIGATIONS OF
THE PROPOSED ALPHABET HILLS BURN PROJECT

WHEREAS, the Alaska Power Authority was established to reduce consumer power costs and otherwise to encourage the long-term economic growth of the state, including the development of its natural resources, through the establishment of power projects; and

WHEREAS, the proposed Susitna Hydroelectric Project will affect existing terrestrial wildlife habitat by flooding portions of the Upper Susitna Basin; and

WHEREAS, the Alaska Power Authority is committed to mitigating to the extent possible this loss of wildlife habitat; and

WHEREAS, the use of fire through controlled burning may be an applicable management tool for mitigating habitat loss by improving habitat on other lands; and

WHEREAS, the effectiveness of burning as a management tool is not fully understood for areas similar to the Upper Susitna Basin; and

WHEREAS, the U.S. Bureau of Land Management is planning a burn in the Alphabet Hills Region of Alaska;

NOW BE IT RESOLVED THAT it is in the best interest of the State for the Alaska Power Authority and the U.S. Bureau of Land Management to cooperate in determining the nature and magnitude of the effects on soils, vegetation, and wildlife which occur as the result of the burn in the Alphabet Hills so that the effectiveness of burning as a management technique can be determined, thereby aiding in the development of a wildlife mitigation plan for the Susitna Hydroelectric Project;

AND THEREFORE, it is the purpose of the Alaska Power Authority and the U.S. Bureau of Land Management to enter into this agreement, to wit:

1. The Alaska Power Authority and its contractors and the U.S. Bureau of Land Management will work together to monitor the effectiveness of fire as a method of managing habitat in the Alphabet Hills area. These studies address the use of large scale controlled burns for the management of wildlife habitat.

2. The Alaska Power Authority will provide helicopter support to the U.S. Bureau of Land Management for the purpose of studying vegetation and cultural resources in the Alphabet Hills burn study area and for establishing a weather station. This helicopter support shall not exceed 40 hours for U.S. Bureau of Land Management personnel only. The company supplying the helicopter and pilot will be subject to the U.S. Bureau of Land Management approval.

3. The U.S. Bureau of Land Management will initiate a burn in the Alphabet Hills region during August, 1982. If weather or operational constraints prevent a successful burn during August, 1982, then the Bureau will attempt the burn in August, 1983, provided appropriate conditions occur. A successful burn shell be defined as one that includes at least 25% of the presampled vegetation plots.

4. The U.S. Bureau of Land Management will allow personnel of the Alaska Power Authority and its subcontractors to conduct vegetation, soil, and wildlife studies on the land owned and managed by the U.S. Bureau of Land Management in the burn study area.

5. All data collected by the Alaska Power Authority and its contractors in the course of monitoring the effects of the burn will be available to the U.S. Bureau of Land Management. All data collected by the U.S. Bureau of Land Management in the course of monitoring the effects of the burn will be available to the Alaska Power Authority and its contractors.

6. The terms of this agreement do not relieve either agency from its legislated responsibilities.

7. This agreement may be amended at any time or terminated by either of the parties following forty-five (45) days written notification or within a lesser period by mutual consent of both parties.

Eric P. Yould
Executive Director
Alaska Power Authority

U.S. Bureau of Land Management

Date

Date

Susitna Hydroelectric Project May 25, 1982

Fish and Wildlife Mitigation
Review Group Meeting

Date: May 17, 1982

Attendees: See Attached List

Held at Federal Building, Anchorage

The purpose of the meeting was to discuss the April 1982 Draft Wildlife Mitigation option paper prepared by TES. Comments were as follows:

1. The best way to determine brown bear response to new roads will be expert opinion. (USFWS)
2. FERC has changed EIS format to include alternatives Exhibit E requirements not changed. APA should get most recent FERC EIS. (APA)
3. Money spent for clearing may be better spent elsewhere. Is this considered a mitigation cost? (USFWS)
4. The option of no recreation or designation of the area as a wilderness should be considered a mitigation option. This would reduce or avoid many of the access-caused impacts. (USFWS)
5. ADF&G asked for policy on access, will they favor consumptive use? Agencies should express their opinion on what they want done. (APA)
6. Some type of matrix should be developed for trade-off of recreation use vs wilderness and other considerations. (APA)
7. Peregrine falcon issue will require official correspondence with USFWS. Contact a Dennis Money at Ecological Services. (USFWS)
8. Bald Eagle nests in reservoir area may be protected by Bald Eagle Act. Mitigation plan should include what integration has occurred with fisheries study. Will there be a reservoir fishery? (USFWS)
9. We should look at Ashetna-Tyone area as mitigation land areas; also along Denali Highway. (USFWS)
10. Mineral closures and other zoning laws may be used to protect replacement lands without having to manage. (ADF&G)
11. Issue of predator-moose-burning issue was discussed. If burn for moose who are impacted by bears then why mitigate for bears?
12. An artificial lick should be established prior to inundation to acclimate sheep to use it. Could water levels be manipulated to preserve the lick? (ADF&G-USFWS)
13. Agreement should be reached from all agencies on proper protection to take for new caribou calving ground before it is established. This would include prevention of mining, settling, ORV use, etc. There should be a contingency plan for all sections. (USFWS)

14. APA should determine what BLM and ADNR are planning to do with land in Denali access route area. This also relates to land replacement and caribou land replacement bill. (APA)

15. Entire issue of construction camp configuration, operating mode and rail use road access was again discussed. These should not be accepted as givens in the mitigation options but scenarios presented which would avoid impacts. Example - flying people in and out daily instead of construction camps, etc. Then show if it is not cost effective. (USFWS)

16. For safety of people and dogs, dogs should not be allowed in camp. (USFWS)

17. It is important restrictions are enforced (speed limits, ORV's, etc.).

18. Type 2 impacts: It was requested that justification should be presented as to why dropping pool elevation cannot be done. Should be presented as a mitigation option then dismissed if economics shows it. (USFWS).

19. Option of creating flooding every 10-15 years by opening flood gates was discussed. This would be to simulate natural flooding. However, would wipe out fishery mitigation. USFWS sees no problem with downstream vegetation changes but wants information to substantiate it.

20. Transmission line mitigation lacking in mitigation plan. Needs to be beefed up.

21. Research station should be considered only as low priority; only for compensation.

MMG:dlp

ATTENDEES

May 17, 1982

NAME	REPRESENTING
Michael Grubb	Acres American
Tom Arminski	ADF&G
Richard Fleming	APA
Don Follows	Acres American
Joe McMullen	TES
Ed Reed	TES
Leonard P. Corin	USFWS
Gary Stackhouse	USFWS
David D. Wozniak	APA

Attendees FW Mitigation Review Group

May 17 1982

Name	Representing
Michael Grubb	Acres
Tom Arminski	ADF&G
Richard Fleming	APA
Don Dolbow	Acres American Corp.
Joe McMullen	TES, inc.
Ed Reed	TES, inc.
Edward P. Gavin	USFWS
Patty L. Stackhouse	USFWS
DAVID D WOZNIAK	APA

June 1, 1982
P5700.11.71
T1726

Mr. Lenny Corin
U.S. Fish and Wildlife Service
733 West 4th Avenue
Suite 101
Anchorage, Alaska 99501

Susitna Hydroelectric Project
<u>Wildlife Mitigation Planning</u>

Dear Mr. Corin:

Thank you for attending the May 18th meeting to discuss the objectives and general approach for a terrestrial habitat evaluation system for the Susitna project.

Due to the change in environmental consultants, we have not yet formalized a plan for further development of this system. We will be contacting you shortly and ask for your patience in this matter.

Thank you again for your input.

Sincerely,

Michael Grubb

Michael Grubb
Senior Scientist

MG/jk

cc: R. Fleming, APA

ACRES AMERICAN INCORPORATED
Consulting Engineers
The Liberty Bank Building, Main at Court
Buffalo, New York 14202

Telephone 716-853-7525 Telex 91-6423 ACRES BUF

[illegible]

Preceeding Letter Sent To:

Mrl Lenny Corin
U.S. Fish and Wildlife Service
733 West 4th Avenue
Anchorage, AK 99501

Mr. Greg Konkel
U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, AK 99503

Ms. Ann Rappaport
U.S. Fish and Wildlife Service
733 West 4th Avenue
Anchorage, AK 99501

Mr. Gary Stackhouse
U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, AK 99502

Mr. Kark Schneider
Alaska Department of Fish and Game
333 Raspberry Road
Anchorage, AK 99502

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF FISH AND GAME

OFFICE OF THE COMMISSIONER

P.O. BOX 3-2000
JUNEAU, ALASKA 99802
PHONE:

July 27, 1982

Mr. Eric Yould
Executive Director
Alaska Power Authority
334 West Fifth Avenue
Anchorage, Alaska 99501

Dear Mr. Yould:

The Alaska Department of Fish and Game has been involved with the Mitigation Review Group in attempting to formulate a workplan that would eventually arrive at mitigative solutions to probable adverse impacts to fish, wildlife and their habitat resulting from the Susitna Hydroelectric project. Internally, my Department is also analyzing an array of mitigation options that may be acceptable if they are demonstrated to be workable and satisfy the Department's mandate to mitigate adverse impacts. The following is a list of options that we hope the Alaska Power Authority is considering as part of their mitigation planning.

I must emphasize that these are by no means the only options that should be considered. In addition, because environmental studies to assess impacts of the proposed project are incomplete and specific mitigation plans have not been identified, these suggested mitigation options either individually or collectively may not satisfy the requirements of this Department. However, we believe that they should be evaluated now so that data regarding feasibility and desirability are available when project impacts have been quantified.

By evaluating these mitigation options concurrently with ongoing impact assessment studies, we believe that considerable time will be saved in completing the permitting and licensing process.

1. Fisheries

   a. Instream flows required to maintain present populations of fish below the two dams should be carefully evaluated. Included in this evaluation should be an array of flow regimes that, when considered with the anticipated loss of fish habitat associated with each, could be a basis for further mitigation measures. The areas immediately below the dam sites, as well as areas further downstream, should be included. Temperature regimes should also be

evaluated concurrently with stream flows. These evaluations should be made on construction as well as operational temperature and flow regimes.

b. If it appears that onsite mitigation of fisheries impacts cannot be accomplished, hatcheries should be considered. Locations of possible hatchery sites should be identified in accordance with my Department's policies on artificial production of fish. My Department's Fisheries Rehabilitation Enhancement and Development (FRED) staff has considerable expertise in selecting sites and designing hatcheries in coordination with other Divisions of my Department. I would suggest that the FRED Division be contracted immediately to do the site evaluations. A specific proposal is enclosed.

c. My Department has been funded by the Legislature to study the salmon enhancement potential of the upper Susitna River without respect to the project. In the case where mitigation of fisheries impacts cannot be mitigated within the project area, enhancement of the Upper Susitna system may present a viable option. Results from this study will be made available to you and should be included in the array of options for mitigation.

2. Wildlife

a. Habitat enhancement options for wildlife species should be evaluated. For example, habitat manipulation to enhance moose browse could be considered in areas where present habitat is considered low in productivity. This option would need to consider the long-term effectiveness of the project, since moose browse is only available at early successional stages.

b. Replacement lands should be considered as another option. Lands outside the development area (preferably adjacent to the development) should be identified and possibly set aside by legislative designation for the purpose of mitigating wildlife habitat losses from the project. This option may be the most viable option for wildlife.

3. Both Fish and Wildlife

a. Impacts from construction and maintenance of the transmission and road corridors should also be evaluated.

As I have stated previously, the above list is to be used in developing a total mitigation package and is transmitted for that purpose.

The following briefly summarizes my Department's hierarchial approach to implementation of mitigation (mitigation policy enclosed):

1. Avoiding the impact altogether by not taking a certain action or parts of an action;

2. Minimizing impacts by limiting the degree or magnitude of the action or its implementation;

3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and

5. Compensating for the impact by replacing or providing substitute resources or environments.

If you have any questions, please feel free to contact me.

Sincerely,

for Ronald O. Skoog
Commissioner

Enclosures (2)

Alaska Department of Fish & Game
F.R.E.D. Division
PROJECT PROPOSAL

I. Title: Susitna River Hatchery Site Investigation

II. Description:

1. Objective: Identify locations of possible hatchery sites in the vicinity of the Susitna River.

2. Timeframe: July 1, 1982 - June 30, 1984

III. Justification: If the Susitna Hydroelectric Project is determined to have a negative impact on existing salmon populations in the Susitna River, various measures may be employed to mitigate this impact. A fish hatchery is an option that could be used to supplement or replace natural production. The potential for successfully employing this option depends on the species of salmon involved and the availability of good hatchery sites.

A critical step in the planning phase of developing a fish hatchery is the systematic and careful selection of an appropriate site. The key factor, of course, is to find a location with a reliable and adequate water supply. In addition, this water supply should be located where logistical problems can be minimized. Broodstocks must be identified and developed.

Strategies for production releases must be considered and the management of returning stocks must be biologically sound.

Since the selection process for a hatchery site is, perhaps, the most critical step in the development of a successful hatchery, it is important to collect thorough and detailed information. This process requires at least two years. During the first year, a large number and a wide variety of sites will be screened and the most likely candidate sites will be selected. During the second year, these primary sites will be investigated more intensively.

IV. Methods and Procedures:

A. First year: During the first year of the hatchery site selection survey, a large number of systems will be surveyed and categorized to assess their value as a possible hatchery site. Initially, ADF&G files will be examined and discussions held with other study groups to determine which systems will be surveyed. Available data will be evaluated and data needs will be identified. Field surveys will then be mobilized to collect the pertinent information so that the best candidates can be selected for further studies. Data to be collected will include: water source, size of the water source, water temperatures, thorough water chemistry, land status, engineering analysis, fish stocks present, logistics, basic

management considerations, and potential broodstocks. A minimum of one field survey will be conducted at each potential site. By the end of the first year of the survey, the four most likely hatchery sites will be identified.

During the second year of this hatchery site selection survey, the most likely hatchery site candidates will be studied more thoroughly. They will be monitored much more frequently or continuously. It is particularly important to determine the reliability and predictability of the water supply, the water temperature, and the water chemistry. The suitability for construction will be analyzed. The size, location, and availability of particular broodstocks will be verified. Stocking strategies will be determined and the most likely management schemes for returning adults will be developed.

By the end of the second year, the best site will have been identified. Approximate costs and a preliminary development schedule will be provided. The potential for successfully producing the various species will be analyzed and recommendations given on alternatives to explore should a hatchery not appear to be a feasible method for replacing expected losses of a particular species.

V. Personnel:

A. Project Leader: Fishery Biologist IV, F.R.E.D Division.

B. Schedule:

	First Year	Second Year
Fishery Biologist IV	4 man months	4 man months
Fishery Biologist III	7 man months	8 man months
Fishery Technician III	3 man months	5 man months
Engineer	2 man months	4 man months

VI. Cost:

Line 100		First Year	Second Year
Salaries:	FB IV	21,000	21,000
	FB III	37,700	43,200
	FT III	7,700	12,800
	Engineer CE II	9,700	19,500
Line 200			
Travel & per diem		500	600
Line 300			
Air charter - fixed wing,	$180/hr x 25 hrs	4,500	x 30 hrs 5,400
	$500/hr x 10 hrs	5,000	x 14 hrs 7,000

Line 300 cont.		
Vehicle mileage	800	900
Vehicle rental	1,000	1,000
Telephone and photocopy	500	500
Photo processing	200	200
Water analysis	2,500	4,000
Line 400		
Scientific supplies (e.g. chemicals)	200	300
Film	100	100
Gasoline (outboard)	100	100
Supplies	600	800
Line 500		
Monitoring equipment		3,000
TOTALS:	92.1	120.1

ALASKA DEPARTMENT OF FISH AND GAME

STATEMENT OF POLICY
ON MITIGATION
OF FISH AND GAME HABITAT DISRUPTIONS

Prepared March 1982

ALASKA DEPARTMENT OF FISH AND GAME

Statement of Policy
on
Mitigation of Fish and Game Habitat Disruptions

I. The Need for Policy

Logging, construction, mining, agriculture, and other developmental industries which use land or water are of great importance to many Alaskans. When properly pursued, these undertakings can be compatible with proper management and use of Alaska's valuable fish and game resources. However, improper practices can lead to significant degradation of the State's fisheries and game resources through alteration or destruction of important habitat components.

Development includes a multitude of practices such as road building, bridge construction, culvert placing, excavation, dredging, clearing, dragging, dumping, and other activities. At issue is land and water, the very bases of all development and all fish and wildlife habitat. Each development action requires space, and thereby alters fish and game habitat and compromises other types of uses. Development activities, when disruptive to fish or wildlife resources, may, for example, increase erosion or sedimentation, divert, obstruct, alter, or pollute water flow, aggravate temperature extremes, alter and destroy populations of animals and vegetation, reduce food supplies, restrict movement of fish and game, disturb or destroy spawning, nesting and breeding areas, change adjacent or downstream habitats, or change the capacity of a stream or wetland to store and use storm or flood waters.

Often, such habitat losses are inevitable and little can be done to prevent or control them, but often they can, in the public interest, be abated or

"mitigated." The overall mitigative goal of the Department of Fish and Game is to maintain or establish an ecosystem with the project in place that is as nearly desirable as the ecosystem that would have been there in the absence of that project. The decision levels through which a project is reviewed - preventing, minimizing, and replacing ecosystems - is outlined and discussed in this policy.

The magnitude of developmental influences on fish and game habitat is to a large extent dependent on the degree to which development operations and facilities and land or water use projects are properly planned and upon the conscientious adherence to practices designed to protect fisheries and wildlife values. Therefore, it is the primary objective of the Department of Fish and Game that fish, game and habitat values be prominently considered by developers and regulatory agencies prior to development or issuance of regulatory approvals. Consideration should take place during the planning and implementation of land or water associated development to avoid or minimize foreseeable or potential adverse environmental effects before the fact of damage, and early enough to consider beneficial alternatives. Similarly, it is imperative to provide for repair, restoration, or rehabilitation of habitat damage after it occurs, should it occur at all, as well as maintenance of the reconstructed habitat over time. However, it is appropriate that this option of after-the-fact redress assume a second priority status to mitigation planning before the fact of damage.

These concepts--preventing, minimizing, replacing--when molded into a working definition of mitigation, will contribute to the sustained functioning of aquatic and terrestrial systems, and the continued viability of common

property fish and game resources, while providing for the other needs of Alaskans arising from beneficial public land and water use programs. A mitigation policy, therefore, is essential to guide, not stop, development actions by insuring considerations of alternatives to or in land and water conversions and to fulfill the sustained yield management precepts of Alaska law.

II. Authority

The Department's basic responsibility as a conservation agency derives from the Commissioner's authority to manage, protect, maintain, improve, and extend fish, game, and aquatic plant resources of the State (AS 16.05.020). This Statute, in combination with constitutional directives, provides implicit direction for the Department to offset losses to fish, wildlife, and their habitat.

The Department's responsibility to impose mitigation measures also derives from the same laws which authorize it to issue written approvals (permits) for land or water use programs. In each instance the developer must obtain the Department's approval as the sufficiency of the developer's plans to provide for free passage of fish (AS 16.05.840), or provide proper protection to fish and game when conducting projects in anadromous fish streams (AS 16.05.870), State game refuges (AS 16.20.060), State game sanctuaries (AS 16.20.120), the natural habitat of endangered species (AS 16.20.185), fish and game critical habitat areas (AS 16.20.260), and State range areas (AS 16.20.300-320).

Simultaneously, a strong basis for prescribing mitigation lies in the public trust doctrine. In simple terms, this doctrine, founded in common law, asserts the public's right to unimpaired use of public lands and waters for fish and wildlife production. The Department, as trustee for the public, is obligated to protect that right. The public trust doctrine thus provides additional ability as well as an obligation to be rigorous in mitigating disruptions to public fish and wildlife resources, including their habitat.

III. Statement of Policy

A. Definition

The directive to mitigate is clear. The nature of and extent to which mitigation is carried out is left to the Department's discretion. In considering mitigatory options it is essential to recognize the differing degrees of stress that may be placed on natural fish and wildlife habitat. Lightly-stressed aquatic or terrestrial systems adjust to change, and recovery takes place through natural processes when the stress is removed. In contrast, a heavily or overstressed natural system cannot restore itself to original conditions through natural processes alone. In this case, the system's capacity for maintenance and repair has been impeded, and at this point man must provide assistance for the system to be restored. These differences in recovery potentials dictate different priority approaches to implementing mitigation measures.

Accordingly, the Department of Fish and Game, when administering mitigation measures pursuant to its permit authority under AS 16, embraces

the definition of mitigation promulgated in the Federal regulations (40 CFR 1508.20) which effectuate the National Environmental Policy Act (42 U.S.C. 4321 et seq.). Mitigation includes, in priority order of implementation:

(1) avoiding the impact altogether by not taking a certain action or parts of an action;

(2) minimizing impacts by limiting the degree or magnitude of the action or its implementation;

(3) rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

(4) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;

(5) compensating for the impact by replacing or providing substitute resources or environments.

B. Implementation

The Department will implement the five forms of mitigation pursuant to its statutory authority in the following manner:

1. Mitigation to Avoid or Minimize Habitat Damage

a. Avoidance

The Department's primary approach to mitigation is one of preventive conservation designed to avoid an evershrinking base of natural habitats and costly man-assisted restoration efforts. It is founded on preventing adverse, predictable, and irreversible trends or changes in natural aquatic or terrestrial systems. The objective is to maintain as much existing natural habitat as possible, even if the relative importance or interrelationships of living organisms are not fully known. Apart from denying outright the issuance of a permit, this can be accomplished by attaching stipulations or conditions to permits for proposed developments. Discretion at the field level is required to allow tailoring of various developmental activities to sites and times for maintenance of individual or groups of fish and game species and various habitats used annually or seasonally. Mitigation by permit stipulation can be employed to avoid activities in areas with a high risk of adverse impact, such as nest sites, winter ranges, or critical habitat. Development consistent with the objectives for designated areas can proceed according to the stipulations or conditions. This fundamental approach provides for beneficial land and water use programs in natural systems.

b. Minimization

This concept differs from avoidance in that it is acknowledged that some habitat damage will occur. The Department recognizes that land

and water development projects are mandated by public need, legislative or constitutional prioritization or land use, or pervading economic considerations. It is recognized that industrial, agricultural and residential development in Alaska will cause some amount of habitat destruction, and that this damage has been accepted by developers and policy makers as the price of economic benefit. The second priority mitigative approach to habitat management is to make that loss less severe, or to minimize foreseeable disruptions to aquatic and terrestrial systems. The focus of this approach is to maintain habitat diversity and the capacity of each system to restore itself naturally from stress or damage, while accommodating preemptive uses of land and waters frequented by fish and wildlife - uses which may reduce species abundance to some degree or cause some disturbance to natural species behavior.

Minimal adverse habitat disruption may be achieved by permit stipulations which limit development actions when and where necessary and to the extent needed to maximize conservation of fish and wildlife values. For example, temporal mitigation measures, which involve adjusting the timing of project activities to reduce impacts in areas of high risk, can be used to restrict development to the seasons when the impact is least, or to reduce the amount of time spent in a sensitive area. Habitat may be stressed temporarily, but recovery can take place through no-cost natural processes.

2. Mitigation In Lieu of Habitat Damage

a. Rectification

The third priority mitigative approach is to repair, rehabilitate, or restore abused aquatic or terrestrial systems. This requires onsite or post-construction evaluations of water and land developments after the fact of damage, or estimation, during the planning stage, of likely environmental damage. Rectification is less desirable than avoidance or minimization because, even if restoration is complete, there is a net loss of fish and wildlife resource and habitat resulting from the time lag between the impact and full replacement. Such time lags may vary from days to decades. Thus, gains or benefits to be realized from this form of mitigation are somewhat less than those of full prevention.

The objective is to restore the same functions as those that were lost, or, to restore the habitat to pre-disturbance conditions. However, if the factor restricting the number of a species using an area is also limited further by the development, it makes little sense to devise and implement factors which cannot alleviate that situation. Additionally, the simplistic view of maximizing one kind of habitat at the expense of another should be avoided. The Department recognizes that there will be situations where no rehabilitation of the loss incurred is possible.

If proper planning occurred and rectification was not considered necessary, rectification should only be necessary when the developer has not complied with his plan, applicable laws, permit stipulations. Rectification of disruptions to habitat may be implemented through permit stipulations and amendments or imposed as a court ordered penalty. It is likely that many completed or partially completed projects can be retrofitted with feasible restoration requirements that could result in the recovery of substantial amounts of project-caused fish and wildlife losses.

b. Preservation and Maintenance Actions

Mitigation should be recognized as a continuing obligation, inextricably tied to a project and carried out during the entire life of the project. The Department recognizes that if mitigation measures are approved but not operated and maintained during the life of the project, little or no mitigation, which may have helped justify the project in the first place, will be realized. The Department holds to the principle that costs of mitigation are all normal costs of any land or water development project and must be borne by the developers and beneficiaries of the project.

Preservation and maintenance operations may be imposed through permit stipulations or amendments to permits. For example, drainage structures installed in fish streams should be required to be maintained properly, and erosion must be corrected when it occurs. Revegetated areas which are not successful, for whatever reason;

must be revegetated until they have become established. In these ways, adverse impacts will be reduced or eliminated over time.

A requirement (or permit stipulation) that developers continue to mitigate by maintenance operations during the life of the project will ensure that conservation objectives are met and litigation is avoided.

c. Compensation

Whenever a project will cause a reduction or loss of values to the public--losses in terms of fish and wildlife populations or habitat, recreation opportunities, access, and other foregone resource use opportunities--the project sponsor must create or restore an equivalent part of the aquatic or terrestrial ecosystem to compensate for the loss. The most difficult problem encountered with this approach is determining what kind of action is appropriate and how much mitigation is adequate. The problem can be resolved qualitatively, through negotiation and quantitatively through the establishment of evaluation procedures.

It is the Department's position that compensation should not involve a simple payment of dollars, but instead should involve replacement of lost habitat, populations or recreational opportunities.

Compensation by replacing or providing substitute resources or environments is the least desirable form of mitigation because it

accepts loss of habitat at the outset and and often cannot result in total reparation for those losses. When it must be implemented, however, the preferred form of compensation is onsite mitigation; that is, all damage caused by a project should be replaced within the development site or project area where damage occurs. The same functions as are lost should be directly restored, replaced, or compensated. Only secondarily should compensation by substitution, or trade-off of an unavoidable ecological loss for an ecological improvement elsewhere, be used. Trade-offs or conversions only change one kind of environment for another, and may be desirable or not, depending upon the viewpoint considered. There are divergent views and interests between local and more distant users regarding the value of the ecological "improvement" to the natural system that was already in place.

Any type of compensation will be costly, and the values of lost resources cannot be measured solely through economic cost/benefit ratios or man-day evaluations. This sort of analysis must be accompanied by evaluations which measure factors other than human uses of land, water, and the resources within. The value of the interdependent biological relationships within an entire ecosystem is too often ignored. Since some ecosystems, such as wetlands, may never be successfully replaced or substituted, it is important that the land owner, developer, and the various government agencies work together to salvage such lands to rectify the loss of the resource values of those areas. The Department recognizes, however, that in

some rare cases, the only compensation negotiable may be prevention of future losses in another or adjacent area.

C. The Role of Planning

Proper mitigation of fish and game habitat losses requires that land and water use projects be properly designed and planned. This requires basic decisions by field personnel at the earliest project conceptualization or design state, before permits are issued.

Proper planning, particularly at the area or regional level, will assist in abating a common cause of fish and wildlife habitat decline, that of piecemeal habitat losses which cumulate from sequential projects. Regional or area planning, when it precedes significant land or water use programs, will allow reduction of the cumulative effects resulting from a variety of projects.

Prior to permit issuance there should be a realistic assessment of the specific losses which likely will be incurred. The losses should be identified first in terms of lost resources and secondly in terms of the uses which may be foregone. This is because human use and resource productivity do not always correlate. The Department cannot accept analyses which equate low human use figures to low estimates of losses. Low human use has no bearing on how much fish, wildlife, or their habitat may have been lost; or how much productivity, biological diversity or critical processes were impaired. However, the loss of human use should be a factor that will need to be mitigated.

Losses of fish and wildlife habitat that cannot be mitigated will affect the people who utilize those resources. Wherever the carrying capacity of the land or water is reduced, harvest of species by subsistance, commercial, and recreational users may have to be reduced. Recreational opportunities to view resources may also decline. As the population of the State of Alaska increases, competition for fish and game resources will surely increase. Decreased abundance of these resources will mean that some resource users will get less of the resource than they may have had in the past. As more and more habitat is damaged or lost, the problem of a growing population base and its pressure on fish and wildlife, will be aggravated.

The impacts of a proposed project and alternatives to it on all the natural resources affected, therefore, should be assessed early in the project planning process. The effects of a project on other resources, such as timber or water, and human use should be assessed, as well as the direct effect on fish and wildlife. Nonstructural alternatives, e.g., providing minimum stream flows rather than a hatchery to maintain a population of fish, for achieving the project objective should be required and considered first since these could be expected to have the least negative impact on the ability of the project area to provide natural resource values.

Including consideration of all natural resources early in the planning process should lead to development of ways to minimize effects on these resources in all phases of project development and reduce the need to later add on the more costly, conspicuous, and less desirable remedies

after the fact of damage. The specific properties and characteristics of the natural system which must remain after development should be defined prior to initial permit issuance. The developer is then allowed to proceed with the project under pre-established mitigation measures, which will guarantee functioning of a natural system and not cause permanent or costly public harm.

D. Assessment of Damages

The combination of population pressures, diminishing space, energy needs, and the necessity of considering economic variables in most decisions have all culminated in questions regarding the intrinsic values of man's surroundings. Attempting to place price tags on an area's worth, whether in terms of its retention as a natural system or its value in an altered condition, is inherently difficult.

The state of the art in habitat valuation will lag behind the need to make permit decisions. The Department holds that fish and wildlife habitat should be preserved unless the expected benefits of the development is demonstrably "large" relative to loss of fish and wildlife values. Of course, what is deemed acceptable must be a broad social decision which necessarily requires assessment of the resource damage likely to be incurred as a result of the development.

In theory, it would seem a simple matter to observe the impact of a construction project, determine if fish or wildlife are killed, and then assess damage. In practice, it is anything but. Damage may be

incremental, and not identifiable without extensive baseline and post-project data. Mortality may affect juveniles as well as adults. Damage to habitat or to populations of juveniles may not impact resource users or be measurable for several years hence when particular species should have reached adulthood. Other damages, such as those affecting migratory species or the lower elements of a marine food chain, may be visible but not amenable to market place valuation. Less tangible aspects of resource damage include decreased aesthetic worth and decreased ability to provide a specific wildlife habitat. Finally, in an environment possessing many, often only partially understood, natural interrelationships - and impacted by any number of man-related activities - definitive assessment of precise cause and effect relationships between development impacts and fish or wildlife mortalities will be difficult and often impossible.

This problem is intensified by the absence of even rudimentary data at a large number of site-specific locations. It follows that assessment of damage will, at best, be a combination of assessment of the partial data base available concerning stock levels, seasonal and cyclical abundance and location, together with a scientific judgement of the "most likely" result of environmental damage, based on a general understanding of fish and wildlife habitat dependencies and tolerances.

These types of judgements put extreme pressure on fish and wildlife scientists and pose unknown risks for the resource. In such cases, and where the only other alternative is to stand mute and observe a steady

erosion of fish and wildlife values - uncorrected and uncompensated for - a judgement decision is necessary.

The Department holds that the appropriate standard for measuring damages to natural resources is the cost which would be reasonably incurred by the State to restore or rehabilitate the environment in the affected area to its pre-existing condition, or as close thereto as is feasible without grossly disproportionate expenditures.

The question is prompted: at what point do indirect or cumulative effects become so remote that mitigation should not be required? The Department recognizes the "without-the-project" baseline assumption for resource evaluation purposes when imposing mitigation measures. It is from this baseline that the degree of project impact, and hence the degree of mitigation required, may be measured.

Because damage estimates will be based upon scanty or incomplete knowledge, and will often be probabilistic in nature, it is possible that estimates of "most likely" level of damage may, from time to time, vary. It is this Department's belief that in such cases of difference, the onus of proof to explain any lower estimates must lie with the developer. This position is based upon the recognition that the developer is the potential beneficiary of both an early start (relative to time required for adequate environmental inventory) and of any lower damage estimate that is put forth.

IV. Summary

(1) Mitigation is necessary to guide development in order to preclude, abate, repair, or indemnify the adverse effects upon fish, game, and their habitat resulting from development projects in fish streams and in refuges, sanctuaries, critical habitats, and the natural habitat of endangered species.

(2) Department's authority to approve development plans in streams and special areas, as well as the public trust doctrine asserting the public's right to unimpaired fish and game production on public lands, provide the means and the obligation to compel mitigation measures.

(3) Differences in recovery potentials due to differing degrees of stress placed upon fish, game, and their habitat dictate that mitigation measures be selected accordingly.

(4) Mitigation before the fact of damage is the preferred means, with avoidance of damage as the primary objective, and minimization rectification, maintenance, and compensation following in that order. Each may be implemented through permit stipulations.

(5) Mitigation measures imposed after the fact of damage or in lieu of expected damage, may require rectification of damage, maintenance of corrections over time, or compensation by replacing or substituting resources or environments.

(6) Rectification, necessary only when the permittee has not fulfilled his obligation, may be imposed by permit stipulation or by court ordered

penalty. Projects may be retrofitted with feasible restoration requirements to recover fish, game, and habitat losses.

(7) Maintenance mitigation actions are project related. The Department holds that maintenance mitigation costs are normal development costs to be borne by the developer and project beneficiaries. This form of mitigation may be imposed by permit stipulations or later amendment.

(8) Compensation by providing substitute resources or environments is the least desirable form of mitigation. When imposed it preferably should be implemented onsite rather than by "improving" an existing ecosystem elsewhere. Compensatory mitigation will only be implemented by negotiating a written agreement with the developer.

(9) Mitigation should be considered at the earliest project conceptualization or design stage. All impacts should be assessed early in the project planning process with first consideration given to nonstructural alternatives to the project objective.

(10) Fish and wildlife habitat should be preserved unless the public benefit of the project is demonstrably large. Assessment of damages will be a Department decision based in part on existing data bases and in part on "most" likely judgements.

(11) The burden of proof to justify lower estimates of damage to fish and wildlife habitat lies with the developer.

September 2, 1982

Mr. Ronald O. Skoog, Commissioner
Department of Fish and Game
P.O. Box 3-200
Juneau, Alaska 99802

Dear Commissioner Skoog: Susitna Hydroelectric Project

During the second quarter of this year, the Alaska Power Authority circulated the draft Feasibility Report on the Susitna Hydroelectric Project and numerous supporting documents to State, Federal and local agencies with interests in the project. This circulation included virtually all of the data and analysis done to that date during the study. Currently, efforts are proceeding towards completing the first phase of planning efforts and submitting a license application to the Federal Energy Regulatory Commission in the first quarter of 1983.

During the remaining time before filing, the Susitna study team will be refining the plans presented earlier this year and continuing to evolve proposed mitigation plans for project impacts. This effort will include requesting another review of the projects Environmental Report, which is the draft of the FERC license application Exhibit E, by your agency. We will be circulating the draft in mid-November of this year. After filing with and acceptance of the application by FERC, there will be another opportunity to comment on the application, including Exhibit E.

At this time we are requesting that the reviewing agencies provide us with input to the mitigation planning which will go into the draft of Exhibit E. Your letter of July 27, however, included the type of response regarding mitigation measures and preferences which we are proceeding to solicit from other agencies.

I appreciate the timely guidance which your Department has provided to the Susitna project planning effort. We will be responding to your recommendations and comments by further correspondence in the draft Exhibit E.

Your continued support and efforts in the study of the Susitna Hydroelectric Project are appreciated.

Sincerely,

SIGNED

Eric P. Yould
Executive Director

EPY:mb

cc: Mr. J. Hayden
Mr. C. Yanagawa
Mr. J. Schneider
Mr. T. Trent
Mr. T. Arminski

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

OFFICE OF THE COMMISSIONER

JAY S. HAMMOND, GOVERNOR

P.O. BOX 3-2000
JUNEAU, ALASKA 99802
PHONE: 465-4100

October 15, 1982

Mr. Eric Yould
Executive Director
Alaska Power Authority
334 West Fifth Avenue
Anchorage, AK 99501

Dear Mr. Yould:

RE: Mitigation

The Susitna Hydroelectric Project and other Alaska Power Authority projects may create conditions that would require changes in hunting, trapping, and fishing regulations. For example, improved access might redistribute harvest pressure in a manner that would tend to increase harvest levels. Such situations may require changes in seasons, bag limits, or methods and means to ensure that harvests are not excessive.

APA will have to address these problems in its environmental assessments and mitigation plans. However, I need to point out that under State law the Board of Game and Board of Fisheries are the governmental bodies responsible for allocating the fish and wildlife resources by appropriate regulations. A strong feature of the State's fish and game regulatory process is its ability to quickly respond to changes in population levels, user demand, and management objectives.

Fish and wildlife management suffers when management actions are implemented through some less flexible authority such as statute, judicial order, or regulation or stipulations set by agencies not directly responsible for maintenance of fish and wildlife populations. It would be particularly inappropriate to commit the State to regulatory regimes to offset impacts that may not occur for several years. There is a substantial possibility that the impacts may not be as predicted or that populations or management objectives would have changed. Consequently, any plans or recommendations for mitigation that might require or suggest changes in fish and game regulations should be directed to the Boards of Fisheries and Game for their consideration.

This procedure does not apply to restrictions placed on individuals brought into the area to engage in construction activities. It applies only to regulations affecting the general public. It is entirely appropriate for APA and its contractors to limit project personnel, because construction projects create unusual concentrations

of people brought into the area by means not available to the general public.

In summary, APA still has a responsibility to attempt to avoid or minimize impacts first, and for those impacts that are unavoidable APA should seek alternative mitigation measures other than restrictive fish and game regulations. As longer term effects emerge, requiring adjustments in management controls, the only legal authority for regulatory response will be through Board action. As long as APA and the Department actively monitor these projects, the existing system should be adequately responsive.

Sincerely,

Ronald Skoog
Commissioner

September 2, 1982

Mr. Robert McVey, Director
Alaska Region
National Marine Fisheries Service
P.O. Box 1668
Juneau, Alaska 99802

Dear Mr. McVey: Susitna Hydroelectric Project

During the second quarter of this year, the Alaska Power Authority circulated the draft Feasibility Report on the Susitna Hydroelectric Project and numerous supporting documents to State, Federal and local agencies with interest in the project. This circulation included virtually all of the data and analysis done to that date during the study. Currently, efforts are proceeding towards completing the first phase of planning efforts and submitting a license application to the Federal Energy Regulatory Commission in the first quarter of 1983.

During the remaining time before filing, the Susitna study team will be refining the plans presented earlier this year and continuing to evolve proposed mitigation plans for project impacts. This effort will include requesting another review of the project's Environmental Report, which is the draft of the FERC license application Exhibit E, by your agency. We will be circulating the draft in mid-November of this year. AFter filing with and acceptance of the application by FERC, there will be another opportunity to comment on the application, including Exhibit E.

At this time we would appreciate any input into the continued plan development you could provide. In particular, we request your guidance with regard to project impacts and the mitigation opportunities your agency would recommend. These comments will be helpful both in identifying and addressing the most important areas of concern in the next draft Exhibit E and in documenting agency comments and recommendations before FERC. In order to address these comments in the draft, it would be most helpful to have them by the first of October.

As you know, the planning process is dynamic. Current efforts are focused on project access, transmission corridors and project operation alternatives. Although this information has not yet been distributed for comment, it will be included in the Exhibit E draft.

We welcome your comment on all areas of the project, but, in accordance with Section 4.41 of the FERC regulations, we are particularly interested in your comments with regard to anadromous fisheries. In these areas, we would like to address your concerns on potential impacts and mitigation measures which can be included in project plans.

Your continued support and participation in the development of the Susitna project license application is greatly appreciated.

Very truly yours,

SIGNED

Eric P. Yould
Executive Director

EPY:mb

cc: Mr. J. Hayden
Mr. Brad Smith

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 1668
Juneau, Alaska 99802

October 15, 1982

Mr. Eric P. Yould
Alaska Power Authority
334 West 5th Avenue
Anchorage, Alaska 99501

Dear Mr. Yould:

I have received your letter of September 2, 1982, regarding the current status of the Susitna Hydroelectric Project Feasibility Studies. You have requested any input our agency may provide at this time, particularly with respect to project impacts and mitigative measures associated with anadromous fishery resources. Such consultation is specified by the FERC regulations for Major Unconstructed Projects, 18 CFR Part 4. Realizing the latest schedule for preparation of the draft Exhibit E and submission of license application, I feel it is important to state or re-state the position of the National Marine Fisheries Service (NMFS) so that the license application may incorporate our views or respond to them as outlined in 33 CFR Part 4.41(f). This section specifies that the application must contain "A description of any measures or facilities recommended by State or Federal agencies for the mitigation of impacts on fish, wildlife and botanical resources."

NMFS's primary concerns regarding the Susitna project include provision of adequate instream flow regimes for spawning, rearing, and migration of indigenous fish species; maintenance of water quality for these species; and provision for compensation of all resource damage in instances where such impacts cannot be mitigated. These concerns are discussed below.

I. Flow Release

Adequate flow regimes are critical for anadromous fish. Consequently, water flows for successful spawning, rearing, and migration must be established and maintained downstream of the project area. If flow reduction or modification of flow regimes is anticipated in the operational scenario for this project, anadromous fisheries could be adversely affected within the entire Susitna River system downstream of the facility.

To address these matters, flow studies must be performed to determine flow releases that will conserve and protect stocks of anadromous fish in the Susitna River. Specific flow regime proposals based on studies and acceptable to NMFS must be submitted as part of your license application. With regard to this issue, we

are particularly concerned with the side channel/slough environments of the Talkeetna to Devil Canyon reach which appear to be particularly important to anadromous fish. Significant post project flow alterations will occur below Talkeetna during winter months, and the impact of these changes must also be addressed.

II. Water Quality

Adequate water quality is also essential to viable populations of anadromous fish. Several concerns exist with regard to water quality parameters that may be altered by the Susitna project, these include:

A. Siltation and other construction related impacts: Construction should proceed at times of least biological activity and should employ best management practices to further reduce these impacts.

B. Temperature changes: The license application must describe temperature changes related to project operation, discuss the impact such changes would present to fish, and propose mitigation measures which will avoid or lessen such impacts. The applicant must also describe the specific studies, reservoir models, and riverine models upon which temperature projections are based.

C. Dissolved gases elevation: Gas supersaturation may occur due to plunging water near dam sites and result in fish/gas-bubble disease. The license application should describe measures employed to mitigate this impact; e.g., cone valves.

D. Turbidity changes: The application must describe, for the entire year, the effect of the project on glacial till suspended in the Susitna River water column.

E. River morphology changes: Altered flows and interruption of bedload transport could effect channel changes, perching of tributary confluences, and armoring of the streambed below the damsites.

III. Compensation for Unavoidable Losses

Effective flow releases and water quality conditions are intended to avoid losses to existing and potential anadromous fish resources.

Despite maximum use of these mitigative measures, unavoidable damage to fish resources may occur either during or after construction. Compensation in the form of fish habitat improvements, artificial production or similar methods is required to fully replace such unavoidable loss. An initial plan which recognizes contingencies such as unanticipated construction impacts

must be developed as part of your license application. Subsequent refinements or modification of this plan may be necessary once the project begins operation and the success of mitigative measures has been assessed.

Recognizing the proposed construction schedule for the Susitna project and the political, economic, and environmental concerns which may continue to influence project development, it is likely that the project may operate as a one dam (i.e., Watana) system for a considerable period of time. Therefore, the license application should identify and discuss those resources, impacts, and mitigative/compensative measures associated with the construction and operation of the Watana Dam in the absence of the Devil Canyon Dam. NMFS will provide additional comments upon review of the 1982 Environmental Report and draft Exhibit E and in response to the FERC license application. In the interim, we are available to discuss any concerns you may have regarding the positions of our agency in this matter.

Sincerely,

Robert W. McVey
Regional Director

The preceding letter was received. Responses are as follows:

I. Flow Release

The Alaska Power Authority recognizes the need for adequate flows to maintain fishery habitat. The flow releases proposed for the project were based on a compromise between "no impact" flows and "maximum power" flows. Chapter 2 and 10 of Exhibit E explain the methodology and rationale of flow releases selected. Chapter 3 discusses the potential impacts to fish and mitigation plans to reduce these impacts.

II. Water Quality

A. Siltation and Other Construction Related Impacts

Best management practies will be utilized to control siltation. These are discussed in the mitigation sections of Chapter 2 and 3 of Exhibit E.

B. Temperature Changes

All of the requested information is presented in Chapter 2 and 3 of Exhibit E.

C. Dissolved Gases Elevation

Gas supersaturation is not predicted to result from project operation. Fixed cone valves have been proposed. This subject is discussed in Sections 4.1 and 4.2 of Chapter 2 of Exhibit E.

D. Turbidity Changes

Seasonal impact analysis is discussed in Sections 4.1 and 4.2 of Chapter 2 of Exhibit E.

E. River Morphology Changes

This subject is addressed in Sections 4.1 and 4.2 of Chapter 2 of Exhibit E.

III. Compensation of Unavoidable Losses

The mitigation plan in Chapter 3 of Exhibit E includes methods for fish habitat improvements and other methods to replace unavoidable loss. The mitigation planning process will continue.

The Susitna Hydroelectric project has been studied and is proposed as a two-dam project. Thus, the license application addresses the impacts of two dams. Included is a discussion of impacts during the period when Watana is complete and Devil Canyon is not.

Detailed comments from your agency will be addressed when received.

September 2, 1982

Mr. Ty Dilliplane
State House Preservation Officer
Department of Natural Resources
Division of Parks
619 Warehouse Avenue, Suite 210
Anchorage, Alaska 99501

Dear Mr. Dilliplane: Susitna Hydroelectric Project

During the second quarter of this year, the Alaska Power Authority circulated the draft Feasibility Report on the Susitna Hydroelectric Project and numerous supporting documents to State, Federal and local agencies with interest in the project. This circulation included virtually all of the data and analysis done to that date during the study. Currently, efforts are proceeding towards completing the first phase of planning efforts and submitting a license application to the Federal Energy Regulatory Commission in the first quarter of 1983.

During the remaining time before filing, the Susitna study team will be refining the plans presented earlier this year and continuing to evolve proposed mitigation plans for project impacts. This effort will include requesting another review of the project's Environmental Report, which is the draft of the FERC license application Exhibit E, by your agency. We will be circulating the draft in mid-November of this year. AFter filing with and acceptance of the application by FERC, there will be another opportunity to comment on the application, including Exhibit E.

At this time we would appreciate any input into the continued plan development you could provide. In particular, we request your guidance with regard to project impacts and the mitigation opportunities your agency would recommend. These comments will be helpful both in identifying and addressing the most important areas of concern in the next draft Exhibit E and in documenting agency comments and recommendations before FERC. In order to address these comments in the draft, it would be most helpful to have them by the first of October.

As you know, the planning process is dynamic. Current efforts are focused on project access, transmission corridors and project operation alternatives. Although this information has not yet been distributed for comment, it will be included in the Exhibit E draft.

We welcome your comment on all areas of the project, but, in accordance with Section 4.41 of the FERC regulations, we are particularly interested in your comments with regard to historical and archeological resources. In these areas, we would like to address your concerns on potential impacts and mitigation measures which can be included in project plans.

Your continued support and participation in the development of the Susitna project license application is greatly appreciated.

Very truly yours,

SIGNED
Eric P. Yould
Executive Director

EPY:mb

cc: Mr. J. Hayden
Mr. Alan Carson

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF PARKS

JAY S. HAMMOND, GOVERNOR

619 WAREHOUSE DR., SUITE 210
ANCHORAGE, ALASKA 99501

PHONE: 274-4676

RECEIVED

OCT 21 1982

ALASKA POWER AUTHORITY

October 15, 1982

Re: 1130-13

Mr. Eric P. Yould
Executive Director
Alaska Power Authority
334 W. 5th Avenue
Anchorage, Alaska 99501

Dear Mr. Yould:

Thank you for your letter of September 2 soliciting our recommendations on Susitna Hydro Project impacts and mitigation measures with respect to cultural resources.

First of all, we wish to commend archaeologists Dr. E. James Dixon of the University Museum and Mr. Glenn Bacon of the Alaska Heritage Research Group, Inc., for the excellent job they have been doing in locating cultural resources prior to ground disturbing activities.

Preconstruction survey is, of course, the first step in impact mitigation - the location and boundaries of cultural resource sites must be known. While this work is fairly far along, more needs to be done as plans become more concrete.

Secondly, these cultural resource sites must be evaluated in terms of eligibility for inclusion in the National Register of Historic Places. For evaluation, each site within the project area must be sufficiently investigated such that their boundaries, stratigraphy, relative age, cultural affiliation and potential to yield significant scientific information are known. Many of the currently known sites require further, more intensive, investigation for eligibility determinations to be made. Since so little is known about the prehistory of the area, each site discovered takes on added significance. In addition, groups of sites within a river drainage have been classic study areas throughout the history of anthropological archaeology. It would appear that a high percentage of the discovered sites may be eligible for the National Register.

Thirdly, each eligible site must be examined in terms of "Effect." Will the proposed action have "no effect," "no adverse effect," or an "adverse effect"? This would have to be done on a case by case basis. The criteria for determinations of effect may be found under Title 36, Code of Federal Regulations, Part 800.

Please note that every effort must be made to mitigate future "adverse effect" activities to National Register or eligible properties. In the few expected cases where very large, complex sites will be adversely effected, it may be more economical to build a barrier around the sites. In many cases, substantive investigation may be necessary. If so, this will usually mean relatively complete excavation of the site in order to recover as much scientific information as possible.

These recommendations are essentially those suggested by Dixon, et al, in the Cultural Resources Investigation Phase I Report (April 1982).

We are confident that impacts to significant cultural resources will be fully mitigated throughout the course of the Susitna Hydroelectric Project.

Sincerely,

Judith E. Marquez
Director

By: Ty L. Dilliplane
State Historic Preservation Officer

cc: Ms. Leila Wise, DNR, A-95 Coordinator
Dr. Edward Slatter, FERC Archaeologist
Mr. Lou Wall, Advisory Council on Historic Preservation
Dr. E. James Dixon, Lead Archaeologist, Susitna Hydro Project
Mr. Glenn Bacon, Lead Archaeologist, Alaska Heritage Research Group

TS:clk

MEMORANDUM State of Alaska

DEPARTMENT OF NATURAL RESOURCES DIVISION OF RESEARCH AND DEVELOPMENT

TO: ERIC YOULD
Executive Director
Alaska Power Authority

DATE: October 11, 1982

FILE NO:

TELEPHONE NO: 276-2653

FROM: REED STOOPS
Director

SUBJECT: Proposed Susitna Hydro Project

RECEIVED
OCT 22 1982
ALASKA POWER AUTHORITY

The Department of Natural Resources appreciates the opportunity to comment on project impacts on the proposed Susitna Hydropower Project and to recommend mitigation strategies. The department has cooperated with Alaska Power Authority (APA) on this proposed project during the last two years and refers the APA to earlier comments, specifically DNR's testimony on April 16, 1982, to APA's Board of Directors (attached). The issues listed in DNR's testimony, water appropriations, instream flow reservations, and access to the project, continue to be major concerns. Additional comments are listed below. In some cases comments may repeat earlier DNR comments.

As you are aware, the department is now in the process of preparing a regional land use plan in cooperation with the Matanuska-Susitna Borough which includes the lands surrounding the hydro project. This plan, which will be completed in 1983, will result in land use designations and land management policies for state and borough lands throughout the area.

To date, the planning team responsible for developing this land use plan has consciously avoided any direct involvement in Susitna Hydro issues, relying instead on the more detailed work being done by other individuals within DNR and DF&G. The planning process is now at a point where it makes more sense that there be closer coordination between the two projects, specifically in the two areas outlined below.

1) The planning team can review and comment on information regarding regional, indirect impacts of the plan (e.g. population growth, changes in resource demand, etc.).

2) The plan can be used as a tool to guide use of public lands to mitigate or control secondary impacts of the proposed project.

I suggest that you designate a staff person to coordinate these two projects with Chris Beck (Susitna Plan project manager).

As stated in DNR's recent comments on recreation planning, we are concerned that recreational facilities planned in conjunction with the hydropower project may be under-utilized. A related concern is the high cost to the state of maintaining potentially over-developed, under-used public recreation facilities.

The Division of Geological and Geophysical Survey has completed a detailed review of the soils and geology components of the feasibility study. Those comments (attached) are intended to be informal and for the consideration of APA and its contractors. Other geological and geophysical concerns are listed below.

1) Existing information indicates that glaciers in the project area are retreating; this and their seasonal nature may affect water availability.

2) The two large bodies of water created by the proposed project may affect the micro-climate of the area.

3) The dams, by blocking sediment travel, may increase erosion downstream.

4) There may be a substantial change in the area between the two dams over a period of time in response to changes in flow regime, the amount of sediment introduced and transported, and the hydraulic geometry of the valley (gradient, width, depth, discharge, and velocity of the channel).

The department requests that any trees felled in the project be made available to the public and that commercial quantities of forest products be made available to the commercial community for harvest and utilization.

Attachments

cc: Chris Beck, DRD
Leila Wise, DRD
Al Carson, DRD

RS:LW:lln

MEMORANDUM

State of Alaska

Department of Natural Resources
Division of Geological & Geophysical Survey

TO: AL CARSON
Deputy Director, DRD/DNR

DATE: 4-26-82

FILE NO:

TELEPHONE NO: 688-3555

FROM: RANDALL UPDIKE
Geologist V, DGGS

SUBJECT: Review of Susitna Hydro Feasibility Study

I have been requested to review Volume II, Section 6, Soils and Geology of the Susitna Hydroelectric feasibility study, representing DGGS. My comments will sometimes refer to specific paragraphs within the section but are generally of a summary nature based upon the discussion of the entire section.

To insure the long-term integrity of a high masonry dam such as those under consideration in the Susitna Hydroelectric Project, three fundamental issues of geotechnical siting must be addressed: (1) geologic foundation conditions at the damsite, (2) suitability of the reservoir based upon the geologic interaction between the basin, stored water, and dam, and (3) seismic exposure of the system. My following discussion will be essentially limited to item (2) above which is the prime concern of Section 6. These comments are based upon the nine page summary that I was provided for review.

We can identify five criteria which are essential, but complex, geologic variables in evaluating the suitability of a given terrain for reservoir development: (1) nature and variability of bedrock within, adjacent to, and beneath the proposed reservoir basin, (2) composition and distribution of unconsolidated deposits over bedrock within the basin, (3) basin geometry (including slope angles), (4) distribution and flow gradients of surface and ground waters within and adjacent to the basin, and (5) ambient stress fields within and adjacent to the basin.

The overwhelming majority of hydroelectric dams in the world have safely met and exceeded design specifications since construction. In fact, masonry dams have performed better than most manmade structures during earthquakes. However, catastrophies associated with dams and their reservoirs have occurred frequently enough to warrant our utmost concern. One of the most serious threats to the dam-reservoir-basin system is the potential for massive, high velocity landslides entering the reservoir. Such slides can propogate destructive surface waves which impinge on opposite shorelines and occasionally the dam itself. Such was the case of the Vaiont Dam, Italy, 1963, when a 230 foot-high wave was generated by a slide, leaving 2,600 dead and missing.

1.) Bedrock-related concerns.

The majority of great landslides in recorded history have involved the slope failure of indurated sediments, or bedrock. These failures typically occur along one or more discontinuities within the rock, which, for a variety of reasons, have shear stresses exceeding resisting frictional stresses. Discontinuities are often planar, and may be repeated in a subparallel manner through the rock body. In some cases failure results from the intersection of two or more sets of weakness planes. From the bedrock geology descriptions for the basins upstream from the two damsites I would like the following to be considered:

1.A) Metamorphic rocks are of concern due to the foliation and joint patterns which typically develop in such rock, as well as the mineral assemblage itself which often can be easily sheared to further lubricate failure planes (p. 6-2, para. 3).

1.B) Conjugate joint sets typical of intrusive rocks (which are also indicated to be present in the basins) can generate complex failure schemes (p. 6-2, para. 2; p. 6-5, para. 2).

1C.) The contacts between rock units, for example those between the intrusive rocks and argillite-graywacke sequence, can serve as extensive planes of discontinuity (p. 6-2, para. 3; p. 6-5, para. 2).

1.D) Although no active faults may be identified in or near the project area, numerous older inactive faults probably exist and, in conjunction with mylonitization along these zones, can provide additional planar trends for failure. Often, major river valleys follow regional fault trends with subsidiary faults paralleling the trend of the master fault. Thus, the subsidiary faults may tend to parallel the valley walls, enhancing the failure susceptability along these trends (p. 6-5, para. 3).

1.E) In addition to planar discontinuities within mappable bedrock of the valley walls, concern should be expressed for bedrock structures "hidden" beneath the unconsolidated sediments in the valley floors. This would be of prime concern as reservoir filling proceeded, which induces profound physical stresses on the underlying rock masses, as well as imposing large hydraulic head values over a broad saturated "foot print" of the reservoir floor (p. 6-2, para. 1; p. 6-4, para. 2).

2.) Unconsolidated sediments.

Whereas bedrock failures usually occur as moving blocks or slabs, unconsolidated sediments (e.g., soil, till, alluvium, colluvium) lack strong interparticle bonding and, therefore, are more susceptible to slope failure. Concerns I have, based upon the summary geologic report are:

2.A) Contacts (discontinuities) between unconsolidated sediments and underlying bedrock are usually abrupt, at high angles along valley walls, and saturated with groundwater (p. 6-3, para. 1; p. 6-4, para. 2-3).

2.B) Typically glacially-related sediments vary significantly in texture and degree of consolidation which can produce:

2.B.1) Underconsolidated (soft) sediments below grade (p. 6-4, para.2)

2.B.2) Seismically liquefiable sands and silts (p. 6-7, para. 1)

2.B.3) Textural discontinuities which can act as failure planes (p. 6-4, para. 2-3)

2.B.4) Confined aquifers having substantial hydraulic head

2.C) Old landslides were identified in the report. Often such slides are in equilibrium with existing conditions which can be dramatically modified by reservoir water encroachment with associated ground water table rise. This can cause reactivation of old slides (p. 6-3, para. 5).

3.) Concerns related to thawing permafrost.

Unconsolidated deposits under a permafrost regime have a passive rigidity which is abruptly diminished when thawed. Often this results in slow solifluction-like flows which may prove more of a nuisance than a hazard to facilities. However, the identification of permafrost in unconsolidated sediments on moderate to steep slopes prompts:

3.A) The rapid flowage of supersaturated, thawed debris, often over still-frozen sediments in the subsurface (p. 6-3, para. 2; p. 6-5, para. 4).

3.B) Both surface infiltration and groundwater flow regimes will be enhanced by the thawing process, transmitting larger volumes of water to potential slide interfaces.

4.) Changes in groundwater regime.

In addition to the groundwater affects mentioned above, the rise of water level in the reservoir filling process, and fluctuations of that level, will significantly change the hydraulic gradient of groundwater in sediments and bedrock upslope from the water line. This causes both failure plane lubrication and hydraulic unloading of shear-resisting stresses on discontinuities.

5.) Stress-state concerns.

As far as I can discern the stability of the slopes within the reservoir basins is assumed to be a steady-state system. Two variable stress conditions come to mind.

5.A) The oversteepened valley walls are presently in disequilibrium with respect to previous rapid glacial unloading. This will occassionally be manifested by rock failure along steep, bedrock, glaciated surfaces (p. 6-1, para. 5-6).

5.B) Seismic accelerations which may not be of concern to dam design, may be very significant in slope stability. I saw no mention of this.

6.) Rapid slides into reservioirs.

It seems that one must be predisposed to consider that design-life big slides will occur into the reservoir. With this in mind I am concerned about:

6.A) The affect of slides along the margins of the reservoir which may over-run operational of recreational facilities (e.g., roads, campgrounds).

6.B) Where slab failures are potentially to occur on steep slopes, the mass may be airborne and enter the lake along a ballistic path. This can generate waves several tens of feet high which, in turn, affect:

6.B.1) Boats on the reservoirs

6.B.2) Facilities along the shore (across the lake, downstream and/or upstream)

6.B.3) Where the reservoir follows bends in the valley causing an enhanced additive affect off of these curves, resulting in progressively bigger waves at unpredicted locations downstream.

6.B.4) The dam itself, if the slide is near the dam, due to surging of water away from (drawdown), against, and over the dam, resulting in stresses exceeding dam design limits

6.C) Landslides may occur in part or wholly below water-level in the reservoir which may not generate surface waves but could displace very large volumes of water resulting in surge or drawdown at the dam.

Based upon the foregoing commentary I feel that a strong plea must be made to examine the locations, types, magnitude, and potential frequency of reservoir-basin landslides. The soils and bedrock at the two sites support the feasibility of the project. However, slope studies, wave modeling, and possibly stabilization measures should be an integral part of the design and construction.

Please feel free to contact me at 688-3555.

RU/jlw

Enclosures

cc: Ross G. Schaff

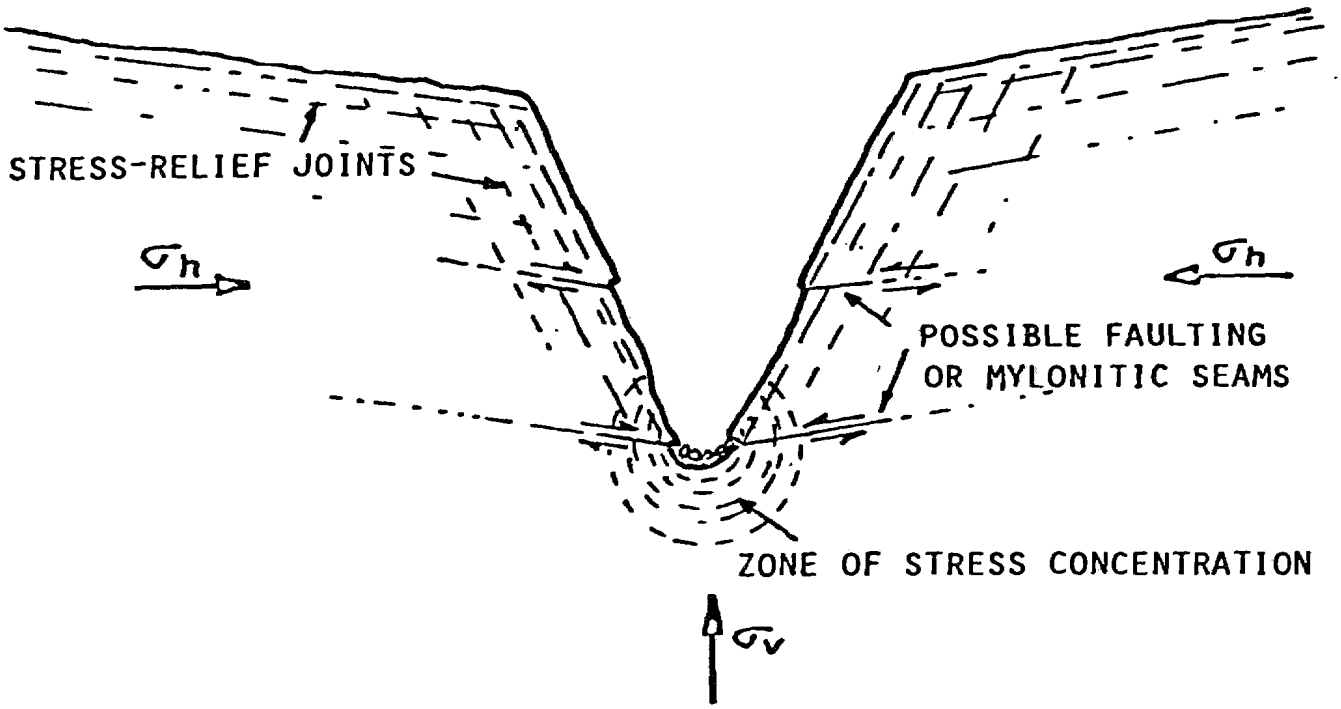
Bill Barnwell

Dick Reger

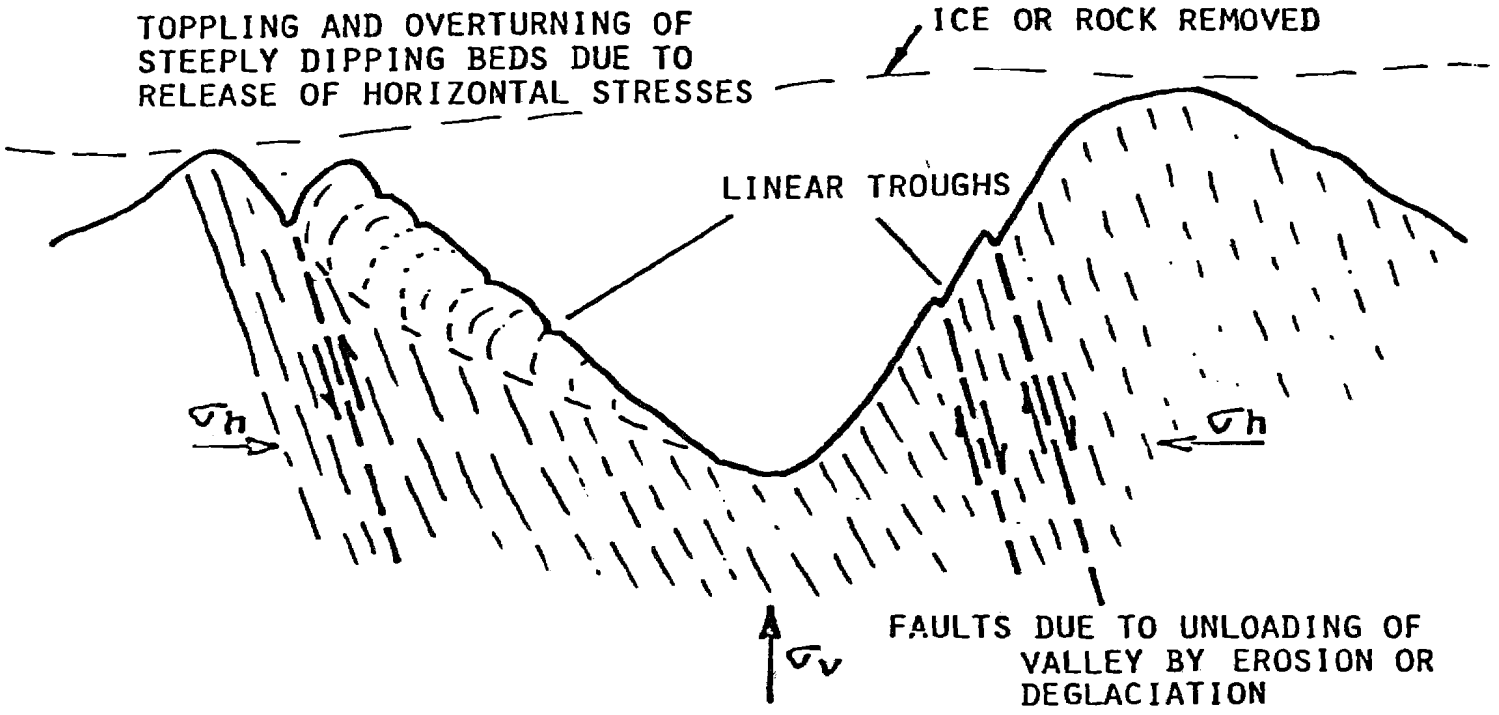
ATTACHMENTS TO UPDIKE MEMORANDUM

RE: Susitna Hydro Feasibility Study

Figure 8 from Patton and Hendron (1974) on the following page shows some of the stress release phenomena that might be expected in the Susitna Project where steep glacial terrain is encountered.



A) DEEP NARROW CANYONS



B) COMPLEX LARGE-SCALE MOUNTAIN STRUCTURES

FIG. 8 GEOLOGIC STRUCTURES RELATED TO STRESS RELEASE IN MOUNTAIN VALLEYS

Figure 9 from Patton and Hendron (1974) shows the potential for failure along the interface between unconsolidated surficial deposits (referred to as 'residual soil') and bedrock. Note the authors' emphasis on water conditions, which is also important at Susitna.

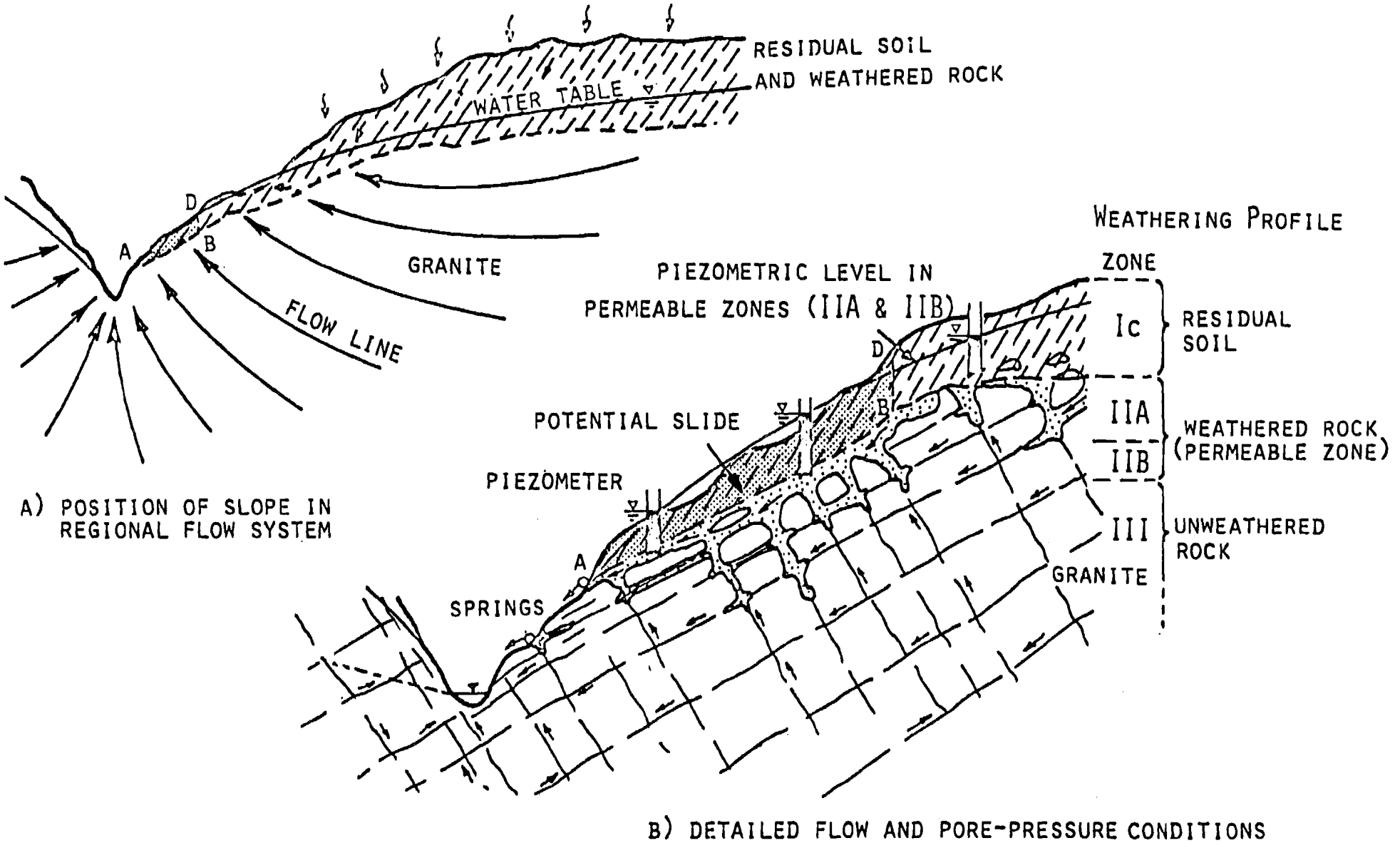
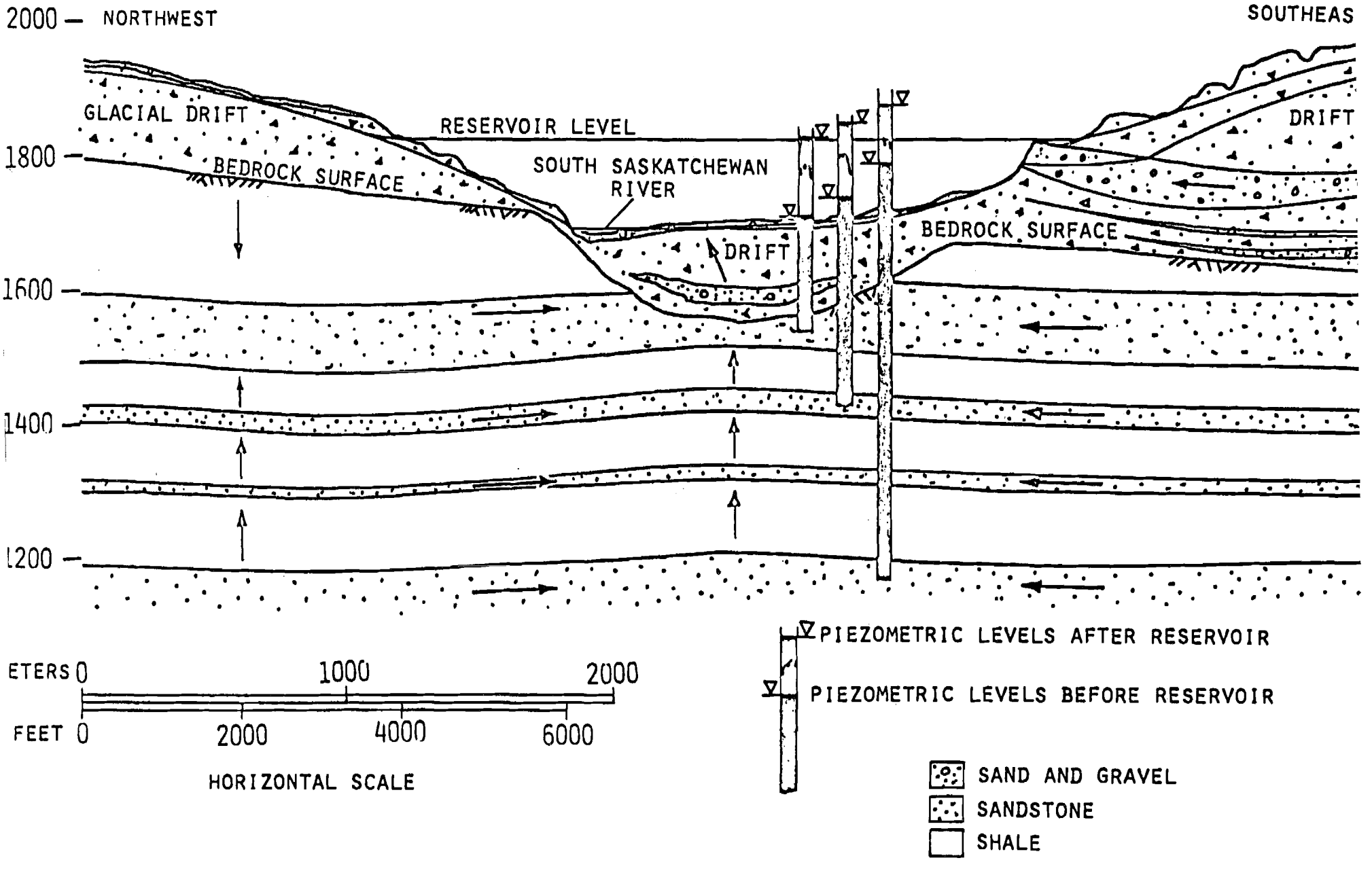


FIG. 9 POTENTIAL SLIDE IN RESIDUAL SOIL, TYPICAL ENVIRONMENT

Figure 4 from Patton and Hendron (1974) showing the change in Piezometric levels as a result of the reservoir influence on aquifers. Figure 17 (following page) further shows how this piezometric change can influence a potential slide plane.

FIG. 4 CROSS SECTION, SOUTH SASKATCHEWAN RIVER VALLEY, RIVERHURST



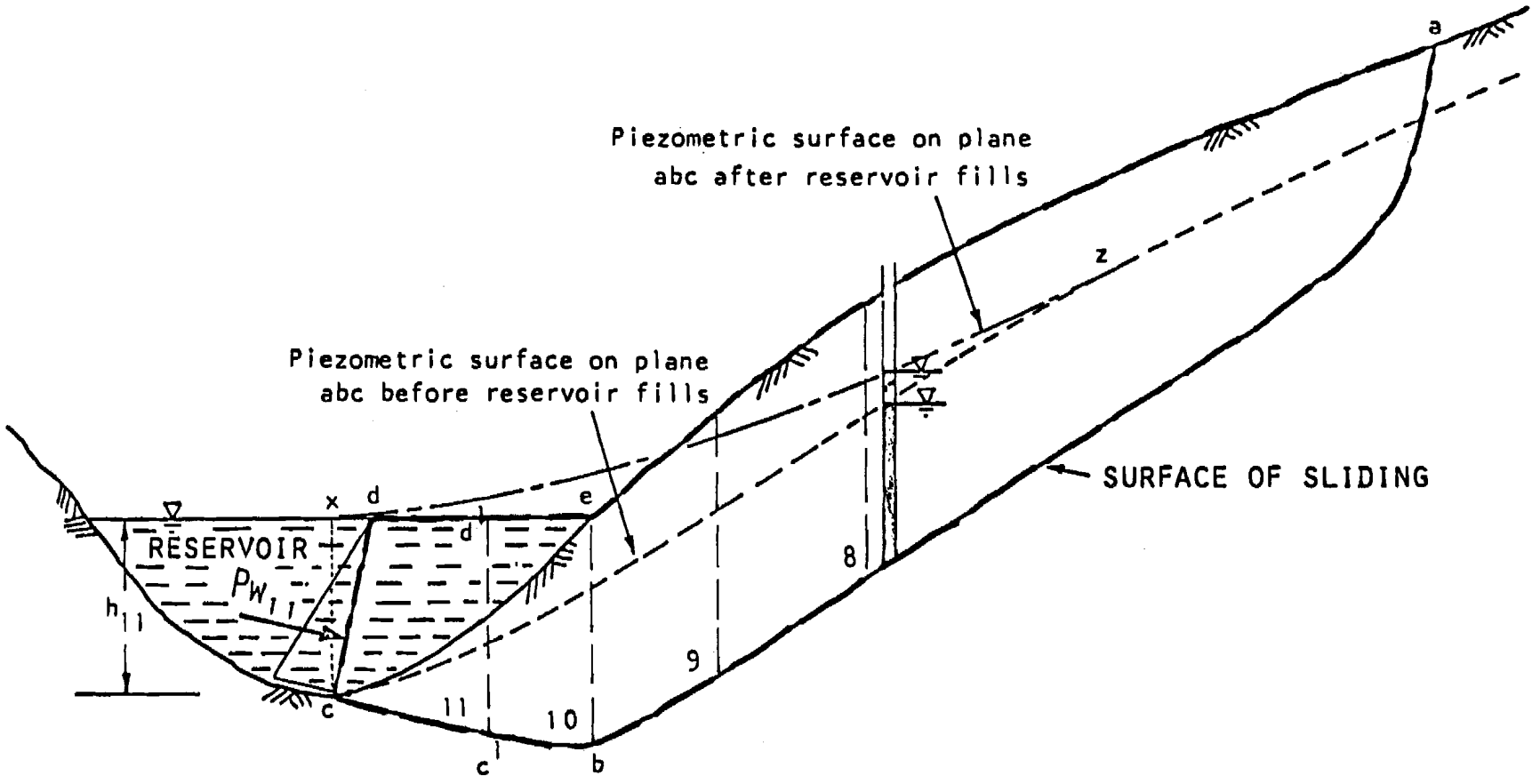


FIG. 17 ILLUSTRATION OF THE SIMPLIFIED METHOD OF ANALYSIS

I have included the following table which shows the measured wave heights associated with landslides entering large bodies of water.

Table 2

Historic Slide Generated Waves

Location	Wave Height ft	Max Runup ft	Slide Type & Vol (Million cy)	Slide Slope	Slide Velocity fps	Slide Thickness ft	Slide Width ft	Water Depth ft	Slide spec. gravity	Wave Velocity mph	No. of Waves
Libby 700' U/S (314 Psh)			2.25 (max)	30°	115-165	170	300	359 (max)			
Assumed Slide 2100' U/S (327 Psh)			4.75 (max)	27.7°	115-185	320	300	359 (max)			
Lituya Bay, Alaska[1]											
9 July 1958	110	1720	Rock 40.0	40°		93	2700	400-700	2.7	97-130	1
1936	100-250	400	Submarine					400-700		22	3
1899		200						400-700			
1874		80	Rock	40°				400-700			
1853 or 54		395						400-700			
Lake Kenai, Alaska[2]											
27 March 1964	30	72	Sediment Delta Slough 0.2								
Whittier, Alaska[3]											
27 March 1964	25	104	Unconsolidated Landslide	15°							3 (1 Glassy 2 Breaking)
Vaiont Reservoir, Italy[4]											
9 October 1963	230 D/S	885	Rock - 310 Total 150 in water	45° to 26.5°	50-100		6000	775 (max)	2.7		1
Japan Kyushu Is.[1]											
21 May 1792		33	Rock & Soil 700	10°			16,000	210 (max)			3
Norway Langfiord[1]											
22 February 1756		130	Rock & Soil 15.7	25°				1100 (max)			3
Norway Lake Loen[1]											
15 January 1905	10	131	Rock 0.45	65°				436 (max)			
12 September 1936	3-6	230	Rock 1.3	≈65°			1300	436 (max)			
21 September 1936	-------	49	Rock	≈65°							
11 November 1936	-------	230	Rock 1.3	≈65°				436 (max)			
Norway, Tafjord[1]											
7 April 1934	-------	204	Rock 2.0	45°				700 (max)		13.4-26.8	
Disenchantment Bay, Alaska[1]											
4 July 1905	15-20	115	Glacier Slide	16°			3500	942 (max)	1.0		
Franklin D. Roosevelt Lake,[1] Washington Reed Terrace April 1941-August 1953	-------	65	Unconsolidated Slides	23°				160 (max)		45	
Hawk Creek 27 July 1943	-------	65	Unconsolidated Slides	31°				120 (max)			

1 Miller (1960)
2 McCulloch (1965)
3 Kachadoorian (1965)
4 Kiersch (1964)

From: Banks, 1972, Libby Dam Study

April 16, 1982

DEPARTMENT OF NATURAL RESOURCES'S
TESTIMONY TO THE ALASKA POWER AUTHORITY BOARD OF DIRECTORS

I appreciate the opportunity to provide comments to the Power Authority Board of Directors on the Susitna Hydroelectric project. I regret that, because of other commitments in Juneau, I am unable to personally deliver these comments.

At the invitation of the Alaska Power Authority, the Department of Natural Resources has been working informally with the Authority over the last two years to help formulate and carry out studies designed to answer the questions which ultimately will determine whether the Susitna Dam proposals are feasible. The purpose of this testimony today is twofold: First, to identify Susitna Hydroelectric issues that are within the sphere of DNR's authority; and second, to make recommendations to the Board of Directors on the continuation of project development, as requested in the January 26 letter from Mr. Conway.

SUSITNA HYDROELECTRIC RELATED ISSUES WITHIN THE PURVIEW OF THE DEPARTMENT OF NATURAL RESOURCES

The Department of Natural Resources will be required to make decisions on two major facets of the Susitna Hydroelectric Project. These are:

1. DNR responsibilities for water appropriation (and possibly instream flow reservations) from the Susitna River.

2. Rights-of-Way permits for access into the dam sites and transmission line routes. Other land use permits for access to construction sites, gravel for construction, and other land use related needs as they occur on state owned lands.

The role of the Department of Natural Resources in water rights appropriation will be an adjudicatory one. According to Alaska Statute 46.15.080 (b), the impacts of water appropriation on the public interest shall be considered during adjudication. Areas of public interest are defined in the Statute as follows:

1. The benefit to the applicant resulting from the proposed appropriation.

2. The effect of the economic activity resulting from the proposed appropriation.

3. The effect on fish and game resources and on public recreational opportunities.

4. The effect on public health.

5. The effect of loss of alternate uses of water that might be made within reasonable time if not precluded or hindered by the proposed appropriation.

6. Harm to other persons resulting from the proposed appropriation.

7. The intent and ability of the applicant to complete the appropriation.

8. The effect upon access to navigable waters.

The DNR will be looking to the Feasibility Study data and information to describe the relationship between various streamflow levels and how they will impact fisheries and aquatic habitat downstream. Thus, from this Department's perspective, instream flow studies and the relationship of various flow levels to aquatic habitats and fisheries resources are vital. The studies administered by the APA will be the fundamental source of data and information used by DNR to make the public interest findings described above. We are eager to review and comment upon the present and future plans for instream flow studies. To date, we have not been provided an opportunity to review or comment upon the instream flow study approach.

The access to the dam sites and the policy surrounding the extent of access after construction will lead to one of the most significant impacts of the project. The Power Authority has stated that the permit for use of a "pioneer road" is needed in 1982 (before a F.E.R.C. permit is issued) if the power is to be on line eleven years later. One significant issue is the possibility of the construction of a road to the proposed dam sites and a subsequent decision by the state not to construct the dams. It would appear to be in the best interest of the Power Authority, the land managing agencies, and the public to identify other alternatives which will allow the necessary access to the proposed dam sites in a manner which prevents irreversible impacts. In order to prevent this issue from being a potential delay in progress, we recommend that the APA take the lead in convening a multi-agency, multi-disciplinary effort to accomplish the goal stated above.

The second issue is the long term land use implications of access to the proposed dam sites. The provision of access to the dam sites should not unwittingly determine the types and extent of land use impact on the surrounding lands in the upper Susitna Valley. Carefully determined access route decisions could result in a multiple purpose route which could facilitate and enhance other uses of the surrounding lands. In order to accomplish this, the dam access route decision should be made in conjunction with surrounding land owners, land managers, and the general public. As on the other issue above, the DNR is willing to participate cooperatively with the Alaska Power Authority, other agencies, and the public to resolve this matter so that it does not become a potential delaying factor for the proposed project or a future management problem for land owners and managers.

SUMMARY AND RECOMMENDATIONS

In summary, the Department of Natural Resources has three recommendations:

1. The Department supports continued studies in the socio-economic, technical, and environmental areas. The preliminary work accomplished so far indicates that the project is technically feasible. Further work is needed to establish the information and data for water appropriation and fishery mitigation. Additionally, we recommend further work on the timing, route and conditions of access to the proposed dam sites.

2. With respect to the question of whether it is desirable to submit an application to the F.E.R.C. on September 30, 1982, we offer the following comments. The APA Board of Directors and the staff should carefully weigh the advantages and disadvantages of submitting the formal application on September 30, 1982. If that course of action would result in the APA acquiring a F.E.R.C. permit to construct in the most timely and economical way, then that course of action makes sense. However, if on the other hand, a formal application would result in delays, increased potentials for litigation, and a hardening of adversarial roles between the APA, other agencies, and other interested parties, then the possibility of these delays should be considered. We believe that the APA Board and the Staff are in the best position to evaluate pros and cons and to determine whether a F.E.R.C. application on September 30, 1982, is desirable or not. From our more narrow agency standpoint, DNR is not opposed to a F.E.R.C. application so long as our agency concerns and responsibilities can be fully and openly determined through the traditional intervenor process.

3. We compliment the APA Board of Directors and staff for encouraging inter-agency interdisciplinary approach to identify ways to improve the coordination and ultimately the results of the feasibility studies. We believe that strengthening this approach will facilitate a more cooperative and constructive role for those agencies which have responsibilities that require them to take action on the Susitna Hydroelectric Project. Specifically, we recommend strengthening and enhancing the role of a group similar to the Susitna Hydroelectric Steering Committee which has been providing informal agency comments to the APA on this project for the last two years.

September 2, 1982

Ms. Lee McAnerney, Commissioner
Department of Community and Regional Affairs
Pouch B
Juneau, Alaska 99811

Dear Commissioner McAnerney: Susitna Hydroelectric Project

During the second quarter of this year, the Alaska Power Authority circulated the draft Feasibility Report on the Susitna Hydroelectric Project and numerous supporting documents to State, Federal and local agencies with interest in the project. This circulation included virtually all of the data and analysis done to that date during the study. Currently, efforts are proceeding towards completing the first phase of planning efforts and submitting a license application to the Federal Energy Regulatory Commission in the first quarter of 1983.

During the remaining time before filing, the Susitna study team will be refining the plans presented earlier this year and continuing to evolve proposed mitigation plans for project impacts. This effort will include requesting another review of the project's Environmental Report, which is the draft of the FERC license application Exhibit E, by your agency. We will be circulating the draft in mid-November of this year. AFter filing with and acceptance of the application by FERC, there will be another opportunity to comment on the application, including Exhibit E.

At this time we would appreciate any input into the continued plan development you could provide. In particular, we request your guidance with regard to project impacts and the mitigation opportunities your agency would recommend. These comments will be helpful both in identifying and addressing the most important areas of concern in the next draft Exhibit E and in documenting agency comments and recommendations before FERC. In order to address these comments in the draft, it would be most helpful to have them by the first of October.

As you know, the planning process is dynamic. Current efforts are focused on project access, transmission corridors and project operation alternatives. Although this information has not yet been distributed for comment, it will be included in the Exhibit E draft.

We welcome your comment on all areas of the project, but, in accordance with Section 4.41 of the FERC regulations, we are particularly interested in your comments with regard to archeological and historical, and socioeconomic issues. In these areas, we would like to address your concerns on potential impacts and mitigation measures which can be included in project plans.

Your continued support and participation in the development of the Susitna project license application is greatly appreciated.

Very truly yours,

SIGNED

Eric P. Yould
Executive Director

EPY:mb

cc: Mr. J. Hayden
Mr. Lawrence H. Kimball, Jr.

STATE OF ALASKA

DEPT. OF COMMUNITY & REGIONAL AFFAIRS

DIVISION OF COMMUNITY PLANNING

JAY S. HAMMOND, GOVERNOR

225 CORDOVA, BUILDING B
ANCHORAGE, ALASKA 99501

October 4, 1982

RECEIVED

OCT 12 1982

ALASKA POWER AUTHORITY

Mr. Eric P. Yould
Executive Director
Alaska Power Authority
334 W. 5th Avenue
Anchorage, AK 99501

Dear Mr. Yould:

Your letter of September 2, 1982 requested this Department's guidance regarding potential impacts of the Susitna Hydroelectric Project and mitigation measures that might be appropriate. Regarding potential project impacts, we would refer you to our letter of May 28, 1982 which expressed our concerns relative to impacts. The issues raised and points made in that letter remain valid.

In terms of mitigation measures, it would be more productive to offer detailed suggestions once the draft Feasibility Report is revised to incorporate comments of reviewers and then circulated for review. We would at this time encourage continued close coordination with the Matanuska-Susitna Borough, Cook Inlet Region, Inc. and appropriate State and federal agencies during revision of project reports and preparation of FERC application materials.

Sincerely,

Lee McAnerney/BR

Lee McAnerney
Commissioner

cc: Lawrence H. Kimball, Jr., Director
Division of Community Planning

Al Carson, Chairman
Susitna Hydroelectric Steering Committee

Gary Thurlow, Manager
Matanuska-Susitna Borough

Claudio Arenas, Planning Director
Matunuska-Susitna Borough

September 2, 1982

Mr. Keith Schreiner
Regional Director, Region 7
U.S. Fish and Wildlife Service
1011 E. Tudor Road
Anchorage, Alaska 99503

Dear Mr. Schreiner: Susitna Hydroelectric Project

During the second quarter of this year, the Alaska Power Authority circulated the draft Feasibility Report on the Susitna Hydroelectric Project and numerous supporting documents to State, Federal and local agencies with interest in the project. This circulation included virtually all of the data and analysis done to that date during the study. Currently, efforts are proceeding towards completing the first phase of planning efforts and submitting a license application to the Federal Energy Regulatory Commission in the first quarter of 1983.

During the remaining time before filing, the Susitna study team will be refining the plans presented earlier this year and continuing to evolve proposed mitigation plans for project impacts. This effort will include requesting another review of the project's Environmental Report, which is the draft of the FERC license application Exhibit E, by your agency. We will be circulating the draft in mid-November of this year. AFter filing with and acceptance of the application by FERC, there will be another opportunity to comment on the application, including Exhibit E.

At this time we would appreciate any input into the continued plan development you could provide. In particular, we request your guidance with regard to project impacts and the mitigation opportunities your agency would recommend. These comments will be helpful both in identifying and addressing the most important areas of concern in the next draft Exhibit E and in documenting agency comments and recommendations before FERC. In order to address these comments in the draft, it would be most helpful to have them by the first of October.

As you know, the planning process is dynamic. Current efforts are focused on project access, transmission corridors and project operation alternatives. Although this information has not yet been distributed for comment, it will be included in the Exhibit E draft.

We welcome your comment on all areas of the project, but, in accordance with Section 4.41 of the FERC regulations, we are particularly interested in your comments with regard to fish, wildlife and habitat. In these areas, we would like to address your concerns on potential impacts and mitigation measures which can be included in project plans.

Your continued support and participation in the development of the Susitna project license application is greatly appreciated.

Very truly yours,

SIGNED

Eric P. Yould
Executive Director

EPY:mb

cc: Mr. J. Hayden
Mr. Robert Bowker
Mr. Gary Stackhouse

IN REPLY REFER TO
WAES

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1011 E. TUDOR RD.
ANCHORAGE, ALASKA 99503
(907) 276-3800

05 OCT 1982

Eric Yould, Executive Director
Alaska Power Authority
334 West 5th Avenue
Anchorage, Alaska 99501

Dear Mr. Yould:

This responds to your letter dated 2 September 1982 requesting Fish and Wildlife Service (FWS) input on Susitna Hydroelectric project impacts and potential mitigation pertaining to fish and wildlife resources. We have previously provided as input to the Alaska Power Authority (APA) and its consultants some of our concerns. Please reference the testimony presented to the APA Board by Deputy Regional Director LeRoy Sowl, FWS, on 16 April 1982, our letters dated 15 November 1979, 23 June 1980, 30 December 1980, 5 January 1982, and 17 August 1982, and the Susitna Hydro Steering Committee (SHSC) letter dated 5 March 1982. We expect that the issues raised in these letters and testimony would be addressed in the license application. We anticipate making additional comments after our review of the 1982 field data and analysis and during our formal consultation review of the draft Federal Energy Regulatory Commission (FERC) license application Exhibit E.

Presently, the FWS is internally reviewing a draft document prepared under the auspices of the FWS Mitigation Policy (F.R. Vol. 46, No. 15, 23 January 1981). The purpose of this document is to establish for this agency project area Resource Categories and the corresponding mitigation goals. Following completion of our internal review, the draft document will be provided to the Alaska Department of Fish and Game (ADF&G), the Environmental Protection Agency, and the National Marine Fisheries Service for a 30-day review period. Following incorporation of comments from these agencies the document will be released to the APA and the FERC. We expect to issue the document around 15 December 1982. By providing this analysis we intend to: (1) allow the APA and FERC to anticipate FWS recommendations and plan for mitigation needs; and (2) reduce potential conflicts and project delays. It is the intention of the FWS to protect and conserve the most important and valuable fish and wildlife resources while facilitating balanced development of the nation's natural resources. Copies of our Mitigation Policy have been previously provided to you. If you need additional copies please do not hesitate to contact the Field Supervisor, U.S. Fish and Wildlife Service, 605 W. 4th Avenue, Room G-81, Anchorage, Alaska 99501 (907-271-4575).

The following comments should not be considered as superseding comments previously provided or foreclosing future opportunities to provide input on fish and wildlife resouce impacts and mitigation options, prior to, and during the FERC licensing process.

Aquatic Studies

1. The instream flow and temperature regime, turbidity, benthos, chemical composition, and nutrient levels to maintain the existing fishery should be fully evaluated. This would provide the baseline by which project impacts could be evaluated. For instance, how and to what extent the project would modify present conditions, how these changes would impact (positively or negatively) the biota, what project modifications could be undertaken to minimize, or eliminate adverse impacts, and impacts of incremental changes in these parameters should be fully assessed. Mitigation options must be examined on the basis of a defensible, quantified impact analysis.

Many of these concerns were raised previously. We refer you to Subtask 7.10 Fish Ecology: A Survey of Questions and Concerns Pertaining to Instream Flow Aspects of the Proposed Susitna Hydroelectric Project (May 1981) and Subtask 7.10 Fish Ecology: Instream Flow Assessment for the Proposed Susitna Hydroelectric Project Issue Identification and Baseline Data Analysis 1981 Summary Report (March 1982). We expect that the issues identified in these reports will be reevaluated in light of the 1982 field season.

To achieve the aforementioned goals, the analysis must provide the following:

a. Quantify the relationship between mainstream discharge and the availability of fish habitat by life stage (passage, milling, spawning, rearing), in the sloughs, side channels, and mainstream.

b. Assess the interrelationship of the Susitna River to its tributaries in regard to fishery habitat requirements vs. life stage.

c. Quantify the relationship between an array of flow regimes and fish habitat downstream of Talkeetna throughout the year.

d. Identify the source, flow, chemical and temperature characteristics of upwelling water in the sloughs and their relationship to mainstream conditions throughout the year. This should include an evaluation of the influence of ice cover on the relationship between the mainstream and the sloughs.

e. Baseline surface and intergravel temperature data sufficient to describe the annual thermal regimes of the mainstream river, side channels, and sloughs above Talkeetna. The relationship of these three river components must be established to allow a realistic assessment of potential project impacts.

f. The relationship between ambient and potential project-caused temperature conditions and salmon embryo survival and rate of development.

g. The viability of slough modifications to increase fishery habitat needs to be demonstrated.

h. The long range implications of proposed project flows vs. natural flows and potential habitat maintenance flows in terms of possible slow loss of sloughs, and loss of flushing flows. This should take into consideration long term one dam and two dam configurations.

i. Salmon enhancement potential above Devil Canyon without the Susitna project, with the Susitna project and the impacts of any program to establish salmon in the upper river on existing fisheries, particularly grayling. Consideration should be given to potential conflicts between mitigation options to offset project-caused losses to grayling vs. salmon.

j. The potential to establish/expand the salmon fishery between the Devil Canyon and Watana dam sites in the absence of a Devil Canyon development.

k. Within and out-of-basin opportunities to offset losses to fisheries such as stream stocking, lake fertilization, extension of existing fisheries, and increasing public fishing access and opportunities.

l. Extent of dewatering between the Devil Canyon dam and its powerhouse and associated fishery impacts, and mitigation options.

m. Pre- and post-project nitrogen levels in Devil Canyon and impacts.

n. Behavioral impacts related to changes in flows, temperature, and chemical composition of the Susitna River due to the proposed project.

o. The impact of changes in winter flows, turbidity, chemical composition, salinity levels, and timing and extent of ice formation and break-up on the estuary.

p. The viability of a reservoir fishery needs to be evaluated through an assessment of: predicted reservoir temperatures, turbidity, chemical composition and anticipated primary productivity, available spawning habitat, potential for establishing spawning habitat, and the relationship of a reservoir fishery to established tributary fisheries.

q. The timing, extent, and seasonal variability of daily peaking which would occur with either a one or two dam system and the associated aquatic impacts.

r. Hydraulic turbine configurations with both a one and two dam configuration related to maximizing flow release options vs. more flexible turbine system alternatives.

s. The impacts of anticipated operation flow release schedules on the aquatic system during a critical low water period.

Terrestrial Studies

The ongoing wildlife studies are providing the basis upon which impact assessment and mitigation planning take place. We believe the present studies need to be related to habitat value. Population estimates, by themselves, are often unreliable indicators for evaluating project impacts on fish and wildlife resources. Sampling errors, cyclic fluctuations of populations, and the lack of times series data all contribute to this unreliability. The FWS believes that habitat value based upon predicted carrying capacity and human use data is a much better basis for determining mitigation requirements. However, consideration of impacts of a project directly to fish and wildlife populations should not be foreclosed. Population information can be an important supplement in fish and wildlife mitigation planning.

We support the species specific mitigation planning based upon the National Enviromental Policy Act guidelines (i.e., to first try to avoid any adverse impacts, then if that is not possible, to minimize, etc.). Maximum efforts should be put forth to avoid adverse impacts to moose, caribou, brown bear, black bear, gray wolf, Dall sheep, beaver, pine marten, bald eagle, golden eagle, and trumpeter swan. We consider these wildlife species as having high public interest, economic value, and ecological significance in terms of tracking project-related impacts to habitat values.

Additional terrestrial impacts and mitigation investigations should examine:

1. disposal of material excavated at the Devil Canyon saddledam.

2. Procedures and evaluation of the potential and practicality of disturbed area rehabilitation.

3. Viability of prescribed burning in the upper Susitna basin to compensate for moose habitat losses evaluated through an examination of Bureau of Land Management burns, historic burns, and enclosure studies. Potential areas of low habitat value which could be enhanced through burning should be identified. Areas of interest should include sites which presently have low or declining numbers of moose and good public access, and it can be established that habitat manipulation, such as prescribed burning, would increase habitat value.

4. Anticipated project-related changes to the riparian vegetation from Devil Canyon to Talkeetna and downstream from Talkeetna should be evaluated with consideration being given to the benefits or drawbacks of accelerating, decelerating, or maintaining the existing conditions.

5. Temporal use of the Jay Creek Dall sheep mineral lick should be documented. The chemical composition of the mineral lick would need to be determined and identical artifical blocks set out experimentally if inundation of the mineral lick would be unavoidable at the time it is normally used.

Aquatic and Terrestrial Studies

We recognize that on a large project such as the Susitna hydroelectric project, study components are usually compartmentalized. By this method, a complex problem becomes manageable. However, by compartmentalizing, a large burden is placed on coordination. The pieces of the puzzle must be constantly monitored to assure that they will fit together at the end of the process. We are concerned that the present system of having separate subcontractors writing the aquatic and terrestrial components of the FERC license application Exhibit E and the scheduling constraints placed upon these subcontractors will not allow for a thorough analysis of the interrelationship of the aquatic and terrestrial studies.

Additional aquatic and terrestrial impacts and mitigation considerations should be examined.

1. Changes in the existing ice patterns and reliable predictions of what these patterns would be with the project must be provided to allow a full assessment of potential impacts to the fish and wildlife resources. The following information would aid in an evaluation of project ice-related reservoir impacts.

    a. The timing of formation, extent, thickness, and time of breakup of reservoir ice. This would need to be related to potential wildlife reservoir crossing sites, such as Watana Creek for caribou.

    b. The composition and physical characteristics of the reservoir shoreline and drawdown zones and expectations for ice shelving.

The following information would aid in an evaluation of project ice-related impacts downstream from Devil Canyon:

    a. the timing of formation, extent, thickness, and time of breakup of ice vs. a range of water releases and winter conditions. Evaluation of this information should then be directed toward: what would be the impact on beaver, moose, salmon utilization of the mainstream, grayling and other resident fishery use of the mainstream, the extent and impact of ice fog conditions on riparian vegetation.

    b. The extent to which ice functions in channel formation and modification and predicted changes in this role.

    c. The pre-project importance of ice as an influence in habitat changes and anticipated post-project conditions.

2. Impacts of the project on users of fish and wildlife resources, such as:

    a. commercial fishery use;

    b. big game and fishing professional guides;

    c. subsistence use;

    d. trappers;

e. river guides;

f. winter access across the Susitna River; and

g. increased fish and wildlife user population in the railbelt.

3. The interrelationship between potential impacts to and mitigation options for salmon and wildlife species dependent upon aquatic habitats, such as beaver, moose, shorebirds, and black and brown bears.

4. Adjustments to the Watana reservoir filling schedule to minimize impacts to fish and wildlife resources such as salmon, grayling, caribou, and moose.

5. Quantification of aquatic and terrestrial habitat to be inundated due to the proposed dam height and what an array of lower dam heights would mean in terms of lessening habitat losses.

6. Magnitude, duration, and frequency of occurrence of daily fluctuations and their impacts on fish and wildlife resources with both a one and two dam system.

7. Disposal of material excavated from tailrace and power tunnels, saddledam and general dam construction and potential uses.

8. Impacts of the construction village, permanent village, and alternatives to the proposed system to minimize adverse fish and wildlife resources.

9. Timing restrictions to minimize adverse impacts due to access road, transmission lines, and dam construction.

10. The impacts due to construction and maintenance of the transmission lines and access road need to be fully evaluated. This should include a complete fish and wildlife impact assessment of borrow areas and access to these sites.

11. Minimizing fish and wildlife impacts through proper timing of woody material removal in the impoundment areas. Consideration needs to be given to acceptable methods of disposal of this material.

12. Handling of hazardous materials to and at the construction sites and safety precautions.

Although we are providing information which would facilitate your project objective of submitting a license application in February 1983, we continue to urge you to defer license submittal at least until the 1982 field data can be fully evaluated. Communications between my staff and those involved in

gathering data indicate that we should expect to understand much more thoroughly the resources of the Susitna study area after this year. Mitigation planning should go forth based upon this more complete understanding of the resources and the resultant assessment of project impacts.

Sincerely,

Acting Assistant Regional Director

cc: FWS-ROES, WAES
Questin Edson/FERC
Larry Moulton/Woodward-Clyde
Robin Sener/LGL
NMFS, EPA, NPS, USGS, ADEC, AEIDC
Al Carson/ADNR
ADF&G, Hab Div., Su Hydro Studies

The preceding letter was received; responses appear below.

Aquatic Studies

We believe that many of the questions raised in your letter have been addressed in the draft license application and the license review workshop.

However, to reiterate somewhat, we recognize the need to develop a data base respective to the physio-chemical process of the Susitna River which, in turn, will allow us to predict the impact of the project.

Realizing that factor by factor analyses is insufficient to predict project aquatic impacts, a model which incorporates the factors is being developed. The model is project specific and complex. Preliminary physical data for use in the model will be included in the February 15th FERC license application. The model, however, will not be available for use until June 1983, and we expect that useful analysis will begin to be available in the fall of 1983.

With respect to the specific aquatic analytical goals mentioned in your letter, please refer to the following:

"a. Quantify the relationship between maintream discharge and the availability of fish habitat by life stage (passage, milling, spawning, rearing), in the sloughs, side channels, and mainstream."

Determination of fisheries habitat requirements, availability of said habitats, quantification, and incremental changes in habitat quantity responsive to discharge will be accomplished in the basic steps. The first is development of relationships that describe habitat suitability in terms of physical parameters. This first step is underway, and we expect those relationships to be available by June 1983 in the ADF&G habitat analysis report. The second step will be to use the aquatic habitat model to predict the changes in habitat availability with respect to various project operating scenarios.

"b. Assess the interrelationship of the Susitna River to its tributaries in regard to fishery habitat requirements vs. life stage."

We recognize the significance of the mainstem Susitna River to provide for migration and rearing of tributary bound or spawned fish. Efforts are underway to further refine our understanding of mainstem utilization.

"c. Quantify the relationshp between an array of flow regimes and fish habitat downstream of Talkeetna throughout the year."

We have not embarked on a program to establish the relationship of flow regimes and habitat availability below Talkeetna, although physical data has been collected below Talkeetna. Impact assessment has been conducted on an area priority basis. The highest priority areas are those within the impoundment zone. The second priority area is that between Devil Canyon and Talkeetna. The lowest priority area is that below Talkeetna. To date, investigations related to the area up river of Talkeetna have not indicated a need to rigorously assess aquatic impacts below Talkeetna. If, however, it becomes apparent that impacts below Talkeetna may be significant,

that area too will be rigorously investigated.

"d. Identify the source, flow, chemical and temperature characteristics of upwelling water in the sloughs and their relationship to mainstream conditions throughout the year. This should include an evaluation of the influence of ice cover on the relationship between the mainstream and the sloughs."

The relationships between mainstream conditions and slough upwelling waters have always been recognized as being potentially significant. To define that relationship, ground water studies have been initiated in representative sloughs. Ground water observation wells indicate that the upwelling in the sloughs, which is necessary for egg incubation, is caused by ground water flow from the uplands and from the mainsteam Susitna. The higher permeability of the valley bottom sediments (sand-gravel-cobble-alluvium) compared with the till mantle and bedrock of the valley sides indicates that the mainstem Susitna River is the major source of ground water inflow in the sloughs. Preliminary estimates of the travel time of the ground water from the mainstem to the sloughs indicate a time on the order of about six months.

We also recognize that ice cover on the mainstem will influence ground water hydraulics, for example, when there is an increased stage due to ice cover.

In addition, ground water wells have been equipped with thermistor strings and piezometers to monitor temperature and pressure. The dissolved oxygen content of these ground waters is also periodically determined.

"e. Baseline surface and intergravel temperature data sufficient to describe the annual thermal regimes of the maintream river, side channels, and sloughs above Talkeetna. The relationship of these three river components must be established to allow realistic assessment of potential project impacts."

Temperature data, especially as it relates to salmonid habitat, is being gathered. Surface and intergravel water temperatures will be monitored both instantaneously and continuously.

"f. The relationship between ambient and potential project-caused temperature conditions and salmon embryo survival and rate of development."

This relationship is currently being investigation by U.S. Fish and Wildlife Services at the Anchorage research facilities. Chum and sockeye salmon eggs from Susitna River slough are being incubated at four thermal regimes including one that mimics a representative slough. Development rates are followed, noted, and compared to the in situ development.

"g. The viability of slough modifications to increase fishery habitat needs to be demonstrated."

There are plans to conduct a slough modification demonstration project this year. This program will help ascertain whether the types of slough modification that have been proposed to date are viable.

"h. The long range implications of proposed project flows vs. natural flows and potential habitat maintenance flows in terms of possible slow loss of sloughs, and loss of flushing flows. This should take into consideration long term one dam and two dam configurations."

The Power Authority has partially funded the U.S. Geological Survey to conduct sediment transport studies on the Susitna, Chulitna, and Talkeetna Rivers. The study will be entering its third year this year. We envision that the data from the study will enable us to model bedload and sedimentation processes, none of which may impact slough habitats. However, since most of the sediment contribution to the sloughs is from sources other than the Susitna, emphasis will be placed on developing flushing criteria. This criteria will be based on known physical relationships related to water borne transport of sediments and other pertinent data specific to the project.

"i. Salmon enhancement potential above Devil Canyon without the Susitna project, with the Susitna project, and the impacts of any program to establish salmon in the upper river on existing fisheries, particularly grayling. Consideration should be given to potential conflicts between mitigation options to offset project-caused losses to grayling vs. salmon."

The Alaska Department of Fish and Game's Fisheries Enhancement, Rehabilitation and Development (FRED) Division is, at the direction of the State Legislature, preparing a study which addresses this issue. We understood a draft study has been completed and will be finalized by February 1983. The study concludes that there is a potential for salmon enhancement in the upper Susitna drainage by either construction of a fish pass to provide for migration to the upper basin or by establishment of a hatchery. While technically feasible, the fishpass scheme is not cost effective.

The hatchery scenario envisions propagation of sockeye, chum, king, and coho salmon for release into Lake Louise or Susitna.

The study also addresses the impact of this program on existing resident fisheries resources. Apparently, the preliminary study indication is that the impact may not be significant.

"j. The potential to establish/expand the salmon fishery between the Devil Canyon and Watana dam sites in the absence of a Devil Canyon development."

There is the potential for increase of the salmon escapement above Devil Canyon with a Watana only project. ADF&G has observed that king salmon have successfully negotiated Devil Canyon during periods of lower flows in 1982, chinook salmon spawned at the mouth of Cheechako Creek (RM 152.5), and in an unnamed creek (RM 156.8), both of which are above Devil Canyon.

"k. Within and out-of-basin opportunities to offset losses to fisheries such as stream stocking, lake fertilization, extension of existing fisheries, and increasing public fishing access and opportunities."

Ideally, the Power Authority will try to confine mitigation for fisheries losses to within the basin. One measure that has been proposed is the stocking of barren lakes within the project area with grayling to offset losses that may be realized when tributary spawning habitat in the reservoir is inundated.

"l. Extent of dewatering between the Devil Canyon dam and its powerhouse and associated fishery impacts, and mitigation options."

No flow supplementation will be provided immediately below the dam. Depending on backwater effects, this will result in a dry channel for approximately 3,300 feet below Devil Canyon dam. The gradient below the dam is quite steep and the bed is composed of coarse substrates. To provide a flow will result in insignificant fisheries habitat at a substantial capital cost.

"m. Pre- and post-project nitrogen levels in Devil Canyon and impacts."

Nitrogen supersaturation is a naturally occurring phenomenon on the Susitna River. Since 1981, the Power Authority's contractors have been collecting data on gas saturation in the Devil Canyon area. Preliminary relationships have been developed that relate dissolved gas saturation to discharge and decay rates to the distance downstream from Devil Canyon.

Gas supersaturation resultant of the project will be minimized by virtually eliminating spills through reservoir management. Only significant flood events (greater than a once in 50-year occurrence) would necessitate spilling over spillways. It is proposed that all other releases be through fixed cone valves, which have been shown to be effective in preventing gas supersaturation.

"n. Behavioral impacts related to changes in flows, temperature, and chemical composition of the Susitna River due to the proposed project."

Behavioral response to changes in the aquatic environment will be investigated in conjunction with the fisheries modeling effort.

"o. The impact of changes in winter flows, turbidity, chemical composition, salinity levels, and timing and extent of ice formation and break-up on the estuary."

To date, the most intensive impact investigations have been focused on the area above Talkeetna realizing that project impacts are substantially attenuated at the estuary. However, from these investigations, a preliminary assessment of estuarine impacts have been made and are discussed in the license application. If it becomes apparent that there may be significant impacts in the estuary, these will be investigated.

"p. The viability of a reservoir fishery needs to be evaluated through an assessment of: predicted reservoir temperatures, turbidity, chemical composition and anticipated primary productivity, available spawning habitat, potential for establishing spawning habitat, potential for establishing spawning habitat, and the relationship of a reservoir fishery to established tributary fisheries."

Reservoir modeling, with respect to temperature and water surface fluctuation, is currently underway. Sedimentation processes, as they relate to reservoir turbidity, have also been investigated. Current assessment indicates that tributary spawning habitat subject to inundation by the Watana reservoir may be lost for that purpose. There may be changes in species composition. The Devil Canyon reservoir does appear suitable for supporting a reservoir fishery. The reservoir areas presently support grayling whitefish, longnose sucker, burbot, and Dolly Varden.

"q. The timing, extent, and seasonal variability of daily peaking which would occur with either a one or two dam system and the associated aquatic impacts."

It is currently proposed that Watana alone would be base loaded. With the two dam scenario, Watana would be peaked and Devil Canyon base loaded. However, consideration of peaking with Watana only should not be ruled out. To date, there has not been an assessment of aquatic impacts associated with daily peaking, we expect that, if necessary, the impacts of peaking scenarios could be investigated by means of the aquatic modeling effort.

"r. Hydraulic turbine configurations with both a one and two dam configuration related to maximizing flow release options vs. more flexible turbine system alternatives."

The Watana plant output may vary from zero, with the units at standstill or at spinning reserve, to approximately 1,200 MW when all six units are operating under maximum output at maximum head. The load following requirements of the plant results in widely varying loading but because of the multiple unit installation, the total plant efficiency varies only slightly.

The Devil Canyon plant output may vary from zero to 700 MW with all four units operating at maximum output. The combined plant efficiency varies with output and number of units operating. As with Watana, the plant efficiency varies only slightly with loading due to the load following capabilities of multiple units.

"s. The impacts of anticipated operation flow release schedules on the aquatic system during a critical low water period."

It is anticipated that the project will always be operated to provide a minimum flow for fisheries. It is currently envisioned the releases will maintain Gold Creek flow at 12,000 cfs during the month of August. This is a preliminary figure and may be adjusted, along with other monthly flows, during the course of design and licensing.

Terrestrial Studies

Where possible, wildlife impact assessments at mitigation will be based on habitat requirements for the species in questions.

In response to your point related to mitigation planning based on the National Environmental Policy Act (NEPA) guidelines, please find enclosed The Susitna Hydroelectric Project Fish and Wildlife Policy (1982). The policy is consistent with the NEPA hierarchic approach to mitigation of project impacts.

Your specific points related to additional terrestrial impacts and mitigation are addressed, as follows:

"1. Disposal of material excavated at the Devil Canyon saddledam."

Material excavated at the Devil Canyon saddledam will be disposed of in depleted Borrow Site G. During operations, Borrow Site G will be approximately 450 feet below the pool elevation.

"2. Procedures and evaluation of the potential and practicality of disturbed area rehabilitation."

Initial procedures to rehabilitate disturbed areas are based on past experience on similar projects in Alaska and primarily confined to replacement of topsoil, grading, fertilization, scarification, and seeding (if necessary). It is envisioned that site specific rehabilitation effort will continue for three growing seasons. Within that period of time, there should be ample time to assess the practicality of the effort and effect necessary modification.

"3. Viability of prescribed burning in the upper Susitna basin to compensate for moose habitat losses evaluated through an examination of Burueau of Land Management (BLM) burns, historic burns, and enclosure studies. Potential areas of low habitat value could be enhanced through burning should be identified. Areas of interest should include sites which presently have low or declining numbers of moose and good public access, and it can be established that habitat manipulation, such as prescribed burning, would increase habitat value."

Efforts to assess past burns, studies, and the proposed BLM Alphabet Hills burn are underway as is the identification of sites and quantification of acreage required.

"4. Anticipated project-related changes to the riparian vegetation from Devil Canyon to Talkeetna and downstream from Talkeetna should be evaluated with consideration being given to the benefits or drawbacks of accelerating, decelerating, or maintaining the existing conditions."

These effects have been evaluated and are discussed in Chapter 3 of the license application.

"5. Temporal use of the Jay Creek Dall sheep mineral lick should be documented. The chemical composition of the mineral lick would need to be determined and identical artificial blocks set out experimentally if inundation of the mineral lick would be unavoidable at the time it is normally used."

Studies currently being conducted by ADF&G will determine both temporal and spatial use of the lick. Soil samples will be collected and analyzed in 1983. This information will be utilized in future mitigation planning.

Aquatic and Terrestrial Studies

"We recognize that on a large project such as the Susitna hydroelectric project, study components are usually compartmentalized. By this method, a complex problem becomes manageable. However, by compartmentalizing, a large burden is placed on coordination. The pieces of the puzzle must be constantly monitored to assure that they will fit together at the end of the process. We are concerned that the present system of having separate subcontractors writing the aquatic and terrestrial components of the FERC license application Exhibit E and the scheduling constraints placed upon these subcontractors will not allow for a thorough analysis of the interrelationship of the aquatic and terrestrial studies."

Extensive coordination activities have occurred between all contractors during preparation of the FERC license application.

"Additional aquatic and terrestrial impacts and mitigation considerations should be examined.

1. Changes in the existing ice patterns and reliable predications of what these patterns would be with the project must be provided to allow a full asseesment of potential impacts to the fish and wildlife resources. The following information would aid in an evaluation of project ice-related reservoir impacts.

   a. The timing of formation, extent, thickness, and time of breakup of reservoir ice. This would need to be related to potential wildlife reservoir crossing sites, such as Watana Creek for caribou.

   b. The composition and physical characteristics of the reservoir shoreline and drawdown zones and expectations for ice shelving.

   The following information would aid in an evaluation of project ice-related impacts downstream from Devil Canyon:

   a. The timing of formation, extent, thickness, and time of breakup of ice vs. a range of water releases and winter conditions. Evaluation of this information should then be directed toward: what would be the impact on beaver, moose, salmon utilization of the mainstream, grayling and

other resident fishery use of the mainstream, the extent and impact of ice fog conditions on riparian vegetation.

b. The extent to which ice functions in channel formation and modification and predicted changes in this role.

c. The pre-project importance of ice as an influence in habitat changes and anticipated post-project conditions."

The Power Authority's contractors have used state-of-the-art methodology in ice modeling studies. It is not possible, utilizing currently available technology, to supply all of the information requested. As much information as possible to predict is included in the license application. This information has been related to changes in habitat and resulting impacts to fisheries and wildlife.

"2. Impacts of the project on users of fish and wildlife resources, such as:

a. commercial fishery use;
b. big game and fishing professional guides;
c. subsistence use;
d. trappers;
e. river guides;
f. winter access across the Susitna River; and
g. increased fish and wildlife user population in the railbelt."

Information on b, c, d, e, and g are discussed in Chapter 5 of the license application concerning socioeconomic impacts on fish and wildlife resource users. Effects on the commercial fishery are discussed in Chapter 3; effects on winter access across the Susitna River are discussed in Chapter 2.

"3. The interrelationship between potential impacts to and mitigation options for salmon and wildlife species dependent upon aquatic habitats, such as beaver, moose, shorebirds, and black and brown bears."

These interrelationships have been addressed in both the impacts and mitigation sections of Chapter 3.

"4. Adjustments to the Watana reservoir filling schedule to minimize impacts to fish and wildlife resources such as salmon, grayling, caribou, and moose."

Filling of the Watana reservoir has been scheduled to provide power by 1993. Clearing of the reservoir will be conducted in a manner and within a schedule to minimize impacts to fish and wildlife.

"5. Quantification of aquatic and terrestrial habitat to be inundated due to the proposed dam height and what an array of lower dam heights would mean in terms of lessening habitat losses.

6. Magnitude, duration, and frequency of occurrence of daily fluctuations and their impacts on fish and wildlife resources

with both a one and two dam system."

The above two subjects are discussed in Chapter 10 of the Exhibit E in the license application. They were also in the Development Selection Report.

"7. Disposal of material excavated from tailrace and power tunnels, saddledam and general dam construction, and potential uses.

8. Impacts of the construction village, permanent village, and alternatives to the proposed system to minimize adverse fish and wildlife resources.

9. Timing restrictions to minimize adverse impacts due to access road transmission lines, and dam construction."

These subjects are all discussed in Chapter 3 of Exhibit E of the license application.

"10. The impacts due to construction and maintenance of the transmission lines and access road need to be fully evaluated. This should include a complete fish and wildlife impact assessment of borrow areas and access to these sites."

These issues have been considered and addressed in the license application. Further consideration will be given to fish and wildlife impacts during final alignment of the transmission lines and access road. Restoration of those borrow areas above the reservoir pool will occur.

"11. Minimizing fish and wildlife impacts through proper timing of woody material removal in the impoundment areas. Consideration needs to be given to acceptable methods of disposal of this material.

12. Handling of hazardous materials to and at the construction sites and safety precautions."

These issues are addressed in the mitigation plan of Chapter 3 of Exhibit E.

> "Although we are providing information which would facilitate your project objective of submitting a license application in February 1983, we continue to urge you to defer license submittal at least until the 1982 field data can be fully evaluated. Communications between my staff and those involved in gathering data indicate that we should expect to understand much more thoroughly the resources of the Susitna study area after this year. Mitigation planning should go forth based upon this more complete understanding of the resources and the resultant assessment of project impacts."

Mitigation planning will continue.

September 2, 1982

Mr. Claudio Arenas
Planning Director
Matanuska-Susitna Borough
Box B
Palmer, Alaska 99645

Dear Mr. Arenas: Susitna Hydroelectric Project

During the second quarter of this year, the Alaska Power Authority circulated the draft Feasibility Report on the Susitna Hydroelectric Project and numerous supporting documents to State, Federal and local agencies with interest in the project. This circulation included virtually all of the data and analysis done to that date during the study. Currently, efforts are proceeding towards completing the first phase of planning efforts and submitting a license application to the Federal Energy Regulatory Commission in the first quarter of 1983.

During the remaining time before filing, the Susitna study team will be refining the plans presented earlier this year and continuing to evolve proposed mitigation plans for project impacts. This effort will include requesting another review of the project's Environmental Report, which is the draft of the FERC license application Exhibit E, by your agency. We will be circulating the draft in mid-November of this year. After filing with and acceptance of the application by FERC, there will be another opportunity to comment on the application, including Exhibit E.

At this time we would appreciate any input into the continued plan development you could provide. In particular, we request your guidance with regard to project impacts and the mitigation opportunities your agency would recommend. These comments will be helpful both in identifying and addressing the most important areas of concern in the next draft Exhibit E and in documenting agency comments and recommendations before FERC. In order to address these comments in the draft, it would be most helpful to have them by the first of October.

As you know, the planning process is dynamic. Current efforts are focused on project access, transmission corridors and project operation alternatives. Although this information has not yet been distributed for comment, it will be included in the Exhibit E draft.

We welcome your comment on all areas of the project, but, in accordance with Section 4.41 of the FERC regulations, we are particularly interested in your comments with regard to land use and socio-economic issues. In these areas, we would like to address your concerns on potential impacts and mitigation measures which can be included in project plans.

Your continued support and participation in the development of the Susitna project license application is greatly appreciated.

Very truly yours,

SIGNED

Eric P. Yould
Executive Director

EPY:mb

cc: Mr. J. Hayden

September 2, 1982

Director of Planning
Fairbanks-North Star Borough
520 5th Avenue
P.O. Box 1267
Fairbanks, Alaska 99701

Dear Sir: Susitna Hydroelectric Project

During the second quarter of this year, the Alaska Power Authority circulated the draft Feasibility Report on the Susitna Hydroelectric Project and numerous supporting documents to State, Federal and local agencies with interest in the project. This circulation included virtually all of the data and analysis done to that date during the study. Currently, efforts are proceeding towards completing the first phase of planning efforts and submitting a license application to the Federal Energy Regulatory Commission in the first quarter of 1983.

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We welcome your comment on all areas of the project, but, in accordance with Section 4.41 of the FERC regulations, we are particularly interested in your comments with regard to socioeconomic issue. In these areas, we would like to address your concerns on potential impacts and mitigation measures which can be included in project plans.

Your continued support and participation in the development of the Susitna project license application is greatly appreciated.

Very truly yours,

SIGNED

Eric P. Yould
Executive Director

EPY:mb

cc: Mr. J. Hayden

September 2, 1982

Mr. John E. Cook
Regional Director
Alaska Region
National Park Service
450 West 5th Avenue
Anchorage, Alaska 99501

Dear Mr. Cook: Susitna Hydroelectric Project

During the second quarter of this year, the Alaska Power Authority circulated the draft Feasibility Report on the Susitna Hydroelectric Project and numerous supporting documents to State, Federal and local agencies with interest in the project. This circulation included virtually all of the data and analysis done to that date during the study. Currently, efforts are proceeding towards completing the first phase of planning efforts and submitting a license application to the Federal Energy Regulatory Commission in the first quarter of 1983.

During the remaining time before filing, the Susitna study team will be refining the plans presented earlier this year and continuing to evolve proposed mitigation plans for project impacts. This effort will include requesting another review of the project's Environmental Report, which is the draft of the FERC license application Exhibit E, by your agency. We will be circulating the draft in mid-November of this year. AFter filing with and acceptance of the application by FERC, there will be another opportunity to comment on the application, including Exhibit E.

At this time we would appreciate any input into the continued plan development you could provide. In particular, we request your guidance with regard to project impacts and the mitigation opportunities your agency would recommend. These comments will be helpful both in identifying and addressing the most important areas of concern in the next draft Exhibit E and in documenting agency comments and recommendations before FERC. In order to address these comments in the draft, it would be most helpful to have them by the first of October.

As you know, the planning process is dynamic. Current efforts are focused on project access, transmission corridors and project operation alternatives. Although this information has not yet been distributed for comment, it will be included in the Exhibit E draft.

We welcome your comment on all areas of the project, but, in accordance with Section 4.41 of the FERC regulations, we are particularly interested in your comments with regard to historical and archeological, recreation, aesthetics, and resources. In these areas, we would like to address your concerns on potential impacts and mitigation measures which can be included in project plans.

Your continued support and participation in the development of the Susitna project license application is greatly appreciated.

Very truly yours,

SIGNED

Eric P. Yould
Executive Director

EPY:mb

cc: Mr. J. Hayden
Mr. Larry Wright

September 2, 1982

Colonel Neil E. Saling
District Engineer
U.S. Army Corps of Engineers
P.O. Box 7002
Anchorage, Alaska 99510

Dear Colonel Saling: Susitna Hydroelectric Project

During the second quarter of this year, the Alaska Power Authority circulated the draft Feasibility Report on the Susitna Hydroelectric Project and numerous supporting documents to State, Federal and local agencies with interest in the project. This circulation included virtually all of the data and analysis done to that date during the study. Currently, efforts are proceeding towards completing the first phase of planning efforts and submitting a license application to the Federal Energy Regulatory Commission in the first quarter of 1983.

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As you know, the planning process is dynamic. Current efforts are focused on project access, transmission corridors and project operation alternatives. Although this information has not yet been distributed for comment, it will be included in the Exhibit E draft.

We welcome your comment on all areas of the project, but, in accordance with Section 4.41 of the FERC regulations, we are particularly interested in your comments with regard to water quality . In these areas, we would like to address your concerns on potential impacts and mitigation measures which can be included in project plans.

Your continued support and participation in the development of the Susitna project license application is greatly appreciated.

Very truly yours,

SIGNED

Eric P. Yould
Executive Director

EPY:mb

cc: Mr. J. Hayden

September 2, 1982

District Chief
U.S. Geological Survey
1515 E. 13th Avenue
Anchorage, Alaska 99501

Dear Sir: Susitna Hdyroelectric Project

During the second quarter of this year, the Alaska Power Authority circulated the draft Feasibility Report on the Susitna Hyrdoelectric Project and supporting documents to State, Federal and local agencies with interest in the project. This circulation included virtually all of the date and analysis done to that date during the study. Currently, efforts are proceeding towards completing the first phase of planning efforts and submitting a license application to the Federal Energy Regulatory Commission in the first quarter of 1983.

During the remaining time before filing, the Susitna study team will be refining the plans presented earlier this year and continuing to evolve proposed mitigation plans for the project impacts. This effort will include requesting another review of the project's Environmental Report, which is the draft of the FERC license application Exhibit E, by your agency. We will be circulating the draft in mid-November of this year. After filing with and acceptance of the application by FERC, there will be another opportunity to comment on the application, including Exhibit E.

At this time we would appreciate any input into the continued plan development you could provide based on the materials which you have received. These comments will be helpful both in identifying and addressing the most important areas of concern in the next draft Exhibit E. Your continued support and participation in the development of the Susitna project license application is greatly appreciated.

Very truly yours,

SIGNED

Eric P. Yould
Executive Director

cc: John Hayden

September 2, 1982

Ms. Wendy Wolt
Office of Coastal Management
Division of Policy Development and Planning
Pouch AP
Juneau, Alaska 99811

Dear Ms. Wolt: Susitna Hdyroelectric Project

During the second quarter of this year, the Alaska Power Authority circulated the draft Feasibility Report on the Susitna Hyrdoelectric Project and supporting documents to State, Federal and local agencies with interest in the project. This circulation included virtually all of the date and analysis done to that date during the study. Currently, efforts are proceeding towards completing the first phase of planning efforts and submitting a license application to the Federal Energy Regulatory Commission in the first quarter of 1983.

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Very truly yours,

SIGNED

Eric P. Yould
Executive Director

cc: John Hayden

September 2, 1982

Mr. David Haas
State-Federal Assistance Coordinator
State of Alaska
Office of the Governor
Division of Policy Development and Planning
Pouch AW
Juneau, Alaska 99811

Dear Mr. Haas: Susitna Hdyroelectric Project

During the second quarter of this year, the Alaska Power Authority circulated the draft Feasibility Report on the Susitna Hyrdoelectric Project and supporting documents to State, Federal and local agencies with interest in the project. This circulation included virtually all of the date and analysis done to that date during the study. Currently, efforts are proceeding towards completing the first phase of planning efforts and submitting a license application to the Federal Energy Regulatory Commission in the first quarter of 1983.

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Very truly yours,

SIGNED

Eric P. Yould
Executive Director

cc: John Hayden

September 2, 1982

Mr. Richard J. Vernimen
Acting District Manager
U.S. Bureau of Land Management
4700 E. 72nd Avenue
Anchorage, Alaska 99507

Dear Mr. Vernimen: Susitna Hydroelectric Project

During the second quarter of this year, the Alaska Power Authority circulated the draft Feasibility Report on the Susitna Hydroelectric Project and numerous supporting documents to State, Federal and local agencies with interest in the project. This circulation included virtually all of the data and analysis done to that date during the study. Currently, efforts are proceeding towards completing the first phase of planning efforts and submitting a license application to the Federal Energy Regulatory Commission in the first quarter of 1983.

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As you know, the planning process is dynamic. Current efforts are focused on project access, transmission corridors and project operation alternatives. Although this information has not yet been distributed for comment, it will be included in the Exhibit E draft.

We welcome your comment on all areas of the project, but, in accordance with Section 4.41 of the FERC regulations, we are particularly interested in your comments with regard to land use and aesthetics. In these areas, we would like to address your concerns on potential impacts and mitigation measures which can be included in project plans.

Your continued support and participation in the development of the Susitna project license application is greatly appreciated.

Very truly yours,

SIGNED

Eric P. Yould
Executive Director

EPY:mb

cc: Mr. J. Hayden
Mr. John Rego

September 2, 1982

Mr. John R. Spencer
Regional Administrator
Region X
U.S. Environmental Protection Agency
1200 6th Avenue
Seattle, Washington 98101

Dear Mr. Spencer: Susitna Hydroelectric Project

During the second quarter of this year, the Alaska Power Authority circulated the draft Feasibility Report on the Susitna Hydroelectric Project and numerous supporting documents to State, Federal and local agencies with interest in the project. This circulation included virtually all of the data and analysis done to that date during the study. Currently, efforts are proceeding towards completing the first phase of planning efforts and submitting a license application to the Federal Energy Regulatory Commission in the first quarter of 1983.

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Your continued support and participation in the development of the Susitna project license application is greatly appreciated.

Very truly yours,

SIGNED

Eric P. Yould
Executive Director

EPY:mb

cc: Mr. J. Hayden
Mr. William Riley
Mr. William Lawrence

September 2, 1982

Mr. Ernest W. Mueller, Commissioner
Department of Environmental Conservation
Pouch O
Juneau, Alaska 99811

Dear Commissioner Mueller: Susitna Hydroelectric Project

During the second quarter of this year, the Alaska Power Authority circulated the draft Feasibility Report on the Susitna Hydroelectric Project and numerous supporting documents to State, Federal and local agencies with interest in the project. This circulation included virtually all of the data and analysis done to that date during the study. Currently, efforts are proceeding towards completing the first phase of planning efforts and submitting a license application to the Federal Energy Regulatory Commission in the first quarter of 1983.

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We welcome your comment on all areas of the project, but, in accordance with Section 4.41 of the FERC regulations, we are particularly interested in your comments with regard to fish, wildlife and habitat. In these areas, we would like to address your concerns on potential impacts and mitigation measures which can be included in project plans.

Your continued support and participation in the development of the Susitna project license application is greatly appreciated.

Very truly yours,

SIGNED

Eric P. Yould
Executive Director

EPY:mb

cc: Mr. J. Hayden
Mr. Robert Martin

September 2, 1982

Mr. Michael Meehan, Director
Planning Department
Municipality of Anchorage
Pouch 6-650
Anchroage, Alaska 99502

Dear Mr. Meehan: Susitna Hydroelectric Project

During the second quarter of this year, the Alaska Power Authority circulated the draft Feasibility Report on the Susitna Hydroelectric Project and numerous supporting documents to State, Federal and local agencies with interest in the project. This circulation included virtually all of the data and analysis done to that date during the study. Currently, efforts are proceeding towards completing the first phase of planning efforts and submitting a license application to the Federal Energy Regulatory Commission in the first quarter of 1983.

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Your continued support and participation in the development of the Susitna project license application is greatly appreciated.

Very truly yours,

SIGNED

Eric P. Yould
Executive Director

EPY:mb

cc: Mr. J. Hayden

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF FISH AND GAME

333 RASPBERRY ROAD
ANCHORAGE, ALASKA 99502
344-0541

cc: S. FANCY
R. EVERITT/ESSA
I. ELLISON/WELUT
M. GRUBB/ACRES

September 10, 1982

Dr. Robin Sener
LGL, Alaska Research Associates
1577 C Street
Anchorage, AK 99501

Dear Robin,

Since I was one of the more vocal participants at the recent Adaptive Environmental Assessment workshop and was responsible for deviations from the original agenda, I thought it would be useful if I summarized my impressions of the workshop. Some background on my experience and the history of the Susitna Project wildlife studies may be helpful in understanding my perceptions.

I have been involved in a number of impact assessment programs in Alaska. Some of these such as the nuclear testing at Amchitka Island, the Trans-Alaska Pipeline and the Outer Continental Shelf Environmental Assessment Program were fairly large programs. In most cases interdisciplinary coordination among field studies was poor or after the fact. Impact statements were prepared by people who had no input into the field studies and either didn't understand the studies or received the results too late or in a form they couldn't use. The result was that decisions were made with inadequate environmental input, even though huge amounts of money were spent.

I became involved in the Susitna Project when the Corps of Engineers re-activated the project in 1974. Planning was poor and funding inadequate. As a result, in 1977, ADF&G unilaterally drew up a plan of study listing a number of specific projects and pointing out the need for interdisciplinary coordination, particularly between fish, wildlife, vegetation, hydrology, recreation, and socio-economic studies. Many of the specific projects listed were incorporated in Acres' POS in fall of 1979. However much of the interdisciplinary coordination failed to materialize. I repeatedly asked TES to provide this coordination and develop an overall study design that would integrate wildlife and vegetation studies and ensure collection of adequate hydrology and climate information. When no concrete action was taken, we made a number of requests for changes in plant ecology and climate

studies, more or less guessing what would ultimately be needed. We asked that a workshop of outside experts be held to review the plant ecology studies. We were told that these things would be taken care of in Phase II. We started holding meetings on our own to try to resolve these problems and even attempted to design vegetation and snow sampling schemes that we could implement ourselves. Most of these efforts failed due to lack of money, manpower and expertise.

In spite of these problems, I believe the program has been more successful in identifying impacts and providing environmental input into the decision making process than any other program of similar size in which I have been involved. However I felt we could do much better.

Things began to improve as we got into Phase II planning, but the planning process wasn't well organized and a number of aspects, especially those related to habitat, had not been fully resolved. It was at this point that LGL joined the project and proposed use of the AEA simulation modelling process. The workshop was the first major step in that process. While the stated objective of the AEA workshop was to develop a working model, I viewed it as a potential good first step in a systematic planning process that was badly needed regardless of whether simulation modelling is used. The model itself helped to focus the workshop, but I had some deep concerns about the modelling process as it was outlined.

The following is a partial list of issues I hoped would be addressed during the workshop and subsequent meetings.

1. Design a coordinated, interdisciplinary approach to assessing impacts on wildlife. This would provide a framework for identifying information needs and help ensure that all the pieces of information needed for a comprehensive impact assessment are collected in a form that is useable.

2. Initiate a process for reviewing the design and methodology of the plant ecology studies. The plant ecology people have received inadequate input from individuals conducting wildlife studies and the wildlife impact assessment. There have been concerns about the usefulness of some of the information collected in Phase I. We need to clarify what we want.

3. Select a habitat based approach for measuring impacts. Many of us have reservations about HEP. We needed to develop a better approach that achieved the same objectives.

4. Review on methods of handling data. We had discussed the value of using a geoprocesser for analyzing data. We needed to decide how certain types of data would be used before we could weigh costs against benefits.

5. Identify products and a timetable for ADF&G's Phase II contract. The reporting schedule in our contract became obsolete with the submission of our Phase I report.

6. Provide fresh viewpoints from individuals outside of the project. We have always been at our best when we had outside people challenging our ideas and injecting new lines of thinking.

7. Develop good working relationships. There has been a tremendous turnover in personnel in several of the participating groups. It is essential that good communications and cooperation be maintained. We had already had one counterproductive incident.

   It has been my experience that workshops are good forums for people to develop good working relationships. People develop respect for each other and an appreciation for the points of view.

The following are some of the concerns I had about the planned modelling process.

1. The quality of the model could be poor. With the short time frame, the lack of familiarity of the project by the modellers and many other workshop participants, the geographic remoteness of the modellers from the investigators after the workshop, and the lack of a specific commitment for follow up workshops, the model could end up poorly designed and filled with inadequately scrutinized data. This could lead to serious errors that would never be corrected. I felt the project warranted a more deliberate, thoughtful approach.

2. Use of a canned modelling process could result in fitting the project to the model, rather than vice versa. Any process designed to be quickly applied to a wide variety of situations is likely to be less desirable than one tailored specifically to the objectives of a single project.

3. The model could be misused. Models can be useful tools for testing ideas and examining potential relationships. However, what comes out of them is no better than what goes into them. Our knowledge of natural systems is inadequate for developing models that can make accurate predictions. The outputs need to be carefully scrutinized with full consideration of the assumptions and potential biases and errors that went into the model. I am aware of numerous cases where predictions have been blindly accepted, even by people who developed the model and should know better. I felt that the superficial treatment a model would receive in a one week workshop, combined with the tight FERC license application schedule, could lead to improper use of a very poor model.

5. The rush to have a running model by the end of a week could waste time that should be spent on planning and coordination. The schedule of the workshop dictated that people spend time digging out data. I felt this time should be spent on designing the model and interactions between people from different disciplines. It is unusual to get such a broad spectrum of expertise together

and I didn't want to waste the time. Digging out data can be better handled in small groups back at their offices.

6. The modelling process could divert attention from important impact issues. Modelling can be a very seductive process. Even skeptics can become so involved that they fail to step back and look at the entire picture. The model will address only some impact mechanisms for some species. There are many issues that the model will not address or will address only indirectly. If the model consumes too much attention these issues could be ignored.

The work shop addressed all of the issued I listed above. Some of the issues were treated only indirectly and superficially, but this was to be expected from such a large, diverse group. Overall the workshop was a very good first step. Substantial progress was made in designing an interdisciplinary approach to impact assessment. Plans were made for a subsequent meeting to review plant ecology studies. The models seem to provide a basis for a habitat based assessment while avoiding some of the problems with HEP. Once decisions are made on how habitat data will be used, we should be able to evaluate geoprocessing as a tool. I came out of the workshop with a clearer idea of what products LGL wants from ADF&G and plans were made to firm things up over the next couple of weeks. The infusion of fresh viewpoints was excellent and I think a good basis for future working relationships was formed.

My concerns about the modelling process itself remain. They were somewhat alleviated for the time being by the fact that LGL personnel seem to share some of my concerns. If we develop the models carefully, and use them properly they can be useful tools. However if we fail to document and continually remind ourselves of the assumptions and biases built into the models, if we allow ourselves to think of the model as an accurate representation of the real world, or if we fail to address impact issues not covered by the model, then the model could do more harm than good. It would be helpful if we drew up a complete list of potential impact mechanisms for each species. We should get input on this list from as many people as possible to ensure that all the issues are on the table. Then we can identify an approach to assessing each impact mechanism. Some issues can be addressed by the model and some may require a unique study design. This list would help keep us on track and put the model in proper perspective.

In summary, I was very satisfied with the workshop as a first step in a planning process. The canned AEA modelling process was tempered by LGL's awareness that the workshop had broader value than simply constructing a working model. If we continue the process with smaller more specialized meetings and lots of communication between groups, as you outlined in your closing statement, we should end up with a good impact assessment and a useful basis for mitigations planning.

Sincerely,

Karl Schneider

cc: Richard Flemming, APA

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1011 E. TUDOR RD.
ANCHORAGE, ALASKA 99503
(907) 276-3800

IN REPLY REFER TO:

WAES

24 JAN 1983

Eric P. Yould, Executive Director
Alaska Power Authority
334 West 5th Avenue
Anchorage, Alaska 99501

Dear Mr. Yould:

The Fish and Wildlife Service (FWS), as part of our overall participation in planning for and evaluating the feasibility of the Susitna hydroelectric project, has determined project area Resource Categories and corresponding mitigation goals. This has been done, in accordance with the FWS Mitigation Policy (FR Vol. 46, No. 15, 23 January 1981) and in consultation and coordination with the National Marine Fisheries Service, the Environmental Protection Agency and the Alaska Department of Fish and Game. Both agencies agree that it is appropriate and timely that guidance be provided for mitigation planning for the Susitna Hydroelectric Project.

The Alaska Department of Fish and Game had specific comments that have been addressed. They did point out that from the state or ecoregion basis, the habitat of all evaluation species is abundant. We agree, but have concluded that the habitat for those species listed in Resource Category 2 is scarce or becoming scarce, considering its historical quantity and quality from the national perspective.

Principles of the FWS Mitigation Policy

Four Resource Categories are described in the FWS Mitigation Policy, with corresponding mitigation planning goals of decreasing stringency. Designation of project area fish and wildlife habitat in Resource Categories serves as a guide to insure that the level of mitigation recommended by FWS will be consistent with the fish and wildlife resource values involved. It is within this framework that the FWS will evaluate project impact and formulate mitigation recommendations. Table 1 summarizes FWS Mitigation Policy Resource categories and their goals.

Table 1. Resource Categories and Mitigation Planning Goals

Resource category	Designation criteria	Mitigation planning goal
1	Habitat to be impacted is of high value for evaluation species and is unique and irreplaceable on a national basis or in the ecoregion section.	No loss of existing habitat value.
2	Habitat to be impacted is of high value for evaluation species and is relatively scarce or becoming scarce on a national basis or in the ecoregion section.	No net loss of in-kind habitat value.
3	Habitat to be impacted is of high to medium value for evaluation species and is relatively abundant on a national basis.	No net loss of habitat value while minimizing loss of in-kind habitat value.
4	Habitat to be impacted is of medium to low value for evaluation species.	Minimize loss of habitat value.

Taken from FWS Mitigation Policy (FR Vol. 46, No. 15, 23 January 1981).

Focus of the FWS Policy on Habitat Value

Specific guidance the FWS wishes to provide is in mitigating losses of habitat value. Predicted carrying capacity or population data by themselves are often unreliable indicators for evaluating project impacts upon fish and wildlife resources. Causes include sampling errors, cyclic fluctuations, and poorly defined life requisites for the species involved. Therefore, the FWS feels that habitat value, based upon predicted carrying capacity, current and historical use, and consideration of the influence of disturbance on capability of the habitat to support fish and wildlife populations, is the appropriate concept to be used in determining mitigation requirements.

Although the primary focus is on fish and wildlife habitat value losses, the policy covers impacts to fish and wildlife populations and the human uses thereof. In many cases, compensation of habitat value losses should result in replacement of fish and wildlife populations and human uses. But where it does not, the Service will recommend appropriate additional means and measures.

As stated in the FWS Mitigation Policy, specific ways to achieve the mitigation goal when loss of habitat value is unavoidable include, "(1) physical modification of replacement habitat to convert it to the same type lost; (2) restoration or rehabilitation of previously altered habitat; (3) increased management of similar replacement habitat so that the in-kind value of lost habitat is replaced, or (4) a combination of these measures. By replacing habitat value losses with similar habitat values, populations of species associated with that habitat may remain relatively stable in the area over time."

The mitigation goal of in-kind replacement of lost habitat is not always achievable. Further, opposition to a project on that basis alone may not be warranted. In such cases there are two instances when deviation from this goal is appropriate. These are: "When (1) different habitats and species available for replacement are determined to be of greater value than those lost, or (2) in-kind replacement is not physically or biologically attainable in the ecoregion section. In either case, replacement involving different habitat kinds may be recommended provided that the total value of the habitat lost is recommended for replacement."

Evaluation Species

Determination of Resource Categories is based upon the habitat value and relative abundance of species selected for evaluation. The choice of evaluation species will, ultimately, have a prominent role in determining the extent and type of mitigation achieved in a project.

Two basic approaches to selecting project impact evaluation species can be taken. First, species with high public interest, subsistence or economic value may be selected. The second approach would entail the selection of species which would provide a broader ecological perspective of an area. In actual practice, species are selected to represent social, economic, subsistence and broad ecological aspects.

It should be recognized that the evaluation species will, to a large extent, define the geographic scope of both the direct and indirect fish and wildlife resource impacts resulting from a project. Direct impacts to species such as chinook salmon, brown bear, and caribou can have indirect impacts to others with which they have an interdependent relationship.

Nineteen species have been selected by the FWS to determine the habitat mitigation Resource Categories for the Susitna Hydroelectric Project (Table 2). We consider these species as having high public interest, economic and/or subsistence value, and ecological significance[1/]. Brief descriptions of these species as they relate to the project are provided in the Appendix.

The species selected to establish the habitat mitigation Resource Categories need not completely correspond to the list of species chosen to quantify project impacts and mitigation. The species selected for impact assessment and mitigation planning by the APA, through its consultants, and coordinated with

1/ The Bald Eagle meets several of these tests but was not included as an evaluation species for mitigation purposes because it is specifically protected by the federal Bald Eagle Protection Act.

the resource agencies, includes all of the FWS evaluation species. Study of those species other than the FWS evaluation species should continue since they provide confidence in predictions of project impacts and potential mitigation alternatives. For example, consideration of high public interest and economic value led to the selection of the golden eagle and the pine marten as evaluation species. However, our ability to directly monitor project impacts through these species is questionable. Monitoring of small mammal and songbird populations dependent upon forested habitat, lends additional confidence to predictions of impact on the evaluation species.

Resource Category Determination

The resource category determination was made by the FWS in consideration of the relative abundance on a national basis of the evaluation species habitat and the value of their habitat to be impacted in the pre-project status.

For purposes of this document the area of direct project impact is defined as the area to be disturbed or inundated by project features such as the dams, reservoirs, access roads and transmission line; the flood plain of the Susitna River from the lower dam to Talkeetna; and the riparian area below Talkeetna. Species using each area are directly impacted. Species dependent on directly impacted species are indirectly impacted.

The criteria used for determining evaluation species habitat relative scarcity or abundance from the national perspective are: (a) the historical range and habitat quality of the evaluation species, and (b) the status of that habitat today. If a significant reduction in extent or quality of habitat has occurred for an evaluation species, that habitat is considered scarce or becoming scarce. If that is not the case, the habitat is considered abundant.

The lack of ecosystem diversity in arctic and subarctic environments is widely recognized (Kormandy 1969, Whittaker 1975). Losses to one species will quickly reverberate through the ecosystem due to lower stability found in less diverse ecosystems (Kormandy 1969). Buffering of adverse impacts upon one species by others does not occur to the extent found, for instance, in the tropical and temperate zones. For example, losses to moose will lead to increased predation pressure on caribou eventually leading to reductions in populations of caribou, wolves, black bears, and brown bears.

Most of the evaluation species (e.g., moose, caribou, wolf, Dall sheep, brown bear, black bear, and the five salmon species) are dependent upon large habitat areas as well as upon specific habitat types which receive seasonal use. This necessitates long term monitoring and causes difficulty in clearly evaluating impacts and formulating mitigation measures. As a result, seemingly minimal habitat losses could severely impact a population throughout the upper Susitna basin.

'The FWS has placed the habitat of the evaluation species in the following resource category designations 2/:

Resource Category 2	Resource Category 3	Resource Category 4
Caribou	Moose	Dolly Varden
Brown bear	Dall sheep	
Gray wolf	Arctic grayling	
Chinook salmon	Black bear	
Coho salmon	Beaver	
Chum salmon	Pine marten	
	Golden eagle	
	Trumpeter swan	
	Sockeye salmon	
	Pink salmon	
	Rainbow trout	
	Burbot	

2/ Once the vegetative cover types have been delineated and evaluated as habitat for these evaluation species, resource category determinations can be made by cover type. In instances where evaluation species habitat overlap, the most conservation (highest) Resource Category will determine FWS mitigation goal for that area.

The FWS provides this analysis to further Susitna Hydroelectric Project planning. By establishing project and species habitat specific mitigation goals the FWS intends to protect and conserve the most important and valuable fish and wildlife resources while facilitating balanced development of the Nation's natural resources.

Sincerely,

Acting Assistant Regional Director

Table 2. Fish and Wildlife Service Mitigation Evaluation Species for the Susitna Hydroelectric Project.

Common Name	Scientific Name
Moose	Alces alces
Caribou	Rangifer tarandus
Brown bear	Ursus arctos
Black bear	U. americanus
Gray wolf	Canis lupus
Dall sheep	Ovis dalli
Beaver	Castor canadensis
Pine marten	Martes americana
Golden eagle	Aquila chrysaetos
Trumpeter swan	Cygnus buccinator
Chinook salmon	Oncorhynchus tshawytscha
Coho salmon	O. kisutch
Sockeye salmon	O. nerka
Chum salmon	O. keta
Pink salmon	O. gorbuscha
Arctic grayling	Thymallus arcticus
Rainbow trout	Salmo gairdneri
Dolly Varden	Salvelinus malma
Burbot	Lota lota

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Appendix. Susitna Hydroelectric Project Evaluation Species

Terrestrial Species

1. Moose (Alces alces). In terms of hunting pressure, moose are probably the most important big game species in Alaska. Historically, moose were an important source of food, clothing, and implements along the major rivers. On a local, regional, and state-wide basis, this species continues to be an important source of food and recreation. The monetary value of moose is compounded by the number of non-resident hunters which are attracted to the state. Spending by hunters results in benefits throughout the State's economy. Moose also have a high non-consumptive value. They are easily observed and thus provide high photographic value.

   In terms of susceptability to project impacts moose provide a good evaluation subject. Commonly associated with riparian zones, especially during harsh winters, moose will be adversely impacted by the project. Yet, because moose are generally responsive to habitat modifications, post-project habitat manipulations could potentially benefit moose.

   Information on moose, both in terms of general life history and project area specific data is comparatively good. With continued project-sponsored monitoring of the area populations, adequate information will, eventually, be available for mitigative planning.

   Moose play an important ecological role in the project area. They are an important prey species for wolf (Canis lupus), black bear (Ursus americanus), and brown bear (U. arctos). In addition, predation on moose may provide caribou (Rangifer tarandus) with some relief from predation.

   The moose population and habitat quality downstream of the impoundment areas is relatively high (Modafferi 1982). Upstream of the Devil Canyon dam site the population level could be described as low to moderate (Ballard et al. 1982a). It has been suggested that predation is restricting population growth in the upstream area (Ballard et al. 1982). Moose habitat, relative to its historical range, is considered abundant from a national and ecoregion section basis.

2. Caribou (Rangifer tarandus). Caribou have traditionally been and still are an important food source for humans on a local, regional, and state basis. As a favored game animal, caribou attract many resident and non-resident hunters. Benefits accrue throughout the State's economy as a result of these hunters.

   The project area is within the range of the Nelchina herd. The herd contains approximately 20,000 animals and is of very high value to resident hunters because of its size and proximity to population centers. The herd contained 60,000+ animals during the 1960's. Caribou habitat, from the national perspective, has not been significantly reduced from its historical range, However disturbances such as highways, pipelines, North Slope Oil field activities and human/equipment presence have cumulatively threatened the quality of caribou habitat statewide. Accordingly, we consider caribou habitat of historical quality is becoming scarce.

The herd has been continuously studied since around 1948 (Pitcher 1982). Intensified investigations, through radio-tracking, are being carried out as a component of the Susitna Hydro Big Game Studies undertaken by Alaska Department of Fish and Game (ADF&G) (Pitcher 1982). Management of the caribou herds is aimed at balancing population levels with their habitat and avoiding the sharp fluctuations in numbers that have previously characterized the herds.

Migratory behavior by caribou limits this prey species to an ephemeral role to its somewhat more sedentary predatory species; wolf, and black and brown bear. Caribou do not provide a dependable year-round food source. Just as caribou would provide relief from predators for moose, the reverse would also be true.

Disturbances would be the principal mechanism by which the project could adversely impact the Nelchina caribou herd. Additionally, the impoundment behind Watana dam may interfere with caribou migration to and from the calving grounds. Utilization of access from the Denali Highway south to Watana dam would be expected to have adverse impacts on a sub-herd calving ground (Pitcher 1982). Also, if the main herd reacts to the Watana impoundment by seeking a calving area north of the reservoir, the presence of an access road in this area would compound the potential impacts problem. The potential adverse effects of the project on caribou relate more to habitat quality than quantity. Project impacts to the herd could be negligible to substantial. Thus, although population levels are approaching "optimal", drastic project impacts could result in this species becoming scarce in the basin.

3. Brown bear (Ursus arctos). This species is considered to be a valuable big game animal and attracts numerous resident and non-resident hunters. The non-consumptive value of brown bears is exemplified by the state-operated McNeil River Sanctuary. Hundreds of people yearly submit applications to obtain an opportunity to observe brown bears in this sanctuary. A lottery system limits the number of observers at the sanctuary to minimize disturbance to the bears.

   Although not considered threatened or endangered in Alaska, the brown bear is listed as threatened under the Endangered Species Act in the 48 conterminous states. As such, it can be considered a species of particular national interest and one whose habitat has been significantly reduced in extent and quality from the national perspective. Accordingly, it is considered scarce on that basis.

   Project-specific and scientific information on this species is relatively good. Studies funded by the Susitna project have been on-going since 1980. Information on movement patterns, population levels, and location of denning sites is providing a basis for analyzing project impacts.

   The project would be expected to result in a high degree of direct and indirect disturbance. Although some disturbance impact is unavoidable, the degree to which it can be controlled is large. The type and design of construction camps, mode and route of access, and timing of construction are factors which will dramatically influence the extent of disturbance resulting from this project. Neither direct habitat nor denning sites

losses appear to be major project-related impacts (Miller 1982). Prey reduction, however, is expected to result in adverse impacts to brown bear. Losses due to prey reductions may be masked by the reductions due to disturbance.

Project-caused losses to a variety of habitats and species will impact the brown bear. Project impacts to the berry-rich shrublands, salmon fishery, areas of early green-up, prey species such as moose and caribou, will all ultimately affect brown bear.

According to the ongoing ADF&G studies, "In comparison with other North American brown bear populations, the study area population appeared highly productive and moderately dense." (Miller 1982). Even though the population is considered to be moderately dense in the project area, actual numbers are not very high in even the best habitat. A rough estimate of the study areas population is 1 bear/41-62 km^2 (Miller and McAllister 1982).

4. Black bear (Ursus americanus). This species is widespread in Alaska as well as in the 48 conterminous states. Black bear habitat is considered abundant on a national and ecoregion basis.

Seasonal availability of foods strongly determine the occurrence of black bears in a particular area. Movement will occur from spring green-up areas, to salmon streams in summer, and then to berry-producing shrubland in summer/early fall. In the project area, brown bear appear to restrict black bears to the forested habitat along the Susitna River and the adjacent shrublands to which the forested areas serve as escape cover (Miller and McAllister 1982). Because of this habitat restriction, black bear will be strongly impacted through direct habitat losses due to the project.

Black bear habitat value in the inundation area and downstream from the dam sites appears to be relatively high. In the ADF&G Big Game Studies report (Miller and McAllister 1982) is was noted that, "In comparison with other North American black bear populations, black bears in the study area appeared to be productive although possibly having an older age of reproductive maturity and higher rate of cub mortality than an intensively studied population on the Kenai Peninsula. No good density estimate was obtained for the study area although a rough estimate of 1 bear/4.1 km^2 was obtained in one relatively open area based on aerial observations of marked and unmarked bears."

Black bear would appear to be highly susceptible to impacts from the project. Indications are that upwards of 90% of the black bear habitat could be lost through inundation. Avoidance of significant losses to this species through project modifications does not appear to be possible. The following is a summary of expected project impacts on the black bear: "1. Inundation of scarce denning habitats (especially in the upper impoundment area), 2. Habitat elimination through inundation, 3. Increased human disturbance and hunting resulting from project construction, operation, and improved access, 4. Increased predation by brown bears resulting from decreased availability of berry-rich shrublands which are also adjacent to forested escape habitat, 6. Reduction of prey items

(downstream salmon, moose calves and, perhaps, caribou), 7. Impoundment related climatic changes which alter the availability or abundance of food resources." (Miller and McAllister 1982).

Black bear are being examined as a component of the project's environmental studies program. Information will continue to be gathered on this species through the project-funded studies and should provide an adequate data base for assessing project impacts. General scientific knowledge of this species is good and thus would facilitate the evaluation of project impacts to black bear.

5. Gray wolf (Canus lupus). Interest in the wolf is relatively high on a statewide and national basis. However, concern for managing wolves to maximize population levels is mixed. Due to its status as an endangered/threatened species in the conterminous 48 states there is high national interest in protecting this species. From the national perspective, the quantity of wolf habitat has been significantly reduced, thereby placing it in a scarce status. On ecoregion basis, wolf habitat is abundant and state game management has frequently been directed at reducing wolf populations in selected areas.

   Information on wolves in the project area has been accumulated over more than 30 years (Ballard et al. 1982b). Studies specific to the Susitna project have been carried out for the last two years. The scientific data base is relatively good and it is anticipated that continued project-related studies will result in sufficient information for mitigation planning.

   The wolf packs residing in the Susitna study area largely depend upon moose and caribou. A minor proportion of their diet is composed of small mammals (Ballard et al. 1982b). Because they are highly dependent upon the availability of moose and caribou, losses to those species due to project impacts would directly impact the wolf populations.

   The wolf is susceptible to project-related impacts. Impacts to wolves would primarily occur through reductions in prey density, particularly moose. Initially, the project may lead to an increase in wolf numbers due to increased vulnerability of prey which have been displaced from the impoundment areas (Ballard et al. 1982b). Disruptions in moose and caribou movements could adversely impact wolves quite distant from the impoundments. Indirect adverse impacts could also be anticipated from increased access resulting from the project.

6. Dall sheep (Ovis dalli). In the United States, Dall sheep are unique to Alaska. Interest on a national basis is high. The importance of this species as big game and an observation subject also creates high interest from a state and local perspective. On a national and ecoregion basis, Dall sheep habitat has not significantly changed from its historical status and is therefore considered abundant.

   Consumptive/nonconsumptive use of Dall sheep is high. Numerous hunters are attracted to the state to sheep hunt. The value of this species for nonconsumptive purposes is exemplified by the state having a prohibition on hunting in areas where sheep can be readily observed.

Three distinct sheep populations, Portage-Tsusena Creeks, Mt. Watana, and Watana Hills, were identified in the upper Susitna basin study area (Ballard et al. 1982c). In that the range of these bands correspond to different portions of the project area, the type and extent of project-related impacts vary. The Portage-Tsusena band would be impacted primarily through disturbance. However, placement of borrow pits with associated roads, and project-access roads could result in a significant shift in sheep distribution and a loss of critical winter range (Ballard et al. 1982c). Although the project could have a severe adverse impact on the sheep, the impacts are, if not unavoidable, substantially controllable.

Information on the three populations of Dall sheep will continue to be acquired through project-related studies. The studies will be designed to assess potential impacts of the project. Additional scientific information on this species is available, being relatively qualitative in nature. Project-specific data are extremely important with this species due to its fidelity to traditional use areas, which makes assessments of habitat value very difficult in absence of project area-specific information.

The Mt. Watana band has not been clearly defined. Apparent use of range adjacent to the Watana reservoir would indicate that project-caused impacts would include disturbance and possible loss of habitat (Ballard et al. 1982c).

Impacts to the Watana Hills band could be severe due to its proximity to the proposed Watana reservoir. Potential project-caused impacts would be related to disturbance: altered behavior, decreased lambing success, and abandonment of the apparently important Jay Creek mineral lick (Ballard et al. 1982c).

Project impacts to the Mt. Watana and Portage-Tsusena Creeks populations would be related primarily to disturbance rather than loss of habitat. if long-term, this would result in a decrease in habitat value. Principal concern rests with the Watana Hills band which could lose the use of what is apparently a highly valuable mineral lick at Jay Creek. If the Jay Creek mineral lick proves to be critical to the band and irreplaceable, the value of this habitat would obviously be very high. Studies to ascertain the nature of this sheep population's dependence on the mineral lick are being undertaken as part of the project.

7. Beaver (Castor canadensis). This species plays an important ecological and economic role in Alaska. Trapping beaver continues to be an important component of traditional lifestyles. Beaver trapping is pursued on a recreational basis as well as being an important source of revenue for bush residents. Beaver habitat is neither unique to Alaska nor scarce in the United States or Alaska. They do, however, play an important ecological role. Actions by this species results in habitat modifications which benefit other wildlife species that are also of high interest (e.g. waterfowl and moose).

Beaver are dependent upon both aquatic and riparian habitats. Projects impacts to these habitats would impact beaver distribution and population

levels. Although beaver are scarce in the Susitna system above the proposed Devil Canyon dam site, from that point downstream existing population levels gradually increase. At the present time, it has not been clearly established how the project would physically modify the Susitna River downstream of its confluence with the Talkeetna and Chulitna Rivers. Impact questions which are presently outstanding include:

1. What is the potential for beaver-caused fish passage blockages which may be associated with stabilized flows?

2. What would be the effects of relatively stable water levels on beaver and their habitats?

3. How would the altered ice conditions impact beaver and their habitats?

4. What are the plant species that beaver are dependent upon and how would these plants be effected by the proposed project? (Gipson et al. 1982).

5. To what extent are moose dependent upon beaver for habitat creation?

As a component of project furbearer studies, beaver are being examined. Location of habitations was completed during the early phase of work. During the second stage of the study potential impacts will be assessed for the purpose of mitigation planning. Baseline scientific information is relatively comprehensive and should lend a high degree of certainty to impact predictions for this species, if post-project water regimes can be adequately identified.

Existing conditions in the proposed impoundment areas are not favorable for beaver. Aquatic habitat created by the reservoirs potentially could benefit beaver, however, water level fluctuations could negate this area as habitat. Below Devil Canyon the value of the habitat increases with distance from the dam site. Below Talkeetna beaver populations exist in quantities that can sustain a high and continuous harvest (Gipson et al. 1982).

8. Pine marten (Martes americana). The pine marten is restricted to coniferous forests and, in the United States, is abundant relative to its historical range in Alaska, the Rocky Mountains, and the northern areas of the Midwest and the Northeast. Low population densities are characteristic of this species. Marten are locally abundant in the vicinity of the proposed impoundment area which corresponds to the forested areas in the upper Susitna valley (Gipson et al. 1982). This furbearer has, historically, been highly important to trappers. Economically, the pine marten is considered the most important furbearer to trappers in the vicinity of the impoundments (Gipson et al. 1982).

In that pine marten inhabit coniferous and mixed coniferous-deciduous forests, inundations would eliminate much of the habitat of highest value for this species. Susceptibility of this species to project-related impacts can thus be considered high. In addition, as this species is associated with older age vegetation, mitigation modification for other species, such as moose, may be in conflict with the pine marten.

As a component of project furbearer studies, information on this species is being accumulated. Although the present level of detail is not considered high, additional studies are being undertaken.

9. Golden eagle (Aquila chrysaetos). As with the bald eagle, nonconsumptive interest in this species is high. Although protection is also offered to the golden eagle by the Bald Eagle Act of 1940, as amended, this legislation is less restrictive for the golden eagle in that their nests may be taken when they interfere with resource development. A permit from the Department of Interior is required in those instances.

   Susceptibility of the golden eagle to project impacts would be similar to that indicated for the bald eagle. Disturbance type impacts, loss of important habitats, particularly nesting cliffs, and loss of important prey species would all be project-related negative effects which could occur to this species.

   Habitat to be impacted by the project is not of high value for the golden eagle. Ten active nest sites were identified during the last two years of studies undertaken for the proposed project (Kessel et al. 1982). This concentration of active golden eagle nests is similar to the highest populations noted for Alaska (Kessel et al. 1982). However, in a 1974 study C.M. White (1974) did not locate any active golden eagle nests in the proposed impoundment areas. This suggests that relating changes in nesting density to project actions could be difficult.

10. Trumpeter swan (Cygnus buccinator). Interest in this species, on a nonconsumptive basis, is high. Recently close to extinction, the trumpeter swan is still very rare in the conterminous 48 states. Although restricted to breeding in western Wyoming and Montana the trumpeter swan has recently shown substantial population increases (Robbins et al. 1966).

    Swan populations in Alaska are associated during nesting and rearing with wetlands and ponds found, primarily, along the major river systems in the southern half of the state. Information on habitat use is concentrated on coastal areas such as the Kenai Peninsula and Copper River (Konkel et al. 1980). Specific habitat to be impacted by the proposed project is not of high value for trumpeter swans.

    Project-related tracking of trumpeter swans has focused on the impoundment areas. Swans are now considered common in the eastern section of the Susitna study area from the MacLaren River to the Oshetna River. In the last five years the population there has more than doubled (Terrestrial Environmental Specialists, Inc. 1982).

    Trumpeter swans are susceptible to disturbance type impacts during nesting and rearing of cygnets. Lacustrine waters are utilized by this species for nesting and rearing.

Aquatic Species

Five-year studies are being conducted by the ADF&G, Woodward/Clyde Consultants, and the Arctic Environmental Information and Data Center for the purposes of:

(1) providing fish population estimates;

(2) identifying valuable aquatic habitats;

(3) evaluating project impacts;

(4) assessing potential mitigation; and

(5) evaluating the potential for salmon enhancement above the dam site.

Water quality, quantity, and other instream flow parameters are to be analyzed to allow an evaluation of project-caused changes vs. fishery resource requirements. Project impacts to salmon habitat will be most apparent in the reach from the Devil Canyon dam site downstream to the confluence of the Susitna, Chulitna, and Talkeetna Rivers. Except for a small run of chinook, salmon do not go above the dam site.

1. Chinook salmon (Oncorhynchus tshawytscha). Development of hydroelectric potential in the northwestern United States has resulted in the loss of a significant portion of the salmon spawning habitat. On a national basis, interest is very high in minimizing losses to chinook salmon, and, if possible, expanding existing stocks. State, and local interest is very high in maximizing populations of this highly prized commercial, recreational, and subsistence species.

   The Susitna River is considered the major contributor of chinook salmon to Cook Inlet (ADF&G/Su Hydro 1981). Although chinook salmon of the Susitna River are not managed at present for commercial harvest, they provide important sport and subsistence fisheries. In 1982, approximately 10,000 chinook salmon were taken by sports fishermen with a fishery effort of 28,000 man-days.

   The primary Susitna River habitats which could be lost between the Devil Canyon dam site and the tri-rivers confluence are the side channels and sloughs. Chinook salmon juveniles rear year-round in the mainstream Susitna River and associated side channels, sloughs, mouths of tributaries and lateral tributaries. Because studies to determine the importance of this reach of the Susitna River to salmonids are still ongoing, project impacts to this species have not been adequately established nor have potential mitigation alternatives been evaluated.

2. Coho salmon (Oncorhynchus kisutch). Hydroelectric development in the Northwest United States has resulted in a significant depletion of coho salmon stocks.

   The coho salmon is an important commercial resource and a highly prized sport fish in Alaska. The 1981 commercial harvest of cohos for the Upper Cook Inlet was just under 500,000 (ADF&G/Su Hydro 1982). The contribution of the Susitna River to this fishery has been estimated as 50 percent.

Coho salmon are also an important sport fish in the Susitna River system. In 1981, sport fisherman harvested over 13,500 coho from the Susitna River system. The commercial harvest of coho in 1982 attributable to Upper Cook Inlet was 777,000 fish.

For spawning, cohos predominantly depend upon clear water tributaries with limited use of the side channels and sloughs. The sloughs also provide important rearing habitat (Schmidt and Trihey 1982). Because the side channels and sloughs will probably be affected, cohos are susceptible to project impacts above Talkeetna. The potential of the project to adversely impact important coho salmon habitat below the tri-river confluence has not been clearly established.

3. Sockeye salmon (Oncorhynchus nerka). Past depletion of sockeye salmon stocks in the Pacific Northwest as well as in Alaska has resulted in major interest in this species. Restoration programs have been ongoing in Alaska for several years. Thus there is considerable national, state, and local interest in avoiding adverse impacts to sockeye, the most commercially important of the Pacific salmon. The 1982 Upper Cook Inlet sockeye commercial catch was 3.2 million (ADF&G/Su Hydro). Contribution from the Susitna River to this catch is estimated to be perhaps 1/2 million. Sockeye salmon is also considered an important species to sport and subsistence fishing interests.

   Spawning habitat for sockeye salmon above Talkeetna appears to be limited to the sloughs. Although a small proportion of the Susitna sockeye run, those using habitat above Talkeetna will be highly susceptible to project impacts because the sloughs would be prone to project-caused changes (Terrestrial Environmental Specialists, Inc. 1982). Below Talkeetna, the extent of project-related impacts to sockeye salmon has not been adequately established.

4. Chum salmon (Oncorhynchus keta). Commercially, chum salmon are second in value to sockeye salmon in the upper Cook Inlet; the average commercial catch being just over 700,000 during the last ten years (ADF&G/Su Hydro 1982). The commercial harvest of chum salmon in Upper Cook Inlet in 1982 was 1.4 million. Sport and subsistence fishing for chum salmon is important, however, it can be considered the salmon species of least value to these interests.

   Based on the 1981 fisheries studies data, chum salmon is the predominant salmon species found in the Susitna reach between Talkeetna and the Devil Canyon dam site (Terrestrial Environmental Specialists, Inc. 1982). Predominant use of the sloughs is by spawning chums and as such severe adverse impacts can be predicted to this species if the project results in the elimination of access to the sloughs. Without mitigating flows, the loss of the slough habitats is predicted. Mainstream spawning by chum salmon was noted at ten sites in the Talkeetna to Devil Canyon segment of the Susitna (Terrestrial Environmental Specialists, Inc. 1982). The contribution of the mainstream beds to overall chum spawning is not considered to be substantial. Potential project-related impacts downstream of the confluence of the Susitna, Talkeetna, and Chulitna Rivers has not yet been clearly established.

Chum salmon habitat historically extended south to the coastal streams of Washington and Oregon. The quality of its habitat in that area has been significantly reduced. Accordingly, from the national perspective, we consider it becoming scarce.

5. Pink salmon (Oncorhynchus gorbuscha). Pink salmon exhibit a two year run cycle. During even years the Susitna River pinks contribute more than any other salmon species to the commercial catch attributable to the Susitna River. The commercial value of this species is considered high and the Susitna River is considered the major contributor to the upper Cook Inlet commercial catch. Pink salmon are important to sport and subsistence fishing interests.

   Information from the 1981 field season provided insight as to habitats of importance. Spawning pink salmon were found in the sloughs as well as the tributaries to the Susitna River (Terrestrial Environmental Specialists 1982). Data must be obtained from a peak run of pinks to allow a complete assessment of valuable habitats. Data on odd-year runs may not be indicative of habitats which receive the heaviest use.

   Pink salmon was historically limited in range to coastal streams of north-west Washington and north. No significant reduction to that habitat has occurred. Accordingly pink salmon habitat is considered abundant on the national and ecoregion basis.

6. Arctic grayling (Thymallus arcticus). Native arctic grayling are found in Michigan, the headwaters of the Missouri River, and in Alaska (Eddy 1969). Due to its relatively rare status in the conterminous states, this sport fish is of high national interest. In Alaska, grayling are a popular sport fish. The grayling population within the upper Susitna River basin is rather large, due principally to lack of exploitation. In that it comprises a very healthy population of a popular sport fish, interest on a state and local basis is high.

   Arctic grayling is the predominant fish species in the Susitna above Devil Canyon. The lower Susitna river smaller populations are found and spawning appears to be restricted to the clear water tributaries (Terrestrial Environmental Specialists, Inc. 1982).

   Based upon data from the 1981 Susitna project field studies the upper Susitna River impoundment areas presently supports a population of approximately 10,000 (Terrestrial Environmental Specialists, Inc. 1982). Since grayling inhabit Susitna River and tributary reaches which would be inundated, this species will be severely impacted. Downstream from the impoundments, project impacts have not yet been adequately evaluated.

7. Rainbow trout (Salmo gairdneri) fit all the necessary criteria for a mitigation evaluation species and are well suited to represent fish species in the Cook Inlet to Devil Canyon reach. They are considered abundant within their historical range. Habitat to be impacted is of medium value for this species.

8. Burbot (Lota lota) are relatively abundant in the Susitna River year-round and are sensitive to project impacts. They are considered abundant within their historical range. Habitat to be impacted is of medium value for this species.

9. Dolly Varden (Salvelinus malma) are an important sport fish and should be considered as an evaluation species as well. They are considered abundant within their historical range. Habitat to be impacted is of medium value for this species.

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February 3, 1983

COMMENTS ON: U S Fish & Wildlife letter of January 24, 1983, project area resource categories

The Alaska Power Authority concurs with the mitigation goals outline for species in the project area. These goals were incorporated into the Power Authority's Mitigation Policy November 1981, and revised April 1982. The mitigation plans presented in Exhibit E are designed to achieve these goals.

The Power Authority does, however, feel that the process that identified habitat resources in the project area as Resource Category II invites comment. The procedures outlined in CFR 46, No. 15 of January 23, 1981, seem to indicate that if a resource is abundant on a national scale but scarce in a particular region, then based upon regional scarcity, in that region, it may be identified as Resource Category II. To work in the other direction, where the resource is abundant on a regional basis, but not on a national basis does not seem to warrant a finding of resource scarcity.

The Notice of Final Policy outlines a procedure for determining Resource Categories. The Alaska Department of Fish and Game, which is the Resource Manager in the project area, does not consider the resources in question as being scarce in either the eco-region or the state. Formal comments from the Alaska Department of Fish and Game

state. Formal comments from the Alaska Department of Fish and Game should have been included and commented upon to reflect "consultation and coordination with the state agency responsible for Fish and Wildlife Resources".

The technical rationale for designation should also "discuss and contrast the relative scarcity of the fish and wildife resources on a national and eco-region basis".

To the best of our knowledge, no area in the eco region (M1310 Alaska Range province) has been identified as an Important Resource Problem area nor has the project area been identified as such. If it has been so designated, a copy of the designation document from the Director of the Fish and Wildlife Service is requested.

Finally, the Power Authority is concerned that the designation of resource values in the Project area as Resource Category II is inconsistent in the context of land management activity in Southcentral Alaska. There seems to be little or no basis, when reviewing past and present state and federal resource agency actions in the Project vicinity, to substantiate Resource Category II classification.

While we take strong exception to the designation, it should be reiterated that Resource Category II goals are consistent with the Authority's goals and mitigation plans for the project. Mitigation planners for the Project would profit by the experience gained in mitigating in Resource Category II habitat and would appreciate being informed of such activity as may be presently on-going in Alaska.

JS:gh

APPENDIX E11F

CORRESPONDENCE RELATING TO FEASIBILITY ASSESSMENT

APPENDIX 11.F

ASSESSMENT OF FEASIBILITY

On March 15, 1982, the Susitna Feasibility Report was distributed to federal, state, and local agencies for review and comment. It was also made available for general public review. During April and May 1982, all background and support documents were distributed. This appendix contains the list of agencies to whom the report was distributed. Also included are agency comments and testimony concerning the Feasibility Report.

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April 16, 1982

DEPARTMENT OF NATURAL RESOURCES'S
TESTIMONY TO THE ALASKA POWER AUTHORITY BOARD OF DIRECTORS

I appreciate the opportunity to provide comments to the Power Authority Board of Directors on the Susitna Hydroelectric project. I regret that, because of other commitments in Juneau, I am unable to personally deliver these comments.

At the invitation of the Alaska Power Authority, the Department of Natural Resources has been working informally with the Authority over the last two years to help formulate and carry out studies designed to answer the questions which ultimately will determine whether the Susitna Dam proposals are feasible. The purpose of this testimony today is twofold: First, to identify Susitna Hydroelectric issues that are within the sphere of DNR's authority; and second, to make recommendations to the Board of Directors on the continuation of project development, as requested in the January 26 letter from Mr. Conway.

SUSITNA HYDROELECTRIC RELATED ISSUES WITHIN THE PURVIEW OF THE DEPARTMENT OF NATURAL RESOURCES

The Department of Natural Resources will be required to make decisions on two major facets of the Susitna Hydroelectric Project. These are:

1. DNR responsibilities for water appropriation (and possibly instream flow reservations) from the Susitna River.

2. Rights-of-Way permits for access into the dam sites and transmission line routes. Other land use permits for access to construction sites, gravel for construction, and other land use related needs as they occur on state owned lands.

The role of the Department of Natural Resources in water rights appropriation will be an adjudicatory one. According to Alaska Statute 46.15.080 (b), the impacts of water appropriation on the public interest shall be considered during adjudication. Areas of public interest are defined in the Statute as follows:

1. The benefit to the applicant resulting from the proposed appropriation.

2. The effect of the economic activity resulting from the proposed appropriation.

3. The effect on fish and game resources and on public recreational opportunities.

4. The effect on public health.

5. The effect of loss of alternate uses of water that might be made within reasonable time if not precluded or hindered by the proposed appropriation.

6. Harm to other persons resulting from the proposed appropriation.

7. The intent and ability of the applicant to complete the appropriation.

8. The effect upon access to navigable waters.

The DNR will be looking to the Feasibility Study data and information to describe the relationship between various streamflow levels and how they will impact fisheries and aquatic habitat downstream. Thus, from this Department's perspective, instream flow studies and the relationship of various flow levels to aquatic habitats and fisheries resources are vital. The studies administered by the APA will be the fundamental source of data and information used by DNR to make the public interest findings described above. We are eager to review and comment upon the present and future plans for instream flow studies. To date, we have not been provided an opportunity to review or comment upon the instream flow study approach.

The access to the dam sites and the policy surrounding the extent of access after construction will lead to one of the most significant impacts of the project. The Power Authority has stated that the permit for use of a "pioneer road" is needed in 1982 (before a F.E.R.C. permit is issued) if the power is to be on line eleven years later. One significant issue is the possibility of the construction of a road to the proposed dam sites and a subsequent decision by the state not to construct the dams. It would appear to be in the best interest of the Power Authority, the land managing agencies, and the public to identify other alternatives which will allow the necessary access to the proposed dam sites in a manner which prevents irreversible impacts. In order to prevent this issue from being a potential delay in progress, we recommend that the APA take the lead in convening a multi-agency, multi-disciplinary effort to accomplish the goal stated above.

The second issue is the long term land use implications of access to the proposed dam sites. The provision of access to the dam sites should not unwittingly determine the types and extent of land use impact on the surrounding lands in the upper Susitna Valley. Carefully determined access route decisions could result in a multiple purpose route which could facilitate and enhance other uses of the surrounding lands. In order to accomplish this, the dam access route decision should be made in conjunction with surrounding land owners, land managers, and the general public. As on the other issue above, the DNR is willing to participate cooperatively with the Alaska Power Authority, other agencies, and the public to resolve this matter so that it does not become a potential delaying factor for the proposed project or a future management problem for land owners and managers.

SUMMARY AND RECOMMENDATIONS

In summary, the Department of Natural Resources has three recommendations:

1. The Department supports continued studies in the socio-economic, technical, and environmental areas. The preliminary work accomplished so far indicates that the project is technically feasible. Further work is needed to establish the information and data for water appropriation and fishery mitigation. Additionally, we recommend further work on the timing, route and conditions of access to the proposed dam sites.

2. With respect to the question of whether it is desirable to submit an application to the F.E.R.C. on September 30, 1982, we offer the following comments. The APA Board of Directors and the staff should carefully weigh the advantages and disadvantages of submitting the formal application on September 30, 1982. If that course of action would result in the APA acquiring a F.E.R.C. permit to construct in the most timely and economical way, then that course of action makes sense. However, if on the other hand, a formal application would result in delays, increased potentials for litigation, and a hardening of adversarial roles between the APA, other agencies, and other interested parties, then the possibility of these delays should be considered. We believe that the APA Board and the Staff are in the best position to evaluate pros and cons and to determine whether a F.E.R.C. application on September 30, 1982, is desirable or not. From our more narrow agency standpoint, DNR is not opposed to a F.E.R.C. application so long as our agency concerns and responsibilities can be fully and openly determined through the traditional intervenor process.

3. We compliment the APA Board of Directors and staff for encouraging inter-agency interdisciplinary approach to identify ways to improve the coordination and ultimately the results of the feasibility studies. We believe that strengthening this approach will facilitate a more cooperative and constructive role for those agencies which have responsibilities that require them to take action on the Susitna Hydroelectric Project. Specifically, we recommend strengthening and enhancing the role of a group similar to the Susitna Hydroelectric Steering Committee which has been providing informal agency comments to the APA on this project for the last two years.

Response

1. Inadequacies of population estimates of: 1) moose and other large animals in the downstream Susitna below Devil Canyon; 2) caribou subherds in Talkeetna River, Chulitna Hills, and Upper Susitna-Nenana drainages; 3) wolves in the Keg Creek, Portage Creek, Stephan Lake, and upper Talkeetna River; 4) wolverine throughout the study area; 5) black and brown bear with the entire study areas; 6) marine mammals such as Beluga Whales in the lower downstream estuarine area; 7) even year numbers of pink salmon.

2. Major data gaps exist concerning the use of specific types of habitat of certain species during various seasons. Among these are: 1) use of downstream vegetative by moose and bear; 2) use of the main stream reservoir area of vegetation by moose during severe winters; 3) use of the impoundment area in spring by black and brown bears; 4) home ranges of black bears; 5) use of sloughs in the lower Susitna by fur bearers and water fowl; 6) use of the mainstream Susitna and other sloughs below Talkeetna by salmon and other fish species; and 7) significance of the mainstream/clear water confluence areas for chum and coho salmon spawning and distribution of juvenile salmon all resident fish throughout the main stream Susitna, especially in winter months.

3. Much additional study is needed to address complex issue of interrelationships between species within th study area. Specific information needs are: 1) seasonal predation levels upon moose and caribou by black and brown bear and wolves; 2) importance of moose and caribou carion to species of wolverine, red fox, and other

small mammal; 3) use of salmon population by black and brown bear; and 4) potential conflicts between black bear and brown bear populations caused by displacement during project construction.

4. Report fails to project any estimates of potential numbers of species that would be actually gained or lost as a result of project construction. Specifically: 1) loses of moose through starvation resulting from displacement; 2) moose losses through increased predation by wolves and bears upon displaced population; 3) loss of moose, caribou, bear, wolf, and other other species through road strikes; 4) loss of moose, caribou, bear, etc. through attempts to cross the reservoirs; 5) effects of increased predation upon caribou by wolves as moose populations decline; 6) losses to black and brown bear through unavailability of Prairie Creek and lower Susitna Salmon populations; 7) losses of brown beans through interspecies conflict caused by human disturbances, displacements, and reduces food sources; and 8) losses of black bears through intraspecies conflict with brown bears.

5. Report deficient in fisheries. Specifically: 1) loss of potential enhancement possibilities for salmon upstream of Devil Canyon; 2) losses or gains associated with potential alteration of habitat below Devil Canyon to Cook Inlet; 3) losses to anadromous and resident fish downstream from Devil Canyon during the filling of the reservoirs; 4) losses or gains associated with artificial manipulation of fish habitat recommended as mitigation for salmon

losses; 5) losses associated with increased fishing, both legal and illegal, due to increased access.

6. Although report addresses all species and potential impacts, it fails completely in almost all cases to identify specific losses on any real means to offset even the very generally identified impacts to fish and wildlife.

Examples: 1) Upper basin moose - Report recommends only compensation by prescribed burning and also states method is experimental and needs more study; 2) black bear - report recommends literature review to identify management techniques or compensation with other species; 3) brown bear - no mitigation recommended other than aiding other local species; 4) wolf - unless moose mitigation works no other recommendation made; 5) wolverine - no recommendation other than aid to other species; 6) salmon - habitat loss through flow reduction will be mitigated by modifications of the existing stream or by adding gravel build spawning areas, artificial spawning channels and hatcheries are mentioned but no discussion of the high experimental nature of these types of projects in Arctic environments; at and 7) salmon - no discussion of potential impact of mixing hatchery stocks with wild stocks; 8) salmon - temperature problems downstream of Devil Canyon will be mitigated via multi-intake flow system although no evidence is presented to substantiate this claim; 9) resident fish - no information is presented to support

claim that a viable recreation fishery could be maintained in reservoirs.

7. Current demand projections are not weighted to consider the last several years when price - induced conservation has dramatically reduced the demand for electricity.

8. Acres' report did not address salmon enhancement possibilities in upper Susitna basin.

9. Acres' downplayed devastating impacts of the project on the Nelchina caribou herd due to increased hunting pressures and interruption of traditional migrating ground.

10. Moose habitat along the River would be greatly diminished by the decrease in the willow growth.

11. The Watana studies state that in 100 years the reservoir will fill some 5% of its total volume with sediment... All estimates for sediment load are based on the river carrying not 10% or 5%, or even 1% sediment load by volume, but .04% as the sediment load... What this estimate says to me is that research is long on watered down data and short on practical judgement.

12. The way it is designed now the Watana reservoir would become silted in 25 to 35 years. This is at a 5% sediment bearing rate - for below the 30% which is possible for glacial rivers to run at.

13. I question the amount of mixing Acres' suggests sediment will be undergoing in the reservoir, and I question the entrapment rate or the rate at which the silt falls out of the water and settles in the reservoir. Despite abundant research which would indicate entrapment rates substantially high, Acres American advances 70% as the lower end of their entrapment studies, or entrapment estimates. It disturbs me that probably the simplest measure of sediment load, the ratio of sediment to water, in never plainly stated.

14. Scanning Acres American's research... I question the lakes that they draw for comparison. There are substantial differences between natural lakes in southern British Columbia and the Watana Reservoir. The one in British Columbia is about a ninth the size of the Watana reservoir.

15. Our particular concern is the destruction of salmon spawning area in the Susitna sloughs... before we go or with this project I believe that they (Acres) should have figured out how salmon can spawn successfully there, how the sloughs can be prevented from drying up, how the fish will have clear water, and the sufficient amount of water with the dams being raised and lowered.

16. I have real problems with this base case plan, in that it is predicated entirely upon the development of the Beluga coal fields and to a world class exporting coal complex within the next ten years... I feel that the base case plan, with all of its critical assumptions regarding massive coal production within ten years from

what is currently only a potential prospect, and further restricting this potential to the whims of the foreign coal market is a fictitious economic measuring stick.

17. What bothers me most about the proposed Susitna project is the lack of a complete picture of information... The Acres' report seriously down-played the uncertainties and failed to show all impacts and methods of mitigations. The uncertainties include whether the project is truly, economically feasible. A cost overrun of 20% makes the project uneconomical.

18. I have found that we cannot adequately evaluated the potential environmental impacts of the proposed Susitna Dam... with the first year of extensive fishery and wildlife studies now complete, I feel that it is impassible to determine whether the project is environmentally sound. Similarly, I feel it is also impossible to compare the environmental impacts of alternatives because of lack of information.

19. ...if we build one dam, the Watana dam, and then the power needs do not live up to what we think they are going to be, we can just build one dam. However, it does not actually come out and say it in the Acres' Report, but their figures show that 70% of the cost of this project is in the first dam. However, that first dam is only projecting 50% of the power output and gigawatts, which is the actual power that we are paying for per kilowatt. If we did build one dam, with the cost estimates in the project of the 20%, 17 to

RESPONSE

20% overrun, making it unfeasible economically, than building one dam - the Acres' Report says that in building one dam will not be economically feasible, we have to build both dams to make it economically feasible.

20 ...I would like to address the proposed road access to the dam site... I feel that it would be a lot more economically viable to use the old cat trail that goes across the top of the ledge over to Portage Creek and build one bridge across Portage Creek and then go on up to where the dam sites are... If they go ahead and use the road access that they are talking about at this time and put the bridge across the Susitna down below Indian River next to the railroad trestle, that is going to mean enlarging the staging area at Gold Creek and there is going to be a lot of activity going on in that area; in a real remote situation.

21. The Acres' report also states that this completed project would result in the shutting down of all other generation facilities in the Railbelt... In case of a failure of any sort on the facility, power generation or transmission would cease or seriously be impaired. It seems more feasible to have numerous smaller hydro, natural gas, wind, solar, and geothermal-thermal facilities to distribute the stress providing the electrical power.

22. Why is the preferred or chosen access route a road from the Park Highway?, which would, according to the Vice President of Acres American, be double wide and paved, when the overwhelming majority

of the people in this area favored and all rail route to the site of the proposed project.

23. The project itself would add a serious blow to ridding the state of its boom/bust economy. A recent report by the Army Corps of Engineers, entitled "Rainbow or Opportunities" states that 70% of the labor force for this project would be made up of skilled trades from outside Alaska.

RESOURCE AGENCY'S COMMENTS

1. There is been a failure to quantify the habitat types present, a failure to anticipate impacts, and to identify the required mitigation... Some of the following deficiencies have been noted: 1) terrestrial studies have focused on the impoundments and their immediate vicinities, neglecting in large part the downstream areas, transmission and access corridors of secondary or indirect impact; 2) inadequate data to describe the data between various stream flows and the projective of the fisheries and the aquatic habitat downstream from Devil Canyon dam site; 3) anticipated water temperature and levels in the reservoirs and downstream of Devil Canyon have not been satisfactorily investigated, especially important to determine fisheries impacts; 4) terrestrial impact assessment and mitigation options are quite general and insufficient to provide adequate basis for full discussion of the project; 5) public access and mode and route of construction access need to be more fully addressed within the context of mitigation; and 6) insufficient look into the alternative of the Susitna project.

2. Access is the topic being discussed. We also have some concerns of the environmental impacts. Those routes are: 1) the one south of the Susitna River between Devil's Canyon and Watana; 2) the corridor paralleling the Indian River; and 3) the route proposed south of the Denali Highway. The impact here (Denali) is somewhat mitigated by the western route as opposed t the route via Butte

RESPONSE

Lake. It is still unclear as to the relative magnitude of the impact on caribou posed by the western route south of the Denali Highway. While we are concerned as to the impact on that caribou herd, we feel that the environmental trade off in question is one of the impacts - the caribou herd versus the impacts of more projective habitats in the area of Indian River or the Fog Lakes area. From an environmental standpoint, the route southerly from the Denali seems preferable from the aspects of minimizing disturbance of projective habitat. The route form the Denali, however, poses a secondary impact; that of human access to the project area after construction.

3. General comment that both the Acres' and Battelle studies were "ultra conservative." I would like to point out just a few of the numerous items that led me to the conclusion previously mentioned. For instance, the coal alternative anticipates an operating coal mine at Beluga supplying a major export market. This may or may not be a reasonable assumption; however, the manner in which it is applied in the study certainly places the coal alternative in the best possible situation. In addition, the coal alternative did not anticipate worst case environmental restrictions over and above those now on the books. The worst may be yet to come relative to burning coal and the added cost... One other item, as I understand the environmental assessment, all the moose at Watana over a two and a half year period are considered dead moose. I believe this assumption to be an unduly harsh evaluation and not realistic.

4. Downstream water quality changes are certainly going to exist as a result of the project...what we do not know at this point is what do these charges mean or what they imply in terms of downstream biological effects or downstream morphological effects on the actual stream bed itself...The second group of concerns... are downstream flow volumes and water levels... Apparently the project envisions as much as a foot and a half of lower water level in the summer... How does this effect side channel situation, the habitat areas, what about sediment transport? How does it effect the recreational use of certain reaches of the downstream area, what about river travel, aesthetics, etc..., Another class of concerns would be construction camp impacts... Where are you going to discharge sewage, how are you going to treat sewage, where are you going to get your water supply, what about power?... Another concern, question, I have relates to what are going to be the recreational impacts of a town of say 4,000 or so located in the wilderness?... They are going to want to hunt, to fish... To what degree is that going to be controlled or managed? What are those impacts; how serious ar they?... The final class of specific questions that I raise relate to the access issue on transportation issue to the dam sites themselves. First, I am still exploring my view of the feasibility work in reasoning behind the model question in why we are going road transportation as opposed to rail. Are there some gains to be had in going with the rail transportation or a rail access situation?... I am not saying rail is the best way to go, I am just saying that it seems like we eliminated that possibility possibly out of hand.

SRA Box 1628
Anchorage Alaska 99507
April 16, 1982

Charles Conway Jr., Chairman
Alaska Power Authority Board
334 West 5th Avenue
Anchorage, Alaska 99501

Response

Dear Mr. Conway:

The thirty day review period allowed for public comment is way too short of time to review and formulate comments on such a volume data being presented by ACRES on the Susitna Hydroelectric Project Feasibility Report. A minimum of 60-90 days should have been allowed. Because of this short time element, only the access route to the Dam site is being addressed since this is probably the most controversial environmental issue. The Dam projects themselves have only minor environmental impact on both the biological and social environment.

In reviewing ACRES "Selection of Access Plan" found in Volume 1 Engineering and Economic Aspects, Section 9-19 Final Draft, and its relation to the Environmental Assessment Report, Feasibility Report Volume 2 Environmental Report Sections 1-4 and 5-11 Final Draft, there is not sufficient data available to verify or uphold their reasons for selecting one route over another.

A good example of this is the Upper Susitna-Nenana subherd which is also called by another name elsewhere in the report. The Denali route (Plans 6 and 11) was disregarded because of the environmental impact the road would have on this subherd. Yet in the main environmental assessment on caribou, only two sentences where dedicated to this herd. How can anyone make a sound judgement based on this absolute minimum information. Any comments referred to this subherd in the selection of the access plan can only be accepted as unconfirmed assumptions. One can also assume from the lack of data presented in the main environmental assessment that someone is blowing out of proportion the impact the Denali route will have on the subherd.

The following are specific comments to the various statements made concerning the recommended selection of the access route.

1. Page 11-4 11.4(a) Corridor 1: In listing the major environmental constraints the Hurricane-Gold Creek furbearer habitat was left out. This was a major concern in the evaluation portion of selecting the recommended route.

2. Page 11-13 11.8 (e)(i) Effects on Big Game:

   (1) 1st Sentence: What is the potential effect the selection of an access plan will have on the Nelchina Caribou herd - specifically the subpopulation? The main environmental assessment only had two sentences on this particular herd so the importance cannot be too great.

(2) 3rd Sentence: It states impacts on hunting for moose and bear can be greatly lessened by selecting a route other than the Denali Highway.

No matter what route is selected the hunting will impact any game. Also under major environmental constraints identified with each corridor, moose is not mentioned in Corridor 3 (Denali route) yet it is mentioned in Corridor 1. Bear is not mentioned in any of the routes.

3. Page 11-13 11.8 (e)(ii) Effects on Fisheries:

(1) 1st Paragraph - What about the angling preasure upon the resident fisheries of Miami Lake and the streams of Indian River, Portage Creek and other streams feeding into Susitna River along the Parks Highway route? In actuality this shouldn't be consern for any route since through good fishery management the lakes and streams can be stocked thus improving the fishing potential.

(2) 2nd Paragraph - The impacts on the salmon fishery in Indian River, Portage Creek and the Susitna River below Protage Creek could be avoided completly using the Denali access route. Instead the solution for reducing the impact was to avoid road access paralleling the Indian River. But on all road location maps, the road is shown paralleling the river and crossing the Susitna River at Gold Creek. Even if the road doesn't parallel the River, it will increase the fishing presure both up and down stream for several miles where the road will cross the River. In this case, the distance could be greater because of the excellent trail provided by the railroad bed which parallels Indian River.

4. Page 11-14 11.8 (e)(iii) Effects on Furbearers:

(1) What type of potential negative impact will the access road crossing have on the furbearers? It is questionalble that the road traffic will effect the fox dening areas that are located one mile from it. Through proper hunting and trapping regulations the furbear impact can be reduced to a nomimal impact for any of the routes selected. As to loss of habitat, the Denali route will have the less disturbance according to 11.5 (d)(iv) which states "The terrain is relatively flat with few wetlands involved."

(2) Last sentance - This is a misleading statement. By indirectly indicating the Gold Creek - Devil Canyon has the least impact on furbearers by selecting this access, it leads the reader to believe this is the prefered route over Denali Highway. There is still the wetlands between Parks Highway and Gold Creek which are important to furbearers that has to be addressed further.

5. Page 11-14 11.8 (e)(v) Effects on Wilderness Setting:

This is a mute question. There is no way to maintain the status quo to the maximum extent possiable due to the type of project being developed and land ownership envoled. By creating a

reservoir of this magnitude will cause an outcry of the general public to develop the recreation potential of the area. This will be compounded by the private landowners seeking to tap this desire for economical gains. The access will also allow the private landowners to exploit the land which is now in a wilderness state.

There are three ways to retain the impact into the area. The first is cancel the whole project. The second is by railroad access only, both during and after construction. This still would allow the private landowners to exploit their land. It is queationable if the majority of the public would buy this type of access. The third way would be a road in from Denali Highway. The route is the furthest away from the major population center of Alaska. This would have the tendancy to reduce the recreational traffic. There would be no road access to the south side of the Susitna River which would retain it in a wilderness catagory unless the private landowners wants to build a bridge accross the River at their expense.

A short spur road from Wantana Dam site down stream to the head waters of the Devil Canyon Dam Reservoir would allow boating recreationist to use the reservoir. This would allow for restricting road traffic between the two dams to only project maintance work. This would preserve the semi-wilderness characteristics of the area surounding the Devil Canyon Dam Site.

6. Page 11-19 11.8 (h) Transmission:

(1) 2nd Paragraph - It states that if the Denali access route is selected, one of the reason for not constructing the transmission line in the same corridor was the adverse visual impact. Yet no mention was made to the visual impact it would have on the Parks Highway route which would be even greater due to the development in the Gold Creek - Indian River area, the Alaska Railroad and the access road itself.

7. Page 11-19 11.9 Evaluation of Access Plans:

(1) 2nd Paragraph - When ever a new access is open up into an area it creats an impact upon the natural resources if left unchecked. This is where proper resources and land use management planning comes into being. Prior to creating a new road, in fact for the whole project, a management plan should be developed to offset or reduce the overall environmental impacts to an acceptable levels. The plan should include hunting, fishing, and trapping regulations, a desirable animal-habitat ratio, ATV closures to protect the fragil vegetation or animal disturbance, determine which archaeological sites are valuable to preserve and excuvate, what recreational and other development is needed to serve the public, land use allocation, etc.

8. Page 11-20 & 21 11.9 (a)(iii) Biological:

(1) 2nd Paragraph - According to 11.5 (d)(iv) the Denali route will disturb the lease amount of wetland habitat so this can not be a significant concern when comparing one route with another. It is questionable if the fox denning complex (18 dens) would be effected by a road one mile away.

(2) Just how importrant is the calving and summer range for the northwestern subgroup of the Nelchina caribou herd? As previous stated only two sentances were devoted to this particular herd in the main environmental assessment. Even the map which outlined the caribou calving areas didn't show the loctaion of this subherd calving area. The location was first mentioned under 11.4 Corridor Selection and Evaluation where it stated it was near Butte Lake. According to plate 11.2, the calving ground would be 8-12 miles from the road so its queationable if either the road construction or traffic would have any effect on the cows during the calving period.

Through proper management, the construction period of the road near the calving area could be restricted until after the calving period takes place. This could also apply to the migration period. After construction, road traffie could be reduced to the minimum for the same periods.

(3) 3rd Paragraph - The consern on opening up the area to more ATV use can be stopped through land use management regulations or game regulations. The area can be closed to ATV use. The USDA-Forest Service has done this quite efficently on the Kenai Peninsula and the Copper River Delta (which encompess approx. 300,000 acres). The ADF&G has also carried this out through their walk in hunt areas through out the State. Therefore, this is not a valid consern.

(4) 4th Paragraph - Who are the particular resource agencies that are apprehesnsive about the success of any mitigation plans for the Denali route? Are they a one resource agency or a multiple use agency who deals with these problems on a everday basis?

9. Page 11-24 11.9 (c)(iii):

(1) 1st Paragraph - The same discussion as stated in comment 8 pertains to this discussion on the caribou herd.

10. Page 11-26 & 27 11.10 (b) Social vs Biological Considerations:

(1) 1st Paragraph - As stated in previous discussions, proper and timely development of land use and resource management plans can resolve or reduce to a minimum the conflicts discussed for the Denali access route.

These same conflicts mentioned with the exception of the caribou apply to the Parks Highway. Probably more so after reading the varius environmental assessments on wildlife and fisheries for the area. Therefore, the only conflict is to the caribou herd. As stated, through ATV closures and road traffic restrictions this conflict can be resolved. A few ATV users will be displaced, but there are other areas to the east of the Susitna River they can use instead.

(2) 2nd Paragraph - Any routes selected could result in unacceptable delays in licence approval especially if Federal land or wetlands are envolved. Since the project is a major environmental issue, a Environmental Impact Statement will have to be filed. This alone can take up to two years or more to prepare and be approved.

(11.) Page 11-28 11.11 (d):

(1) 1st Paragraph - This is not a valid statement since through proper and timely land use management planning the ATV traffic can be controled through ATV closures.

(2) 2nd Paragraph - On what bases is the statement made that biological perspective, the Parks Highway is a prefered to a Denali Highway access. If land use management planning is done before hand, the overall biological perspective would be equal.

(3) 3rd Paragraph - Even though the additional 52 miles of haul distance is involved, the cost of constructing and maintaining the talked about pioneer road plus ware and tear on the vehicles will far out weigh the additional cost envolved to haul the supplies an extra 52 miles over an all weather road. In order to haul the type and tonage of equipment needed for the dam project, the temporary haul road will require extensive construction.

Environmentally, construction of two roads in the same area is not wise. It will double the disturbance to the environment and the finally abandoned road will attract ATV use on an unmaintained road which eventally will cause erosion problems.

(4) 5th Paragraph - Allowing the access route and transmission line to use the same corridor would cause a visual impact. Since the Denali route for the transmission line was dropped because of high cost and visual impact, the line must go west paralleling the proposed Parks Highway route. Thus from a visual stand point, the Denali access route has the advantage over the other routes. This was never brought out in the write up.

(5) 7th Paragraph - Instead of creating a major railroad head at Gold Creek, construct the railhead six miles up stream from Gold Creek on the large alluvial flat located there. This would reduce the social impact on the commumity except for the additional train traffic during the construction and several switchmen station there.

(6) 9th Paragraph - This is not a valid assumption. Plan 6 would not increase the social change at Gold Creek other than the short period of constructing the railroad and the increase train traffic during the Devil Canyon Dam construction period.

(7) 10th Paragraph - This assumption applies to the other routes. Because of the major issues involved conbined with Federal land, an Environmental Impact Statement will be required.

(8) 11th Paragraph - Cantwell will be the only community effected and they are infavor of the socioeconomic benefits the construction will bring them. Therefore, the mitigations would be nominal incomparison to Talkeetna and Trapper Creek.

(9) 12th Paragraph - This is invalid statement. As stated before, ATV closures and hunting and trapping regulations can control this activity. In the long run, an effective management plan using ATV closures would reduce the harassment of the animals in the area, preserve the delicate, shallow soil and vegetation from being torn up by the present unrestricted ATV use, and would allow a fair game hunt of the caribou by walk in hunters only.

This has been a vary effective tool on the Copper River Delta ATV closure that was once open to unrestricted ATV traffic. The Denali route and the Copper River Delta area are similar in nature. This has also been effective in the ADF&G walk in hunt areas.

(10) 13th Paragraph - The foregoing considerations as presented by ACRES are not valid for eliminating the Denali route based upon the comments under this section. For some reason or another, someone is affraid of having a good land use and resourse management plan developed and approved for the area and carrying it out.

12. Page 11-30 & 31 11.12 Recommended Access Plan:

(1) 2 & 3rd. Paragraph - No construction of any pioneer road should be built until an FERC license is aproved. If one is put in from Gold Creek amd the license denied, the Native Corporatins will press legislators to retain the road for the development of their lands at no cost to them. This means public funds would be used to benefit a private corporation.

(2) 4th Paragraph

a. What type of special construction techniques will be utilized to minimize the impact to furbearers and fisheries? This is a broad statement and has no real meaning. It should be more specific as to the type. Is this additional cost figured into the overall cost to the project?

b. Under 11.8 (e)(ii) Effects of Fisheries it was recommended the road access avoid paralleling Indian River. This recommendation was ignored. Why?

(3) 5th Paragraph

a. The first sentance percludes to the fact that the highly recreation value of the project will be denied to the public. If this is the case them, a whole new evaluation of the varius road access routes be made conserning the overall recreation potential vs not allowing recreation potential be developed.

Reed

b. The second sentance creats a two face situation conserning ATV use and hunting. It can be assumed that ATV and hunting restrictions can be imposed and controled for the Parks Highway route but not on the Denali route.

(4) 6th Paragraph - What about the impact the road will have on Indian River Remote Parcel and Gold Creek? Mitigation measures suggested for the other communities but ignored for Indian River and Gold Creek.

(5) 7th Paragraph - This is a poor assumption and probably invaled. An Environmental Impact Statement will have to be filed since it is a major issue and Federal land is involed. The preservation groups will push this. Even though the road doesn't tie into an exsisting road, it does tie to a public transportation system - the Alaska Railroad. The US Borax case in Southeastern Alaska is a good example. Their request for a temporary road access is still tied up in court even with a EIS filed.

The second assumtion is wrong also. The Native Corporation will bear pressure to use the road for access and development of their land.

(6) 8th Paragraph - This assumtion is correct. The natives will reap from the benefit of public funds spent on the development of the road. It is assumed their not putting up any funds for the construction therefore their desires should have no bearing on what route is selected.

13. Page 11-32 Recommended Access Plan:

(1) 1st Paragraph, 2nd Sentance - Again this is a invalid assumption. Plan 11, the Denali route, offers the best control over public access during the construction phase since their are no active private inholdings involved.

(2) 3rd Paragraph - This is a positive assumption and it would be advantageous to apply for the necessary permits for either Plan 6 or 11 immediately to allow for the length of time involved to obtain the necessary permits and still meet the time schedual.

14. Page 11-32 & 32 11.13 Mitigation Recommendation:

(1) Only four of the seven mitigation recommendations pertain to socioecomonic. Two pertain to road restrictions and the last one to putting the pioneer road to bed. None deals with biological or cultural resources.

No attempt was made to develop mitigation recommendations for the Indian River Remote Parcel or Gold Creek. This should be addressed.

No attempt was made to mitigate the real problem Talkeetna and Trapper Creek are consern about - the population increase. Putting funds into the community for the additional services needed to

handle the influx of people does not answer their conserns. It actually increases it since the more services being offered will require a larger local work force.

(2) The first mitigation measure would restrict access to the people that have inholding land along the route. They were denied the semi-wilderness of the area by the recommended selection of this route now their being denied the use of the road which was paid for by public funds.

(3) The second mitigation measure precludes the development of the recreation potential the area has to offer.

(4) The last mitigation measure is fine but through past experiences on putting a road to bed, the general public still finds ways to use it with ATV's or motorcycles thus creating serious erosion problems in the future.

(5) The 1st and 3rd-6th mitigation measures could be avoided by selecting the Denali Highway route.

The second mitigation measure still has to addressed if the recreation potential should be developed or not.

(6) The dollar figure mentioned for mitigation measures seams quite low in comparison to the figures being prepared by the New Capitol Site Planning Commision for capital improvement cost. To build just a new school to handle the influx of new students would cost more tham the figure given.

(16.) Page 11-33 & 34 11.14 (b)(i) Engineering:

(1) 1st concession made discussed a complete loop connecting Parks Highway with Denali Highway. No where in the varius access plans mentioned connecting the two highways via the dam sites. So no cocessions were made.

(2) 3rd concession made is also invaled because of the pressure the Native Corporations will bring to bear to keep the road open.

(3) 2nd objective retained is questionalble. As stated, an environmental Impact Statement will probably have to be filed for the road.

(17.) Page 11-34 & 35 11.14 (b)(ii) Biological:

(1) The concession made is untrue as to providing parcial public access to the upper basin. The road from either Parks or Denali Highways will open up the lower portion of the basin to the public for recreational purposes. There is a difference between the two routes which has been neglected. An all Denali route will open up only the portion north on the Susitna River which is already being used by ATV's. Whereas, the Parks Highway route will open up both the northern and southern side of the lower basin to public traffic and still retain the ATV use to the north. Overall, from a biological and wilderness retention standpoint, the all Denali route would be preferable.

(2) The fourth objective retained is vage, misleading and ignoring the recreational value the reservoirs offer. It is vage because it really doesn't state any pertinent facts. It is misleading since terrain is not a factor in controlling vehicle traffic. The traffic is on the road not over cross country terrain. As to ATV use between Parks Highway and Devil Canyon Dam site, the soil and vegetation is highly suseptible to environmental damage by the off road vehicles; probably even more so than the highlands found on the Denali route because of the deeper and more moist soil characteristics.

As to the recreation potential, by mentioning control access beyon the Devil Canyon Dam site, it presents a strong indication that the recreation values are not being considered in the overall project.

(3) The last paragraph - The statement "Road management will reduce the adverse biological impacts associated with an access connection to a major highway to a minimum" would apply to any route selected including the Denali access. Yet it is assumed the resource agencies are willing to apply it for the Parks Highway route but not to the Denali Highway route. Why?

18. Page 11-35 11.14 (b)(iii) Social:

(1) The first concession made is not true. Any of the road access discussed to the dam sites will provide access to the lower portion of the upper Susitna Basin. See comments under item 17 (1).

(2) The second concession should be expanded to read Gold Creek and to the expected population increase in the Trapper Creek area. As previously stated under item 14 (1), why hasn't any mitigation measures been taken to reduce the impact to Indian River and Gold Creek area?

(3) The first objective retained would apply for any route selected. By taking the same attitude for the Denali route combined with a good land use and resource management plan the biological impacts would be reduce to a minimum. At the same time it will releive Trapper Creek and Talkeetna of the social-economical impacts.

(4) The second objective retatined does not really address the main consern of Talkeetna - Trapper Creek area which is the population increase. See comment 14 (1).

It is agreed that the all-rail plan would have a greater impact on Talkeetna since this would be the main jumping off spot for the construction workers.

(5) Next to last paragraph.

a. If a good land use and resource management plan is developed and applied correctly for the area, the Denali route would actually have a better biological advantage over the Parks Highway route. See comment 11 (9).

b. As previously stated under comment 12 (6), the preference of the Native landownwrs should not be considered unless they are willing to pay for their share of the cost for the construction. Public funds should not be used to develop a private corporations land especially since no access between communities are involved.

19. Table 11.2 Identification of Conflicts:

(1) The minimized cost criteria for Plan 11 should be changed to '2' rating since it is within the $50MM variance.

(2) Minimize Biological Impacts for Plans 6 and 11 should be changed to a '2' rating on the bases proper land use and resources management plans can be developed and accepted which will actually improve the envioronment over the present condition.

(3) The preference for native landowners should be dropped completely unless they are willing to pay their share of the cost for constructing and maintaining the road.

(4) Accommodate local community preference.

a. Plan 2 should be changed to a '1' rating since an all railroad route will have a greater impact to Talkeetna area.

b. Plan 3 should be changed to a '1' rating since three communities will be impacted.

c. Plan 7 should be changed to a '1' rating since three commumities will be impacted.

d. Plan 8 should be changed to a '1' rating since an all rail route to Gold Creek will have a greater impact on Talkeetna.

e. Plan 9 should be changed to a '1' rating for the same reasons as 'a' and 'd'.

f. Plan 10 should be changed to a '1' rating for the same reasons as 'a' and 'd'.

g. Plan 11 should be changed to a '3' rating since it satisfis all local commumities.

20. Other Comments:

Not mentioned is the assumption the Devil Canyon Dam may never be built. This has been mentioned as a possibility during several public hearings. If this could be true, them it should be one of the major factors in deciding which route is selected. What would be the varius cost per access routes if this happens? How would this change the social and biological impacts, etc.? All these items must be addressed before selecting the perferred route.

21. Summary:

From all indications, the report in its decision making is slanted one way. There are numerous assumptions made that apply to all routes yet they were directed to a particular route and ignored on the others This has a tendancy to mislead a person not fully knowledgable in dealing with the whole parameter of land use management in making a selection of one land use item over another.

Land use and resource management planning was not injected into the process of selecting a preferred route other than road management for the Parks Highway. In all projects of this size and nature, it is probably the most important function to be carried out prior to making a decision along with the safety of the structual engineering design and economical feasibility study of the project.

The report lacks sufficient detail information for making a rounded out conclusion on the varius items discussed in the selection process.

More wildlife data could be gathered and analyzed but it is questionable the additional funding is worth the effort. Overall, the environmental conserns on the wildlife and fisheries are not that great either for the route access, the impoundment areas, or the wildlife and fishery down stream from the dam sites. Any additional funding should be directed toward a land use and resource management plan instead. The plan should be developed by a field oriented multi-resource planning team with representation from the private landowners being effected. and not by an one resource oriented group or desk personnel. As a minimum, two years would be needed to develop and approves the plan. The plan could be incorporated into an Environmental Impact Statement.

Based upon the environmental data presented by ACRES, using proper assumptions for all routes, injecting the comments made on the varius items including a good land use and resource management practices, and the possibility of the Devil Canyon Dam not being built, the Denali access route (plan 11) would be the preferred route.

Plan 6 would be the preferred route if there is an quarantee that the Devil Canyon Dam will be built.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 1668
Juneau, Alaska 99802

STATEMENT FOR
ALASKA POWER AUTHORITY
BOARD OF DIRECTORS

Anchorage, Alaska
April 16, 1982

by

ROBERT W. MCVEY
REGIONAL DIRECTOR
NATIONAL MARINE FISHERIES SERVICE
Juneau, Alaska

The National Marine Fisheries Service (NMFS), within the Department of Commerce, has Federal responsibility for marine, estuarine, and anadromous fisheries. Several laws, including the Fish and Wildlife Coordination Act, require our agency to assess the impact of water resource developments on fishery resources. Regulations of the Federal Energy Regulatory Commission (FERC) specifically require applicants for license of a major hydroelectric project to consult with

NMFS and respond to those concerns or recommendations our agency feels are necessary to protect fishery resources. Our responsibilities for anadromous fishery resources have resulted in the development of considerable NMFS expertise in addressing the potential impacts of hydroelectric facilities on the salmon resources of the northwestern U.S.. The NMFS and its predecessor agency, the Bureau of Commercial fisheries, has been actively involved in efforts to study and preserve salmon runs to the Columbia River basin over three decades. While the current scope of our involvement with hydropower development in Alaska is considerably less than in the northwest states, we expect to draw upon our agency's overall expertise and involvement with such developments during our review of the Susitna dam proposal.

We recognize the requirement placed upon the Alaska Power Authority (APA) to submit recommendations to the Governor and the legislature on a future course of action regarding the Susitna project. Accordingly, we appreciate the need for APA to have resource agencies' opinions available for consideration at this time. We feel, however that it is premature for NMFS to give a definitive evaluation on the acceptability of the project with respect to energy benefits versus fish losses. It is more appropriate therefore, that we describe our basic expectations with the coordination process and our general environmental concerns.

(1)

MC

(2) First, I would like to emphasize the need for a comprehensive understanding of the importance of fishery resources within the project area. The Susitna River drainage is an extremely productive system with an annual salmon run producing a large percentage of the commercial Cook Inlet catch. These fish are very important to both the commercial fishing industry and the sport fishing sector. Salmon and several resident species such as rainbow trout, Dolly Varden and grayling are sought by sport fishermen. The fish of the Susitna River also contribute to the ecosystem of the area by providing food to other fish, birds, and wildlife. Here in Alaska our fisheries represent part of a lifestyle which, while difficult to describe and impossible to place value on, is no less real.

The two-dam proposal will impact these fisheries. While not all of those fish utilizing the system will be directly impacted, we are concerned about any loss of fisheries resources.

Only with an in-depth understanding of the fish and anticipated impacts, can we fully weigh the costs associated with hydro development, and perhaps, find ways to accommodate both. It is important, therefore that fisheries research and studies not only identify the species of fish occupying the Susitna drainage and describe their ecological characteristics and needs, but also identify areas of impact and measure to avoid or mitigate those impacts.

The necessity of obtaining comprehensive environmental data is also recognized by the FERC in their requirement that such information be specific, accurate,, and sufficiently quantified to convey a precise picture of the project and its probable effects.

This leads us to my second point in which I would like to discuss several aspects of the Susitna dam project that are of concern to our agency.

(3) The Susitna Hydroelectric Project Feasibility Report has been prepared to assist decision makers by describing the economic, social and environmental concerns associated with the project. In this regard the document performs well. However, the Feasibility Report is also intended to provide the basis for application for license to the FERC. ← 4 The regulations of the FERC are clear in describing the importance of including adequate environmental data in the license application. Further, they require this information to be provided on a level commensurate with the scope of the project. At this time we do not feel this level of detail has been reached. Without the results of

additional study in several areas, various aspects of the proposal will be poorly described or understood. These deficiencies do not imply that the Feasibility Report was improperly prepared or presented. Rather, they reflect on the limited information available as of this date.

One area of limited information in the Feasibility Report deals with the effects of post project flows on the fisheries resources. The Feasibility Report discusses the importance of side channels and sloughs between Talkeetna and Devil Canyon. These areas are heavily utilized by spawning and rearing salmon. The impact of project flows to these areas will determine , to a large extent, the fishery impact attributed to the project. These sloughs therefore represent an area requiring consideration of potential mitigation and/or enhancement measures. To date, less than one eighth of the side channel and slough areas have been surveyed. Further, the impacts of various flow regimes on the habitat are unknown because the hydrological and ecological relationships between the mainstem Susitna and these areas have not been adequately studied. An in-depth study of projected flow regimes is needed. The results of a comprehensive In-Stream Flow Study would allow a balancing of fish habitat losses against power generation, and other mitigation possibilities that could be evaluated.

(4) kf

Temperature changes within the Susitna River are expected to result from construction and operation of the dams. These changes could present both positive and negative changes to fish populations. The APA has used a computer model to predict and describe these changes. Currently, we do not believe a high level of confidence exists in the projected post project temperature within the two reservoirs, the Susitna mainstem, and the side channels and sloughs. Thermal changes may present significant problems to salmon, and additional study will be necessary before possible impacts can be adequately defined.

(5) kf

The Feasibility Report states the objective of the Susitna mitigation effort is to achieve no net loss. To achieve this goal, specific studies must occur which will develop mitigation options identified in the Feasibility Report. We do not believe that a mitigation plan can be developed, based upon available information, which would satisfy the requirements of the FERC. Basic to any mitigation plan is a comprehensive understanding of the resource and the potential impact the project will present to the resource. Again, we do not believe this level of understanding has been reached.

(6) kf

The FERC regulations concerning license application require a report that describes the fish, wildlife, and botanical resources. Information in this report is to include temporal and spatical distributions of certain fish species. As some salmon within the Susitna River have life cycles of five or more years, it would seem reasonable to allow at least

(7) kf

this long for fishery studies. To date, the fisheries studies specific to the APA proposal have occurred for only one field season. It is not reasonable to assume that such an abbreviated sampling is adequate for proper characterization of resources. For example, pink salmon exhibit a two year cycle with even year runs being much stronger than the odd years runs in Upper Cook Inlet. At this time, we have no information on the size of even year pink salmon runs to the upper Susitna or the areas of the River in which these fish spawn.

We feel it is unreasonable to discuss mitigation details before adequate knowledge of the fishery resources exists. The Power Authority has been informed of these concerns and data gaps, and of the steps necessary to correct them. Our agency has previously stated that the environmental data available from Phase I studies will not support an adequate evaluation of project impact. We continue to recommend that the anticipated date for submitting the license application be delayed to allow additional data collection.

It is our understanding that the draft license application for the Susitna project will soon be available for review. We are concerned that the application will reflect the serious deficiencies we have mentioned. If our review shows this to be the case, we feel our agency will have no alternative but to request the FERC to reject the application or direct that the deficiencies be corrected. We very much desire to avoid this situation.

Finally, I would like to close my statement with a look towards the future and a word of encouragement. The undertaking of an environmental study for a project such as Susitna is an enormous task. Accordingly, the Power Authority has initiated a very comprehensive series of studies which when completed will provide us with a better understanding of the full range of project related effects. Indeed, it may be possible to construct and operate the dams in such a way as to achieve the Authority's no net loss goal by mitigating fishery impacts, and/or by enhancing fishery habitat in certain areas.

I know the Board of Directors appreciates the importance of our fisheris. I hope I have conveyed to you the benefits of detailed studies to obtain essential information. In formulating its recommendations to the legislature, I sincerely encourage the Board to consider the critical need for this information and the implications of proceeding in its absence.

DNR

April 16, 1982

DEPARTMENT OF NATURAL RESOURCES'S
TESTIMONY TO THE ALASKA POWER AUTHORITY BOARD OF DIRECTORS

I appreciate the opportunity to provide comments to the Power Authority Board of Directors on the Susitna Hydroelectric project. I regret that, because of other commitments in Juneau, I am unable to personally deliver these comments.

At the invitation of the Alaska Power Authority, the Department of Natural Resources has been working informally with the Authority over the last two years to help formulate and carry out studies designed to answer the questions which ultimately will determine whether the Susitna Dam proposals are feasible. The purpose of this testimony today is twofold: First, to identify Susitna Hydroelectric issues that are within the sphere of DNR's authority; and second, to make recommendations to the Board of Directors on the continuation of project development, as requested in the January 26 letter from Mr. Conway.

SUSITNA HYDROELECTRIC RELATED ISSUES WITHIN THE PURVIEW OF THE DEPARTMENT OF NATURAL RESOURCES

The Department of Natural Resources will be required to make decisions on two major facets of the Susitna Hydroelectric Project. These are:

1. DNR responsibilities for water appropriation (and possibly instream flow reservations) from the Susitna River.

2. Rights-of-Way permits for access into the dam sites and transmission line routes. Other land use permits for access to construction sites, gravel for construction, and other land use related needs as they occ[illegible] on state owned lands.

The role of the Department of Natural Resources in water rights appropriation will be an adjudicatory one. According to Alaska Statute 46.15.080 (b), the impacts of water appropriation on the public interest shall be considered during adjudication. Areas of public interest are defined in the Statute as follows:

1. The benefit to the applicant resulting from the proposed appropriation.

2. The effect of the economic activity resulting from the proposed appropriation.

3. The effect on fish and game resources and on public recreational opportunities.

4. The effect on public health.

5. The effect of loss of alternate uses of water that might be made within reasonable time if not precluded or hindered by the proposed appropriation.

6. Harm to other persons resulting from the proposed appropriation.

7. The intent and ability of the applicant to complete the appropriation.

8. The effect upon access to navigable waters.

The DNR will be looking to the Feasibility Study data and information to describe the relationship between various streamflow levels and how they will impact fisheries and aquatic habitat downstream. Thus, from this Department's perspective, instream flow studies and the relationship of various flow levels to aquatic habitats and fisheries resources are vital. The studies administered by the APA will be the fundamental source of data and information used by DNR to make the public interest findings described above. We are eager to review and comment upon the present and future plans for instream flow studies. To date, we have not been provided an opportunity to review or comment upon the instream flow study approach.

The access to the dam sites and the policy surrounding the extent of access after construction will lead to one of the most significant impacts of the project. The Power Authority has stated that the permit for use of a "pioneer road" is needed in 1982 (before a F.E.R.C. permit is issued) if the power is to be on line eleven years later. One significant issue is the possibility of the construction of a road to the proposed dam sites and a subsequent decision by the state not to construct the dams. It would appear to be in the best interest of the Power Authority, the land managing agencies, and the public to identify other alternatives which will allow the necessary access to the proposed dam sites in a manner which prevents irreversible impacts. In order to prevent this issue from being a potential delay in progress, we recommend that the APA take the lead in convening a multi-agency, multi-disciplinary effort to accomplish the goal stated above. P4

The second issue is the long term land use implications of access to the proposed dam sites. The provision of access to the dam sites should not unwittingly determine the types and extent of land use impact on the surrounding lands in the upper Susitna Valley. Carefully determined access route decisions could result in a multiple purpose route which could facilitate and enhance other uses of the surrounding lands. In order to accomplish this, the dam access route decision should be made in conjunction with surrounding land owners, land managers, and the general public. As on the other issue above, the DNR is willing to participate cooperatively with the Alaska Power Authority, other agencies, and the public to resolve this matter so that it does not become a potential delaying factor for the proposed project or a future management problem for land owners and managers. K4

SUMMARY AND RECOMMENDATIONS

In summary, the Department of Natural Resources has three recommendations:

1. The Department supports continued studies in the socio-economic, technical, and environmental areas. The preliminary work accomplished so far indicates that the project is technically feasible. Further work is needed to establish the information and data for water appropriation and fishery mitigation. Additionally, we recommend further work on the timing, route and conditions of access to the proposed dam sites.

2. With respect to the question of whether it is desirable to submit an application to the F.E.R.C. on September 30, 1982, we offer the following comments. The APA Board of Directors and the staff should carefully weigh the advantages and disadvantages of submitting the formal application on September 30, 1982. If that course of action would result in the APA acquiring a F.E.R.C. permit to construct in the most timely and economical way, then that course of action makes sense. However, if on the other hand, a formal application would result in delays, increased potentials for litigation, and a hardening of adversarial roles between the APA, other agencies, and other interested parties, then the possibility of these delays should be considered. We believe that the APA Board and the Staff are in the best position to evaluate pros and cons and to determine whether a F.E.R.C. application on September 30, 1982, is desirable or not. From our more narrow agency standpoint, DNR is not opposed to a F.E.R.C. application so long as our agency concerns and responsibilities can be fully and openly determined through the traditional intervenor process.

3. We compliment the APA Board of Directors and staff for encouraging inter-agency interdisciplinary approach to identify ways to improve the coordination and ultimately the results of the feasibility studies. We believe that strengthening this approach will facilitate a more cooperative and constructive role for those agencies which have responsibilities that require them to take action on the Susitna Hydroelectric Project. Specifically, we recommend strengthening and enhancing the role of a group similar to the Susitna Hydroelectric Steering Committee which has been providing informal agency comments to the APA on this project for the last two years.

Testimony presented to the Alaska Power Authority Board by Deputy Regional Director LeRoy Sowl, U.S. Fish and Wildlife Service, on April 16, 1982, concerning the Susitna Hydroelectric Project.

The mission of the U.S. Fish and Wildlife Service is to:

> Provide the federal leadership to conserve, protect, and enhance fish and wildlife and their habitat for the continuing benefit of people.

You might ask, therefore, why is the Fish and Wildlife Service concerning itself with a State energy project?

The Susitna Hydro Project must be licensed by FERC before construction begins. The Fish and Wildlife [redacted] Coordination Act requires that fish and wildlife conservation be given equal consideration with other features of a proposal throughout the planning and decision processes. FERC is further required to consult with state and federal fish and wildlife resource agencies to determine whether there will be project related losses of fish and wildlife resources.

The Coordination Act and Section 102(2)(3) of the National Environmental Policy Act both require:

(1) A description and quantification of the existing fish and wildlife and their habitat within the area of project impacts;

(2) A description and quantification of anticipated project impacts on these resources; and

(3) Delineation of specific mitigation necessary to avoid, minimize, or compensate for these impacts.

The Fish and Wildlife Service has reviewed the draft feasibility report with respect to its area of expertise. Deficiencies are readily apparent with respect to all three requirements. There has been a failure to quantify the habitat types present, anticipate the impacts or to identify required mitigation. All of these deficiencies are directly realted to the unrealistic time constraints placed on data collection.

Some of the specific deficiencies we have noted are, as follows:

(1) Terrestrial studies have focused on the impoundments and their immediate vicinities. The assessment of wildlife and fishery resources must be extended to downstream areas, transmission and access corridors, and areas of secondary or indirect impacts.

(1) M6

(2) The terrestrial studies have been qualitative. Quantification, through an acceptable methodology, is essential to the evaluation of habitat values, the probable impacts and the selection of appropriate mitigation. APA has stated its objective as "no net loss." Without methodology to quantify either losses or mitigation there is no way to assess when this goal has been achieved.

(3) Fisheries studies have been conducted for only one year. A study of this scope is sufficient only for a preliminary evaluation of the impacts and to provide for refinement and focusing of longer term studies. One year is not enough time to provide the data necessary to fully describe the resource. Any attempt to assess impacts or plan mitigation within the context of the license application would be inadequate.

(4) There are inadequate data to describe the relationship between various stream flows and the productivity of fisheries and aquatic habitat downstream from the proposed Devil Canyon Dam. A fully thought-out instream flow study would provide the quantification necessary for any impacts evaluation and mitigation planning. Without this information any evaluation of project impact on fishery resource is missing an essential component, and effective mitigation planning is seriously hampered.

(5) Anticipated water temperatures and turbidity levels in the reservoirs and downstream from Devil Canyon have not been satisfactorily investigated. An adverse temperature regime has severe implications for the fisheries; downstream from Devil Canyon as well as any potential fishery in the reservoirs.

(6) The terrestrial impacts assessment and mitigation options put forth by the consultants are quite general, not sufficiently thought through, and provide an inadequate basis for a full discussion of the project. This is directly related to the lack of an acceptable methodology for quantification.

(7) Public access and the mode and route of construction access need to be fully addressed within the context of mitigation. The environmental consultants have recognized that public access poses the greatest threat to the terrestrial resources, principally through disturbance. It is completely incongruous given this assessment and APA's goal of "no net loss" that the consultant should attempt to divorce access from consideration of mitigation as they have done.

(8) A pioneer road constructed prior to FERC licensing, is proposed. The sole purpose of this road is to facilitate project construction. We do not expect FERC approval for this proposal. FERC cannot

give its approval without an environmental impact statement. In addition, habitat losses sustained must be justified by the need for a project. The need is proven when, in the case of a power facility, the license is issued. Prior to that point, there is no project and there is no habitat degradation that can be justified.

We believe that alternatives to Susitna must also continue to be studied. Comparison of tradeoffs for fish and wildlife resources attendent to the North Slope natural gas, Cook Inlet natural gas, Beluga coal, other hydroelectric generating alternatives, conservation, and other options have not been evaluated to an acceptable level. Continued studies would allow for a full evaluation of the environmental costs.

The APA proposes to submit a licence application to FERC on September 30, 1982. The application will be based on the feasibility report. Given the numerous deficiences I have just noted a submission on the proposed date would be premature.

The Fish and Wildlife Service has had minimal involvement with the Susitna project during the last 2 and 1/2 years. We believe we have considerable expertise to offer APA in developing an adequate license application for submission to FERC.

One particular area in which we believe we could add substantially to the study is in quantifying the fish and wildlife data for evaluating impacts and formulating mitigation plans. The Service's Habitat Evaluation Procedures would provide a framework within which habitat value can be evaluated. This methodology was used in both the Terror Lake and the Bradley Lake Hydroelectric Projects. Our Incremental Instream Flow Methodology allows for the quantification of the anticipated impacts of proposed flow regimes on aquatic habitat. Modification would need to occur to this methodology but we fully believe that it provides the groundwork upon which to build. It was utilized in the Terror Lake Project to evaluate impacts and formulate mitigation measures to protect the fisheries resources.

The Board should realize that the very decision to file the application with FERC would automatically change the relationship between APA, its consultants, and the Fish and Wildlife Service. With the decision to file, our attention must immediately focus on the licensing process. We no longer would have sufficient time and manpower to assist and provide expertise to APA and its consultants. We would expect that other federal agencies would be similarly affected.

We recommend that the decision whether or not to submit an application to FERC should be deferred until data gathered this year has been evaluated. We must have a better understanding of the fishery-habitat relationships; a more thorough understanding of the relationship of the aquatic habitat to flows and temperatures; an understanding of what the terrestrial tradeoffs are; and a greater comprehension of the reservoirs' temperature and turbidity regimes.

We greatly appreciate the opportunity to present this testimony and look forward to a continued working relationship.

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
Anchorage District Office
4700 East 72nd Avenue
Anchorage, Alaska 99507

IN REPLY REFER TO
2920/013

APR 15 1982

Alaska Power Authority
Board of Directors
334 West Fifth Avenue
Anchorage, Alaska 99501

Gentlemen:

The Bureau of Land Management appreciates the opportunity to address and comment to this board on the proposed Susitna Hydroelectric Project. Curt McVee, Alaska BLM State Director regrets that he is unable to attend and comment today due to other commitments. I am Dick Vernimen, Associate District Manager, BLM Anchorage District.

Since the Anchorage District will be the office making the recommendations on the project I will be speaking from that position.

The BLM's charge as a multiple-use agency is to allow the use of the public lands to its highest capacity and values and to mitigate impacts where possible. In the case of this project we are involved with a mixed land pattern requiring us to act as interim land managers in regards to unconveyed Native and State selected lands. Our charge is the same but the land status requires more concurrence concerning decisions on what is allowed to happen on these lands.

Based on what we know about the project today from reviewing documents and meetings with both ACRES and APA we do not forsee any reason why the continuation of project development should not proceed. We offer the following information for your use:

1. Pioneer Road Routes.
   As we understand the situation, for those routes that originate either on the Alaska Railroad or the Parks Highway, the Pioneer Road would have to be constructed during the years 1983-1984 in order to arrive at improved access during 1985 and early 1986, which would then provide for a state of continuous access from the middle of 1986 onwards. The Pioneer Road concept requires road rights-of-way and related permits during the year of 1982 which is prior to the FERC licensing process. There are obviously several problems with the Pioneer Road concept. As we now understand the situation, they are as follows:

1. Early construction of the Pioneer Road would have to be permitted by a BLM right-of-way that would require an environmental impact statement separate from those documents now being prepared for the project. Approaching the Pioneer Road Project in a separate EIS without evaluating the entire Susitna Project may lead to a legal challenge of piecemealing a bigger project. In other words, we could be challenged that the road is merely a part of a larger overall hydroelectric project which should be analyzed at one time.

2. The Pioneer Road would deviate from the location of the final access road particularly on the route south of the Susitna River between Devil's Canyon and the Watana site.

3. The Pioneer Road concept requires decision making by the Cook Inlet Native Corporation, State of Alaska, and the Bureau of Land Management, prior to licensing by FERC. We are very much concerned that a decision on the pioneer road may lead to serious environmental and economic consequences prior to the actual licensing of the project. While it is not likely a FERC license will be denied after the feasibility of the project has been established, time has a way of changing the values set by many of our past decisions and we as separate agencies cannot take the Pioneer Road concept lightly. There are three other aspects of the Pioneer Road concept we should mention. Those are: 1) it is very likely a Section 10 permit will be required for crossing navigable waters (Susitna River), 2) a Section 404 permit for wetlands will be required from the Corp of Engineers, and 3) the decision on the Pioneer Road concept will be elavated to the level of the Secretary of the Interior. All of the mentioned problem areas take time and, as time is of the essence, it is extremely important that, if a route is chosen that requires Pioneer Road construction, that the decision be made as early as possible and that the application for right-of-way and other permits be made to the Department of Interior and Department of Defense agencies at the earliest possible moment.

2. Environmental Impacts:
We are concerned about the relative environmental tradeoffs that must be made if this project is to be constructed. We cannot at this time recommend to you a preferred access route and mode. There are obviously some routes however that pose relatively higher environmental costs. Those routes

are the one south of the Susitna River between Devil's Canyon and Watana and secondly, the corridor paralleling the Indian River. Also of significant environmental concern is the route proposed south from the Denali Highway. The impact here is somewhat mitigated by the western route as opposed to the route via Butte Lake. It is still unclear as to the relative magnitude of the impact on caribou posed by the western route south from the Denali Highway. While we are concerned as to the impact on that caribou herd, we feel that the environmental tradeoff in question is one of impacts on the caribou herd versus the impacts of more productive habitats in the area of Indian River or Fog Lakes area. From an environmental standpoint, the route southerly from the Denali Highway seems preferrable from the aspect of minimizing disturbance of productive habitat. The route from the Denali, however, poses a secondary impact, that of human access to the project area after construction. Public access to the project area is a two-edged sword. We recognize that the Watana Project may provide a valuable recreation source for people of the southcentral Alaska. It is also recognized however, that public recreation can be a very destructive activity. We submit that control of the access, the State Game Laws, and the project management, after construction, are tools that can be used to manage the adverse effects of increased recreation opportunities. The question of public access to the project area is a spinoff of the type of access that is developed for project construction. While many problems are present we submit to you the following conclusions:

a. Both rail and road access will be required for construction. We feel this concept provides adequate flexibility and logistics during construction phases.

b. It is improbable the State of Alaska can construct a project of this magnitude without some form of readily available public access as a residual product.

c. The entire Susitna project is surrounded by primarily two kinds of land ownership, approximately 215,000 acres of private lands, in Native ownerships, and a very large acreage of State Land. The Cook Inlet Region Corporation has indicated they prefer development of their lands as a means of generating revenue. We can deduce that the State of Alaska likewise is committed to the development of the highest and best use of its land. This land ownership pattern and the respective management philosophies lead one to believe that road access will be supported by these two very important landowners in the area of the project.

It is our position to work with you on the project proposal in the most expediant manner we can while working within the laws and regulations placed upon us. If there are further questions concerning our comments please contact me at (907) 267-1246. Thank you.

Sincerely yours,

Richard J. Vernimen

Richard J. Vernimen
Associate District Manager

IN REPLY REFER

United States Department of the Interior

2920 (013)

BUREAU OF LAND MANAGEMENT

Anchorage District Office
4700 East 72nd Avenue
Anchorage, Alaska 99507

JAN 7 1982

Mr. Eric Yould, Executive Director
Alaska Power Authority
334 W 4th Ave., 2nd Floor
Anchorage, Alaska 99501

Dear Mr. Yould:

The BLM has been contacted by Acres American requesting formal coordination and review on five Susitna Hydroelectric Project documents. Comments on these documents cannot be accomplished under the guidance of the ACRES Coordination Plan until a coordinated interagency approach is developed for review and comments. Such a process has been recommended by the Susitna Steering Committee and is awaiting your approval.

Your recent letters and briefings have brought into focus several aspects of the access study that I would like to comment on. Those subject areas are land status, Pioneer Road concept, environmental impacts, and the piecemeal effect on the project.

Briefly, the land status on the project area has not changed significantly within the last year; however, there are several problems concerning land status we feel should be brought to your attention. These problems areas are as follows:

1. The Chickaloon Native Corporation's administrative appeal to BLM Interim Conveyance No. 285, which conveyed lands to Cook Inlet Region Inc. (CIRI), casefile No. VLS-80-1, has been dismissed by the Alaska Native Claims Appeal Board (ANCAB).

2. Another action filed by the Chickaloon Native Corporation is a civil suit filed in U.S. District Court (casefile number A-80-207). This court suit was filed on village deficiency lands which encompass the entire project area. There are also lands within this area that have been selected by the State of Alaska and CIRI. Mr. Dennis Hopewell of the U.S. Department of Interior Regional Solicitor's Office is the Attorney on the above case for the Department of Interior. The civil court case will be a consideration in the granting of any right-of-ways by the Department of Interior for access to the project. While the Department may grant right-of-way permits on lands under litigation, the standard Department practice

includes notification of the plaintiff (Chickaloon) of the proposed issuance of right-of-way. This practice allows the plaintiff to file for a restraining order that would stop the issuance of the right-of-way. We recommend that the APA investigate further, with the BLM and the Regional Solicitor's Office, the questions of land and litigation status.

3. The entire area within the Cook Inlet agreement boundary is land considered on as Appendix A lands.

The second concept we would like to discuss is the pioneer road as proposed by Acres American during the October 20th briefing this year. As we understand the situation, for those routes that originate either on the Denali Highway, Alaska Railroad, or the Parks Highway, the Pioneer Road would have to be constructed during the years 1983-1984 in order to arrive at improved access during 1985 and early 1986, which would then provide for a state of continous access from the middle of 1986 onwards. The Pioneer Road concept requires road right-of-way and related permits during the year of 1982 which is prior to the FERC licensing process. There are obviously several problems with the Pioneer Road concept. As we now understand the situation, these are some of the problems.

1. Early construction of the Pioneer Road would have to be permitted by a BLM right-of-way which would require an environmental impact statement separate from those documents now being prepared for the overall Susitna project. Approaching the Pioneer Road Project in a separate EIS without evaluating the entire Susitna Project may lead to a legal challenge of piecemealing a bigger project. In other words, we could be challenged that the road is merely a part of a larger overall hydroelectric project which should be analyzed at one time.

2. The Pioneer Road would deviate from the location of the final access road particularly on the route south of the Susitna River between Devil's Canyon and the Watana site.

3. The Pioneer Road concept requires decision making by the Cook Inlet Native Corporation, State of Alaska, and the Bureau of Land Management, prior to the licensing by FERC. We are concerned that a decision on the Pioneer Road may lead to environmental and economic consequences prior to the actual licensing of the project. While it is not likely a FERC license will be denied after the feasibility of the project has been established, time has a way of changing the values set by many of our past decisions and we cannot take the Pioneer Road concept lightly. There are three other aspects of the Pioneer Road concept we should mention. Those are: 1) it is very likely a Section 10 permit will be required for crossing navigable waters (Susitna River), 2) a Section 404 permit for wetlands will be required from the Corps of Engineers, and 3) the decision on the Pioneer Road concept will likely be elevated to the level of the

Secretary of the Interior. All of the aforementioned problem areas take time and, as time is of the essence, it is extremely important that if a route is chosen that required Pioneer Road construction the decision be made as early as possible and that the application for right-of-way and other permits be made to the Department of the Interior and Department of Defense agencies at the earliest possible moment.

The third major subject brought to our attention is environmental impacts. As agencies we are all concerned about the relative environmental tradeoffs that must be made if this project is to be constructed. We cannot, however, at this time, recommend to you a preferred access route and mode. There are obviously some routes that post relatively higher environmental costs. Those routes are, the one south of the Susitna River between Devil's Canyon and Watana, and secondly, a significant area of environmental concern is the corridor paralleling the Indian River. Also, a significant environmental concern is posed by the route south from the Denali Highway. The impact here is somewhat mitigated by the western route now preferred as opposed to the route via Butte Lake. It is still unclear as to the relative magnitude of the impact on caribou posed by the western route south from the Denali Highway. While we are greatly concerned about the impact on that caribou herd, we feel that the environmental tradeoff in question is one of impacts on the caribou herd versus the impacts of more productive habitats in the area of Indian River or Fog Lakes. From an environmental standpoint, the route southerly from the Denali Highway seems preferrable from the aspect of minimizing disturbance of productive habitat. The route from the Denali, however, poses a secondary impact, that of human access to the project area after construction. Public access to the project area is a two-edged sword. We recognize that the Watana Project may provide a valuable recreation source for people of the southcentral Alaska. It is also recognized, however, that public recreation can be a destructive activity. We submit that control of the access, the State Game Laws, and the project management after construction, are tools that can be used to manage the adverse effects of increased recreation opportunities. The question of public access to the project area is a spinoff of the type of access that is developed for project construction. While many problems are present we submit to you the following conclusions:

a. Both rail and road access will be required for construction. We feel this concept provides adequate flexibility and logistics during construction phases.

b. It is improbable the State of Alaska can construct a project of this magnitude without some form of readily available public access as a residual product.

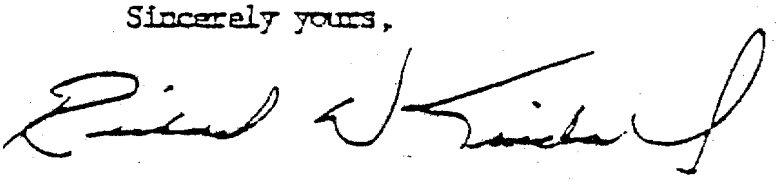
c. The entire Susitna project is surrounded by primarily two kinds of land ownership, approximately 215,000 acres of private lands

in Native ownerships, and a very large acreage of State land. The Cook Inlet Region Corporation has indicated they prefer development of their lands as a means of generating revenue. We can deduce that the State of Alaska likewise is committed to the development of the highest and best use of its land. This land ownership pattern and the respective management philosophies lead one to believe that road access will be supported by these two very important landowners in the area of the project.

The 1993 time frame for power-on-line deadline has been a highly controversial subject and it is not well understood how this was established. We would appreciate clarification of the justification for establishing 1993 as a planning objective.

It is hoped that this letter clarifies BLM's position on land status, EIS, and ROW granting, FERC, and coordination. Should you have further questions that require elaboration and elucidation feel free to contact me.

Sincerely yours,



STATE OF ALASKA
DEPT. OF ENVIRONMENTAL CONSERVATION
(907) 465-2600
JAY S. HAMMOND, GOVERNOR
POUCH O – JUNEAU 99811

April 21, 1982

Mr. Charles Conway
Chairman, Board of Directors
The Alaska Power Authority
821 N Street, Suite 201
Anchorage, AK 99501

Dear Mr. Conway:

Subject: Decisions on the Proposed
Susitna River Hydroelectric Project

As we are all aware by now, a decision on further work on the proposed Susitna hydroelectric project will not be an easy one, especially considering the legal constraints we are under. There are a number of alternatives which the Authority should consider, not only those recommended by Executive Director Eric Yould, but several intermediate ones. In order to understand this situation better, I would like to share with you my ideas on several of the factors we are required to consider when making our decisions:

A. Economic feasibility and financial considerations. The Acres feasibility study and the Battelle Susitna alternative study determine economic feasibility using different mechanisms. Acres derives a "net economic benefit" formula which derives a present worth for the difference between the cost of the Susitna project over its projected economic life and the cost of the "best thermal alternative." Battelle derives a "levelized cost of power" which demonstrates the per killowatt-hour costs of several alternatives, one of which is Susitna. Although both studies predict that the Susitna project is "feasible," in that it presents a positive "net economic benefit" and a lower "levelized cost of power," the actual figures are quite close to those of the thermal alternatives, and are quite sensitive to a number of exogenous factors such as demand rates, cost of fossil fuel, discount rates, cost of borrowed money, inflation, cost escalation, and unknown technical factors. Further, the differential in costs between Susitna and its alternatives may be less than the inherent error in the calculations.

Acres indicates in its analysis that the Susitna project will suffer an "inflationary financing deficit" for at least the first

twelve years of its existence. This factor results in a projected production cost of the Susitna project of 30 cents per kilowatt-hour and of the base case thermal plan of 14 cents per kilowatt-hour. The "inflationary financing deficit" would begin to be repaid after the first twelve years of life of the Susitna project, but Acres does not speculate as to when it would be "zeroed out." Acres goes on to recommend that the State essentially pay for the "inflationary financing deficit" in advance so that the project can be "competitive" with the base case thermal option--that is, that it will generate power at, or cheaper than, thermally generated power. This analysis is sensitive to the same factors as the "net economic benefit" analysis--the thermal option costs are especially sensitive to price escalation of fuel. Also, Acres compares a subsidized Susitna project with an unsubsidized base case. It would be of value to see the projected energy costs from a variety of equally-subsidized comparisons of Susitna and the base case.

All this indicates that the economic feasibility of the Susitna project has not been demonstrated, at least to my satisfaction. Of equal concern are the financial considerations. In a very real sense, Susitna's financing is tied to the price of crude oil. If the price of crude oil is high, Susitna looks inviting when compared to the base case thermal option, and the State may have the oil revenues to provide the front-end subsidy Acres recommends, albeit not without sacrificing other capital projects. At present, however, the real price of crude oil is low, thermal generation may be more economically efficient than Susitna, and the State treasury cannot fund the "inflationary financing deficit" without severe sacrifice to the State's general fund budget. Also, revenue bond interest rates are so high as to potentially adversely affect the economic feasibility of this project.

Under the economic and financial analysis performed by Acres, the "net economic benefit" of the Susitna project does not inure to the Alaska Power Authority or the State treasury, it goes to individual ratepayers. In view of the fact that current legislation requires neither a repayment nor a rate of return on the State's cash investment in this project, regardless of the size of that "benefit," the State treasury will actually lose its investment in the power project, and the long-term opportunity costs associated with that loss.

The alternative to partial, or total, State financing of the Susitna project is to use revenue bonds, with perhaps some form of guarantee by the State, or some other form of bonding. If, however, the project were to be required to repay the entire costs, including interest, of the project, the "inflationary financing deficit" may result in early-year costs of power which

are twice those of the base case. It would be necessary, under this scenario, to require participating utilities to purchase power from the project on a "take or pay" basis where each utility must guarantee it will either purchase a minimum amount of power at the project's cost, or pay the equivalent amount to the project if it doesn't need that power. In this way, the Authority can assure it will recover sufficient revenues to pay the bond payments. The willingness of the pertinent utilities to enter into such agreements, knowing they may be able to generate less expensive power at least in the early years, is speculative.

B. Environmental and technical considerations. It would appear that, by and large, the Acres feasibility study adequately addresses most of the technical aspects of engineering design and construction. It also would appear that, with the possible exception of relict river channels, that sufficient information has been generated from field investigations to begin detailed design. It may be that new field information needs will emerge over the next few years of work on the project. However, it is not likely that this would result in sufficiently radical design changes to increase the project cost substantially.

On the other hand, there appears to be substantial question on the amount and quality of environmental information and the type and extent of mitigating measures, if any, that would be associated with this project. Virtually all federal and State resource agencies were critical of the level of information gathered to date, and several suggested that at least an additional year of data is required to understand the biological populations and physical environment. Further analysis was also indicated for an adequate understanding of the effects of this project on the living resources and other environmental factors.

The mitigating measures incorporated into this proposed project have a direct bearing on its costs and economic feasibility. In my view, both the capital and operating costs of the mitigating measures, be they fish hatcheries or other means, is a legitimate project cost and should not be left to the whims of the Legislature's appropriation process. It is not certain to what extent these measures were incorporated into the Acres and Ebasco cost estimates of this project. However, of even more importance is the impact of controlled flows on fisheries, and the in-stream flow needs of the resident aquatic populations. If the Susitna River discharge is managed to protect fishery habitat, a concomitant decrease in potential power generation may result. At present, there is no agreement between the staff of the Power Authority and the resource agencies on what the stream flow should be, however, a substantial deviation from the Acres optimal needs may result in the project becoming economically infeasible.

C. Alternatives to Susitna. I don't think anyone would be surprised by a characterization of the Battelle study as "disappointing." Although Battelle did review some traditional sources of electric power which might be alternatives to the Susitna project, but did not review in depth some options which, in my opinion, seem viable and quite possibly economically competitive with Susitna. In addition, Battelle did not review possible non-cost means of subsidizing public power in the railbelt area. Further, Battelle apparently considered at least some options as having substantial environmental objections which, at least in my opinion, are not all justified. Battelle did not adequately treat the options of using gas to generate power at Prudhoe Bay and transmitting it to Fairbanks and Anchorage, or of building a gas pipeline, independent of ANGTS, to Fairbanks and Anchorage, and using gas for home heating and electrical generation of the railbelt. Battelle did not thoroughly consider using Healy coal to fire a series of 200mw steam-electric power plants. The coal option was apparently criticized as causing air pollution problems and contributing to the "greenhouse effect" and "acid rain." Although the increase in ambient atmospheric CO_2 is not to be scoffed at, the contribution of six 200mw coal-fired plants to ambient CO_2 is probably negligible. As to local air pollution, that depends substantially on the location of the plants, but considering the type of coal involved and the type of technology available today, it is not likely that a perceivable impact on visibility would even result from a properly designed and operated plant. In addition, the low sulfur content of the Alaska coal available would argue against a potential decrease in the pH of precipitation.

Battelle also did not look at the possibility of the State using its natural resources, rather than cash, to subsidize an energy project. For example, the State could dedicate a portion of its North Slope royalty natural gas to the Alaska Power Authority at no charge; the Power Authority could then build a gas-fired power plant and the necessary transmission lines to carry power from the North Slope to the railbelt. Likewise, the State could dedicate some of its coal reserves to the Authority for use in coal-fired generating plants. Although I am sure there would be legal and technical problems associated with this approach, it is at least worthy of investigation.

D. The Federal Energy Regulatory Commission license process. The Susitna project may well be one of the largest non-federal power projects ever constructed. As a result, FERC will doubtless have a large number of intervenors who object to part, or all, of the State's application. I fully expect that a number of national environmental organizations, as well as their Alaska counterparts, will intervene in the FERC proceedings and contest the Susitna project as the "pork barrel" water resource project

of the 80s. Their success in intervention and/or contesting the required Environmental Impact Statement will depend upon the quality of the application before the Commission, the reaction of State and federal agencies to the project, and the environmental organizations' own resources and objectives. APA and the State have no influence over the latter factor, but we do control the quality of the application, and can work directly with affected agencies to address their consensus. At present, however, the reaction of resource agencies seems to range from ignorance of the project to something akin to opposition. Most agree, however, that more information and more planning is needed before an application is submitted to FERC. Submission of an application before these concerns are completely addressed will likely cause delay in the project because of the very adversarial nature of the FERC process, and will provide substantial and effective ammunition to project opponents.

The alternative of submitting a preliminary application for a FERC license has not been recently discussed by the Board. A number of witnesses suggested such an action, and indicated that it might be a way of involving the federal agencies, including FERC, in the project so that the Board might know more about what would be required to submit a satisfactory, complete FERC application. In addition, the preliminary application might well cause potential intervenors to identify themselves, and their concerns discussed.

E. Recommendations. Regardless of the decision by the Alaska Power Authority regarding Susitna, substantial new electric power generation facilities will be needed in the railbelt area, both to replace facilities being retired and to meet new demand. In the normal course of events, those facilities would be constructed by the utilities involved, however, the prospect of Susitna's construction has led to a hiatus in planning by public utilities for long-term, base load needs. Further, there may be substantial economic and resource efficiencies gained by central construction of generating facilities to serve all railbelt utilities. At present, the only institution that can construct central facilities is APA. To allow utilities time to plan for their needs, it is essential that APA make a firm decision and commitment within the next 2-5 years. Because of the economic uncertainties involving the Susitna project, and their sensitivity to timing of decisions, it may not be possible to meet the needs of the utilities and also make a firm commitment on Susitna at its most opportune time.

Considering all of the unknowns arising out of the Acres feasibility study and the Battelle report, I suggest that the Power Authority take the following action:

(1) Defer deciding upon submission of a formal application to the Federal Energy Regulatory Commission for at least one year.

(2) Investigate the possibility of filing a preliminary application and, if it is found to be to the Authority's advantage to do so, file such an application at the earliest opportunity.

(3) Continue studies of fish and wildlife and accelerate, when possible, design of mitigating measures.

(4) Continue work toward design of the project and any further associated field data collection.

(5) Investigate the possibility of entering into formal memoranda of agreement with resource agencies, especially the federal agencies, so that they can be provided with a formal avenue of communications with the Authority, and the funds necessary to properly evaluate this project.

(6) Inaugurate a new study of alternatives so that the analysis of alternatives required by the FERC EIS process will be adequate, and so that APA and the State can be assured of selection of that alternative which is optimal in economic efficiency, environmental, socio-cultural impacts, and other relevant factors. This study may be conducted by others, but it should be understood that the fundamental responsibility for its adequacy lies with the Authority.

(7) Recommend to the Governor that he formally designate, through an administrative order, an organization representing the affected State agencies, to work directly with the APA Board and staff. This group would help assure that the consensus of these agencies are addressed in some organized manner, rather than being revealed in the FERC intervenor process, as was suggested by the Department of Natural Resources.

Of course, all of the above is predicated upon the Authority receiving sufficient funding from the 1982 Session of the Legislature. Although that is, at this point, yet unknown, I have every confidence that our Susitna budget request will be honored.

I would be pleased to discuss these proposals in detail at the Board of Directors' meeting April 22, and trust the Board will award them every consideration.

Sincerely,

Ernst W. Mueller
Vice Chairman

cc: APA Board Members
Sue Greene, Office of
the Governor

APPENDIX E11G

CORRESPONDENCE RELATING TO ADDITIONAL STUDIES AND PROJECT REFINEMENT

APPENDIX 11.G

ADDITIONAL STUDIES AND PROJECT REFINEMENT

In response to agency concerns and in recognition that further studies, especially in the area of fisheries, were warranted prior to submitting a FERC license application, the decision was made by the Alaska Power Authority to delay the license application date. Studies and project refinements that received agency review included the wildlife/habitat issue, water quality and flow modeling, access plans, and downstream flow release schedule. Agency consultation took the form of Steering Committee meetings, modeling workshop, Fish and Wildlife Mitigation Review Group meetings, and request for written comment on the revised access plan. Correspondence, minutes of meetings, and meeting schedules are contained in the following pages.

Correspondence is presented primarily in chronological order. However, in some cases, a response to a letter directly follows the letter to facilitate an understanding of the flow of communication. This results in an interruption in the chronological sequence.

February 25, 1982
P5700.11.92
T.1533

Ms. Lee McAnerney
Department of Community and
Regional Affairs
Pouch B
Juneau, Alaska 98111

Dear Ms. McAnerney:

Susitna Hydroelectric Project
Agency Coordination Meetings

As an agency representative of the Historical and Archeological Group reviewing the Susitna Hydroelectric Project you are invited to a meeting on the morning of March 15, 1982 in the offices of Acres American Inc., 1577 "C" Street, Suite 305, Anchorage, Alaska. The purpose of this meeting will be to review the results of the Phase I archeological studies, assess mitigation options and discuss future study programs.

If you have any questions relating to these meetings, please contact Mr. Vern Smith of Acres at (907) 276-4888.

Sincerely,

KRY/ljr

John D. Lawrence
Project Manager

February 25, 1982
P5700.11.50
T.1537

Mr. Roy Huhndorf
President
Cook Inlet Region, Incorporated
P.O. Drawer 4N
Anchorage, Alaska 99509

Dear Mr. Huhndorf:

Susitna Hydroelectric Project
Agency Coordination Meetings

As a member of the Aesthetics and Land Use Group reviewing the Susitna Hydroelectric Project you are invited to a meeting on the afternoon of March 15, 1982 in the offices of Acres American Inc., 1577 "C" Street, Suite 305, Anchorage, Alaska. The purpose of this meeting will be to discuss the results of the Phase I studies and to review the alternative and proposed recreation plans.

If you have any questions relating to these meetings, please contact Mr. Vern Smith of Acres at (907) 276-4388.

Sincerely,

KRY/ljr

John D. Lawrence
Project Manager

February 25, 1982
P5700.11.71
T.1537

Mr. Keith Schreiner
Regional Director, Region 7
U.S. Fish and Wildlife Service
1011 E. Tudor Road
Anchorage, Alaska 99503

Dear Mr. Schreiner:

Susitna Hydroelectric Project
Agency Coordination Meetings

As a member of the Aesthetics/Land Use and Recreation Groups reviewing the Susitna Hydroelectric Project you are invited to a meeting on the afternoon of March 15, 1982 in the offices of Acres American Inc., 1577 "C" Street, Suite 305, Anchorage, Alaska. The purpose of this meeting will be to discuss the results of the Phase I studies and to review the alternative and proposed recreation plans.

If you have any questions relating to these meetings, please contact Mr. Vern Smith of Acres at (907) 276-4888.

Sincerely,

KRY/ljr

John D. Lawrence
Project Manager

February 25, 1982
P5700.11.92
T.1531

Mr. Ronald O. Skoog
Commissioner
State of Alaska
Department of Fish and Game
Subport Building
Juneau, Alaska 99801

Dear Mr. Skoog:

Susitna Hydroelectric Project
Agency Coordination Meetings

As an agency representative of the Historical and Archeological Group reviewing the Susitna Hydroelectric Project you are invited to a meeting on the morning of March 15, 1982 in the offices of Acres American Inc., 1577 "C" Street, Suite 305, Anchorage, Alaska. The purpose of this meeting will be to review the results of the Phase I archeological studies, assess mitigation options and discuss future study programs.

As a member of the Recreation and Aesthetics/Land Use Groups you are also invited to a meeting at the same location on the afternoon of March 15, 1982 to discuss the results of the Phase I studies and to review the alternative and proposed recreation plans.

If you have any questions relating to these meetings, please contact Mr. Vern Smith of Acres at (907) 276-4888.

Sincerely,

KRY/ljr

John D. Lawrence
Project Manager

cc: Mr. Thomas Trent
State of Alaska
Department of Fish and Game
2207 Spenard Road
Anchorage, Alaska 99502

February 25, 1982
P5700.11.92
T.1535

Mr. Robert McVey
Director, Alaska Region
National Marine Fisheries Service
NOAA
P.O. Box 1668
Juneau, Alaska 99802

Dear Mr. McVey:

Susitna Hydroelectric Project
Agency Coordination Meetings

As a representative of the Recreation Group reviewing the Susitna Hydroelectric Project you are invited to a meeting on the afternoon of March 15, 1982 in the offices of Acres American Inc., 1577 "C" Street, Suite 305, Anchorage, Alaska. The purpose of this meeting will be to discuss the results of the Phase I studies and to review the alternative and proposed recreation plans.

If you have any questions relating to these meetings, please contact Mr. Vern Smith of Acres at (907) 276-4888.

Sincerely,

KRY/ljr

John D. Lawrence
Project Manager

cc: Mr. Ron Morris
Director, Anchorage Field Office
National Marine Fisheries Service
701 "C" Street
Box 43
Anchorage, Alaska 99513

February 25, 1982
P5700.11.92
T.1532

Mr. John E. Cook
Acting Regional Director
Alaska Office
National Park Service
540 West Fifth Avenue
Anchorage, Alaska 99501

Dear Mr. Cook:

Susitna Hydroelectric Project
Agency Coordination Meetings

As an agency representative of the Historical and Archeological Group reviewing the Susitna Hydroelectric Project you are invited to a meeting on the morning of March 15, 1982 in the offices of Acres American Inc., 1577 "C" Street, Suite 305, Anchorage, Alaska. The purpose of this meeting will be to review the results of the Phase I archeological studies, assess mitigation options and discuss future study programs.

As a member of the Recreation and Aesthetics/Land Use Groups you are also invited to a meeting at the same location on the afternoon of March 15, 19822 to discuss the results of the Phase I studies and to review the alternative and proposed recreation plans.

If you have any questions relating to these meetings, please contact Mr. Vern Smith of Acres at (907) 276-4888.

Sincerely,

KRY/ljr

John D. Lawrence
Project Manager

cc: Mr. Larry Wright
National Park Service
1011 E. Tudor Road, Suite 297
Anchorage, Alaska 99503

March 2, 1982
85700.11.92
T.1534

Mr. Ty Dilliplane
State Historic Preservation Officer
Alaska Department of Natural Resources
Division of Parks
619 Warehouse Avenue, Suite 210
Anchorage, Alaska 99501

Dear Mr. Shaw:

Susitna Hydroelectric Project
Agency Coordination Meetings

As an agency representative of the Historical and Archeological Group reviewing the Susitna Hydroelectric Project you are invited to a meeting on the morning of March 15, 1982 in the offices of Acres American Inc., 1577 "C" Street, Suite 305, Anchorage, Alaska. The purpose of this meeting will be to review the results of the Phase I archeological studies, assess mitigation options and discuss future study programs.

If you have any questions relating to these meetings, please contact Mr. Vern Smith of Acres at (907) 276-4068.

Sincerely,

John D. Lawrence
Project Manager

KRY:dlp

cc: Mr. Alan Carson
Division of Research & Development
Department of Natural Resources
Pouch 7-005
Anchorage, Alaska 99501

02-8207

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF RESEARCH & DEVELOPMENT

Pouch 7-005
ANCHORAGE, ALASKA 99510

March 5, 1982

Eric Yould
Executive Director
Alaska Power Authority
334 West 5th Avenue
Anchorage, Alaska 99501

RECEIVED
MAR 9 1982
Alaska Dept. of Fish & Game
Sport Fish/Susitna Hydro

Dear Mr. Yould:

In the past 18 months, the Susitna Hydroelectric Steering Committee (SHSC) has reviewed many aspects of the Susitna Hydroelectric Feasibility Plan of Study. We have been briefed by, and have consulted with many of the Acres American, Inc., contractors and subcontractors. On November 21, 1980, the SHSC transmitted to APA a comprehensive review of the entire Task 7 (environmental and socio-economic) Plan of Study for the proposed Susitna Hydroelectric Project. During the summer of 1981, most of the SHSC members participated in a field trip to the proposed dam sites and to some of the field camps where investigations were ongoing.

As a result of these and other Susitna Hydroelectric related meetings and discussions, the members of the Steering Committee are probably the best informed representatives of those agencies who will participate in the decision making and permitting process. The SHSC members believe it is desirable to identify the most important issues prior to the issuance of the draft feasibility study for review and comment. We hope this will achieve three things: (1) provide a basis for agreement between SHSC and the Alaska Power Authority on the status of important Task 7 issues and concerns; (2) provide the vital information to those not well informed so they can be aware when they review the findings provided in the draft feasibility study; (3) where appropriate, to identify potential remedial actions to the APA to minimize if not resolve the concerns that are raised.

The process that the SHSC went through in creating this letter was to request all the SHSC members to compile a list of issues and concerns that merited attention of the APA. This list was then drafted, reviewed, and approved by the SHSC members.

The issues identified below have been placed in two categories. The first entitled "Overall Study Approach" deals with those issues and concerns which transcend specific studies. These concerns are not entirely in the scope of the feasibility study contract or necessarily the sole responsibility of the Power Authority. However, the decisions the APA and Legislature may make with respect to the Susitna project in the next 60 days could obviate these concerns. The other category is entitled "Study Specific Issues" and is self-explanatory.

The following are the overall study approach problems identified:

OVERALL STUDY APPROACH

1. The most urgent and most important issue is the relationship between the timing of findings from studies conducted by Acres American and its subcontractors and when the State of Alaska will decide whether to build Susitna. The problem is that existing law may result in a decision by the state as to whether the dams should be built before the socio-economic and environmental costs, impacts, and trade-offs are known. Although the March 15, 1982, Susitna Hydroelectric Feasibility Study may assist in determining if the dams can be built in a narrow technical (engineering and constructability) sense, it cannot speak to significant public policy questions such as:

a. is it in the best interests of Alaskans to use their money to build the dams?

b. what are the environmental and socio-economic impacts and trade-offs that have to be made if it is decided to build the dams?

In determining answers to such questions, there are accepted methods which should be rigorously applied. No one would consider building the Susitna dams without anwering all questions about soils stability and earthquake hazards. The same level of assured knowledge needs to be acquired to answer questions about environmental and socio-economic effects of the dams.

This issue may be outside the scope of the Acres contract and the sole purview of the Power Authority. A combined effort of the Power Authority and the Governor's Office may be needed to comprehensively frame the issue and devise methods to deal with them.

2. There appears to be a lack of necessary coordination between the various study tasks. Unless extraordinary corrective efforts are made, it is unlikely that an integrated, relevant, and complete environmental assessment which is acceptable to state and federal agencies and to the Federal Energy Regulatory Commission (FERC) will be produced. This need was identified early by the SHSC. The November 21, 1980, review of the Plan of Study says: "The Steering Committee members believe the most compelling need is for a well conceived process to improve the linkage and coordination of the various studies." As an example of this, I refer you to point number 1 below.

The following are studies specific issues:

SPECIFIC ISSUES

1. A coherent and coordinated Fish and Wildlife mitigation policy and plan needs to be established immediately. It is our understanding that, unlike the wildlife mitigation options, the fisheries mitigation options

and the overall Susitna Hydroelectric Project fish and wildlife mitigation policy have yet to produce an agreed upon product. The following issues still require resolution: agreement on mitigation policy, agreement on the roles definition of the APA, the agencies with fish and wildlife authority and expertise, the Federal Energy Regulatory Commission (FERC), and those agencies with land and water management authority. Until these issues have been resolved, determination of the full costs and impacts of the proposed Susitna Hydroelectric project are not possible. Failure to settle these issues will dramatically increase the probability of delay in action by the FERC, unnecessary confrontation between the APA and government management and regulatory agencies and litigation in the courts. Once resolution of the identified issues occurs, the FERC application process may be the appropriate forum to resolve specific mitigation issues.

2. There is a lack of information to describe the relationship between various stream flow levels and the productivity of fisheries and aquatic habitat downstream from the proposed Devil Canyon Dam. Exhibit E of the FERC application for license requires quantification of the anticipated downstream impacts.

3. The fisheries studies have not been going on long enough to acquire the comprehensive data and knowledge needed to assess project impacts. This, coupled with inadequate instream flow studies, provides for a less-than-satisfactory answer to questions on the impact of the proposed hydroelectric project on fishery populations.

4. Wildlife studies and wildlife mitigation appear much further developed than the fisheries issues described above. However, there are issues yet to be resolved in the wildlife area. I refer you to the February 16, 1982, letter from the Department of Fish and Game to Robert Mohn of APA. It appears that additional work is needed to identify realistic mitigation measures for lost wildlife habitat and on relating wildlife use of an area to habitat the characteristics.

5. Public review of the Phase I environmental reports and of most mitigation options discussion papers is now scheduled to occur separately from the distribution and public review of the draft feasibility report. We do understand that the decision to delay for 90 days the application for a license to FERC (assuming that that is the decision from the State of Alaska), the public and agencies will be provided the opportunity to review the detailed study results and data reports for a period of 60 days before final agency comments on the feasibility study are due.

6. The Fairbanks-to-Anchorage Intertie study and the Susitna feasibility study should be integrated. We suggest that the intertie assessment be included in the Susitna feasibility study review package.

7. The decision on access to the dam sites and the policies surrounding their use after construction will be one of the most significant impacts

of the project. The Yukon River to Prudhoe Bay Haul Road built in conjunction with the construction of the Trans-Alaskan oil pipeline is a comparable situation. There is no need to restate the comments made by the SHSC and their parent agencies to the APA on this matter. However, it is appropriate to identify two of the major issues with respect to the access question. First, APA's need to begin construction of a pioneer road prior to FERC licensing of the dams raises some serious public policy issues. Second, the decision as to the mode of access (rail versus conventional road) may well be the determining factor for the extent and type of public access once construction is completed.

8. The socio-economic implications of the availability of 1600 megawatts of electrical power in the railbelt region of Alaska need to be fully described and discussed in a public forum. It would appear that this amount of electrical energy could result in industrialization and socio-economic impacts on the same order of magnitude as would petrochemical development. Because the State of Alaska is sponsoring this hydroelectric proposal, it is incumbent upon the state to provide and present in a public forum, information regarding the end use of the power and advantages and disadvantages of the socio-economic impacts of this end use. The SHSC recommends consideration of an approach similar to that which was done for the Dow-Shell petrochemical proposal.

The SHSC will be advising their respective parent agencies of the contents of this letter in order to insure that formal agency comments to the proposed Susitna feasibility study fully address the issues and concerns detailed above. In order to alleviate the problems identified above, the SHSC recommends the following: (1) The APA should take an interdisciplinary interagency approach in identifying ways to improve coordination of the environmental and socio-economic studies to insure that the scope of and the methodology used in the studies are acceptable and germane. This approach should be funded and staffed appropriately and should have the responsibility, authority and independence to accomplish this objective. (2) The draft instream flow study plan should be updated and made public to provide opportunity for agencies and other groups to participate in the development of the necessary instream flow studies. (3) Comprehensively evaluate all potential and secondary impacts to fish and wildlife both above and below the Devil Canyon and Watana Dam sites. (4) Provide public participation opportunities to: inform the public of the feasibility study and the socio-economic impacts of this project and to provide an opportunity for the public to give comments and advice to the Power Authority Board of Directors before the state determines what course of action it should take on this project.

Because of the nature of some of these suggestions as well as the extent of discussion we anticipate will be required before APA and its

contractors fully comprehend our concerns, the SHSC is prepared to meet with you, your staff and contractors whenever you wish.

Sincerely,

Al Carson

Al Carson, Chairman
Susitna Hydroelectric Steering Committee

cc: SHSC Members
Charles Conway, Chairman, APA
Ernest Mueller, Commissioner, Dept of Environmental Conservation
Ronald Skoog, Commissioner, Dept of Fish & Game
John Katz, Commissioner, Dept of Natural Resources
Lee McAnerney, Commissioner, Dept of Community & Regional Affairs
Curtis McVee, State Director, Bureau of Land Management
Robert McVey, Regional Director, National Marine Fisheries
Keith M. Schreiner, Regional Director, US Fish & Wildlife Service
Reed Stoops, Director, Division of Research & Development
S. Leopold
Quentin Edson, FERC

May 4, 1981
P5700.11.74
T.868

Mr. Robert Shaw
State Historic Preservation Officer
State of Alaska
Department of Natural Resources
Division of Parks
619 Warehouse Avenue
Anchorage, AK 99501

Dear Mr. Shaw:

Susitna Hydroelectric Project
Cultural Resources Investigation

In response to your request during our meeting of April 7, 1981, I am forwarding a copy of the Susitna Procedures Manual for the Cultural Resources Investigations. In addition, I have enclosed a copy of the Cultural Resources section from our Plan of Study.

I trust this will aid in your continued review of our program. Any specific questions on this component of our study should be referred to Mr. Lewis M. Cutler of Terrestrial Environmental Specialists, RD Box 388, Phoenix, NY 14135.

Yours truly,

Kevin Young
Environmental Coordinator

KY:adh
Enclosures

MEMORANDUM State of Alaska

DEPARTMENT OF NATURAL RESOURCES DIVISION OF RESEARCH AND DEVELOPMENT

TO:
ERIC YOULD
Executive Director
Alaska Power Authority

DATE:
October 11, 1982

FILE NO:

TELEPHONE NO:
276-2653

FROM:
REED STOOPS
Director

SUBJECT:
Proposed Susitna Hydro Project

The Department of Natural Resources appreciates the opportunity to comment on project impacts on the proposed Susitna Hydropower Project and to recommend mitigation strategies. The department has cooperated with Alaska Power Authority (APA) on this proposed project during the last two years and refers the APA to earlier comments, specifically DNR's testimony on April 16, 1982, to APA's Board of Directors (attached). The issues listed in DNR's testimony, water appropriations, instream flow reservations, and access to the project, continue to be major concerns. Additional comments are listed below. In some cases comments may repeat earlier DNR comments.

As you are aware, the department is now in the process of preparing a regional land use plan in cooperation with the Matanuska-Susitna Borough which includes the lands surrounding the hydro project. This plan, which will be completed in 1983, will result in land use designations and land management policies for state and borough lands throughout the area.

To date, the planning team responsible for developing this land use plan has consciously avoided any direct involvement in Susitna Hydro issues, relying instead on the more detailed work being done by other individuals within DNR and DF&G. The planning process is now at a point where it makes more sense that there be closer coordination between the two projects, specifically in the two areas outlined below.

1) The planning team can review and comment on information regarding regional, indirect impacts of the plan (e.g. population growth, changes in resource demand, etc.).

2) The plan can be used as a tool to guide use of public lands to mitigate or control secondary impacts of the proposed project.

I suggest that you designate a staff person to coordinate these two projects with Chris Beck (Susitna Plan project manager).

As stated in DNR's recent comments on recreation planning, we are concerned that recreational facilities planned in conjunction with the hydropower project may be under-utilized. A related concern is the high cost to the state of maintaining potentially over-developed, under-used public recreation facilities.

The Division of Geological and Geophysical Survey has completed a detailed review of the soils and geology components of the feasibility study. Those comments (attached) are intended to be informal and for the consideration of APA and its contractors. Other geological and geophysical concerns are listed below.

1) Existing information indicates that glaciers in the project area are retreating; this and their seasonal nature may affect water availability.

2) The two large bodies of water created by the proposed project may affect the micro-climate of the area.

3) The dams, by blocking sediment travel, may increase erosion downstream.

4) There may be a substantial change in the area between the two dams over a period of time in response to changes in flow regime, the amount of sediment introduced and transported, and the hydraulic geometry of the valley (gradient, width, depth, discharge, and velocity of the channel).

The department requests that any trees felled in the project be made available to the public and that commercial quantities of forest products be made available to the commercial community for harvest and utilization.

Attachments

cc: Chris Beck, DRD
Leila Wise, DRD
Al Carson, DRD

RS:LW:lln

April 2, 1982

Susitna Hydroelectric Project
Proposal Phase II Wildlife/
Vegetation Studies

Dear :

Enclosed for your review are the proposed Phase II Susitna Hydroelectric project study plans in the disciplines of vegetation, vegetation/habitat, birds, furbearers, and non-game mammals. Studies for big game will be submitted directly to the Power Authority by ADF&G.

The enclosed study plans, as well as the big game study plans, were developed based on Phase I study results, input from the Fish and Wildlife Mitigation Review Group on March 10, 1982, and the discussions of the Wildlife Core Group on March 11 - 12, 1982. Please review these studies to determine if they accurately reflect the results of our meetings. Please note bird and small mammal studies in the Upper Basin have been added.

Because of the necessity to begin spring studies, please review these items as soon as possible and notify me in writing of your agreement or of any discrepancies. These study plans will then be forwarded to the Power Authority for their consideration. Thank you.

Sincerely,

Michael Grubb
Senior Scientist

MG:jk
Enclosures

cc: Ed Reed
E. Yould

Preceeding Letter Sent To:

Dr. A.W.F. Banfield
Rangifer Associates, Ltd.
37 Yates Street
St. Catherines, Ontario L2R 5R3
Canada

Dr. Richard Taber
2024 23rd Avenue, East
Seattle, WA 98112

Dr. Philip Gipson
Alaska Cooperative Wildlife
Research Unit
209 Fairbanks Building
University of Alaska
Fairbanks, AK 99701

Dr. Jay McKendrick
Agriculatural Experiment
Station
Box AE
Palmer, AK 99645

Dr. Brina Kessel
Box 80211
College, AK 99708

Mr. Karl Schneider
Division of Game
Alaska Department of Fish and
Game
333 Raspberry Road
Anchorage, AK 99502

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF FISH AND GAME

333 RASPBERRY ROAD
ANCHORAGE, ALASKA 99502

April 27, 1982

Michael Grubb
The Liberty Bank Bldg.,
Main at Court
Buffalo, New York 14202

Dear Mike;

We had an informal meeting in Juneau to discuss the best approach for a habitat based analysis of the effects of the Susitna Hydroelectric Project on big game. In addition to members of my staff, the meeting was attended by Drs. Richard Taber and Ken Raedeke from the University of Washington and Wayne Reglin, who recently transferred from USFWS to ADF&G. Jay McKendrick attended the first part of the meeting.

My main objective for the meeting was to identify major components of a study approach for budgeting purposes. I feel we need to give the Alaska Power Authority a ball park estimate of cost as soon as possible, even though details of design will have to be worked out later.

Everyone would like some quantification of the "value" of lost habitat. This would facilitate measurement of impacts and comparisons of mitigation options. Most of us associated with big game studies favor expressing value in terms of carrying capacity rather than some sort of arbitrary index. We can design a system to produce either, but both are attempts to express complicated dynamic processes in simple static terms. There is a very real danger that we may oversimplify things to the point where serious errors in judgement will be made. We should not waste time and money on a study approach that will yield results we can't trust.

We used Dr. Taber's Toward a Program of Habitat Analysis as a basis of our discussion. This program focuses on cow moose in the upstream area during late winter and spring. This approach has considerable merit as it focuses on critical time periods and segments of the population. However, there are some basic problems that may limit the effectiveness of this and other similar approaches.

We believe that the proposed impoundment areas may be critical for moose for only a few weeks each year and environmental conditions may greatly influence the area's importance from year to year. Even if we obtain

accurate estimates of forage production we will have trouble interpreting the data. If we estimate 1000 moose days of forage we need to know if it is used by 10 moose for 100 days or 100 moose for 10 days. The latter situation would be quite difficult to accurately assess. In spring, timing of availabilty might be more important than quantity produced. During severe winters availability might be more a function of snow depths than browse production.

Dr. Taber's and similar approaches are likely to underestimate the value of the habitat to be lost unless the actual conditions we wish to evaluate occur during the study and the intensity of sampling is adequate to quantitatively measure habitat selectivity at that time.

We concluded that our knowledge of the mechanisms determining moose carrying capacity in the impoundments is inadequate and it may be beyond our ability to design a study approach that will provide nice neat, yet reliable, estimates of value of habitat that will be innundated.

We concluded that it is more important to gain a better understanding of the mechanisms of impact. How well we can quantify them will depend on the nature of these mechanisms. Specifically we are recommending expanded studies to determine what moose are using during late winter and spring and determine the availability of those habitat characteristics inside and outside the areas to be impacted. Phenology, particularly timing of snow melt and emergence of vegetation are important concerns. The key question is whether higher quality food becomes available significantly sooner in areas to be impacted, thereby improving a moose's ability to recover more completely from the nutritional stress of winter before calving.

We have not attempted to design this study but it would probably consist of determining moose food habits through fecal analysis and by tracking moose and observing plant use. Snow characteristics and emergence of plant species used by moose would be correlated with time, elevation, slope, aspect, vegetation type etc. We should be able to address spring use of impoundments by bears at the same time.

This study should be the primary responsibility of the plant ecology groups but I feel it is important that I designate an individual from the big game studies to work with the plant people to ensure a coordinated effort. I believe we should plan on two field seasons. If Jay McKendrick can get in the field immediately he might be able to learn enough this year to design a sampling procedure for next year. However, it may already be to late.

I found the plant ecology plans of study difficult to evaluate because of a lack of detail. We can discuss this at our meeting during the week of May 17.

Sincerely,

Karl Schneider
Research Coordinator

cc: Ed Reed - TES

April 27, 1982
P5700.11.71
T.1685

Mr. Gary Stackhouse
U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, AK 99503

Dear Gary:

Susitna Hydroelectric Project
Fish and Wildlife Mitigation
Review Group Meeting

You are invited to attend the next meeting of the Susitna Hydroelectric Fish and Wildlife Mitigation Review Group to be held at 8:30 a.m., May 17, in Room C121 at the Federal Building, 6th and C Street, Anchorage. The purpose of this meeting will be to discuss the Draft Wildlife Mitigation Options Paper mailed to you on April 21, 1982. Please review this document prior to this meeting.

The issue of quantification of habitat loss will be discussed at a workshop on May 18th. This workshop will be attended by mambers of the Susitna Hydroelectric Project Wildlife Core Group, ADF&G, and USFWS. I have asked Lenny Corin to determine who the USFWS attendees will be and ask you to contact him for further details. The objective of the meeting on the 18th will be to reach concensus on:

1. The objectives of the habitat evaluation system we will develop.
2. A general description of the system.

In keeping with past procedures, the Susitna Wildlife Core Group will then develop the technical specifics of the system.

I am enclosing a Phase I Habitat Evaluation Report written by TES which applies a modified Konkel et al system (as discussed in the Environmental Analysis of Alternative Access Plans Report) to the impoundment and surrounding areas. I will, hopefully, also forward to you before the meeting a general system developed by Dr. Taber which may be specifically applied to moose.

It is my intention to discuss these two systems, as well as HEP, at the workshop. I am asking all attendees to come with an open mind so that we may have a constructive session and work towards the common goal of obtaining satisfactory mitigation for wildlife/vegetation impacts associated with the Susitna Project.

I look forward to your attendance on the 17th.

Sincerely,

Michael Grubb
Senior Scientist

MG:ccv
Enclosure

cc: D. Wozniak - APA
E. Reed - TES

April 27, 1982
P5700.11.71
T.1686

Mr. Lenny Corin
U.S. Fish and Wildlife Service
733 West Fourth Avenue
Suite 101
Anchorage, AK 99501

Dear Lenny:

Susitna Hydroelectric Project
Fish and Wildlife Mitigation
Review Group Meeting

You are invited to attend the next meeting of the Susitna Hydroelectric Fish and Wildlife Mitigation Review Group to be held at 8:30 a.m., May 17th, in Room C121 at the Federal Building, 6th and C Street, Anchorage. The purpose of this meeting will be to discuss the Draft Wildlife Mitigation Options Paper mailed to you on April 21, 1982.

The issue of quantification of habitat loss will be discussed at a workshop on May 18th. This workshop will be attended by members of the Susitna Hydroelectric Project Wildlife Core Group, including Karl Schneider, who may bring other representatives of ADF&G with him. In order to keep the workshop size to a reasonable number, I have asked Karl to bring no more than two other people. I am inviting you to attend this workshop on the 18th and, if you desire, bring two other USFWS representatives with you. We suggest and would appreciate if Mr. Greg Konkel could attend. This meeting will be held in Room C109.

The objectives of the meeting on the 18th will be to reach concensus on:

1. The objectives of the habitat evaluation system we will develop.
2. A general approach to developing this system.

In keeping with past practice, the Core Group will then develop the technical specifics of the system or systems.

I am enclosing a Phase I Habitat Evaluation Report written by TES which applies a modified Konkel el al system (as discussed in the Environmental Analysis of Alternative Access Plans Report) to the impoundment and surrounding areas. I will, hopefully, also forward to you before the meeting a general system developed by Dr. Taber which may be specifically applied to moose.

It is my intention to discuss these two systems, as well as HEP, at the workshop. I am asking all attendees to come with an open mind so that we

may have a constructive session and work towards the common goal of obtaining satisfactory mitigation for wildlife/vegetation impacts associated with the Susitna Project.

I look fowward to your attendance on the 17th and 18th.

Sincerely,

Michael Grubb
Senior Scientist

MG:ccv
Enclosure

cc: D. Wozniak - APA
E. Reed - TES

April 28, 1982
P5700.11.70
T.1687

Mr. Karl Schneider
Alaska Department of Fish and Game
333 Raspberry Road
Anchorage, AK 99502

Dear Karl:

Susitna Hydroelectric Project
Mitigation Workshop

As discussed, the workshop to discuss a habitat evaluation system is scheduled for May 18th, at 8:30 a.m., in room C109 of the Federal Building, 6th and C Street, Anchorage. The workshop will be attended by members of the Susitna Wildlife Core Group and, for the first day, the U.S. Fish and Wildlife Service and ADF&G employees whom you select. The purpose of this workshop will be to reach consensus on:

1. Objectives of the habitat evaluation system.
2. A general approach to this system.

Following this meeting, the Core Group will develop the technical details of the system.

I am enclosing a Phase I Habitat Evaluation Report prepared by TES which applies a modified Konkel et al system to the impoundment zone and surrounding areas. I will, hopefully, also forward to you prior to the meeting a general system developed by Dr. Taber which may be specifically applied to moose.

It is my intention to discuss these two systems, as well as HEP, at the workshop. I am asking all attendees to come with an open mind so that we may have a constructive session and works towards the common goal of obtaining satisfactory mitigation for wildlife/vegetation impacts associated with the Susitna Project. The Core Group will continue meeting on the 19th, 20th, and 21st (if necessary); please be available if at all possible.

Thank you for your help.

Sincerely,

MG:ccv
Enclosure

Michael Grubb
Senior Scientist

Susitna Hydroelectric Project

Habitat Evaluation Meeting

Date: May 19, 1982

Attendees: See Attached List

Held at Federal Building, Anchorage

May 25, 1982

The purpose of the meeting was to proceed with planning for habitat evaluation schemes.

Karl Schneider explained more fully the Delphi approach. It involves a group of experts assigning values to parcels of land with the value representing their opinion on the quality of the habitat for a particular species. This is a more straight-forward and quicker process than the formal HEP process. A similar exercise is conducted for mitigation lands. Karl Schneider, Phil Gipson, and Brian Kessel will provide names to LGL on who they feel should be on the various panels.

The concept of digitizing data was again discussed. This would be done by digitizing the vegetation mapping and utilizing ADF&G digitized moose and bear collar locations and then correlating the results. Karl Schneider and Steve Fancy will meet with USFWS to discuss the practicality of this approach.

An alternative method would be to use a cell approach. The study area would be divided by a grid system, with each cell being approximately 40 acres in size. The slope, elevation, grid, aspect, cover type and number of moose and bear sightings would be calculated for each grid and correlations developed.

Karl Schneider, Dr. Taber and Jay have suggested a phenology study to better understand impact mechanism and to determine what foods and habitat characteristics moose are using during late winter and spring and determine the availability of those habitat characteristics inside and outside the area to be impacted. This study would involve determining moose food habits (through fecal analysis), measuring snow characteristics and emergence of vegetation and correlating it with elevation, slope and aspect. McKendrick is proceeding to set up transects in the field and equipment. He and Karl will be preparing a scope of work and budget for this. The study will be repeated next spring. Seven transects in the Watana area and two in the Devil Canyon area will be established, with three points along each transect.

Vegetation mapping may have to be expanded at the 1" = 1 mile scale because current mapping does not include the home range of all moose in the area.

Karl will develop a winter contingency budget to study moose distribution in case of a severe winter.

Three impact zones need to be delineated; these are the primary impact zone, secondary or temporary impact zone and disturbance impact zone. The with and without project scenario must include the project area assuming no change

and also assuming what reasonable land use developments (mining, etc.) may occur. The future land items should be expressed to correlate with proposed dates for present study activities, construction, filling, operation.

The browse studies to be conducted in the upper basin will begin in mid-July and end in mid-September.

The BLM burn vegetation study will include base mapping at a 1:24,000 scale. Vegetation species list, composition and annual production studies will commence in July. ADF&G will plot baseline moose sighting information on the vegetation maps.

The Jay Creek lick study by McKendrick will include soil analysis inside and outside the lick. Acres should attempt to determine what erosion patterns may occur.

The species list of May 18 was studied and revised. Moose, black bear and brown bear were included as big game species as they best fit the established criteria. The other big game species did not. Birds chosen were the yellow-winged warbler, tree sparrow, golden eagle, and furbearers, the marten and beaver.

MMG:dlp

ATTENDEES

NAME	REPRESENTING
Jay McKendrick	University of Alaska
Phil Gipson	University of Alaska
Brian Kessel	University of Alaska Museum
Kenneth Raedeke	University of Washington
Richard Fleming	Alaska Power Authority
Michael Grubb	Acres American
Richard Taber	University of Washington
Karl Schneider	Alaska Dept. of Fish & Game
Joe McMullen	TES
Ed Reed	TES
Dot Helm	University of Alaska

Susitna Hydroelectric Project May 25, 1982

Wildlife Mitigation Meeting

Date: May 18, 1982

Attendees: See Attached List

Held at Federal Building, Anchorage

The purpose of this meeting was to discuss general objectives and general approach for a habitat evaluation system.

A list of objectives for the system was developed (attachment 1). Ann Rappoport of USFWS presented an approach based on HEP. After much discussion it was decided the approach taken would be to:

1. Develop criteria for selection of species for which habitat evaluation would be conducted.
2. Develop species list.
3. Develop habitat evaluation procedures for each species which will include field work or a Delphi session or both.
4. Test the procedures on a pilot program this summer, on small areas in and outside of impact area.

Existing data would be utilized whenever possible. The habitat evaluation procedures would begin with the U of A subs and K. Schneider and LGL conducting Delphi sessions, reviewing the HEP models and determining what parameters and criteria should be utilized. Documentation was stressed.

The Terror Lake situation was discussed as an example. The technical aspects of this study for mitigation involved three afternoon sessions and 2-3 months of effort to obtain quantitative comparison of land for mitigation.

Official HEP models were discussed. Much concern was expressed about their accuracy, applicability, validity and assumptions which must be used in their application. It was decided the TES report on habitat evaluation would not be suitable for mitigation purposes.

Digitizing of data was discussed. Because of the large amount of time required, it was felt it may not be cost effective for this project. Decision would be based on development of habitat procedures. Available sources of information include:

1. Feasibility Report and Phase I Final Report.
2. TES/U of A prepared vegetative cover map, which are 1:24,000 in impoundment zone.
3. Digital Terrain model from USGS.
4. USFS-SCS vegetation data (digitized?) for Susitna Basin.
5. DNR land use plan for Talkeetna sub-basin and Willow sub-basin

The criteria for species selection were developed (attachment 2) and the species list (attachment 3). The species list would be refined following closer examination of the criteria. It was decided indicator bird species were more appropriate than guilds.

MMG:dlp

ATTACHMENT 1

Objectives of Habitat Evaluation System

1. Integrate habitat characteristics with animal use
2. Quantify value of habitat lost
3. Utilize existing data, if possible
4. Determine mechanisms affecting wildlife
5. Quantify differential habitat values
6. Determine appropriate mitigation

ATTACHMENT 2

Criteria for Selecting Wildlife Species

1. Consumptive use
2. Non-consumptive use
3. Ecological importance
4. Vulnerability to project disturbance
5. Responsiveness to mitigation
6. Species susceptible to habitat loss
7. Data availability and predictability of response

ATTACHMENT 3

Species for Consideration

1. Moose
2. Black bear
3. Brown bear
4. Beaver
5. Red fox
6. Pine Marten
7. Yellow rumped warbler
8. Wilson's warbler
9. Tree or Savannah sparrow
10. Dipper
11. Golden Eagle
12. Spruce grouse
13. Meadow vole
14. Mink

ATTENDEES

May 18, 1982

NAME	Representing
Michael Grubb	Acres American
Kenneth J. Raedeke	University of Washington
Richard Fleming	APA
Brina Kessel	University of Alaska Museum
Karl Schneider	ADF&G
Carl Yamagawa	ADF&G
Gary Stackhouse	USFWS
Steve Fancy	LGL Alaska
Philip S. Gipson	AK. Coop. Wildlife Res. Unit
Joe McMullen	TES
Dot Helm	University of Alaska
Jay N. McKendrick	University of Alaska
Ed Reed	TES
Leonard P. Corin	USFWS
Greg Konkel	USFWS
Ann Rappoport	USFWS
Dick Taber	University of Washington

Attendees

May 18, 1982

Name	Representing:
Michael Grubb	Acres Americas
Kenneth J. Raedeke	Univ. of Wash.
Richard Fleming	APA
Bonnie Kreel	Univ Alaska Museum
Karl Schneider	ADF&G
Carl Yanagawa	ADF&G
Gary L. Stackhouse	US FWS
Steve Fancy	LGL Alaska
Philip S. Gipson	AK Coop Wildl. Res. Unit
Joe McMullen	TES
Dot Helm	U. of Alaska
Jay M. McKendrick	U of AK
Ed Reed	TES
Leonard P. Corin	US FWS
Greg Konkel	USFWS
Ann Rappoport	USFWS
Dick Baker	Univ of Washington

LGL
Alaska Research Associates, Inc.

P.O. Box 80607, Fairbanks, Alaska 99708 (907) 479-6519/479-2669
Telex 35-355

17 July 1982

Michael Grubb
Acres American, Inc.
The Liberty Bank Bldg.
Main at Court
Buffalo, NY 1420

Dear Michael:

LGL Alaska recently became involved with the terrestrial environmental studies being conducted for the Susitna Hydroelectric Project. We are responsible for assessing the impacts of the project on vegetation and wildlife, using data collected by the Alaska Department of Fish and Game and our University of Alaska subcontractors. LGL is also responsible for developing a plan to mitigate any adverse impacts on terrestrial wildlife and vegetation.

We will use systems analysis as a means for organizing the terrestrial environmental program. The attached document explains the reasons for using the approach and the steps involved in the process. We would like to invite you to a one-week workshop scheduled for 23-27 August 1982, to be held in the Ketchikan Room of the Anchorage Holiday Inn, beginning at 8:30 AM on the 23rd. The workshop will be intensively focused and will require long days from all. We have reserved a room for you at the Holiday Inn for Sunday through Friday nights, but you will need to make your own travel arrangements. Following the initial workshop, the model will be refined during one or two technical meetings (lasting 1 or 2 days each) with each subgroup in the fall, and during future modeling workshops to be held once or twice each year.

LGL's Program Manager is Dr. Robin Sener, who is located at our Anchorage office (274-5725). Dr. Joe Truett of LGL will be the workshop facilitator. The modeling team will be composed of modelers from LGL, Environmental and Social Systems Analysts (ESSA), and the Western Energy Land Use Team (USFWS) of Boulder, Colorado.

We will be contacting you in person or by telephone to provide you with additional details on the workshop. We look forward to having you participate in the project, and hope you will find the approach to be a useful and realistic means for impact quantification and mitigation plan development. Please feel free to call me if you have any questions about the workshop.

Sincerely,

Robin Sener

Robin Sener
Program Manager

SUSITNA HYDROELECTRIC PROJECT

SIMULATION MODELING WORKSHOP
FOR
TERRESTRIAL WILDLIFE AND HABITAT

Anchorage, Alaska August 23 - 27, 1982

WORKSHOP OBJECTIVES

1. Develop a preliminary simulation model of hydrology, vegetation, and wildlife interactions in the Susitna Basin.

-- and through future refinements --

2. Use the model to help predict and quantify project impacts to wildlife and habitat.

3. Use the model to help assess the probable effectiveness of proposed mitigation alternatives.

WORKSHOP AGENDA

Monday, August 23: 8:30 AM - 5:00 PM

INTRODUCTION

BOUNDING THE MODEL
- o Project Actions
- o Indicators
- o Spatial Boundaries
- o Temporal Boundaries

LOOKING OUTWARD

Tuesday, August 24: 8:30 AM - 5:00 PM

LOOKING OUTWARD (Continued)

SUB-MODEL DEVELOPMENT

7:30 - 9:30 PM: DISCUSSION OF EVALUATION PROCEDURES

Wednesday, August 25: 8:30 AM - 5:00 PM

SUB-MODEL DEVELOPMENT (Continued)

Thursday, August 26: 8:30 AM - 5:00 PM

PRESENTATION OF SUB-MODELS

DEVELOPMENT OF HYPOTHETICAL MITIGATION STRATEGIES

Friday, August 26: 8:30 AM - 5:00 PM

GAMING OF THE MODEL

FUTURE DIRECTIONS (Discussion)

TERRESTRIAL ENVIRONMENTAL WORKSHOP

Invited Participants

	Robert Mohn	Alaska Power Authority
	Dave Wozniak	Alaska Power Authority
	Eric Yould	Alaska Power Authority
	Richard Fleming	Alaska Power Authority
	George Gleason	Alaska Power Authority
*	Bob Weeden	Alaska Power Authority/University of Alaska
*	Keith Bayha	U.S. Fish and Wildlife Service
	Gary Stackhouse	U.S. Fish and Wildlife Service
	Lenny Corin	U.S. Fish and Wildlife Service
	Ann Rappoport	U.S. Fish and Wildlife Service
	Al Carson	Alaska Department of Natural Resources
	Reed Stoops	Alaska Department of Natural Resources
	Marjorie Willits	Alaska Department of Natural Resources
	Keith Quintavell	Alaska Department of Natural Resources
*	Carl Yanagawa	Alaska Department of Fish and Game
	Karl Schneider	Alaska Department of Fish and Game
	Ron Modafferi	Alaska Department of Fish and Game
	Sterling Miller	Alaska Department of Fish and Game
	Warren Ballard	Alaska Department of Fish and Game
	Wayne Regelin	Alaska Department of Fish and Game
	Tom Trent	Alaska Department of Fish and Game
	Bob Martin	Alaska Department of Environmental Conservation
	Bob Lamke	U.S. Geological Survey
	Larry Wright	National Park Service
	Brad Smith	National Marine Fisheries Service
	Bill Lawrence	Environmental Protection Agency
	Bill Riley	Environmental Protection Agency
	John Rego	Bureau of Land Management
	Mike Scott	Bureau of Land Management
	Jay McKendrick	University of Alaska
	Brina Kessel	University of Alaska
	Phil Gipson	University of Alaska
	Ed Murphy	University of Alaska
	John Hayden	Acres American
	Mike Grubb	Acres American
	Bob Butera	R&M Consultants
*	Bruce Apple	National Wildlife Federation
	Dave Cline	National Audubon Society
	Roland Shanks	Cook Inlet Region, Inc.

* will not be able to attend

SUSITNA HYDROELECTRIC PROJECT
TERRESTRIAL ENVIRONMENTAL WORKSHOP
23-27 August 1982

INTRODUCTION

The technical feasibility, economic viability, and environmental impacts of a hydroelectric development in the Susitna River Basin are being studied by Acres American, Inc. (Acres) on behalf of the Alaska Power Authority. As part of these studies, Acres recently contracted LGL Alaska Research Associates, Inc. (LGL) to coordinate the terrestrial environmental studies being performed by the Alaska Department of Fish and Game and, as subcontractors to LGL, several University of Alaska research groups. LGL is responsible for further quantifying the potential impacts of the project on terrestrial wildlife and vegetation, and for developing a plan to mitigate adverse impacts on the terrestrial environment. The impact assessment and mitigation plan will be included as part of a license application to the Federal Energy Regulatory Commission (FERC) scheduled for the first quarter of 1983.

The quantification of impacts, mitigation planning, and design of future research is being organized using a computer simulation modelling approach. Through a series of workshops attended by researchers, resource managers, and policy-makers, a computer model is being developed and refined. This model will assist project personnel in identifying impacts on terrestrial wildlife and vegetation and in evaluating different mitigation measures such as habitat enhancement and the designation of replacement lands to be managed as wildlife habitat. The simulation modelling approach is being used for the following reasons:

1. It provides a means to incorporate and coordinate the professional judgments of scientists, resource managers, and policy-makers. Mitigation planning will include many subjective evaluations, and therefore all parties must

maintain continuing communication throughout the program.

2. It utilizes existing data to focus future research in areas that are decided by the workshop participants to be the most important. The approach will also insure that the data are collected in the proper units, sampling schemes, and time-frames to promote integration of data from the different disciplines (e.g., hydrology, furbearers, vegetation).

3. It allows great flexibility. The selected indicators (environmental items of interest) can include population attributes (e.g., changes in the number of beavers with and without the project, and with different mitigation options); habitat units or important descriptive variables (e.g., amount of browse available in late winter); or any number of alternative indicators as selected by the workshop participants. Data on habitat, predation, weather, and other biophysical system components is incorporated into the models as needed.

Eventually, the model will represent the best available understanding of the biophysical system, and as such will provide an "ecological laboratory" for helping to evaluate mitigation options.

The mitigation plan will be developed in two steps, an immediate effort based on existing data, and a longer-term effort that will apply data yet to be gathered. Some mitigation measures, such as controlling dust along roads, leaving clumps of trees along the reservoir margin for eagle nesting, minimizing aircraft disturbance, and locating recreation facilities away from critical wildlife areas, are rather easily defined and agreed to, and these measures will be developed prior to submittal of the FERC application to allow adequate time for incorporation into project design and the application. It is recognized, however, that final agreement on some mitigation measures such as habitat enhancement or compensation lands may require several more years of research and discussion, and that the mitigation plan must be flexible to allow changes necessitated by information from long-term monitoring studies. Thus the final comprehensive mitigation plan will not be complete at the time of license application submittal, but the

modelling workshops provide a framework for development of the final plan by increasing communication between scientists and policy-makers.

WORKSHOP ACTIVITIES

The intitial simulation model was constructed during the one-week workshop held in Anchorage 23-27 August 1982. The participants at the workshop are listed in Table 1. The workshop facilitators were members of LGL Alaska (Fairbanks and Anchorage), ESSA Environmental and Social Systems Analysts Ltd. (Vancouver, Canada), and U.S. Fish and Wildlife Service (USFWS) personnel from the Western Energy and Land Use Team (WELUT) office in Fort Collins, Colorado.

The main objective of the workshop was to initiate development of a dynamic simulation model of the hydrology/wildlife/vegetation system in the Susitna Basin. The participants provided the knowledge of the system; the facilitators translated that knowledge first into a conceptual model and then into computer code.

Bounding

On the first day of the workshop, the bounds of the model were defined. The first step in this exercise involved defining all the actions to which we wanted the model to respond. In the context of the model, the actions were the various activities associated with construction and operation of the impoundments and the current collection of mitigation activities (Table 2).

The next step in the bounding exercise was the identification of the key indicators (environmental attributes of interest such as moose numbers, habitat quality, etc.) for which the model must be able to generate values over time. The predicted changes in these indicators are used to help determine the impacts of an action, and in turn, evaluate the quantity, quality and timing of appropriate mitigation

Table 1. Participants in Susitna Terrestrial Modelling Workshop, 23-27 September 1982.

NAME	AFFILIATION	ADDRESS
Tom Arminski	Alaska Department of Fish and Game	333 Raspberry Road Anchorage, AK 99502
Greg Auble	USFWS - WELUT	2625 Redwing Road Fort Collins, CO 80526
Warren Ballard	Alaska Department of Fish and Game	P.O. Box 47 Glennallen, AK 99588
Bruce Bedard	Alaska Power Authority	334 - 5th Avenue Anchorage, AK 99501
Steve Bredthauer	R&M Consultants	P.O. Box 6087 5025 Cordova Street Anchorage, AK 99503
Leonard Corin	USFWS	605 West 4th, #G-81 Anchorage, AK 99501
Ike Ellison	USFWS - WELUT	2625 Redwing Road Fort Collins, CO 80526
John Ernst	LGL	1577 "C" Street Anchorage, AK 99501
Bob Everitt	ESSA Ltd.	678 West Broadway Vancouver, B.C.
Steve Fancy	LGL	P.O. Box 80607 Fairbanks, AK 99708
Richard Fleming	Alaska Power Authority	334 - 5th Avenue Anchorage, AK 99501
Bill Gazey	LGL	1410 Cavitt Street Bryan, TX 77840
Philip Gipson	Alaska Cooperative Wildlife Research Unit	University of Alaska Fairbanks, AK 99701

Table 1 (continued)

NAME	AFFILIATION	ADDRESS
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Table 1 (continued)

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Table 2. Actions identified at Sustina Terrestrial Modelling Workshop, 23-27 August 1982. Exactly how these are implemented in the model will be described in a later report.

I. Reservoirs

a. Construction

- road building
- borrow pits
- transmission lines
- camp sites
- village sites
- temporary diversions
- mining of river bed
- reservoir clearing
- disposal of spoil
- construction of air strip
- aircraft use
- staging areas

b. Operation

- operating rule curves

II. Recreation/Access

- reservoir recreational development (access and facilities
- recreational use (backbacking, hunting, fishing)
- increased traffic on existing roads/railroads

III. General

- timber harvest
- changes in land use patterns (mining, oil and gas development)
- increased population in surrounding communities

IV. Mitigation

- habitat enhancement
  - controlled burn
  - fire protection
  - vegetation crushing
- flow regulation for fish and wildlife
- control of access
- hunting/fishing regulation
- scheduling of construction activities
- siting of roads
- reclamation/revegetation

actions. The indicators identified at the workshop are shown in Table 3.

After establishing the actions and indicators, the next step was the definition of the spatial and temporal bounds of the model. Spatially the area was divided at Devil Canyon into the upstream portion and downstream portion of the Susitna River (Figure 1).

The upstream area included all of the upper Susitna Basin and the Prairie Creek-Stephan Lakes area. Within the upstream area the Watana and Devil Canyon impoundment areas were considered separately.

The region downstream of Devil Canyon was separated into two units -- an area on each side of the river, paralleling it and extending away from the river the estimated maximum diameter of a moose's home range. Currently the area considered by the model extends as far downstream as Talkeetna. Because the effects of the project downstream of Talkeetna will be tempered by the contributions of the Chulitna and Talkeetna rivers and other tributaries, hydrological and vegetation data south of that confluence have not been collected in as much detail as north of Talkeetna.

Within both upstream and downstream areas, the flood plain and upland habitats were considered separately, such that a floodplain area was defined within each of the four major spatial divisions. Each floodplain and non-floodplain area was further subdivided into vegetation types, of which there are fourteen in the project area (Table 4).

The chosen time step of the model was annual, although each subsystem had the option of developing time dynamics on a shorter scale if appropriate. The time horizon for the model runs was set at 70 to 80 years.

The final step in bounding the model, the "looking-outward" exercise, involved first dividing the system as defined up to this point (i.e., the actions, indicators, space and time) into four disciplinary subsystems. The subsystems were:

Table 3. Indicators identified at Susitna Terrestrial Modelling Workshop, 23-27 August 1982.

Hydrology

- instream flows

Vegetation

- hectares of selected vegetation types

Wildlife

- population levels of:

moose	raptors
black bear	caribou
brown bear	wolverine
sheep	small mammals
wolves	selected birds

- carrying capacity of habitat for the above populations
- species diversity of birds
- numbers of animals harvested by hunters
- hunter success
- habitat quality

Recreation

- number of user days
- non-consumptive uses of wildlife

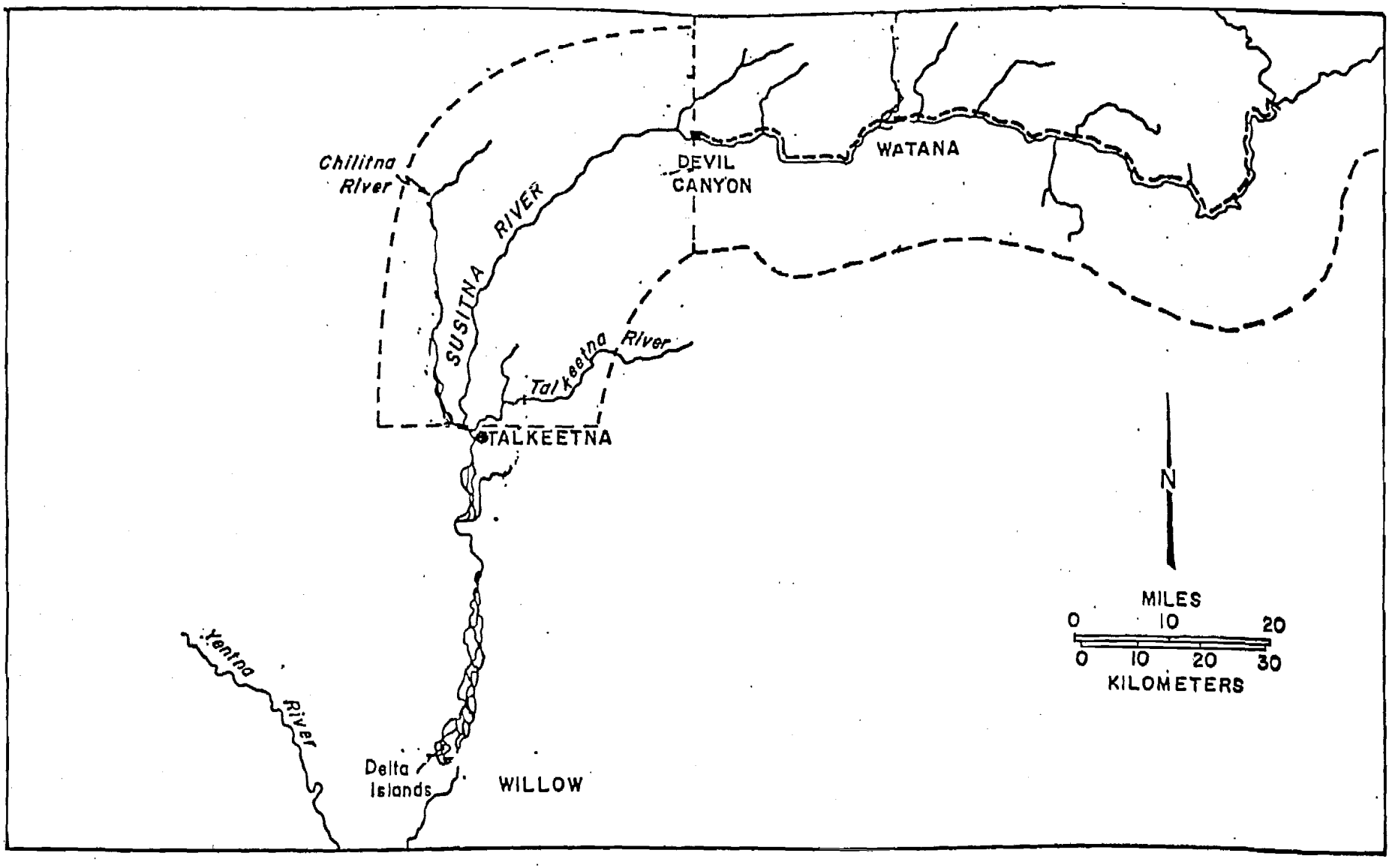

Figure 1: Suggested boundaries for study area and subareas for simulation modeling purposes.

Table 4. The vegetation types found on the Susitna Hydro Project Area.

Conifer forest
•woodland
•open
Deciduous and Mixed Forest
Tundra
Tall shrub - alder
Medium Shrub
Low shrub
•birch
•willow
•mixed
Unvegetated
•water
•rock/snow/ice
Disturbed
•temporary
•permanent
Pioneer

Hydrology/Development/Land Use/Recreation
Vegetation
Furbearers/Birds
Large Mammals

Participants were then separated into four subgroups. Each subgroup, with the help of one of the workshop facilitators, began building a computer model of one of the subsystems. The interactions between each subsystem were defined by filling in the "looking-outward matrix" (Figure 2). To do so the participants in each subgroup identified what information they required from the other subsystems in order to build their submodel.

Submodel Construction

At the conclusion of the "looking-outward" exercise, each subgroup had all the information required to construct and code its submodel independently of the rest of the participants. Where possible, data from the Susitna basin were incorporated into the structure of each submodel. In the absence of data, the expertise of the participants was used to develop hypotheses to help refine the structure -- hypotheses that hopefully could be tested in future field work and/or analysis.

Scenario Construction

On Thursday afternoon, the workshop participants discussed a number of representative construction (action) and mitigation scenarios to be tried on the model. Three scenarios were developed. The first was the no-project option to establish indicator behavior under undisturbed conditions. The second was the construction of the complete project (Watana and Devil Canyon) using the optimum flow regime for power generation. The third scenario considered Watana development only, had restricted access to the area by the public, and

Figure 2. Looking Outward Matrix

Hydrology/Development Recreation	Vegetation,	Furbearers/Birds	Large Mammals
Hydrology/Development Recreation	- 3 day peak flows - locations and hectares of development activities - surface area exposed in floodplain	- date of breakup,freezeup on lakes, ponds, streams - date of first snow cover and exposure of 30% - km of open water in river - km of sloughs and side channels with at least .5 m of unfrozen water - reservoir elevations - levels of human disturbance	- date of ice breakup - amount of ice shelving March 15 to June 15 - snow depths at 150 m elevation intervals, monthly - trips/day on access road by season - train trips/day, Nov-Mar - recreational use days
Vegetation		- areas of vegetation types (ha) - productivity (kg/ha) of: Paper birch Balsam poplar Birch shrubs Black spruce White spruce Willow spruce Aspen	- areas of vegetation types (ha) - ha of berries suitable for bear food - production of berries (kg/ha) - standing crop (kg/ha) of Paper birch Balsam poplar Willow shrub Aspen Lowbush Cranberry
Furbearers/Birds	- hectares of intensive beaver use by vegetation type		
Large Mammals	- consumption (kg/ha) of forage species by season and type		

used the flow regime considered best for maintaining instream flow requirements of wildlife. Little experimentation with mitigation options was carried out at this stage, largely due to the preliminary state of the model and the available time. The workshop report will discuss these and other scenarios in more depth.

EVALUATION

Ultimately in the development of any mitigation strategy there is a need to evaluate the alternatives and select the preferred option. However, the major difficulty is structuring the evaluation. When dealing with a possible change in wildlife populations or available habitat as a consequence of the project, putting value on that change is invariably subjective and open to criticism. In any case, such evaluations are necessary both in evaluating mitigation options as well as establishing appropriate compensation.

Ultimately, the simulation model developed at the workshop will help in the evaluation of mitigation options. Exactly how they will be evaluated is, at this time, not certain. Various approaches have been applied in the past (e.g., Habitat Evaluation Procedures (HEP), Rapid Assessment Methodology (RAM), or Delphi), some with more success than others. Although "evaluation" as an issue was not the subject of this first workshop, an evening discussion (facilitated by Ann Rappaport of the USFWS) was held on this topic to initiate development of some of the ideas to be pursued after the workshop.

REPORT

The workshop report is now being prepared by the workshop facilitators/modellers. This report will summarize the workshop activities and give detailed descriptions of each of the submodels. It will also discuss the relationship between mitigation planning and the

modelling effort as well as the major research needs identified by the workshop participants.

SUSITNA TERRESTRIAL MODELING WORKSHOP
AUGUST 23 - 27, 1982

NAME	AFFILIATION	ADDRESS
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LGL REC'D 8/19/82 egc
cc: RICHARD FLEMING
MIKE GRUBB

UNITED STATES GOVERNMENT

memorandum

U.S. FISH AND WILDLIFE SERVICE
WESTERN ALASKA ECOLOGICAL SERVICES
733 W. 4th Avenue, Suite 101
Anchorage, Alaska 99501
(907) 271-4575

cc: JOHN HAYDEN
STEVE FANCY

TO: Su Hydro Files

FROM: Ann Rappoport, Fish & Wildlife Biologist

DATE: 18 AUG 1982

SUBJECT: Beaver Survey, Talkeetna to Montana Creek

On August 5 and 6, I joined Jim Durst and Dave Volsen of the University of Alaska, Fairbanks, on the second of their three downstream beaver surveys for the proposed Susitna hydroelectric project. We surveyed 11 sample miles within the 24 mile stretch of the Susitna River from just below its confluence with Montana Creek to Talkeetna. Purpose of my participation was to familiarize myself with data being collected and determine the applicability of HEP to the Su Hydro beaver study.

Jim, Dave, and principal investigator, Dr. Phil Gipson, had previously surveyed the Takeetna to Devil's Canyon portion of the Susitna River; Phil was to join them the next week for the remaining survey from Montana Creek to the Delta Islands. Upstream areas had been briefly evaluated during the previous year's furbearer work. An aerial count of food caches will be undertaken this fall.

Following is a brief description of the beaver survey methodology, qualitative study findings, data needs and applicability of HEP.

Methodology

Traveled upriver in University's 20' riverboat. River miles had been marked and numbered on 1" = 4000' black and white photos with one number for the east river bank and one number for the west river bank. One river mile long sample sites were surveyed by boat. Sloughs and freshwater streams adjacent to those sample miles and within the area expected to be impacted by project-caused flow changes were also surveyed. Where impossible to survey an area by boat or foot, a helicopter was to be used the following week. Data collected included: beaver sign (tracks, cuttings, "skid" trails, lodges, bank burrows, and dens), bank type (e.g. mud, rock, etc.), water depth, water velocity, dominant tree and shrub cover types, other wildlife sign, and presence or sign of human disturbance.

Qualitative results

Eleven sample sites were surveyed. Each site consisted of one mile stretch of river bank along one side of the river and the adjacent sloughs and streams. River banks were typically heavily vegetated and ranged from 1 - 3' in height to 40-50' with gravel rocks to 6" or bare mud at the water's edge. Occasional exposed, barren cliffs of 30-50' in height were also present. Vegetation along the river is primarily deciduous. Dense alder to 30' predominated with some interspersed tall willow shrubs. The cottonwood and birch overstory ranged from open to closed with intermixed spruce along the top of the banks. Devil's club, ferns, berries (high bush cranberry, elderberry, and wild rose), and grass typically comprised the understory. Willow and poplar seedlings were usually scattered in the grass/sedge/equisitum cover on flats and vegetated islands.

At least three beaver were observed during the survey. Beaver sign (tracks along mud banks, cuttings of willow and poplar (one cut alder was found), "skid" trails where cut vegetation has been dragged to the water, and beaver lodges and dams was common in areas of suitable habitat. Key factors contributing to suitable habitat were:

(1) sloughs or clear-water streams of slower-moving water adjacent to the main river channel; apparently limiting water velocities are unknown;

(2) availability of food - University researchers are preliminarily concluding that lack of willow limits beaver use along the Susitna River. It is unknown why alder is the early successional stage rather than willow in some locations is unknown.

(3) banks which provide stable substrates for burrowing;

(4) absence of human disturbance -- a few areas of highly suitable habitat (i.e. willow was present, side sloughs and sand/mud banks offered suitable building sites) lacked any beaver sign. However in all cases these areas were easily accessible to the road and supported an enthusiastic population of 10-20 fisherpersons and abundant empty beer cans and other trash; and

(5) at least 30" water depth in winter.

Data Needs/Applicability of HEP

Lack of information on both vegetation succession and the hydrologic regime anticipated with project development are the major limitations to determining project impacts to beaver. Data being collected should provide a good baseline assessment of beaver populations and habitat uses downstream of the Devil's Canyon dam site. A baseline HEP analysis could likely be performed with existing data and the University of Alaska researchers' input.

I discussed HEP with Jim and Dave. They were interested to learn of the availability of color IR photos of the area (from U.S. SCS/FS studies of the Susitna River Basin) which could help in identifying vegetation cover in areas not directly surveyed. We considered ways of modifying the beaver habitat

model as was done for the Bradley Lake and Willow Subbasin studies, yet the model could be improved with the site information collected for the Susitna project. Model modification should involve assigning suitability index values on the basis of available water plus adjacent suitable vegetation cover.

cc: FWS-ROES
Lenny Corin, WAES
Phil Gipson, University of Alaska, Fairbanks
Robin Sener, LGL

APPENDIX E11H

COMMENTS RECEIVED DURING NOVEMBER 1982 WORKSHOP

APPENDIX 11.H

MEETING NOTES FROM NOVEMBER WORKSHOP

On November 15, 1982, a Draft Exhibit E of the license application was distributed to the appropriate federal, state, and local agencies for review and comment. To assist agencies in reviewing the Draft Exhibit E, a four-day workshop was held in Anchorage from November 29 to December 2, 1982.

This appendix contains a list of agencies that were sent the Draft Exhibit E and notes of the workshop meetings.

P5700.70.0100-00

SUSITNA HYDROELECTRIC PROJECT

FERC License Application Exhibit E Presentation and Discussion

Anchorage, Alaska
Holiday Inn

November 29 - December 2, 1982

Objectives

1. Update Federal, State and local agencies regarding significant changes in project features since the Feasibility Report was published in March, 1982.

2. Use the presentations and discussions as an interactive process whereby Federal, State and local agency review of the draft Exhibit E can be facilitated.

3. Develop a mechanism for continued interaction as the finalized Exhibit E is prepared for submission to FERC.

AGENDA

Monday, November 29 1:00 P.M.

Introduction

Project Operational Description

Watana Dam

Devil Canyon Dam

Access

Transmission

Schedule for Preparation of Exhibit E

Group Definition

Tuesday, November 30 9:00 A.M.

Group 1 Water Use and Quality and Fishery Resources (W. Dyck, L. Moulton)

Group 2 Wildlife and Botanical Resources (R. Sener, M. Grubb)

Group 3 Socioeconomic/Land Use (P. Rogers, P. Lukens, K. Young)

Group 4 Cultural Resources (G. Smith, D. Follows)

Wednesday, December 1 9:00 A.M.

Group 1 Water Use and Quality and Fishery Resources

Group 2 Wildlife and Botanical Resources

Group 3 Recreation and Aesthetics (R. Erickson, J. Chappell)

Thursday, December 2 9:00 A.M.

Group 1 Water Use and Quality and Fishery Resources

Group 2 Wildlife and Botanical Resources

LIST OF ATTENDEES

SUSITNA HYDROELECTRIC PROJECT WORKSHOP

Holiday Inn, Anchorage, AK

Monday, November 29, 1982

Name	Organization	Telephone
Michael P. Storonsky	Acres	276-4888
Philip Hoover	Acres	"
Thomas Lavender	Acres	"
Tony Burgess	Acres	"
Michael Grubb	Acres	716 - 853-7525
Charlotte Thomas	Alaska Power Authority	276-0001
Steve Fancy	LGL Alaska	479-2669
Martha Raynolds	LGL Alaska	274-5714
Robert Sener	LGL Alaska	274-5714
Dave Tremont	Dept. Community Regional Affairs	264-2206
Roland Shanks	Cook Inlet Region, Inc.	274-8638
Priscilla Lukens	Acres	276-4888
Michele Urban	Harza/Ebasco	277-1561
Tom Arminski	Alaska Power Authority	276-0001
Leonard Corin	USFWS	271-4575
Larry Moulton	Woodward-Clyde	276-2335
Jean Baldridge	Woodward-Clyde	276-2335
Keith Quintavell	DNR - DLWM	276-2653
Robert Mohn	Alaska Power Authority	276-0001
George Gleason	Alaska Power Authority	"
John Bizer	Harza/Ebasco	277-1561
Jack Robinson	Harza/Ebasco	"
Randy Fairbanks	Harza/Ebasco	"
Gary Lawley	Harza/Ebasco	"
George S. Smith	University of AK Museum	474-7818
E. James Dixon	University of AK Museum	"
B. Agnes Brown	Tyonek Native Corp.	272-4548
Carole A. Ellerbee	Tyonek Native Corp.	"
Robert M. Erickson	EDAW, Inc.	274-3036
Tim Smith	DNR-Parks (History and Archaeology)	264-2139
Richard Fleming	Alaska Power Authority	276-0001
Bob Madison	USGS-WRD	271-4138
Bob Lamke	USGS-WRD	"
Bob Martin	ADEC	274-2533
Don McKay	ADF&G	267-2284
George Cunningham	ADF&G	344-0541
Randy Cowart	ADNR-R&D	276-2653
Al Carson	ADNR	276-2653
Paul Janke	ADNR	"
Gary Prokosch	ADNR-Water	276-2653
Mary Lu Harle	ADNR-Water Management	"
Robin Hill	Frank Orth & Associates	206-455-3507
Peter Rogers	Frank Orth & Associates	"
Steve Zrake	ADEC	274-2533

LIST OF ATTENDEES - cont..

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Gary Stackhouse	USFWS	263-3475
Brad Smith	NMFS	271-5006
Bill Lawrence	U.S. EPA	271-5083
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Bob Everett	ESSA Ltd.	274-5714
Eric Myers	NAEC	276-4244
John Rego	BLM	267-1273
Lee Adler	AHTNA Inc.	822-3476
Bill Wilson	AEIDC	279-4523
Chris Godfrey	COE	552-4942
Ted Rockwell	USCE Reg. Function	"
Larry M. Wright	NPS	271-4236

LIST OF ABBREVIATIONS USED FOR AGENCIES

Alaska Power Authority	APA
Alaska Department of Community and Regional Affairs	ADCRA
Alaska Department of Environmental Conservation	ADEC
Alaska Department of Fish and Game	ADF&G
Alaska Department of Natural Resources	ADNR
Artic Environmental Information and Data Center (University of Alaska)	AEIDC
Cook Inlet Region, Inc.	CIRI
National Marine Fisheries Service	NMFS
National Parks Service	NPS
Northern Alaska Environmental Center	NAEC
United States Bureau of Land Management	BLM
United States Corps of Engineers	COE
United States Environmental Protection Agency	USEPA
United States Fish and Wildlife Service	USFWS

- Minutes of Meeting -

Subject: Susitna Hydroelectric Project Workshop - FERC License Application Exhibit E, Presentation and Discussion

Location: Holiday Inn, Anchorage, Alaska

Attendees: see attached

Date: Monday, November 29, 1982 1:00 P.M.

Minutes recorded by: Michael P. Storonsky

I. Introduction - Dr. Richard Fleming (APA)

A) Summary:

Dr. Fleming provided an overview of the purpose of the workshop, the schedule of the license application process and introduced some of the attendees.

B) Purpose of Workshop:

To provide an informal informational session for the various agency attendees. Solicit comments and concerns to improve the final license document to be submitted to the FERC.

C) Application:

- submitted draft Exhibit E to the FERC and the various agencies November 15, 1982
- workshop November 29 - December 2
- prepare and distribute a copy of the minutes of workshop week of December 6
- incorporating agency comments into draft as received
- meet with FERC staff 14 December to review Engineering Exhibits meeting with the FERC staff December 28 to receive their comments on Exhibit E of draft application
- agency comments due January 15, 1983
- submitting license application to the FERC February 15, 1983

- a supplementary report of 1982 fisheries information and analysis to be submitted in June 1983.
- additional supplemental information as required.

D) Introduced representatives of the Harza/Ebasco/ team that will be handling Phase II of the Susitna Project.

II. Project Operational Description - Dr. John Hayden (Acres)

A) Summary

Dr. Hayden first provided a slide presentation of the major project features and location, and then a series of overhead viewgraphs of the filling and operational processes. Through the use of wall maps Dr. Hayden provided a description of the access routes and transmission lines, their locations and schedules of development. Following an intermission Dr. Hayden outlined the organization of the workshop for the balance of the week.

B) Major Project Features - Watana

- overview of the drainage basin and the relative position of the dams
- location of the proposed damsite looking both upstream and downstream
- location of the proposed borrow areas D&E, existing field camp, intake tunnel, emergency spillway
- project features discussed including the 54 mile length of reservoir, upstream boundary - just above the confluence with the Oshetna River, site of construction camp and village, and location of access road
- construction development schedule described
  . access road construction
  . diversion tunnel excavation
  . completion of diversion cofferdams
  . diversion of water through 2 tunnels, to be ultimately sealed
  . plug tunnels 4 - 5 years into construction and begin filling reservoir
  . complete dam, power facilities and above ground structures
- operation
  . 1993

. 6 units x 170 MW = 1020 MW
. 120' depth of intake structures rather than previous 140' depth
. 4 intakes levels
. outlet facilities
. main spillway for floods > 1:50 years
. emergency spillway for flood > 1:10,000 years.

C) Devil Canyon Project Features

- location of the proposed site looking both upstream and downstream
- pertinent features
  . access routes
  . borrow area locations
  . powerhouse location on north side of river
  . long tailrace proposed to provide additional head
  . 4 units at 150 MW = 600 MW Total capacity
  . Fixed-cone values will be used to maintain instream flow during filling as well as prevent gas supersaturation during operation.
  . multiple level intake structure - 2 intakes within upper 50 feet of the reservoir.
- Operational Data
  . 50' drawdown in August of some years
  . commissioning date 2002

D) Filling and Operation Processes

(i) Mimimum flow requirements at Gold Creek
  - Filling
    . 1000 cfs in winter
    . 6000 cfs in spring
    . flows spiked to 12,000 cfs in August and through mid Sept.
  - Operation
    . 5,000 cfs in winter
    . spring and summer same as during filling

(ii) Filling Process for Three Filling Scenarios Based Upon the 32 Years of Historical Hydrologic Data

- three year filling flow scenarios examined with
  - . 90% chance of exceedence
  - . 50% chance of exceedence
  - . 10% chance of exceedence
- filling begins 1991 - 1993
- not a lot of difference between 3 scenarios

(iii) Comparison of Monthly Average Pre-project and Filling Flows at Gold Creek, Sunshine and Susitna Station

- greatest % change in the summer time

(iv) Operational Water Levels at Watana

- normal maximum elevation 2185'
- surcharged to 2190' during September after the risk of floods diminished
- mean drawdown 105'
- maximum drawdown 120'
- maximum, minimum and mean drawdown scenarios compared
- very slight water level change with Devil Canyon on line

(v) Devil Canyon Water Levels

- wet years; reservoir full all year
- mean years; 50' drawdown in August and September with filling as rapidly as possible in October
- dry years; slight drawdowns during April - May also

(vi) Comparison of Monthly and Annual Pre-project and Post-project flows with Watana alone and with both projects on line

(vii) Operation of Projects

- Watana alone will be operated as a base-load plant
- with Devil Canyon on line, Watana will be peaked and Devil Canyon will be base-load

(viii) Temperature conditions
- modeling taking place
- may need to consider a low-level intake to achieve more desirable fall temperatures

E) Access Roads - wall maps

(i) Watana Route
- railroad transfer point at Cantwell
- use Denali Highway for 21 miles to Watana access road
- from Denali Highway, 43 miles south to damsite

(ii) Construction Schedule - Watana
- begin immediately after issuance of license
- construct a primitive access road from Denali Highway to Watana damsite first
- within 1 - 2 years upgrade to allow for additional construction traffic
- following 1993 it is uncertain as to whether the access road will be public or private, this decision will be made at a later date

(iii) Devil Canyon
- road from Watana to Devil Canyon north of river
- railroad access from Gold Creek to damsite, south of river
- schedule not as critical
- public vs. private road to be decided at a later date

F) Transmission Line

- two lines from Watana to the intertie
- two lines from Devil Canyon to the intertie
- winter construction of a significant portion of corridor, therefore avoid need for "access road"
- use existing trail from Cheechako Creek to the intertie

G) Other

- pursuant to a question from the audience
  . outlined project boundary
  . identified land holdings in the area: native, private and state
- set of drawings of project reproduced from Exhibit F provided

INTERMISSION

H) Organization for Balance of Workshop

Identified groups, group leaders, and locations and times of meetings - (see attached agenda).

MEETING ADJOURNED

SYNOPSIS OF WORKSHOP ON SOCIOECONOMICS
NOVEMBER 30, 1982

Frank Orth & Associates, Inc. lead a discussion in which the following topics were addressed: objectives of Section 5 of Exhibit E; the methodology and assumptions used in the socioeconomic analysis; the major areas of impacts; and the proposed mitigation process. Copies of the agenda and the list of participants for this workshop are attached. Significant issues brought up by participants are summarized below:

1. It was requested that clarification be provided on the reasons that impacts resulting from the use of the power that the project will provide are not included in the FERC license application. Discussion followed on the distinction between direct/indirect and induced impacts.

2. The possibility of dam failure and the need for an alarm system for residents living near the river, downstream of the project, was suggested.

3. One participant suggested land use restrictions in the areas that could be affected by flooding in case of dam failure.

4. Several participants commented on the need for policies that would encourage local hire at the community level. Suggestions included requiring unions to enroll workers from rural areas, use of tax policies, and review of NANA Corporation's local hire requirements at the Red Dog mining project.

5. It was requested that more discussion of the possible magnitude and significance of people that will come from other areas of the country, without finding work on the project, be provided. It was stressed that this could change the magnitude of impacts significantly.

6. A table listing the various assumptions regarding the origin and characteristics of the construction work force was recommended.

7. One participant commented that the assumption that 50 percent of the workers whose jobs are terminated upon completion of Watana will remain in the area may be too high. He cited the small economic base and resultant lack of job opportunities in the small communities as the reason.

8. One participant asked about the possible access of local planners to the study team's socioeconomic impact model.

9. It was asked whether cumulative impacts that included other projects in the impact area were taken into account.

10. Several questions were asked and issues were raised concerning the work camps/village including: a) who pays for the camp; b) whether the workers would pay rent; c) the concerns of the Mat-Su Borough and individual communities; d) the degree of access; and e) the implications of the camps on land use in the Upper Susitna Basin.

11. A discussion of the objectives of the mitigation process occurred. Several participants emphasized the need for a continuing mitigation process that will anticipate impacts and initiate measures to mitigate impacts before they occur, in which other agencies be included.

12. One participant suggested additional clarification be put into the section concerning the ongoing studies on impacts to fish and wildlife user groups.

13. It was suggested that more research be conducted on part-time and subsistence use of resources in the impact area. Another participant commented on the need to include discussion of subsistence considerations in Section 810 of ANCSA.

14. Additional use of resources on private land by individuals gaining access with the projects's access road was mentioned as a possible adverse impact that should be monitored and mitigated.

15. Additional use of aircraft to transport workers was mentioned as a possible mitigation tool.

16. It was commented that ranges of population influx, or some form of confidence levels associated with the projections, would make the discussion of impacts more useful to the communities. Threshold levels of population influx that would spur the need for new public facilities were also suggested.

LIST OF PARTICIPANTS
SOCIOECONOMIC IMPACT WORKSHOP
NOVEMBER 30, 1982

NAME	AGENCY
Randy Cowart	ADNR, Research and Development
Al Carson	Alaska Dept. of Natural Resources
Ron Stanek	Alaska Dept. of Community and Regional Affairs
Kevin Young	Acres American
Robert Mohn	Alaska Power Authority
Herbert Smelcer	Ahtna, Inc.
S. O. Simmons	Harza-Ebasco
Ed Busch	ADCRA Anc., Div. of Community Planning
Ken Hunt	Alaska Dept. of Natural Resources, Water Mgmt.
Bruce Bedard	Alaska Power Authority
Robert M. Erickson	EDAW, Inc.
Charlotte Thomas	Alaska Power Authority
Nancy Blunck	Alaska Power Authority
Jim Richardson	Frank Orth & Associates, Inc.
Peter Rogers	Frank Orth & Associates, Inc.
Robin Hill	Frank Orth & Associates, Inc.

CULTURAL RESOURCES MEETING

Anchorage Holiday Inn

November 30, 1982

Subject: Mitigation Planning for Susitna

Purpose: To review research design and methodology used in 1980-82 work.

To review and discuss draft FERC License Application.

To discuss cost effective means by which the initial survey may be completed.

To seek approval from the SHPO on the overall mitigation approach.

In Attendance: Beth Walton, State Archeologist, Bureau of Land Management
Diana Riggs, Department Natural Resources
Tim Smith, State Office of History and Archeology
Floyd Sharrock, Chief Archeologist, National Park Service
George Smith, Project Leader, University of Alaska Museum
E. James Dixon, Curator of Archeology, University of Alaska Museum
Richard Fleming, Alaska Power Authority
Don Follows, Acres American, Incorporated

Guests: Phil Hoover, Acres American, Incorporated
Jack Lobdell, Consultant

The Cultural Resources Program Manager, Don Follows, opened the meeting at 9:10 a.m. in Room 227 of the Holiday Inn, Anchorage. After the introductions, the point was made how critical the cultural resources are to the hydroelectric project schedule. Compliance with Section 106 of the Historic Preservation Act of 1966, Executive Order 11593 and Title 36, Part 800, Code of Federal Regulations and related laws direct the process for Cultural Resources investigation and mitigation planning.

Dr. Dixon presented a synopsis of the field work which has been completed and reported on over the past three field seasons. To date, about 50 percent of the total project area has been surveyed. Of special interest is the location of four tephras which provide dating references for the artifacts recovered. It is hoped that the cultural chronology of the region can be, for the first time, established.

Dr. Dixon explained that in his approach to mitigation planning the term "potential impacts" had been developed to address those sites outside the adversely effected areas. This third category allows for a more flexible means by which to address the large number of sites recorded (167) to date, many of which will not be impacted directly, and only potentially in the future. Potentially, impacted sites would not require systematic testing at this time, but should be monitored from time to time by the appropriate

land managers to determine conditions. If conditions warrant, mitigation would then be required.

Dr. Sharrock (NPS) asked at what point the Advisory Council on Historic Preservation should become involved in the project. The information that both Acres and the Power Authority had received in separate meetings with FERC in Washington, D.C. was that FERC would not contact the council until the basic reconnaissance was completed.

Serious scheduling problems could arise if FERC requires the Cultural Resources field survey to be completed next summer. The Alaska summer is only two and a half months long. The project size and remoteness introduce unique conditions under which a large workforce can become less efficient because of support logistics required. Based on his many years of Alaska experience, Dr. Dixon felt it would be unrealistic to expect completion in one year. It was the group consensus that two years would be best.

Another significant factor in attempting to complete the work in one field season is the Alaska Power Authority fiscal year which begins July 1. Unless funds are available at present time to launch the spring 1983 workforce, the goal will be difficult to attain because of the University's administrative procedural delays in hiring employees.

Dr. Fleming said that a decision on whether to proceed with a one or two year program will be made by the end of January, 1983.

In summary, the group consensus seemed to favor a two year survey program as outlined in the mitigation plan, and the early (if possible) involvement of the Advisory Council on Historic Preservation so that procedures can be established which satisfy both the FERC scheduling concerns and the Advisory Council.

Phil Hoover will meet with FERC the end of December to discuss the involvement of the Advisory Council.

LAND USE

Questions & Comments

1. CIRI and the village corporations asked that the Power Authority request that DNR identify lands suitable for exchange. They feel that land exchange with the state may offer one mechanism for the Power Authority to acquire project lands from them. Potential lands for exchange are becomming limited. DNR has not commenced such a study.

2. Clarification was requested on the content of Section 24 of the Federal Power Act.

3. Discussion occurred regarding induced land use changes on Native corporation owned land resulting in public pressure to provide increased access, e.g.: potential of fishermen wanting improved access to Portage Creek. Natives are concerned that the project not lead to trespass on their lands.

4. Concern was expressed about the compatability of the proposed access plan with the Denali Scenic Highway plan.

   - Discussion related to potential recommendations of the ongoing study. The report on Denali Scenic Highway will need to be adopted by the Land Use Council before being released. As identified by BLM, the only incompatability with the Denali scenic Highway would be temporary transmission going into the Watana site.

5. It was suggested that an assessment should be conducted on the long term economics value of having a more appealing access road.

6. A suggestion was made that a land use committee be established. The potential of having the Power Authority participate on the Mat Su land use planning team was discussed as an option.

7. A request was made that a substation and distribution be located at Cantwell as part of supplying construction power to the site, and thus make Intertie power available to that community.

8. It was suggested that additional assessment of land use changes at the community level will be undertaken, particularly with respect to Cantwell.

9. It was mentioned that Native concerns should be presented in the FERC license application.

10. The Native corporations will not initiate planning until definite project requirements are received.

11. The Native corporations propose the following methods for the Power Authority to acquire project lands: purchase, lease or exchange.

12. Effects of land acquisition procedures on land use development were discussed.

ATTENDANCE LIST

Land Use Workshop
Tuesday, 11/30/82

Charlotte Thomas	Alaska Power Authority
Robin Hill	Frank Orth & Associates
Ron Stanek	Alaska Dept. Fish & Game
Herb Smelcer	AHTNA Inc.
Bruce Bedard	Alaska Power Authority
Steve Simmons	Harza-Ebasco
Nancy Blunck	Alaska Power Authority
Randy Cowart	ADNR-R&D
Robert Erickson	EDAW, Inc.
Dave Tremont	Alaska Dept. of Community & Regional Affairs
Priscilla Lukens	Acres American
Kevin Young	Acres American

COMMENTS RECEIVED

WORKSHOP ON RECREATION
December 1, 1982

1. Questions were asked regarding FERC policy on location of facilities off-site. When recreation resources are off-site or when there are problems developing the reservoir, FERC has accepted development of off-site facilities. State Parks concurs with this position agreement.

   The Power Authority stated their position is to a) take advantage of project facilities (roads & reservoirs), b) be responsive to landowners concerns (avoid trespass), c) direct use away from sensitive fish, wildlife and archaeologic resources.

2. Why is an expansion of Brushkana campground recommended? The need has been discussed already by BLM and it appears in their management plan. The project would increase demand for camping along the Denali Highway and this is a logical location. It would also keep some auto traffic and camping from penetrating the project area. BLM would manage the area, and BLM and Power Authority would enter into a memorandum of understanding regarding construction, operation and maintenance.

3. State Parks Department is pleased with the plan as presented and confirmed that the plan is in agreement with the state-wide recreation plan. DNR supports the plan.

   State Division of Parks will open a new trail along Curry Ridge line, from Coal Creek to Troublesome Creek, in 1983. They would like the Power Authority to consider adding three whistlestops, consisting of small campsites and possibly shelter cabins, at Gold Creek, Curry Ridge and Indian River.

4. Question: Is a full range of recreation facilities provided at Watana Village and are facilities provided for other than rugged hikers?
   Answer - Power Authority: Yes, extensive recreation facilities and activities are included in the plan for the village. There is a full range of recreation opportunities provided in the recreation plan, from driving and pull-offs along the road, to a visitor center with educational exhbits, to rugged hiking.

5. Question: There are no improved trails in Denali National Park. Why does State Parks want improved trails?
   Answer - State Parks: Brushing out and hardening is done only where necessary (e.g., inclose-in forested areas). In further out open areas , rock cairns may be all that is necessary.

6. Concern was mentioned about Caribou kills on the Watana access road. The reports recommends lower design speed and lower profile for that road (Section 8, Aesthetics). Caribou kills are not known to be a

problem on the Denali Highway now. The Denali Highway presently has an AADT of 50 vehicles; Parks Highway, 200. The project is projecting 20 truck trips/day. While no firm traffic projections on the Denali access road are available, it will be much lower than the Parks Highway today and lower than the Denali Highway at that time. Recreation traffic will be limited primarily to July, August and September.

7. Question: Are any facilities proposed adjacent to the Watana access road?
Answer: In addition to the turn-outs and trailheads shown on the project maps, rehabilitation of borrow areas for camping is a "Phase 5" item. They cannot be located at this time because the loation of borrow areas is not know. A note to this effect will be added to the map of recreation facilities.

8. Question: Why do we assume that demand will build up over time and not be instantaneous when the facilities open (p E-7-42)?
Answer: National Park Service experience has shown this to be the case, even in well-known recreation areas. It takes time to build a sustained marked. If a new salmon fishing area close to Anchorage were opened, it would get immediate heavy use. Project facilities will not be that type of area.

9. Demand figures were discussed and agreed with; if anything, they may be high. This is why some facilities have been put in Phase 5.

10. What is the capacity of the Susitna River Boat Launch? 6 vehicle places. This will be checked against DOT's Denali Highway Study.

11. Three facilities require Native concurrence - the Chulitna trail, Fog Lakes trail and campground, and Stephan Lake trail.
Question: Is there a statement that says land acquisition costs will be in addition?
Answer: Yes. The plan also recognizes that additional private recreation development may take place on private land.

12. The plan should mention that snowmobiling will probably increase along the Denali Highway. No specific areas need to be set aside.

13. Page E-7-39, paragraph 3 states fishing is decreasing. The data source should be re-checked to confirm this.

14. Capital investments will be part of Power Authority project financing. Operational costs will be partly done as part of regular operations. MOU's with the agency would detail arrangements.

15. Effects on downstream recreation appear to be mixed. Water quality will improve but quantity will decrease during the open water season. See Chapter 2 - Water Quantity and Quality.

ATTENDANCE LIST

WORKSHOP ON RECREATION
December 1, 1982

Larry Wright, USNPS
Randy Cowart, ADNR
Gary Stackhouse, USFWS
Dave Dapkus, USBLM
Mike Mills, ADF&G
Roland Shanks, CIRI
Jack Wiles, ADNR
Richard Fleming, APA
Bruce Bedard, APA
Nancy Blunck, APA
Gary Lawley, Harza-Ebasco
Jack Robinson, Harza-Ebasco
Peter Rogers, Frank Orth & Associates
Robin Hill, Frank Orth & Associates
Bob Erickson, EDAW, Inc.
Jim Chappell, EDAW, Inc.
Kevin Young, ACRES
Priscilla Lukens, ACRES

COMMEMTS RECEIVED

Workshop on Aesthetics
December 1, 1982

1. Be sure that discussion of Watana access road clearly states EDAW's recommended restudy of that alignment.

2. It was suggested that a mitigation measure be to take a film of the river from Tyone River to Gold Creek today, and again periodically after construction, in a "time-lapse" fashion.

3. Discussions of the construction camps and the townsite took place, with agreement that additional location studies and design studies are required.

4. Discussions of the transmission lines took place, with agreement the north and south stubs need additional location studies but the line from the powerhouses to the intertie is well located. (The alignment between Watana and Gold Creek which was assessed in the application and discussed at the workshop was subsequently relocated to provide improved access for construction and operation.)

ATTENDANCE LIST

WORKSHOP ON AESTHETICS
December 1, 1982

Larry Wright, USNPS
Randy Cowart, ADNR
Gary Stackhouse, USFWS
Roland Shanks, CIRI
Jack Wiles, ADNR
Bruce Bedard, APA
Nancy Blunck, APA
Bob Erickson, EDAW, Inc.
Jim Chappell, EDAW, Inc.

SYPNOSIS OF AGENCY COMMENTS
AND QUESTIONS

REVIEW OF DRAFT EXHIBIT E OF FERC LICENSE APPLICATION

WILDLIFE AND BOTANICAL RESOURCES GROUP

Tuesday, November 30, 1982

Room 225, Holiday Inn, Anchorage

ATTENDEES

Name	Organization	Address	Phone No.
Lee Adler (LA)	Ahtna	Box 6 Copper Ctr.	822-3476
Roseann Densmore (RD)	Envirosphere	Anchorage	277-1561
Bob Everitt (BE)	ESSA Ltd.	Vancouver, B.C.	604-872-0691
Randy Fairbanks (RF)	Envirosphere	Seattle	206-451-4620
Steve Fancy (SF)	LGL Alaska	Fairbanks	479-2669
Michael Grubb (MG)	Acres American	Buffalo	716-853-7525
Gary Liepitz (GL)	ADF&G	Anchorage	344-0541x281
Ann Rappoport (AR)	FWS	Anchorage	271-4575
Martha Raynolds (MR)	LGL Alaska	Anchorage	274-5714
Karl Schneider (KS)	ADF&G	Anchorage	344-0541
Robert Sener (RS)	LGL Alaska	Anchorage	274-5714
Gary Stackhouse (GS)	FWS	Anchorage	263-3475
Judy Zimicki (JZ)	No. Ak. Environ. Ctr.	Anchorage	277-2134

Discussion of Preparation of Exhibit E: Baseline Description, Impact Section and Mitigation Section.

KS - What will the February and June submittals entail?
What data will be in which document?

Discussion of Schedule for Submitting Documents and Agency Review Procedures.

AR - What about after June 30? Will there be continuing studies?
When will those data be incorporated?

Discussion of Schedule after June 1983. Discussion of Baseline Vegetation Description.

LA - Is the Susitna basin key winter moose range?

Discussion of Areas That Might be Critical During a Severe Winter.

AR - Is a new classification system being used to help characterize moose habitat?

Discussion of Viereck & Dyrness System and Relation to Moose Browse Identification.

RF - Was all vegetation mapping described in Exhibit E done from 1:120,000 1980 U2 photography?

AR - Does Exhibit E contain all work completed up to this point, so that new data will go into the June 30 document?

Discussion of Threatened or Endangered Wildlife Species, Prioritization of Species, Moose Baseline Description.

KS - New census this fall showed more moose on the Susitna River downstream of Devil Canyon than have ever been measured there before.

Discusion of Moose Calving, Food Habits and Mortality.

KS - Black bear predation on moose calves is important as well as brown bear predation. Early green-up of vegetation in the river valley may be important to cows that are about to calve, even if the area is not a true winter range.

Discussion of the Caribou in the Area, and Dall Sheep.

KS - Sheep sighted in the Watana Mountain - Grebe Mountain area are probably a sub-group of the main Talkeetna Mountains group. The number within the Susitna watershed could vary.

Discussion of Brown Bear Baseline Description.

KS - Yes, one would expect brown bear population to decrease downriver due to poorer habitat and lower elevation.

Discussion of Black Bear, Wolves, Coyotes, Wolverine, Belukha.

KS - Belukha feed on anadromous fish. Smelt runs in Cook Inlet are also an important food source. Have they been studied?

Discussion of Furbearer, Bird and Small Mammal Baseline Descriptions.

AR - What is your perception of the completeness of the baseline information?

AR - How about information on population increases or decreases, or the quality of the habitat? Are there any gaps in that type of information? Are the data being gathered? When will they be available?

Discussion of Data Gaps and 1983 Field Season.

KS - I hope we can get the 1983 field program set up this winter. All issues should be identified.

AR - I'm glad to see the vegetation mapping is being re-done and that you (LGL) are not just accepting the inadequacy of the earlier data.

Will the original researchers (principal investigators) be given the new vegetation maps to re-work their data?

Discussion of Importance of Early Planning, Expecially if This is a Severe Winter. Discussion of Impacts to Moose Due to Watana Development.

AR - Hunting regulations are political, and these are not predictable. Unless commitments are actually a part of the license, they will not necessarily be followed.

KS - Project personnel are easier to regulate than the public. Many different regulatory options are available. Permitting to restrict harvest is easier than closing the road.

Discussion of License Application Approach to Issues Outside the Power Authority's Jurisdiction.

LA - Has any consideration been given to regulations Natives may impose? They can control access - trespass - but can't directly regulate hunting.

Discussion of Moose Impacts and Moose Browse Studies.

AR - Both summer and winter vegetation sampling will be needed to accurately determine energy and protein content of browse.

Discussion of Planned Moose Studies and Those in Progress.

AR - The document (Exhibit E) should clearly describe any work that is going to be done, and its schedule.

Discussion of Species Prioritization and Mitigation Tradeoffs.

KS - In many cases, compensation may be the major mitigative technique.

Discussion of Impacts to Downstream Moose and Caribou.

RF - How is FERC going to respond to the lack of specificity in the caribou impact and mitigation section?

KS - The effects on caribou are difficult to mitigate except through the no project option. Out-of-kind mitigation will be determined after impacts have been assessed during construction and operation.

Discussion of Impacts to Dall Sheep.

KS - Might be useful to do a slope stability study of Jay Creek sheep lick. Inundation might even enhance the lick through erosion exposing fresh mineral soil.

Discussion of Impacts to Brown Bear and Black Bear.

KS - Both bear species use several different, scattered food sources, which will be more or less important in different years. Pinpointing the factor limiting bear populations is difficult, consequently the effect of the dams is difficult to predict.

Discussion of Impacts to Wolves of Watana Development.

KS - Activity sensors on wolves showed that helicopters caused reactions, but the wolves, even one in a den with pups, became habituated. Good data are available on the optimum time of day and season to minimize disturbance.

Discussion of Impacts on Wolverine, Belukha, Beaver, Marten, Raptor, Waterfowl, and Small Mammals.

AR - Looking at the project as a whole, is diversity being maintained through mitigation or are moose being favored to the neglect of other species? In some areas, different species may be more important than moose.

Discussion of the Impacts of Devil Canyon and the Access Roads.

AR - Are there any plans to quantify the impact of different alternative construction methods?

Discussion of FERC's Request to Emphasize Commitments Over Options and Recommendations in the License Application.

KS - If the project is not clearly defined, with the associated impacts of each decision, then reviewing the project is difficult.

AR - The construction method with the least impact should be strongly supported.

GS - Are the costs of the different options included?

Ar - Exhibit E should contain a table of project impacts and corresponding mitigation measures. All project aspects should be presented and evaluated.

GS - It is important for the groups to keep up with any changes.

KS - Is there any mechanism to let agencies know of any changes?

Discussion of Decision Making Process.

AR - What was the level of communication during the engineering design?

Discussion of Formal and Informal Interactions.

GS - Access route has potentially severe impacts. Strong recommendation may be made to FERC to change it. The road between the dams might change, too, due to Native bargaining.

Discussion of the Impact of the Access Roads.

KS - There is not a direct relationship between caribou herd size and range size. Management goals for the Nelchina herd are now ±20,000, but that could change. Changes in potential caribou habitat are important, even if the population is not immediately affected. 70,000 is too high a population for that herd - caused a crash, however a higher ceiling is being considered, 30,000 - 40,000. You should assume an eventual population of 40,000.

LA - The population is presently increasing and will continue to increase unless there is some regulatory change.

KS - When access increases, hunting demand will increase.

Further Discussion of Access Road and Traffic Patterns.

KS - Traffic data averaged over a year is not good enough. It is important to know about peak traffic flows - when they occur and what the maximum number of vehicles would be. The impact on animals depends on the time of year.

GS - We need clear traffic data to be able to estimate impacts.

KS - The time of day of peak traffic might be more important than the time of year.

AR - Suggestions aren't being followed in the Terror Lake project. Need to tie mitigation down, be specific.

KS - We should request some socioeconomic data on traffic predictions.

Discussion of Impacts of Railroad Traffic.

KS - Trains should be scheduled to minimize moose encounters. Scheduling trains close together and using longer trains would also minimize encounters.

GL - Have the effects of the access road mentioned earlier - roadside dust, ATV use - been quantified in terms of loss of habitat or animals?

RF - Roadside dust could actually be beneficial, causing earlier melting and thus early browse.

KS - Impacts should be examined to determine if their effects are significant.

Discussion of Mitigation Measures for Borrow Sites, Access Roads, Transmission Corridors.

AR - Do Exhibit E transmission corridor studies include the intertie? Helicopter construction was agreed to on some sections, but then maintenance was not going to be done by helicopter. The result was less helicopter use.

MG - How do these issues get dropped through the cracks?

AR - The decisions are not written down. If it is written in the permit, then it happens. But if only recommendations are made, then they aren't always followed.

Discussion of Areas of Uncertainty.

AR - Gray areas (where changes are possible) should be identified, so that if things change we have some idea of the impacts of the new option. Construction bids should include all details to make sure the stipulations don't get forgotten.

Discussion of Actions Outside Power Authority Jurisdiction.

LA - Ahtna has no plans to develop project area land if Susitna is built - there is no cash incentive.

WILDLIFE AND BOTANICAL RESOURCES GROUP - 7

Discussion of Plan for Periodic Spring Floods.

AR - Has the plan for 30,000 cfs spring floods been discussed with the aquatic group?

KS - How about the legal effect of causing destruction of property?

Discussion of Negotiations Required for Compensatory Mitigation Measures.

KS - Enhancement of moose habitat is possible, but some impacts cannot be mitigated. Quantification of impacts is perhaps not too important in these cases. General enhancement actions could be taken to preserve the quality of the area (i.e. preserve Stephan Lake area from development).

Discussion of Monitoring Programs.

KS - the cost of mitigation options is difficult to estimate. There may be some trading of State land, and some outright purchase.

REVIEW OF DRAFT EXHIBIT E OF FERC LICENSE APPLICATION

WILDLIFE AND BOTANICAL RESOURCES GROUP

Tuesday, November 30, 1982

Room 225, Holiday Inn, Anchorage

ATTENDEES

Name	Organization	Address	Phone No.
Lee Adler (LA)	Ahtna	Box 6 Copper Ctr.	822-3476
Roseann Densmore (RD)	Envirosphere	Anchorage	277-1561
Bob Everitt (BE)	ESSA Ltd.	Vancouver, B.C.	604-872-0691
Randy Fairbanks (RF)	Envirosphere	Seattle	206-451-4620
Steve Fancy (SF)	LGL Alaska	Fairbanks	479-2669
Michael Grubb (MG)	Acres American	Buffalo	716-853-7525
Gary Liepitz (GL)	ADF&G	Anchorage	344-0541x281
Ann Rappoport (AR)	FWS	Anchorage	271-4575
Martha Raynolds (MR)	LGL Alaska	Anchorage	274-5714
Karl Schneider (KS)	ADF&G	Anchorage	344-0541
Robert Sener (RS)	LGL Alaska	Anchorage	274-5714
Gary Stackhouse (GS)	FWS	Anchorage	263-3475
Judy Zimicki (JZ)	No. Ak. Environ. Ctr.	Anchorage	277-2134

RS began the meeting with a description of the preparation of the Wildlife and Botanical Resources sections of Exhibit E. Research reports from ADF&G and the University of Alaska provided much of the data for the baseline description. These data were substantially supplemented with a thorough literature review. The impact section was prepared in a manner consistent with the Susitna Project Fish and Wildlife Mitigation Policy. Impacts were prioritized by:

1) percent of population affected;
2) certainty of impact occurring; and
3) severity of impact.

The mitigation section is still in progress.

SF - Following FERC's request, the impact section assumed normal engineering practices with no special mitigation measures.

RS - Continued his description of the mitigation section.

KS - What do the February and June submittals entail?

John Hayden (JH) entered, and the question was deferred to him.

JH - We expect feedback from FERC on December 28, which will result in correction of the document before the February submittal. FERC will

have a 60-day review period, then any further requirements can be addressed by June 30. We have 90 days to respond to FERC's request for improvements. The June 30 document will be a response to FERC's evaluation, not a total re-write of Exhibit E.

AR - How about after June 30? Will there be continuing studies?

JH - After June 30, FERC hopes to have enough data to be able to start an EIS. FERC will then incorporate 1983 data as they come in from fisheries, wildlife, and archeological studies. Approval could be contingent on certain aspects of 1983 field data. Not until the EIS is prepared will the agencies have an official comment time, probably in fall 1983.

SF began the presentation of the baseline descriptions. He emphasized the draft nature of the document, particularly the literature cited, the tables and figures, and the mitigation section. An effort was made to be comprehensive and supply all the background material that the reviewing agencies would need.

No endangered plant species were found. Vegetation maps are inaccurate, and will be re-done with a more detailed classification system (still Viereck and Dyrness) and large scale imagery.

LA - Is the Susitna Basin key winter moose range?

SF - Yes, particularly when the snow is deep. Sampling revealed 20% utilization of browse. This winter might reveal browsing patterns in severe winters.

AR - Is a new classification system being used to help characterize moose habitat?

SF - No, still Viereck and Dyrness, but past Level 3 to subcategories. The goal is to stratify browse so that heavy and light browse areas can be separated.

RF - Was all vegetation mapping described in Exhibit E done from 1:120,000 1980 U2 photography?

SF - Yes.

AR - Does Exhibit E contain all work completed up to this point, so that new data will go into the June 30 document?

RS - Yes. We will indicate work in progress if it is not complete.

SF Described the ground truth data available. No endangered wildlife species were found except 2 transient peregrine falcons sighted in 1974. Prioritization of species: 1) moose, 2) caribou, 3) brown bear, 4) black bear, 5) other big game, 6) furbearers, 7) raptors, 8) waterfowl, and 9) other birds and small mammals. Moose in the middle basin were studied separately from moose along the downstream floodplain.

KS - New census this full showed more moose in the Susitna River downstream of Devil Canyon than have ever been measured there before.

SF described moose calving areas, food habits, and mortality. A strong relationship was found between calf mortality and snow depth. Brown bear predation was also important.

KS - Black bear predation is important as well. Early green-up of vegetation in the river valley may be important to cows that are about to calve, even if the area is not a true winter range.

SF discussed the Nelchina Caribou Herd, its present and historical size and range, traditional calving areas, and its subgroups. He then described Dall sheep in the project area.

KS - Sheep sighted in the Watana Mountain - Grebe Mountain area are probably a subgroup of the main Talkeetna Mountains group. The number within the Susitna watershed could vary.

SF discussed brown bear, their denning habits, food sources, density estimates for the impoundment areas and downstream.

KS - Yes, one would expect brown bear populations to decrease downstream due to poorer habitat and lower elevation.

SF discussed brown bear productivity and hunter harvest. He then discussed black bears, their distribution, denning habits, food sources, and mortality. He further described the wolf packs of the middle Susitna basin, the lack of coyotes, the ranges and densities of wolverine, and the studies of belukhas in Cook Inlet.

KS - Belukhas feed on anadromous fish. Smelt runs in Cook Inlet are also an important food source. Have they been studied?

15 Minute Break

SF continued his presentation with the baseline descriptions of beaver, muskrat, marten, red fox, lynx, coyote, and weasels. He then described the field work that has been done to characterize birds in the project area -- 135 species were recorded in the middle basin, including, in 1981, active nests of 6 golden eagles, 5 bald eagles, 1 gyrfalcon, 2 goshawks, and many raven. Relatively low numbers of waterfowl were found in the middle basin.

The data from these years of small mammal trapping were used to characterize these species.

AR - What is your perception of the completeness of the baseline information? How about information on population increases or decreases, or the quality of the habitat?

SF - Much of that information is included in Exhibit E.

AR - Are there any gaps in that type of information? Are the data being gathered? When will they be available?

SF - Yes, some gaps have been identified.

RS - We are still trying to determine which gaps are most important and design the 1983 field season around these data needs. We have made preliminary recommendations to the Power Authority, but the actual program is still being worked out.

SF - We are expecting input from USFWS and other investigators.

RS - Technical meetings between now and December 6 should also provide some input.

SF - Ann, do you have any particular data gaps in mind?

AR - No, since I haven't had time to read Chapter 3 yet, I don't know what's already covered.

KS - I hope we can get the 1983 field program set up this winter. All issues should be identified.

AR - I'm glad to see the vegetation mapping is being re-done and that you are not just accepting the inadequacy of the earlier data.

SF - The new vegetation maps will change some of the wildlife population estimates that are based on densities.

AR - Will the original researchers (principal investigators) be given the new vegetation maps to rework their data?

SF - All the data will be reworked, but not necessarily by the original researchers. The new vegetation maps will be digitized.

RS - Early planning for field studies will be important, especially if this is the severe winter we have all been waiting for. We need a contingency plan to see where the moose are during a severe winter, and to conduct early spring vegetation studies to check the importance of green-up for moose.

AR - Are there any bear studies being planned?

SF - Yes, but those studies will be done in August, so there's more time for planning.

SF then began a description of the impacts of Watana development on moose. Prioritized impacts included: 1) permanent loss of habitat, 2) blockage of movement, 3) disturbance, 4) accidental mortality, 5) alteration of habitat, and 6) increased hunting mortality.

AR - Hunting regulations are political, and thus are not predictable. Unless recommendations are actually part of the license, they will not necessarily be followed.

KS - Project personnel are easier to regulate than the public. Many different regulatory options are available. Permitting to restrict harvest is easier than closing the road.

RS - The license application can state what the Power Authority will do, but can only state options for issues under ADF&G jurisdiction.

LA - Has any consideration been given to regulations that Native corporations may impose? They can control access - trespass - but can't directly regulate hunting.

RS - This is another issue that is not directly under Power Authority jurisdiction. We are not presently planning to discuss options open to private landowners.

SF resumed the discussion of moose impact. Two approaches are being used to predict impacts to moose: a population based assessment, and a habitat based energetics model. To determine the quality of moose habitat, energy and protein content of browse must be known. Vertical distribution of browse, and consequently the amount available at different snow depths, is also important. In order to get this data, trial moose browse sampling studies will be conducted in the field next summer and the vegetation of the area will be re-mapped to identify variation in moose browse potential.

AR - Both summer and winter vegetation sampling will be necessary to accurately determine energy and protein content of browse.

SF agreed, though most work would have to be done in the summer when the whole plant was available for sampling; some sampling would have to be done in the winter. Brown bear predation and critical winters are probably two factors limiting moose population. A large browse sampling program is planned for the summer of 1984, the data will be worked up that fall, then modelling will be done the next spring (1985).

AR - The document (Exhibit E) should clearly describe any work that is going to be done, and its schedule.

SF - We are also working on mitigation and enhancement techniques, and identifying candidate areas.

KS - Compensation may be the main mitigative technique for moose.

SF described impacts to downstream moose. Changes in vegetation succession should favor moose during the license period. Frozen condensation on vegetation due to open water could reduce browse availability. Open water could cause changes in plant phenology and will act as a barrier to moose movements.

Although caribou are excellent swimmers, the impoundment may influence their movements, as may ice shelving and drifted snow. Long-term monitoring programs will be necessary to determine impacts.

RF - How is FERC going to respond to this lack of specificity with respect to caribou?

KS - These types of impacts are difficult to mitigate except through the no project option. Out-of-kind mitigation will be discussed after the impacts have been assessed during construction and operation.

RS - FERC realizes the limitations of biological prediction and would prefer no numbers to unreliable numbers. Indicating that further investigations will be done is acceptable, if sufficient detail is provided.

SF discussed the impact of borrow areas on caribou, then went on to Dall sheep. The two major impacts on Dall sheep are: 1) aircraft disturbance, and 2) inundation of 20-40% of Jay Creek mineral lick. The consequences of the inundation of the lick are not certain.

KS - It might be useful to do some slope stability studies of the lick. Inundation might even enhance it through erosion exposing fresh mineral soil.

30 Minute Lunch Break

SF continued the description of impacts likely to result from Watana development. There will be no poplation effects on brown bear due to facilities or borrow areas. However, the impoundment might alter movement patterns. Any mitigation measures to enhance brown bear populations will conflict with moose mitigation since brown bears are their predators.

The resident bear black bear population in the Watana area could be eliminated due to the inundation of den sites. The transient black bear

population might be affected by decreases in salmon runs.

KS - Both bear species use several different, scattered food sources which will be more or less important in different years. Pinpointing the factor limiting bear populations is difficult, consequently the effect of the dam is difficult to predict.

SF - No known wolf dens or rendezvous sites will be flooded. Disturbance during the denning season could cause increased pup mortality.

KS - Activity sensors on wolves showed that helicopters caused reactions, but the wolves, even one in a den with pups, become habituated. Good data are available on the optimum time of day and season to minimize disturbance.

SF - Human harvest of wolves seems to be the limiting factor, not food supply. The same is true of wolverines.

Impacts on belukha whales could occur through changes in water temperature on fish runs, as has been shown for the St. Lawrence River. Neither is expected to change detectably at the Susitna mouth as a result of the project. Bears are expected to benefit from downstream flow regulation. Marten will lose habitat and are also expected to suffer from increased trapping pressure.

More precise data on the altitude of raptor nests is necessary to quantify impacts. Possible mitigation methods include: 1) building new nest structures, 2) moving nests, 3) exposing new nesting rock by blasting, 4) building artificial cliffs, or 5) topping trees to improve their nesting potential.

Waterfowl should benefit from the increased open water. Other birds and small mammals will suffer from habitat loss. Some species will benefit from the mitigation measures proposed for moose.

AR - Looking at the project as a whole, is wildlife diversity being maintained or are moose being favored to the neglect of other species? In some areas different species may be more important than moose.

SF - Other species are being considered, but there has to be some prioritization of species.

Impacts due to Devil Canyon are similar to those expected to result from Watana development, but generally less severe because of the smaller size of the impoundment and the steeper slopes of inundated terrain.

Transmission line impacts will be minimized by constructing in the winter time or using helicopter support. Some trees will be cut, but brush will be left - no clear cutting.

AR - Do you have any plans to quantify the impacts of different alternative construction methods?

RS - No, Chapter 3 is not supposed to review options, but rather to present the impacts of the chosen option.

KS - If the project is not clearly defined, with the associated impacts of each decision, then reviewing the project is difficult.

AR - The construction method with the least impact should be strongly supported.

GS - Are the costs of different options included?

AR - Exhibit E should contain a table of project impacts and corresponding mitigation measures. All project aspects should be presented and evaluated.

GS - It is important for the reviewing groups to keep up with any changes.

KS - Is there any mechanism to let agencies know of any change?

RS - The Power Authority would do that. Decisions such as the access road design speed have been changed due to environmental involvement, and we have written Chapter 3 according to the new decision, but we haven't seen the maps from R&M incorporating that decision yet.

AR - What was the level of communication during the engineering design?

RS - We have had formal interaction by memorandum (RS passed around several examples), and also much informal communication in meetings with project engineers.

GS - The access road has potentially severe impacts. A strong recommendation may be made to FERC to change it. The road between the dams might change also, due to Native bargaining.

RS - That would not be surprising, since the environmental issues really haven't changed. However, we are writing Exhibit E as if the decision on access was firm, and including mitigative measures relevant to the route in question.

SF described the impacts of the access road including increassed hunting pressure, increased road mortality, increased disturbance, increased ATV use.

KS - There is not a direct relationship between caribou herd size and range size. Management goals for the Nelchina herd are now $\pm$20,000, but that could change. Changes in potential caribou habitat are important, even if the population is not immediately affected. 70,000 is too high a population for that herd, and historically caused a population crash.

However, a higher ceiling of 30,000 - 40,000 is being considered and should be used for your planning.

LA - The population is presently increasing and will continue to increase unless there is some regulatory change.

KS - When access increases, hunting demand will increase.

SF described the potential effects of the access roads on caribou. Predicted road traffic levels are low: 20-30 trucks/day.

KS - Traffic data averaged over a year is not good enough. It is important to know about peak traffic flows: when they occur and what the maximum number of vehicles would be. The impact on animals depends on the time of year.

GS - We need clean traffic data to be able to estimate impacts.

KS - The time of day of peak traffic might be more important than the time of year.

AR - Suggestions are not being followed in the Terror Lake project. We need to tie mitigation down, to be specific.

KS - We should request some socioeconomic data on traffic predictions.

AR - The access plan includes a railroad which will also have an effect on moose.

SF - In Canada, plowing railroad tracks with a wide plow that left no berm did not decrease moose mortality. Eighty additional train cars per week will be travelling as a result of the project.

KS - The trains should be scheduled to minimize moose encounters. Scheduling trains close together and using longer trains would also minimize encounters.

GL - Have the effects of the access route mentioned earlier - roadside dust and ATV use - been quantified in terms of loss of habitat on animals?

RF - Roadside dust could actually be beneficial, causing earlier melting, and thus early browse.

KS - Impacts should be examined to see if they're significant.

RS described in-kind mitigation. Borrow sites will be upland areas preferentially. First level terraces will be mined using draglines. Guidelines to minimize impacts of borrow areas were described. Locations of borrow sites for Watana and Devil Canyon dams were also described. Guidelines for camp facilities, access roads, and transmission lines were reviewed.

AR - Do Exhibit E transmission corridor studies include the intertie?

RS - Yes, but most of the data is from the Environmental Assessment Report prepared by Commonwealth Associates.

AR - Helicopter construction was agreed to on some sections of the intertie, but then maintenance wasn't going to be done by helicopter. The result was less helicopter use.

MG - How do these things get dropped through the cracks?

AR - The decisions are not written down.

JZ - It is not clear exactly when the decisions are made.

AR - If a decision is written into the permit, then it will happen. But if only recomendations are made, they often aren't followed.

RS - The scope of work for subcontractors has to be very detailed. Salary and schedule provisions should be established in the design consultants' contracts to facilitate their working as a team with the project environmental specialists. At present, a few gray areas still exist - the regulation of access by workers during construction, extent of clearing and helicopter support for building and maintaining the transmission corridor. But these are basically policy decisions.

AR - These gray areas should be identified, so that if things change, we have some idea of the impacts of the new option. Construction bids should include all details to make sure the stipulations don't get forgotten.

RS - So far we have only prepared guidelines, but our portion of the application assumes that they will be followed. There is an important need for consistency, to make sure the commitments are really acceptable to all parties, and are reflected in all sections of the license application.

RS went over the list of environmental guidelines, which are included as an appendix of Chapter 3 in Exhibit E. Management decisions by some organizations other than the Power Authority will have an effect on mitigation plans: ADF&G, USFWS, BLM, etc.

LA - Ahtna has no plans to develop land if Susitna is built - there is no cash incentive.

RS discussed the recreation plan developed by EDAW, which includes phased implementation, with interagency review and concurrence between phases. He described biological input to that plan.

SF discussed using periodic flood releases (30,000 cfs) to mitigate for maturation of downtream floodplain vegetation.

AR - Have these plans been discussed with the aquatic group?

KS - How about the legal impacts of causing property destruction?

SF - These questions and others such as candidate areas and alternative methods for habitat enhancement will all take lots of negotiation. Ideas such as controlled burning, irregular selective logging, vegetation crushing are all being considered.

KS - Enhancement of moose habitat is possible, but some impacts cannot be mitigated. Quantification of impacts is perhaps not too important in these cases. General enhancement actions could be taken to preseve the quality of the area, such as proserving Stephan Lake from development.

RS - FERC is interested in the mitigation process that is being set up, including long-term monitoring studies. They want a description of the program, expected products, and the schedule.

RF - I'm interested to learn specifics of what will be in the FERC license application, and FERC's response to non-specificity.

RS - FERC wants a mitigation plan, not a plan for a plan. However, FERC realizes that some aspects of planning may be beyond the Power Authority's jurisdiction. They are also interested in cost estimates for the mitigation plan.

KS - The cost of mitigation options is difficult to estimate. There may be some trading of State land, and some outright purchase of compensation lands.

RS - Some measures are easier to assign a cost to, such as engineering design modifications, incinerators, and other points mentioned in the environmental guidelines. The cost of long-term compensatory measures is much more difficult to ascertain, especially since some decisions won't be made until later in the project.

WETLANDS MEETING

Thursday, December 2, 1982

Holiday Inn, Anchorage, Alaska

ATTENDEES

Name	Organization	Address	Phone No.
Bruce Bedard (BB)	Alaska Power Authority	Anchorage	276-0001
Roseann Densmore (RD)	Envirosphere	Anchorage	277-1561
Richard Fleming (RF)	Alaska Power Authority	Anchorage	276-0001
Chris Godfrey (CG)	USCE Reg. Functions	Anchorage	552-4942
Michael Grubb (MG)	Acres American Inc.	Buffalo	716-853-7525
Jon Hall (JH)	USFWS, NWI	Anchorage	263-3403
Priscilla Lukens (PL)	Acres American Inc.	Anchorage	276-4888
Dave McGillivary (DM)	USFWS, Regional Office	Anchorage	276-3800
Ann Rappoport (AR)	USFWS, WAES	Anchorage	271-4575
Martha Raynolds (MR)	LGL Alaska	Anchorage	274-5714
Ted Rockwell (TR)	USCE Reg. Functions	Anchorage	552-4942
Robert Sener (RS)	LGL Alaska	Anchorage	274-5714
Bill Steigers (BS)	U of A, Ag. Exp. Sta.	Palmer	745-3257
Judy Zimicki (JZ)	No.Ak. Environmental Ctr.	Anchorage	277-2134

RS introduced the meeting. He discussed the ambiguity of the wetlands classification system used in previous mapping. The goal of this meeting was to come up with a practical method of defining and mapping wetlands to facilitate USFWS review and Army Corps of Engineers (USCE) permitting under Section 404 of the Clean Water Act and possibly Section 10 of the Rivers and Harbors Act of 1899, and to aid facility siting. LGL is looking into the possibility of incorporating wetlands mapping as part of the vegetation re-mapping program.

MR presented a summary of wetlands work that has been done to date. Some work was done to characterize aquatic vegetation of ponds in the project area. That work has been presented as part of Chapter 3 in Exhibit E. Wetlands mapping was done using the Cowardin classification system of the U.S. Fish and Wildlife Service (USFWS). Two sets of maps were produced. One, at a scale of 1:24,000, consists of 7 maps of the two impoundment areas. The other, a set of 3 maps at a scale of 1:63,000, mapped alternative access routes. Vegetation maps of the same scale were used as base maps. A system for converting Viereck and Dyrness vegetation classes to Cowardin vegetation classes was developed (see Table 46, Phase I Report, Plant Ecology). Using Cowardin's definition of wetlands, all wet herbaceous, all shrub, and all forest vegetation-types were mapped as potential wetlands. A subjective judgment of slope was made to eliminate steep, well-drained areas. No re-interpretation of the imagery or ground truthing was done.

JH, when asked how USFWS maps wetlands, replied that they use aerial photography, following the Cowardin system, look for one of three characteristics: flooding, hydrophytes, or hydric soils.

RF - According to Cowardin's definition then, wetlands were appropriately mapped for the Susitna Project.

JH - Some plant species occur only in wetlands. Many, however, occur in both wetland and upland areas. Then you have to look at the other criteria.

RS - In order to identify procedures and criteria for wetland mapping, we need to know if the Corps accepts Cowardin for Section 404 permitting.

TR - We accept and use Cowardin, but it is not always sufficient for Section 404 decisions. Often the USCE jurisdictional boundaries are different from the wetland boundaries. The National Wetlands Inventory (NWI) maps are at a good scale for large projects. However, we often need soil data because all three parameters (flooding, hydrophytes, and hydric soil) are necessary to define USCE wetlands. The Corps also needs hydrologic data to know how a given wetland ties into the watershed.

RF - The huge scale of the project area (over 60,000 acres) makes it difficult to map. How much sampling would be necessary?

TR - Sampling areas can be representative of other areas. Maps are only needed of impact areas: roads, borrow sites, camp sites, etc. No wetlands maps of the impoundment areas are needed.

JH - For USFWS, you do need wetland maps of the impoundment area.

RF - No need for soils maps of the impoundment.

JH - Slopes should not be arbitrarily excluded from wetland categories. Larger scale color infra-red photography should have been used. In the Tanana River basin, USFWS is using the Viereck and Dyrness classification system and a wetlands modifier to map the area. The resulting map is easy to convert to the Cowardin classification system. The water regime modifiers in Cowardin's system are especially useful to USCE.

RS - Remapping of vegetation will be done to Level 3 and beyond for moose browse vegetation types.

RF - For most areas, we have vegetation maps and slope is available from contour maps. Might need more soil work.

TR - Once we have maps of the vegetation, hydrology, and project impacts, we'll be able to see where more data such as soil types is necessary.

RS - Are the soil parameters USCE needs available from engineering borings and soil pits?

RF - Some soil maps exist, though I don't know their scale or adequacy.

RS - The Soil Conservation Service has not mapped all of the Susitna area. Several questions still need to be answered:

1) Appropriate level of detail of vegetation mapping to be useful for wetlands classification?

2) What soil parameters are important to USCE?

JH - Even Level 4 of the Viereck and Dyrness system doesn't allow direct conversion to wetland categories. Often, other data are needed.

TR - Ground truthing will be very useful. The USCE personnel who will be responsible for permitting should go along.

RF - What time of year is best for ground truthing?

TR - Anytime during the growing season.

RS - The people doing the vegetation mapping will be working on the ground truthing next summer.

JH - With a group of people who are familiar with the area, we should be able to sit down with the USCE and a wetlands map and decide which areas need USCE permits and which areas are marginal and need ground-checking.

RS - Is it proper procedure to involve USFWS and USCE in the preliminary process and ask you to review drafts?

JH - I'd be glad to work with you.

TR - Yes, certainly, we prefer it that way.

BB - Have you discussed the types of permits required? They are:

USCOE Section 404 - all waters of the U.S.
" " Section 10 - navigable waters - below Devil Canyon.
U.S. Coast Guard - navigable waters - south of Portage Creek.

TR - The USCE definition of navigable waters may not be the same as other agencies. If Section 10 jurisdiction hasn't been taken yet by USCE, then it will not be.

RS - We need to alter the approach to vegetation mapping to be sure to distinguish wetlands. We may need to map more vegetation types beyond Level 3.

RF - Only in access and transmission corridors.

RS - We can restrict the mapping to known corridors and impact zones. The major borrow areas for the dams have also been identified. The borrow areas for the access road have not been finalized, but some potential borrow areas have been indicated.

RF - Those potential borrow areas aren't likely to change much.

RS - What should be included in FERC application? I would suggest:

1) Wetland maps already prepared.
2) Discussion of their preparation and coverage.
3) Plans to rectify problems.
4) Revised maps coming later. (The new maps can be submitted as supplements when they are done).

JH - I would be concerned about including the old maps.

TR - Could you modify the old maps by double-checking them with some aerial photography?

RF - Might be possible, but probably not by February 15.

JH - It would only take 3-4 days to map wetlands in the whole area (impoundments only). The cartographic work, however, would take awhile. From the slides (John Hayden's talk on Monday), upland wetland areas looked fairly easy to define.

RS - We want to confirm to FERC that we are handling wetlands thoroughly. We should list soil features that will be supplied to USCE.

TR - USCE needs soil profiles, from the litter layer down to ground water, depth to ground water, chroma, mottling, gleying, soil type, location of soil pits. Primary interest is in the root zone, the top 18" - 24". We would be glad to work with any field personnel for a few days to explain the USCE requirements and sampling methods.

TR - A few days work should give us a fairly good jurisdictional map.

JH - The first step would be a wetlands map; regulatory wetlands will be a subset of that.

TR - Final COE regulations are expected by December 15. Our jurisdiction could change.

DM - JH might be interested in talking to Dr. Talbot who did some vegetation sampling in the Susitna basin several years ago.

AR - I would like to clarify the timing - the vegetation maps will be drawn up first, so there will be no new maps by February 15. Would the new wetlands map be ready by June?

RS - The vegetation and wetlands mapping will take all spring. We hope to have the preliminary maps by June 30. Ground truthing will be done during the summer, then the final maps will be drawn up. FERC has stated that they will welcome any new data or maps after the June 30 submittal.

RS - To summarize our agenda:

1) Get together with Jon Hall and Ted Rockwell to identify appropriate level of detail for vegetation mapping.
2) Clean up previous work using aerial photography.
3) Prepare discussion of mapping, past and future, for February 15 submittal.
4) Coordinate with USCE to get soils data.
5) Summer ground truthing.
6) Fall: final maps available.

TR - When do you expect to need the first USCE permit?

RS - For building the access road.

MG - Access road construction is scheduled to begin spring 1985.

TR - After the final maps are available in late fall 1983, there will still be time for further field work in the summer of 1984. If construction begins before 1985, then all permit fieldwork has to be done next summer.

RS - There may be wetlands permits required for test drilling and other pre-construction field activities that are planned for next summer.

TR - If so, they should be identified this winter to avoid any permitting delays.

BB - There will be a major staging area around Cantwell, widening the Denali Highway, and a transmission line from Cantwell to Watana. These activities may also need permits. Will the Section 404 permits require socioeconomic input?

TR - Section 404 is not strictly biological, but must also consider the public interest which includes socioeconomics, etc.

RS - How should wetlands be included in various sections of the FERC application?

MG - The whole wetlands section could be repeated verbatim in both the Botanical and Land Use sections.

RS - I would suggest that permit related discussions go into the Land Use chapter of Exhibit E, and biological discussions into the Botanical Resources section of Chapter 3.

RS - I would like to set up a project/agency group that will work together on a regular basis. (General agreement).

BB - Someone should look into the Section 10 question.

TR - I'll do that and use RS and RF as contacts.

AR - Any plans for future work on wetlands should be clearly laid out in the application.

AGENDA

WATER USE AND QUALITY AND FISHERY RESOURCES

Monday, November 29 1:00 P.M.

Introduction

Project Operational Description
- Watana Dam
- Devil Canyon Dam
- Access
- Transmission

Schedule for Preparation of Exhibit E

Review Process and Group Definition

Tuesday, November 30 9:00 A.M.

9:00 - 10:45 A.M.	Baseline, Reservoir Filling and Post Project Flows and Water Levels
10:45 - 11:00 A.M.	Break
11:00 - 12:00 A.M.	Reservoir and Downstream Sedimentation and River Morphology Changes
12:00 - 1:00 P.M.	Lunch
1:00 - 2:30 P.M.	Reservoir and Downstream Water Temperatures
2:30 - 2:45 P.M.	Break
2:45 - 4:30 P.M.	Ice Processes - Existing, Construction, Reservoir Filling and Operation

Wednesday, December 1 9:00 A.M.

9:00 - 10:45 A.M.	Groundwater Upwelling and Water Temperatures in Sloughs
10:45 - 11:00 A.M.	Break
11:00 - 12:00 A.M.	Other Water Use and Quality Concerns
12:00 - 1:00 P.M.	Lunch
1:00 - 2:30 P.M.	Fishery Phenology of Susitna River System Impoundment, Devil Canyon to Talkeetna, Talkeetna to Cook Inlet.
2:30 - 2:45 P.M.	Break
2:45 - 4:30 P.M.	Presentation of 1982 Fishery Data

Thursday, December 2 9:00 A.M.

9:00 - 10:45 A.M.	Fishery Impacts and Mitigations - Construction
10:45 - 11:00 A.M.	Break
11:00 - 12:00 A.M.	Fishery Impacts and Mitigations - Reservoir Filling
12:00 - 1:00 P.M.	Lunch
1:00 - 2:30 P.M.	Fishery Impacts and Mitigations - Filling and Operation
2:30 - 2:45 P.M.	Break
2:45 - 4:30 P.M.	Fishery Impacts and Mitigation - Operation

Friday, December 3 9:00 A.M.

Summary Session - Reports by Each Group Leader

- Minutes of Meeting -

Subject: Susitna Hydroelectric Project Water Use and Quality and Fishery Resources Workshop (see attached agenda)

Location: Holiday Inn (Anchorage Room)
Anchorage, Alaska

Attendees: see attached

Date: Tuesday, November 30, 1982 9:00 A.M.

Minutes recorded by: Michael P. Storonsky

I. Baseline, Filling and Operational Flows and Water Levels - Wayne Dyok (Acres)

A) Summary

Mr. Wayne Dyok provided an overview of the existing, and the proposed filling and operational flows and water level conditions aided by the use of overhead view graphs.

B) Baseline Flow Conditions

(i) Flows

- location of gaging stations
- identified the process by which the 32 year flow scenario was developed from the available data
- various Susitna River basin flow contributions to Cook Inlet
- monthly flow duration curves
  . winter low flow provided by ground water
  . May - breakup occurs with substantial variation in flows
  . August flows > 10,000 cfs approximately 97 - 98% of the time
- 1, 3, 7, and 14 day low flow frequency curves at Gold Creek for July and August
- 1, 3, 7, and 14 day high flow frequency curves at Gold Creek for July and August

- Annual flood frequency curve at Gold Creek
  . mean annual flood 49,000 cfs

(ii) Water Levels
- cross-section near Sherman at River Mile (RM) 131
  . water level elevation with various discharges
    6,000 cfs MSL 604'
    52,000 cfs MSL 611"

C) Construction - Watana

(i) Flows
- no interruption of flow
- a sill will be maintained during construction of the tunnels, then removed when the lower tunnel is complete
- lower tunnel diameter 38', between MSL elevations 1420' and 1458'
- thalweg of river MSL 1450'
- upper tunnel for higher flows only

(ii) Water Levels
- winter
  . pool maintained at elevation 1470'
  . backwater effect approximately 1/2 mile
- summer
  . mean annual flood increase elevation from 1468' to 1520'at dam
  . backwater effect 2 miles

D) Filling - Watana

- minimum flow requirements at Gold Creek
  . November - April 1,000 cfs
- described expected downstream flows, based upon pre-project conditions for the three hydrological sequences: 10%, 50% and 90% exceedence
  . little difference during winter
  . October significant difference during 1992
- Gold Creek choosen as representation of Talkeetna to Watana reach

- water levels at River Mile 131
  . during August, with 22,000 cfs pre-project average vs. 12,000 cfs filling average, there will be a 1 1/2 foot change
  . approximately 3 foot change during early summer
  . however, maintain at least 2 feet of water in river channel at all summer flows
- compared Gold Creek, Sunshine and Susitna Station and indicated that differences in both flows and water levels will be moderated as you progress downstream

E) Operation - Watana

- minimum downstream flows 5,000 cfs during winter
- post-project flows at Watana, Gold Creek and Sunshine
- Flow variability - Natural and Filling Conditions - Discharge at Gold Creek
- Summarized operational change expected
  . substantially increase winter flows
  . substantially reduce summer flows

Question Is there any upper limit to winter discharge and if so is it based upon fisheries requirements or power demand?

Answer
- Maximum Watana powerhouse flows will be 19,000 cfs.
- no upper limit has been established yet
- it may be desirable in future to establish maximum winter flow criteria
- Gold Creek post-project winter flows will average 10,000
- can probably establish a maximum winter flow of 14,000 cfs at Gold Creek

- Sunshine post project flow
  . still substantial winter increase from baseline
  . May and summer much closer to baseline
- Susitna Station post-project
  . winter - substantial increase
  . summer - very little difference

Question What is the difference between winter pre- project vs. operational flows at Susitna?

Answer 14,000 cfs operational flow vs. 7,000 cfs pre-project, therefore, winter flows will be doubled at Susitna Station

Question How will Watana operate if Devil Canyon is never built? Have impacts been assessed for Watana alone or with both dams operational?

Answer Watana will be base-load. Most of impact assessment has been concentrated with both dams on line.

Answer Consideration of peaking should not be ruled out. It is possible to peak if only Watana is built. May have sufficient attenuation of peaks downstream in a short distance if peaks are of short enough duration, with only minor impacts further downstream as a result of attenuation.

F) Filling - Devil Canyon

- 2 stage scenario
- 1st stage
  - . 76,000 ac-ft.
  - . fill within a couple of weeks
  - . maximum elevation 1,135'
- one year at constant elevation 1,135 to plug diversion tunnel and complete dam
- 2nd stage
  - . fill as quickly as possible
  - . filling will take approximately 5-8 weeks depending on energy demand
  - . 25 foot drop in Watana water level

G) Operation - Watana and Devil Canyon

- Watana peak
- Devil Canyon baseloaded
- Devil Canyon outflow similar to with Watana alone
- Devil Canyon will experience approximately a 1 foot daily drawdown with Watana peaking

H) Watana Drawdown and Flow Scenario Derivation

(i) Minimum flow requirements
- 7 scenarios studied
- no difference between winter flows; all 5,000 cfs
- different summer flows
- August was determined the critical time frame because of the need for salmon to gain access to the sloughs

(ii) Net benefit from project ($) vs. August flows
- 10,000 cfs $1,220 x 10^6
- 12,000 cfs $1,140 x 10^6
- 14,000 cfs $1,050 x 10^6
- selected 12,000 cfs
  . compromises economics somewhat
  . provides a starting point upon which mitigation can be based

Question Are the economics of the project based upon the 1981 Batelle forecast?

Answer Yes

Question How would the benefits vs. flow scenario change if the Batelle load forecast is incorrect and the load is reduced?

Answer Not able to answer without further investigation. (Ed. note - shape of curve would basically remain the same. absolute value of benefits would decrease with lower demand forecast)

II. Baseline Slough Information - Woody Trihey (Acres Consultant)

A) Summary

Mr. Woody Trihey provided a description of a side slough in the Susitna River including morphological characteristics (cross sectional profile, gradients), flows, and water profiles with various flows.

B) Introduction - River System and Typical Slough

- river broken into 3 segments
- only discuss the Watana to Talkeetna segment
- will look at flow regime only, however, quality and availability of habitat may also be affected
- several different types of habitat in the river system
  . mainstem
  . tributary
  . side channel
  . side slough
- will talk about side slough habitat only, potential for most impact
- currently evaluating August as most important time of the year
- typical slough and river sketch
  . interim channels have eroded from river to side sloughs
  . very often no water through the interim channels
- flows
  . sloughs typically clear water, low flows
  . river turbid
  . backwater effect at mouth of sloughs
- high flows
  . heads of sloughs can be overtopped at high flows causing turbid flows
  . flows up to 1,000's of cfs during flood conditions
  . flush out the fines
  . act as a side channel during flood

C) Slough 9

(i) Longitudinal profile

- noticeable gradient difference between upper and lower ends
  - . upper 18 ft/mile
  - . lower 5 ft/mile
  - . river 11 ft/mile

(ii) Flows and Stage

- irregular nature of the sloughs causes pools to occur at low water
  - . discharge of 3 cfs. creates three pools of approximately 0.7 feet, 1.5 feet and 3.0 feet.
- staff gage at mouth of slough
  - . 11,000 cfs 590' MSL
  - . 33,000 cfs 594' MSL
- slough profiles provided at various mainstem flows
  - . 12,500 cfs
  - . 16,000 cfs
  - . 18,000 cfs
  - . 22,000 cfs
  - . between 18,000 - 22,500 cfs remove barrier to upstream areas of the slough
  - . 16,000 cfs creates 0.25' depth for 140' length of slough
  - . 20,000 cfs creates 0.5' depth for 30' length

Question Where are the spawning areas in Slough 9?

Answer Some chum salmon were observed during 1982 above the first barrier, however many were observed attempting to spawn at the mouth of the slough. However, August 1982 had unusually low flows of 11,000 - 12,000 cfs and salmon had difficulty attaining access to sloughs. Normally, flows are in the 18,000 - 25,000 cfs and access is not usually a problem

Question It looks like 14,000 - 17,000 cfs is needed to obtain access to slough?

Answer Yes, if only looking at flow, however utilizing engineering techniques, backwater effects could improve access.

Question How did we arrive at 12,000 cfs? Don't we need flushing flows to clean out sloughs?

Answer We believe that this is a starting point and that we are progressing towards a set of unique flows for each month, not there yet.

Question Isn't the backwater effect going to change with reduced flows?

Answer Yes

Question What percentages of sloughs with 12,000 cfs flows will salmon have difficulty with access?

Answer Can't answer right now, but should have a better handle next summer.

III. Reservoir and Downstream Sedimentation - Mr. Brent Drage (Peratrovich, Nottingham and Drage)

A) Summary

Mr. Brent Drage provided a description of the anticipated sedimentation process in the reservoirs, among the major topics included were the mechanisms influencing sedimentation, the existing situation, and the expected changes in particle size distribution, suspended sediment concentrations and turbidity.

B) Sedimentation Process Factors

- if 100% trap efficiency assumed, over 100 years, only 5% of the reservoir volume lost, or 12% of active storage
- factors influencing sedimentation
  . operational schemes
  . mean monthly volume
  . live storage volume
  . dead storage volume
  . change in surface elevation from the previous month
- driving mechanisms
  . inflow
  . outflow
  . flow thru velocity
  . detention time
  . ice cover presernt
  . mean ambient temperature
  . mean reservoir temperature
  . thermal trend
  . inflow temperature
  . flow pattern
  . mixing potential
  . thermal current velocity
  . wind driven current velocity

C) Existing Conditions at Gold Creek

(i) Suspended sediment concentrations at Gold Creek - May - Sept.
- minimum range 10 - 200 mg/l
- average range 200 - 1,000 mg/l
- maximum range 2,000 - 3,000 mg/l

(ii) Average monthly particle size distribution
- May, June, July and August
- fine silt and clay particles less than 12 microns most important

D) Expected Conditions

(i) Particle size range passing through
- 3 - 4 micron range particles will pass through during quiescent conditions
- mixing action of wind and waves will allow up to the 12 micron size range to pass through the Watana Reservoir

(ii) Settling rates - Stolkes Law
- assume quiescent conditions at 40°F
  . 5 micron glacial particle, 3.7×10^{-5} ft/sec.
  . 5 micron spherical particle, 4.3×10^{-5} ft/sec.

(iii) Depth of particle settling over time - quiescent conditions
- 2 micron particle - 400 days to settle 200 ft
- 5 micron particle - 60 days to settle 200 ft
- 10 micron particle - 20 days to settle 200 ft

(iv) Settling column study
- sample taken at Watana at flows of 17,200 cfs
- 10 foot column
- 350 mg/l at time 0
- 10 - 20 mg/l after 72 hours

(v) Effects of wind and waves
- wind waves will significantly effect settling within 25' of surface
- 10 - 12 micron particles will be re-entrained within the top 25 feet
- wind waves will effect at 50' depth signigicantly less

(vi) Prediction of particle size distributions - using Camp's (1943) solution
- gives us an idea of the size of the particles that will settle and amount of sediment for different settling conditions
- results for maximum mixing, minimum mixing and quiescent conditions

(vii) Results of deposit model runs
- maximum and average mixing

(viii) Turbidity vs. suspended sediment concentrations
- appears to be direct correlation
- maximum mixing 100 - 200 mg/l = 20 - 40 NTU
- normal mixing 80 - 120 mg/l = 15 - 25 NTU
- minimum mixing 10 - 30 mg/l = 2 - 5 NTU

(ix) Literature search
- extensive search conducted, but not much information available
- however Eklutna Lake appeared to have the most similar characteristics

Question What will the difference be between pre-project vs. post-project turbidities during winter?

Answer Probably safe to say it will be between 20 - 40 NTU post-project discharge.

Question Has input from other sources been included?

Answer They were considered, but not included in the model. It is expected that the material contributed from other sources will be coarser and settle out shortly, contributions should not be significant.

IV. Eklutna Lake Study - Steve Bredthauer (R&M Consultants)

A) Summary

Mr. Steve Bredthauer provided the following discussion regarding the Eklutna Lake turbidity studies that were conducted due to the lake's close similarities to the Watana Reservoir.

B) Information Collected

- Kamloops Lake, British Columbia, information available
- sampling scheme at Eklutna
- results
  . April under ice 7-10 NTU
  . May isothermal 7-10 NTU
  . mid June starting to increase, 14 - 15 NTU at the lower end of reservoir
  . mid July thermocline developing, plume was evident in the 10 - 30 meter range at head of lake, down the lake-turbidity diminished
  . September - unusual turbidity at reservoir bottom - flows probably entering as underflow
- summary - Eklutna Lake data indicates the sedimentation process at Watana will be heavily dictated by densities of the river and reservoir waters

V. River Morphology - Steve Bredthauer (R&M Consultants)

A) Summary

Mr. Steve Bredthauer utilized overhead view graphs to facilitate his River Morphology presentation which highlighted the basic morphological systems of the river, a breakdown of the river by morphological reaches concentrating on the river downstream of Devil Canyon and the expected morphological changes.

B) Morphology of the River

(i) Four basic systems
- main channel
- side or split channel - (Sloughs)
- braided channel - floodplain 1 - 2 miles wide, large bedload movement
- Delta Islands 50 - 60 miles upstream of the mouth

(ii) Morphological reaches of the river

- upstream of Devil Canyon
  - . first 20 miles braided headwaters
  - . next 55 miles split channel
  - . west from Tyone River to Devil Canyon damsite-steep canyons
- Below Devil Canyon
  - . RM 144 - 149 - single channel
  - . RM 139 - 144 - valley broadens, with split channel
  - . RM 129.5 - 139 - well defined split channels, sloughs
  - . RM 119 - 129.5 - split channel configurations, stable shoreline
  - . RM 104 - 119 - well defined single channel
  - . RM 95 - 104 - Susitna-Chulitna confluence - braided system, aerial photo comparison shows this section to be a very dynamic area of the river
  - . RM 61 - 95 - braided, debris damming, very dynamic
  - . RM 42 - 61 - Delta Islands - rapid erosion evident
  - . RM 0 - 42 - Yentna River confluence, major tributary, 40% of river flow

(iii) Expected Changes

- bedload movement curves
  - . 10 - 30 mm size range moved with 10,000 - 20,000 cfs flow immediately downstream
  - . armouring will allow a well defined stable channel to occur
- tributaries
  - . analyzed 17 streams for degradation
  - . six were found to have potential problems with either perching or degradation
- in summary the river will be better defined, more stable and more deeply extrenched

VI. Eklutna Lake Water Temperature Study - Steve Bredthauer (R&M Consultants)

A) Summary

Following lunch, Mr. Steve Bredthauer provided a discussion of the results of the 1982 Eklutna Lake water temperature montoring program and the Susitna River temperature data that is being and will be used to calibrate the DYRESM temperature model for Watana.

B) Results - Eklutna

May 25	isothermal 4 - 5°C
June 18	a little surface warming to 8°C
July 2	gradual warming
July 14	sharp thermocline in some areas, gradual temperature variation in others, 12°C - 5°C
July 28	same as above
August 10	sharp thermocline maximum 13°C
August 24	15°C maximum, lessening thermocline
Sept. 9	cooling
Sept. 21	isothermal 7 - 9°C
Oct. 14	isothermal 6 - 8°C
Nov. 4	isothermal 5°C

C) Susitna River Data

- average weekly temperatures at Watana gaging site
  - . October - April 0°C
  - . May starts to climb
  - . maximum of 12 - 14°C during summer
- 1981 temperature variations at Vee Canyon, Denali and Susitna Station
  - . warming with distance downstream
- 1981 Denali and Watana water temperature comparison
- 1982 Susitna River vs. Indian River and Portage Creek temperatures
  - . lower temperatures in tributaries than mainsteam
  - . temperature varies between tributaries

VII. Reservoir Temperatures - Mr. Wayne Dyok (Acres American)

A) Editor's Summary

Mr. Wayne Dyok provided a generic description of expected reservoir and outflow temperatures during the filling and operation processes and the DYRESM model used to estimate the temperatures.

B) Filling - Watana

- 1st year fill from 1470' - 1800 ft
  - . outflow temperatures will be a composite of inflow temperatures
  - . low level outlet will not allow the normal temperature variation
- from autumn of the 1st year until powerhouse is available for use, 4°C temperature water will be discharged
  - . no mechanism for mitigation at this time

C) DYRESM Model

- investigated all available temperature models and found DYRESM to be as good as any
- used successfully in Australia and British Columbia

Question How close will DYRESM model the Watana temperatures?

Answer Currently working on it. We feel confortable with the summer modeling that has taken place. Ice cover subroutine has some bugs but we are working with the author to correct them.

D) Temperatures

(i) Reservoir temperature profile June 1 - September 30

- Eklutna Lake inflow water temperature 3°C
  - . glaciers very close to head of lake
- Watana inflow temperatures as high as 10°C
- different thermal structures between the two reservoirs

- multi-level intake structures
  . 4 intakes within upper 120' of the reservoir

(ii) Watana outflow temperatures
- July - mid September, we feel confortable that we can maintain very close to natural temperatures
- mid-September - early winter, we will only be able to provide 4°C water
  . 0°C water that naturally occurs will not be possible
  . over the course of the winter, temperatures will drop to about 2°C

Question Where will the thermocline be during winter?

Answer Probably very close to surface as was observed at Eklutna. Within the first two meters the temperature was 3.6°C and virtually isothermal below.

Question Are these downstream temperatures at the immediate outlet of the project?

Answer Yes.

Discussed water temperatures at Williston Reservoir on the Peace River where a gradual winter profile varying form 0°C at the surface to 3°C at 300 feet existed.

Question Best guess when ice cover on reservoir will form?

Answer Depends on wind conditions, ambient air temperatures, and when an isothermal situation occurs.

Question Has the model been run for winter yet?

Answer No, but we are estimating that outflow temperatures will probably be between 2 - 4°C.

Question Investigations into the expected winds on the reservoir? Will wind increase?

Answer Yes, Lake Ontario has 20% higher winds than adjacent lands. A lake this small may have about a 3-4% increase in winds over what currently exists.

(iii) Devil Canyon Temperatures
- temperatures will largely reflect Watana temperatures
- DYRESM model not run yet for Devil Canyon.

VIII. Downstream Temperatures - Mr. Tom Lavender (Acres)

A) Summary

Mr. Tom Lavender provided a description of the Heatsim heat budget model that is being used to describe expected downstream temperatures during the various phases of the project.

B) Heatsim - Heat Budget Model for River Reaches

- streamwise, daily heat balance, reach by reach from prescribed upstream boundary thermograph and inflow hydrograph
- uses: air temperature; vapor pressure; wind speed; solar radiation; cloud cover; albedo; i.e., a complete heat balance
- accounts for: heat content of rainfall and snowfall, insulating effect of ice cover on small (well mixed) reservoirs; hydraulic mean depth and velocity of stream in each reach
- yields: components of heat balance; net daily heat gain or loss to river reach; inflow and outflow temperatures for reach; length of ice-free reach (optional)
- based on (in large measure): J.M. Raphael, ASCE Journal of the Power Division, V88, No. PO2, p. 157, July 1962.

C) Temperatures

- pre-project
- Watana alone
- Watana/Devil Canyon

Question Did you use the ice formation option of model to determine ice cover formation location?

Answer We will cover that in my next discussion

Question Analyzed temperature variations with mainstem discharge yet?

Answer We have not done a sensitivity analysis yet. During summer probably not significant variation during winter could be more significant.

Question If Watana peaks will it affect temperatures?

Answer No not on a daily average basis.

Question What flows is the model based upon?

Answer Normal operational flows expected, not minimum flow requirements.

Question Need for sensitivity analysis with various climatic and flow conditions?

Answer Yes

Question Why multiple intakes at Devil Canyon if temperatures will not be altered from Watana?

Answer Two month residence time will create slight variations, try to match outflow temperatures as close as possible to natural.

Question Will there be additional graphics in the report that further describe the expected minimum winter temperatures of 2°C+ when both projects are operating?

Answer Yes

IX. Ice Processes, Causes and Effects - Tom Lavender (Acres)

A) Summary

Mr. Tom Lavender presented a description of the major factors influencing the ice processes, namely the hydrologic and thermal regimes and their impacts upon the ice front location, water levels and the ice cover.

B) Hydrologic and Thermal Regimes

- described existing variations throughout annual cycle
- principal factor controlling the ice process is flows
- described proposed hydraulic and thermal regimes
  . flows will be smoothed out throughout the year
  . thermal energy will be transferred from summer to winter

C) Ice Front Formation

(i) Natural lodgement points are a constriction in the river where the ice cover formation process begins
- construction of the Watana dam will not affect the ice cover formation process since a natural lodgement point exists

(ii) Temperature immediately downstream
- water temperature
  . when bulk water temperature reaches 0.1°C, ice will begin to form at surface of river
- air temperature
  . discussed ice front location with warm, average and cold climatic conditions and regulated discharges

(iii) Expected ice front location

D) Water Levels Leading Edge Stability (Froude No.)

- Froude No. will be between 0.08 and 0.154
- gives the range of the change in the water surface elevation given the discharge rate
  . 3' - 4' increased river stage between Sherman and Talkeetna
- areas with an ice cover will experience increased stage levels
- areas without the ice cover may experience slightly lower stage levels than normal winter conditions

E) Ice Cover Thickness

- effects of discharge
  . thickness dictated to a large measure by discharge at the time of freeze-up

F) Effects of Varying Discharges on Ice

- same processes govern spring break-up as govern freeze-up
- hinging of ice occurs with raised water level

Question Will there be an increased ice thickness at Susitna Station due to doubled winter flows?

Answer Yes

Question Will there be problems with ice breakup due to this increased ice thickness?

Answer No, due to the thermal degredation of ice in the upper Susitna and the regulated flows.

Question Will increased flows and staging cause flooding of sloughs during winter with accompanying increased ice thickness?

Answer It will depend upon the elevation of the upstream berm.

Question Will the magnitude of breakup in the downstream reaches be more severe or less severe?

Answer Magnitude unknown. (Ed. note - breakup should be less severe)

Question Do you know if ice will form and where between Devil Canyon and Talkeetna?

Answer It will depend upon climatic conditions.

Question What will the stage increases be?

Answer 3' - 4' increase between Sherman and Talketna.

Definitely have overtoppng of sloughs with these increases.

Question Will erosion problems occur with these increased flows?

Answer None that don't already occur under natural flow conditions with ice jams. With ice jams, velocities can reach 9 - 10 ft/sec. Normally 3 ft/sec velocity under ice is required before the ice front can progress upstream.

Question Will any analysis be done of impacts to sloughs from ice processes?

Answer Talk to AEIDC, who will be handling the impact assessment. No comment from AEIDC.

Question How will sloughs be affected morphologically from ice processes?

Answer Have to do a detailed analysis of existing conditions first.

LIST OF ADDENDEES

WATER USE AND QUALITY & FISHERY RESOURCES

Holiday Inn, Anchorage, AK

Tuesday, November 30, 1982

Name	Organization	Telephone
Wayne Dyok	Acres	276-4888
Woody Trihey	Acres Consultant	274-7583
Steve Bredthauer	R&M Consultants	279-0483
Tony Burgess	Acres	716-853-7525
Bill Lawrence	U.S. EPA	271-5083
Brad Smith	NMFS	271-5006
Len Corin	USFWS	271-4575
Mary Lu Harle	ADNR-Water Management	276-2653
Gary J. Prokosch	ADNR-Water Management	"
Ken Florey	Fish & Game	344-0541
Eric Myers	NAEC	276-4244
Tom Lavender	Acres	276-4888
Tom Arminski	Alaska Power Authority	276-0001
Steve Zrake	ADEC	274-2533
Gary Lawley	Harza/Ebasco	277-1561
John R. Bizer	Harza/Ebasco	"
Jack Robinson	Harza/Ebasco	"
Leslie Griffiths	Peratrovich,Nottingham,Drage	277-8633
Brent Drage	Peratrovich,Nottingham,Drage	"
Phil Brna	ADF&G	344-0541
Bill Wilson	AEIDC	279-4523
Ken Voos	AEIDC	"
Larry Moulton	Woodward-Clyde	276-2335
Jean Baldridge	Woodward-Clyde	"
Michael P. Storonsky	Acres	276-4888
Kevin Delaney	ADF&G	344-0541
David Wangaard	USFWS	263-3316

- Minutes of Meeting -

Subject: Susitna Hydroelectric Project Water Use and Quality and Fishery Resources Workshop

Location: Holiday Inn (Anchorage Room)
Anchorage, Alaska

Attendees: see attached

Date: Wednesday, December 1, 1982 9:00 A.M.

Minutes recorded by: Michael P. Storonsky

I. Slough Access Mitigation Ideas - Woody Trihey

A) Summary

Mr. Woody Trihey presented some possible mitigation techniques that should be considered for maintenance of adequate slough water levels, namely increased mainstem discharges, amplication of backwater effects at the mouth of slough, increased flow through the sloughs, or modification of slough channel and entrance.

B) Introduction

- profile of slough discussed yesterday with flow effects on various barriers to upstream movement
- pre-project August flows
  - . 18,000 + cfs very common occurence
  - . 10 - 12,000 cfs very rare occurence, however these flows are natural occurences in early September
- flows of 12,000 will provide problems for fish to gain access

C) Mitigation Ideas

(i) Increase mainstem discharge
- variability of tributary inflow
  . Project should not have significant effect on weather patterns in river valley therefore, natural tributary variability would occur and create downstream flows of 20 - 25,000 cfs.
  . Try to quantify the occurrence and magnitude of these
- use of controlled releases variable spikes
  . duration and magnitude of variable spikes sufficient to avoid attenuation and provide access

(ii) Amplify mainstem backwater effect
- submerge a sill downstream of mouth of slough
- construct dike to protude into mainstem and cause back water effect in slough

(iii) Increase flow in slough
- collect and concentrate local surface runoff and channelize
- divert water from mainstem
- withdraw water from a local storage pond
  . stored via natural runoff
  . pumped from river
  . pond could contribute to local groundwater upwelling
- increase groundwater inflow

(iv) Modify slough channel and entrance
- deeper entrance of some sloughs
  . have to be careful if deepening slough, spawning habitat could be degraded since most spawning is in riffle areas, need to maintain riffle/pool ratios
- constrict channel width, therefore deeper water levels
- submerged weirs, create pool and drop scenario

(v) Summary
- Mr. Trihey does not recommend any of above at this time,, but providing them as possibilities for everybody to think about.

Question How many sloughs are we talking about? number being used? how many can we modify?

Answer Get a better answer if you ask later, Tom Trent's unit more familiar

- 12 - 15 sloughs quite heavily used - similar to slough 9
- trying to maintain the chum and sockeye fishery above Talkeetna
- approximately 38 sloughs between Talkeetna and Devil Canyon

Question Are there problems with ice, with the use of weirs and submerged sills?

Answer Not advocating any of these alternatives, there could be problems with ice. We have to look at all the various sloughs more closely and evaluate the alternative mitigation more thoroughly before deciding. Just trying to emphasize that there are many ways to attain access to sloughs besides increasing flow. A lot of work still needed.

Emphasized that he was only talking about access to the sloughs and not the quality of habitat that will be available.

May get variations in slough morphology due to ice processes and flow. Look at the gradation of material and the rainfall events that might alter slough morphology.

Answer Not a lot of change in sloughs expected, cobble size substrate at most slough mouths, little change anticipated. However, significant changes in tributary mouth morphology expected.

Ice processes are probably the primary force causing slough formation.

Ice probably a major factor but flows can also work to form sloughs.

High flows move sand and silts, but there is larger substrate at the slough mouths and probably will not be greatly altered.

Larry Moulton's group will be discussing these thoughts in further detail.

II. Groundwater Upwelling and Water Temperature in Sloughs - Tony Burgess (Acres)

A) Summary

Mr. Tony Burgess presented a discussion on the various factors that influence slough groundwater regimes, the investigations that have occured, the modeling that has been conducted, and the conclusions that have been drawn. In addition, he discussed the factors that influence ground water temperatures and the impacts expected.

B) Introduction

(i) Slough morphology
- bar separates slough from mainstem
- bar may be overtopped
  . as ice front passes through
  . during breakup jams
  . under open water storm discharge

(ii) Stratigraphy
- silt/sand up to 6 feet deep
- sand/gravel/cobbles/boulders - possibly occur with depth

- bedrock at unknown depth
  . drilling to 40' has not reached bedrock

C) Groundwater Investigation

(i) Techniques
- walk overs
- test pits and installation of standpipes
- soil drilling and installation of piezometers and glycol tubes
- observations of surface and groundwater elevations, water temperatures, slough discharge, seepage flux

(ii) Slough 9
- drill holes identified
- continuous monitoring
- Slough 9 overtops at approximately 20,000 cfs
- significant ice jam last winter - bulk of river flow went through Slough 9 rather than through the mainstem

(iii) Seepage flux measurements
- identified upwelling area
- estimate flux into sloughs
- haven't done many of these yet and haven't reduced data yet

(iv) Slough 8A
- groundwater gradient approximately the same as river gradient

(v) Slough 9
- general gradient in downstream direction

D) Groundwater Modeling

- geometry, boundary conditions and material properties all influence the constitutive relationships that in turn create a response
- constitutive relationships
  . Laplace's equation
  . Darcy's law

  $Q = K\ i\ A$

  flow = (Hydrologic conductivity) (gradient) (cross section)

- Flow lines orthogonal to and from river
- groundwater flows - 3 types
- geometry
  . shape of area being modelled
  . 3-D, 2-D (plan, cross section) 1-D (along flow line), thickness (D)
- boundary conditions
  . values of dependent variables (head, flow) along boundaries
- material properties
  . hydraulic conductivity (K) (permeability)
  . porosity (n)
  . transmissivity ($T = K \times D$)
  . storage coefficient (S)
- hydraulic conductivity
  . laboratory grain size analyses with empirical formula
    $K = (100 \text{ to } 150) \times d_{10}^2$
  . field tests in drillholes
    constant head
    falling head
    pumping test
  . flow net sketching and discharge measurement
  . response of aquifer to well defined boundary event
- Grain size analysis of Slough 9 bank
  . gravel and sand
- Slough 9 flow net
  . identified flow lines
- Hydrographic Response
  . sudden change in mainstem water level influences the aquifer
  . looked at the response in the Slough 8 wells from a sudden change in water level. Reasonable response on the increasing limb of the hydrograph, however higher than expected water levels occurred on the decreasing limb of the hydrograph. We will continue to investigate.
- Summary of Results
  . grain size analysis
    $K = 6 \times 10^{-2}$ cm/s
  . field tests
    not yet completed

. Flow net

T = 9000 ft^{-1} dm/x

for D = 100' (assumed)

K = 3.2 x 10^{-2} cm/s

. Hydrograph response

T = 1200 to 306000 ft^2/d

for D = 100' (assumed)

K = 4.27 x 10^{-3} to 1.09 cm/s

- Modelling
  . Groundwater flow
    flow net sketches and hand calculations
    finite element analyses using computer
  . Temperature
    no flow thermal regime
    coupled groundwater-thermal regime
- graphic slough model
- contours - boundary heads
- fluxes
- contours
  . fixed heads in mainstem and sloughs
  . identified high bedrock and valley side slope
  . remainder of slough constant saturated thickness
- Conclusions
  . General groundwater regime can be modelled using 2-D plan idealization. Locally, match not so good: may be due to variation in saturated thickness, variation in hydraulic conductivity, or boundary recharge.
  . Flow is generally downstream and laterally towards slough from upland areas.

E) Thermal Processes and Modelling

(i) Baseline

- Susitna mainstem
  . mid October to mid April 0°C
  . maximum +10°C July
  . Annual mean approximately 3°C
- Talkeetna air temperatures
  . minimum mean monthly -13°C

. maximum mean monthly +14.5°C

. annual mean +0.5°C

- groundwater

. upwelling approximately +3°C

. wells 0.05°C (May) to 6 - 8°C (September), locally as high as 11°C

(ii) Preliminary conclusions

- Air temperature variations do not have a significant direct impact on groundwater
- Upwelling temperatures nearly constant but shallow well temperatures show seasonal fluctuation lagging main stem
- Upwelling temperature is approximately mean annual main stem temperature

(iii) Dispersion

- Dispersion theory developed for contaminant transport
- apply to thermal problems by making temperature equivalent to contaminant concentration
- dispersion occurs in all porous media. The extent of dispersion increases as the medium becomes more heterogeneous

. diagrams of dilution variations with different materials

. example cited

(iv) Conclusions

- upwelling temperatures can be explained in terms of dispersion (mixing) of mainstem seasonal variations within groundwater flow path
- but why do near surface grounwater temperatures show less mixing?

Possible factors:

. path length shorter

. gradient steeper

. materials more homogeneous

- recent deeper drilling, piezometer and glycol tube installations should provide important data

F) Project Impacts

(i) Geometry

May be some changes due to deposition and scour.

(ii) Material properties

Generally will not change except possibly due to scour/deposition effects.

(iii) Boundary Conditions

- River stage: higher in winter, lower in spring/summer with less variability
- Temperature: mean annual little change, slightly higher in fall and lower in summer.

(iv) Response to Stage Change

Based on data from September hydrograph, response is quite rapid, in near surface wells. Deeper wells may respond slower due to longer flow path.

(v) Effect of Stage Change on Extent of Upwelling

Could be modelled but unlikely that sufficient data (spatial variation of K) available. Field monitoring and observation preferred.

(vi) Mitigation

Not looked at yet

Question Will river stage be higher during winter or lower?

Answer There could be lower water levels without an ice cover depending on the particular circumstances. Ice cover will be variable.

Both upper and lower water levels would drop equally therefore the same gradients would still exist so groundwater flow will continue but at lower elevations.

Question Does the storage of water in the gravel from late summer flow provide winter groundwater flows?

Answer Some water is stored, but not alot. There were rapid responses observed in the wells due to mainstem discharges.

During October upwelling continued with a decreased discharge. If there is not much storage from late summer flow, this would indicate upwelling continues at low discharge.

A fair amount of upwelling occurred throughout February and March.

Freezing near the banks cold be concentrating upwelling towards the middle of the slough.

Question If you drop the invert elevation 3 - 4 feet would it intercept more grounwater?

Answer No, that only amounts to a small portion of the 2000 feet of head upstream of the slough.

Question Is there a monitoring program envisioned for grounwater upwelling?

Answer Recommended continuous temperature and flow monitoring in wells. Half-barrel technique to quantify seasonal variation. So far only 1 field trip to a half-a-dozen locations.

Question Isn't there variability between the sloughs? Why only slough 9 investigated?

Answer Trying to understand the processes, first. Now we can look at other sloughs and determine the variability.

Question With post-project winter flows of 10,000 cfs, will the location of ice formation dictate upwelling?

Answer Probably not change upwelling, upstream and downstream elevations experience equal change, therefore the gradient is the same.

Question Will absence of flushing flows cause disturbances to upwelling locations?

Answer Only affect near surface sediment, may move upwelling area slightly.

May shift location of upstream most upwelling areas.

III. Other Water Quality Concerns - Mr. Steve Bredthauer (R&M Consultants)

A) Summary

Following an intermission, Mr. Steve Bredthauer discussed the balance of the major water quality concerns including nitrogen supersaturation, eutrophication, leaching, and dissolved oxygen.

B) Nitrogen Supersaturation

- caused by high plunging spills
- measurements above and below Devil Canyon indicate supersaturation currently exists
- project will employ fixed-cone valves to avoid plunging spills that might create a problem

C) Eutrophication

- limited data available for the four nutrients, N, P, C, Si
- phosphorous is the limiting nutrient
- two methods available

. Dillon and Rigler model - rejected due to the limited ability to estimate phosphorous retention coefficient
. Vollenweider model chosen - used at Crescent Lake, Alaska with good results

- Vollenweider model used by Larry Pederson of Fairbanks
  . predicted oligotrophic situation
  . need approximately 115,000 residents dumping untreated waste into Watana reservoir to produce eutrophic situation

D) Leaching

- increased concentrations of metals and other parameters immediately after closure of dam
- decreased leaching with time - Watana
  . buried with inorganic glacial sediment
  . most readily dissolvable materials will dissolve first
- effects of leaching at Devil Canyon will remain longer
  . little sedimentation expected
- effects expected to be confined to reservoir bottom
- no significant impacts anticipated

E) Dissolved Oxygen

- decreased potential for oxygen saturation with increased depth
- COD coming into reservoir is low
- no vegetative growth expected along shoreline during drawdown
- no dissolved oxygen problems expected in the upper levels of reservoirs or downstream

Question If you expect the reservoir to act as a nutrient trap, how will this effect the productivity downstream?

Answer You do not see organisms taking advantage of nutrients in the mainstem since the nutrients are so low. Most organisms taking advantage of nutrients in the system are in the backwater areas and tributary mouths.

Impacts from reduced nutrient concentrations should not affect the rearing that is taking place in the tributary mouths.

Most primary and secondary productivity is occurring in the side sloughs, side channels and tributary mouths.

Question Very high levels of hydrogen sulfide were observed at a hydro project in southern Alaska. Is a similar problem expected?

Answer No

IV. Summary of Water Quality Discussions Mr. Wayne Dyok (Acres)

A) Summary

Mr. Dyok provided a sumary of the water quality discussions of the last day and one half including: flows and water levels, temperatures, ice, suspended sediment and turbidity, and sloughs.

B) Flows and Water Levels

1. Construction: Impacts limited to immediate area of damsites

2. Filling: Winter flows - similar to natural regime except for reduction in October and November 1992 at Gold Creek. Summer flows - substantial reduction at Gold Creek. Downstream - reduced percentage difference (maximum reduction 18 percent Susitna Station). Stage reduction up to four feet May through July. Stage reduction of about two feet during August, Talkeetna to Devil Canyon.

3. Operation: Winter flows increased to about 10,000 cfs at Gold Creek with extremes at 6,000 cfs and 13,400 cfs. Susitna Station flows increased by a factor of two. Summer Gold Creek flows reduced to 12,000 cfs during August. Susitna Station monthly flows reduced by maximum of 13 percent. Water levels - Watana reservoir maximum drawdown 120 feet. Devil Canyon drawdown up to 50 feet August and September. Summer water levels Talkeetna to Devil Canyon reduced by about two feet in August. Minimal water level changes downstream of Talkeetna during summer.

Question Where is the information on expected water level changes in the Report on Water Use and Quality?

Answer Not included, water levels changes will be addressed in final document.

B) Temperature

1. Construction: No impact.

2. Filling: 4°C water at outlet during second year of filling. Gold Creek temperatures could be as low as 6°C.

3. Operation: By selective withdrawal Watana outlet temperatures can be made to approximate natural regime during summer. Fall temperatures will be warmer than natural at outlet and for some distance downstream. Winter outlet temperatures will ikely be between 2°C to 4°C.

C) Ice

1. Construction: No impact due to natural lodgement point near Watana damsite.

2. Filling: Minimal impact because natural flows are approximated during freeze up and natural temperatures are attained at Devil Canyon. Reduced ice jamming during spring breakup because of decreased flows from Devil Canyon to Watana and thermal decay.

3. Operation: Approximately three to four foot increase in stage during freeze up with effects to Cook Inlet. Reduced ice jamming during breakup Devil Canyon to Cook Inlet. Watana alone - ice front will be between Sherman and Portage Creek. Watana/Devil Canyon - ice front will be between Talkeetna and Sherman.

Question It was indicated that there will be a reduced ice breakup downstream nearer to Cook Inlet. Is this correct, since there will be an increase in ice thickness due to higher flows?

Answer Although there will be more ice, spring flows will be reduced and therefore ice jams should be fewer and less severe.

Ice will be gone above Talkeetna before the rest of the river breaks up, therefore no ice going downstream from the upper Susitna.

Question What effect will the change in flows and water levels have on the estuary?

Answer Resource Management Associates modeled the change in salinity. The model indicated a 1 1/2 part per thousand (ppt) maximum change from natural conditions. The salinity range under project conditions is expectd to be less than which presently occurs. This change is not expected to be significant.

D) Suspended Sediment

Particle sizes of three to four microns will pass through reservoir. Approximately 80 percent of suspended sediment will be removed.

Turbidity at Watana outlet will be between 10 to 50 NTU. Lower summer turbidity. Higher winter turbidity. Downstream channel will remain stable because of armoring.

E) Sloughs

- Backwater effects
- Surface water runoff?
- Groundwater upwelling - dominant flow in direction of mainstem flow - upwelling flow rates basically unchanged although there is a potential for dewatering spawning areas in upper locations of some sloughs that are adjacent to ice free reaches of the mainstem Susitna.
- Groundwater upwelling temperature - function of long term average annual mainstem Susitna River temperature.
- Overtopping under post-project conditions where ice in mainstem is adjacent to sloughs.
- Morphological changes?

Question Have navigation and recreation impacts been addressed?

Answer Yes, River divided into sections above and below Talkeetna. Numerous cross-sections studied, no problems were immediately identified above Talkeetna. However, one site located between sloughs 8 and 9 was difficult to navigate this past summer with natural flow conditions. The area was navigable. During post-project conditions caution will be needed in this one section. The normal variations in river morphology that currently occur below Talkeetna - probably will not be as significant. Kayaking will be eliminated in the Devil Canyon reach. Recreational boating on the reservoirs will be available if the reservoirs are open to public. Additional information available in the Recreation Report.

Question Increased stage impacts to sloughs from ice? Impacts to sloughs from the thermal degredation of ice rather than the flushing out of this ice that normally occurs? Impacts to sloughs from lack of flushing flows to rid them of rotting salmon carcasses and the putrification that will result?

Answer If a major ice jam occurs, river flows could be directed through sloughs.

Question What if no ice jams occur and the ice is not flushed out?

Answer The ice cover will melt in place if there is no diversion from the mainstem. It will disappear at a later date. Look at the current system for ice blocks that thermally degrade to get an idea of what will occur. Some ice blocks have been evident until the end of June.

Question Can temperature model estimate these ice conditions?

Answer Probably can with a combination of river temperatures and groundwater temperatures.

Question Is there a problem for the salmon if the ice remains in the sloughs?

Answer Could be depending on the habitat and its type of use by species involved.

Question How can we mitigate the putrification problem in sloughs?

Answer Possibly flush system during wet years.

Question How often do we need to flush?

Answer Don't know, a lot of variaiblity in the different sloughs.

V. Possible Flow Variations - Dr. John Hayden (Acres)

A) Summary

Dr. Hayden provided a brief impromptu discussion about possible variations in river flows that might be available to benefit salmon.

B) Selective Flow Spikes

- spring, 6 days at 20,000 cfs to facilitate outmigration and flush system
- summer, 12 days at 20,000 cfs to facilitate entrance to sloughs
- we have to learn more about the fishery system to determine the most desirable time frames for these spikes

Statement We also have to keep in mind the other uses of the river, i.e., recreation, when considering spikes.

Question The impacts of increased temperatures on over-wintering fish is not discussed in report. Increased temperatures will cause increased metabolic rates in the over-wintering salmon without an available food supply. As a result these fish could go into the next spring in a weakened condition.

Answer This will be addressed in the Fisheries Presentation.

We don't have enough information on the over-wintering locations to assess impacts and provide mitigation at this point in time.

LIST OF ATTENDEES

WATER USE AND QUALITY & FISHERIES WORKSHOP (2nd Day)

Holiday Inn, Anchorage, AK

Wednesday, December 1, 1982

9:00 a.m.	Name	Organization	Telephone
	Jean Baldridge	Woodward-Clyde	276-2335
	Michael P. Storonsky	Acres	276-4888
	Tom Lavender	Acres	"
	Tony Burgess	Acres	"
	Woody Trihey	Acres Consultant	274-7583
	Steve Bredthauer	R&M Consultants	279-0483
	Bill Lawrence	U.S. EPA	271-5083
	Brad Smith	NMPS	271-5006
	Len Corin	USFWS	271-4575
	Mary Lu Harle	ADNR-Water Management	276-2653
	Gary J. Prokosch	ADNR - Water	276-2653
	Chris Godfrey	U.S. COE-Reg. Function	552-4942
	Ken Florey	Fish & Game	344-0541
	Eric Myers	NAEC	276-4244
	John Wiles	State Parks	264-2115
	Dave Wangaard	USFWS	263-3316
	John Hayden	Acres	276-4888
	Wayne Dyok	Acres	"
	Bill Wilson	AEIDC	279-4523
	Ken Voos	AEIDC	279-4523
	John R. Bizer	Harza/Ebasco	277-1651
	Steve Zrake	ADEC	274-2533
	Stuart Burnell	Morrison Knudsen	263-3611
	Larry Moulton	Woodward-Clyde	276-2335
1:00 p.m.	Additional Attendees:		
	Judy Zimicki	NAEC	277-2134
	Larry Hechart	ADF&G	344-0541
	Kevin Delaney	ADF&G	"
	Mike Mills	ADF&G	"
	Dan Wilkerson	ADEC	274-2533
	Tom Trent	ADF&G	274-7583
	Dana Schmidt	ADF&G	"
	Bruce Barrett	ADF&G	"
	Christopher Estes	ADF&G	"
	Alan Bingham	ADF&G	"
	Richard Fleming	Alaska Power Authority	276-0001

MEETING SUMMARY

EXHIBIT E

Water Use and Quality and Fisheries Resources Section

Holiday Inn, Anchorage, Alaska

December 1, 1982 Afternoon Session

Attendees

Name	Organization	Name	Organization
Judy Zimicki	NAEC	John R. Bizer	Harza/Ebasco
Woody Trihey	Acres	Steve Zrake	ADEC
Bill Lawrence	EPA	Larry Moulton	Woodward-Clyde
Brad Smith	NMFS	Jean Baldrige	Woodward-Clyde
Len Corin	USFWS	Larry Hechart	ADF&G
Mary Lu Harle	ADNR	Kevin Delaney	ADF&G
Gary J. Prokosch	ADNR	Mike Mills	ADF&G
Chris Godfrey	COE	Dan Wilkerson	ADF&G
Ken Florey	ADF&G	Tom Trent	ADF&G
Eric Myers	NAEC	Dana Schmidt	ADF&G
John Wiles	State Parks	Bruce Barrett	ADF&G
Dave Wangaard	USFWS	Christopher Estes	ADF&G
John Hayden	Acres	Alan Bingham	ADF&G
Wayne Dyok	Acres	Richard Fleming	APA
Ken Voos	AEIDC		

INTRODUCTION - Larry Moulton, Woodward-Clyde Consultants (WCC)

We have focused on habitat for impact assessment and mitigation planning. Although we cannot presently quantify impacts or present a detailed mitigation plan, we can discuss the general types and magnitudes of fisheries impacts likely to occur. Studies to quantify impacts and determine the level of mitigation necessary are either ongoing or in the planning stage.

We have divided the river into four general habitat types:

- o mainstem,
- o side channel,
- o slough, and
- o tributary.

We considered three general reaches of the river:

- o Impoundments Zone,
- o Talkeetna to Devil Canyon, and
- o Cook Inlet to Talkeetna.

Each reach will have different impacts associated with the various stages of the development.

We did select evaluation species based on the criteria developed by U.S. Fish and Wildlife (USFWS) and Alaska Department of Fish and Game (ADF&G). Because of expected impacts, we focused on salmon spawning activities in slough habitats between Talkeetna and Devil Canyon (Table 1).

1. Chum salmon are most abundant in these habitats.
2. Sockeye salmon are not as abundant as chums but sloughs provide almost all spawning habitat for sockeye in this reach.
3. Chinook and coho salmon do not spawn in the sloughs. So here we are mainly concerned about juvenile fish which rear in slough and mainstem habitats.
4. Pink salmon spawn mainly in tributaries with only slight use of slough habitats.

For the Impoundment Zone, we selected Arctic grayling as the evaluation species.

The different species occupy the river at slightly different times (presented phenology chart, Figure 1).

Q Could some of the differences from 1981 to 1982 could be due to differences in catchability of fish between the high and low flows experienced between 1981 and 1982.

A ADF&G (Su hydro) staff will be here shortly to answer your question.

CONSTRUCTION IMPACTS

Impacts expected during construction are expected to be similar to those experienced by other major construction projects. In the case of the two dams, the impacts are expected to be fairly localized. A construction practices manual will be prepared to assist the contractor in avoiding and minimizing environmental damage.

Major Impacts

1. Loss of habitat in mainstem due to river diversion.

2. Diversion tunnel will have high velocities and fish losses are expected to result.

3. Short-term turbidity problems.

4. Concrete batching operation will produce effluent requiring treatment.

5. Accidental spills are a consideration.

6. Material sites and borrow areas will be located within the impoundment with the exception of Borrow area E, known as the Tsusena Creek borrow area. This area will be rehabilitated to provide aquatic habitat.

FISHERIES BASELINE STUDIES

Tom Trent (ADF&G Su Hydro Project Manager)

ADF&G conducted reconnaissance during the winter of 80-81. We began full scale investigations in June 1981. Presently, we have completed two cycles of open-water season studies and are getting the winter 1982-83 program underway. Our program is divided into three areas:

- o Adult anadromous,
- o Resident and juvenile anadromous, and
- o Aquatic habitat and instream flow studies.

Our task is mainly one of data collection but we are doing some analysis to describe preproject relationships. Our reporting schedule includes our basic data reports which will be produced by Jan. 31, 1983. These will contain very little analysis. Our interpretive reports which will contain our analyses will be produced by June 30, 1983.

Christopher Estes (ADF&G Su Hydro - Aquatic habitat and instream flow program)

Discussed ADF&G 1981 reports and 1982 habitat report.

During the 1982 field season, the aquatic habitat program collected habitat data to assess the influence of the mainstem discharge on other habitat types. We established study sites in slough habitat and collected water quality, hydraulic, and substrate data in six side sloughs upstream of Talkeetna: 8A, 9, 11, 16, 19 and 21.

Downstream of Talkeetna we established study sites in two areas, Chum channel, a side channel and Rabideaux slough. We will evaluate the influence of mainstem discharge on these habitats.

The aquatic habitat program also provided support for the resident and juvenile anadromous studies.

Dana Schmidt (ADF&G Su Hydro - Resident and juvenile anadromous fish program)

In addition to the resident and juvenile anadromous program, I have also been involved in a dissolved gas study upon which I recently presented a paper at the American Fisheries Society meeting in Sitka. Devil Canyon has large plunge pools which cause entrainment of air resulting in nitrogen supersaturation. A continuous recorder was installed near the mouth of the canyon to measure nitrogen concentrations in the canyon. Measurements were collected to determine the downstream dissolved gas profile to assess the decay rate of nitrogen in the system. Peak concentrations of 117% were recorded in the canyon.

Resident and juvenile anadromous fish program.

The adult anadromous program is tracking the adult salmon. We will be following through with the incubation of the embryos. In conjunction with the USFWS, we will determine development rates under various temperature regimes. In addition we will be evaluating:

- Rearing habitat in sloughs and side channels,
- Timing of outmigration (smolt trap 6/18 to 10/10)
- Population estimates of grayling in the impoundment zone. (These estimates will be stratified by age classes and may be available by Jan. 31.)

We will be determining fish distribution and relative abundance, through electrofishing and minnow trapping. Telemetry studies are being conducted on rainbow and burbot.

We will be assessing changes in habitat in response to changes in flow.

We have begun a study of food habits and availability of invertebrate populations.

Bruce Barrett (ADF&G Su Hydro - Adult Anadromous Program)

Conducted adult anadromous investigations from the confluence of Devil Creek to the estuary mainly on eulacon, salmon, and Bering cisco.

Eulachon studies were conducted from May 15 to June 9 using gill nets and electrofishing units. Spawning activity was located from RM 4.5 to RM 48 primarily below the Yentna River confluence. There appears to be two populations of eulachon using the lower Susitna River. The size of the run is in millions of fish. The spawning run is mainly composed of 3 year old fish. The fish were spawning in riffle zones with unconsolidated sands and small gravel and relatively high velocities.

Salmon

5 stations with side-scan sonar and fish wheels were established. Milling activity and mainstem spawning were evaluated with electrofishing and gill nets. Spawning surveys were conducted from RM 100 to 160.

Chinook Studies

Population estimates were determined from tag and recapture. The escapement in 1982 was far greater than in 81. They were near the 1976 levels. There was lots of milling in the canyon. Chinook were found above the Devil Canyon Dam site in Cheechako and Chinook Creeks.

Sockeye Salmon

We had a larger escapement of sockeye salmon in 82 than in 81. Most of the sockeye were found in the sloughs. Sockeye did spawn in Chase Creek, a tributary to Indian River and Prairie Creek in the Talkeetna

Drainage. Sockeye spawned in 9 sloughs between Talkeetna and Devil Canyon. We did document an early run of sockeye in the Talkeetna Drainage.

Pink Salmon

The escapement was less than average for an even year. Pink salmon spawn mainly in the tributaries. We found pink salmon using mainstem spawning sites in addition to slough habitats.

Coho Salmon

Coho salmon spawn mainly in tributaries. One mainstem site was located and coho were found spawning in one slough.

No mainstem spawning areas were located below Talkeetna.

Bering Cisco

We had a much smaller run than last year. Fish were spawning in the same area (near Montana Creek) as they did last year. We had one repeat spawner from last year and fish were 3 and 4 years old.

QUESTIONS

Q Kevin Delaney (ADF&G) How many sloughs are there?
A We have located 33 sloughs, 10 are heavily utilized for spawning.

Q Kevin Delaney (ADF&G) How many are mapped?
A We have planemetric maps on 6 sloughs and will be able to assess access in these sloughs.

Q Brad Smith (NMFS) How important are mainstem spawning sites?

A Some areas are heavily utilized. We may have 1000 fish in one area. The majority of the mainstem is not used.

Q Ken Florey (ADF&G) How are the chum salmon spawning densities? Given the flow we had, how is the habitat utilization?

A We had good utilization of existing habitat. We are fairly close to capacity with 82 populations and flow conditions.

Q Ken Florey (ADF&G) Is the utilization of the sloughs dependent on flow levels or are they density dependent?

A Our population estimates show an increased number of salmon in the system this year and fish moved faster in low water. Low levels kept fish out of the sloughs until late.

Q Ken Florey (ADF&G) With regard to pulsing the discharge in the spring and during the spawning season, is there any evidence to support this concept? I realize that the studies are not complete enough to define pulses.

A We did observe fish passing into sloughs when flows came up in September, which lends some credibility to the pulse concept. However, both mainstem and slough flow increased.

Q Are you going to do any winter food habitats study?

A We will be looking at the distribution of fish in slough and water temperatures will be monitored but we are not doing food habits. We will have some information on growth but the small number of fish scattered over the large channel makes sampling difficult.

Q Will you be able to tell turnover rate in overwintering habitats?

A No. We don't have the resources to determine the relationship between fish overwintering in sloughs and fish overwintering in the mainstem.

Q Brad Smith (NMFS) Does the large amount of milling behavior mean that fish will go upstream if they have the opportunity?

A We think they will as evidenced by the movement of chinook this year into Devil Canyon. We see a lot of interbasin movements and we have a sizeable population in Portage Creek.

Q Has anyone taken a look at the parent year to see what the flows were?

A We only had about 50 fish upstream of Devil Canyon and no scales were collected. We attempted to trap juvenile fish but didn't find any salmon.

Q Lenny Corin (USFWS) Will you generate a new estimates of the grayling population in the impoundment?

A Yes. We expect to have a substantial increase in the population estimate. We will have some information on Watana Creek and we have divided the Oshetna River into riffle pool reaches to refine our estimates.

Q Ken Florey (ADF&G) Were there any age differences relative to the two runs of smelt?

A Most fish were 3 yr old.

Q Ken Florey (ADF&G) Any repeat spawners?

A No way to tell. Males have a longer spawning period than females probably 5 day as opposed to 1 day. The two runs appear to be genetically different due to size and weight.

Q Ken Florey (ADF&G) How long is incubation?

A We could not recover eggs but it is probably 2 weeks. ADF&G Interpretive Report Dana Schmidt (ADF&G Su Hydro). Our June report will integrate data from the various programs into a common base to determine the relative importance of populations at risk and the response to changes associated with natural variation. The report will be confined to the lower river and will integrate by species data on:

1. Adult migration and spawning
2. Embryo development
3. Freshwater rearing
   a. habitat selection
   b. response to changes in discharge and water quality
4. Outmigration timing

It will address:

- o Relationship of behavioral response and changes in flow
- o Hydraulic change in habitat
- o Change in surface area
- o Change in availability of cover and substrate
- o Response of chum and sockeye salmon embryos to thermal variation which presently exists in the habitat

END OF SESSION

MEETING SUMMARY

EXHIBIT E WORKSHOP

Water Use and Quality and Fishery Resources Section

Holiday Inn, Anchorage, Alaska

December 2, 1982

ATTENDEES

Name	Organization	Name	Organization
Jean Baldrige	Woodward-Clyde	Larry Rundquist	Woodward-Clyde
Larry Moulton	Woodward-Clyde	Eric Myers	NAEC
Brad Smith	NMFS	Bill Lawrence	EPA
Garry Stackhouse	USFWS	Dan Wilkerson	ADEC
Kevin Delaney	ADF&G	Paul Krasnowski	ADF&G
Michael D. Kelly	AEIDC	Bill Wilson	AEIDC
Mike Prewitt	AEIDC	Kevin Young	Acres American
Wayne Dyok	Acres American	Tony Burgess	Acres American
Dave Wangaard	USFWS	Gary Lawley	Harza/Ebasco
John Bizer	Harza/Ebasco	Paul Janke	ADNR
Tom Trent	ADF&G	Kevin Florey	ADF&G
Gary Prokosch	ADNR	Steve Zrake	ADEC
Nancy Blunck	APA	Tom Arminski	APA
Mary Lu Harle	ADNR	Dave McGillivary	USFWS
Patricia Lukens	Acres American		

MITIGATION FRAMEWORK - Larry Moulton (Woodward-Clyde Consultants)

Approach to mitigation was based on the USFWS and ADF&G mitigation policies which present the criteria and categories contained in Figure E 3.1 (Exhibit E). Keeping these criteria in mind let's review the impacts.

IMPOUNDMENT

Impoundment Impacts:

Lotic habitat will be innundated as a result of filling Watana Reservoir. Figure 2 shows the portions of the mainstem and tributaries innundated by Watana Reservoir. We believe that much of the grayling population presently occupying this habitat will be lost. The summer habitat in the streams seem to be fairly well occupied so few additional grayling could probably be accomodated in adjacent habitats. Grayling are not generally found in turbid lakes. In addition grayling may encounter difficulties in sucessfully incubating embryos spawned during reservoir operation. Spawning under reservoir operation will be difficult for most species. As the reservoir fills, sediments carried by the tributaries will settle out over the spawning areas, suffocating the eggs. Figure 3 illustrates how reservoir operation and biological activities overlap. The portion of the streams near the reservoir will be innundated by the reservoir filling schedule before the embryos hatch. The portion of the grayling population spawning in habitats above the 2135 ft level will not be affected by the reservoir filling schedule as these embryos would hatch before the habitat would be inundated. Table 1 indicated the miles of tributary innundated by the reservoir during the grayling spawning and incubation period. The amount of overwintering habitat is expected to increase.

A population of Lake trout may develop in the reservoir but again production is expected to be limited. Figure 3 shows that most of the available spawning habitat will be dewatered during the winter before the lake trout embryos have completed their development. The spawning depths for lake trout, whitefish and burbot were taken from Morrow's Freshwater Fishes of Alaska. Some deep spawing lake trout may survive. The probablility of sucessful whitefish or burbot production appears slight. If these fish spawn in tributary channels the embryos may survive.

We expect a little different situation in Devil Canyon Reservoir. The reservoir will innundate riverine habitat and the grayling populations

occupying those habitats may be lost. However, grayling populations in these streams do not appear to be as large as those in the Watana Reservoir streams. The streams in Devil Canyon Reservoir are fairly steep and many appear to have migration barriers which will not be innundated by the reservoir.

Q Silt load covering deposited eggs interfering with success. Also, what will the fish be feeding on?

A Upwelling may clear some of the gravels. Loss of riverine habitat in impoundment zone with very little gained. Do not expect a productive littoral area and do not expect much food production.

Q Is there an access problem if fish overwinter in the reservoir?

A May actually improve accessibility as some fish barriers will be removed, e.g. falls on Deadman Creek will be inundated. Dollys have the best chance of surviving and may occupy reservoir habitats.

Mitigation for the Impoundment Zones - Larry Moulton (WCC)

Since the impacts for the reservoir can not be avoided, mimimized or rectified, compensation is planned for the lost resource. The best way to compensate these losses is with inkind replacement of grayling. We propose investigating the possibility of implanting grayling in barren lakes in the project area or possibly other lakes in southcentral Alaska if none are found within the vicinity of the project. Grayling could be raised in a hatchery and released in suitable lakes. It may be effective to deepen some lakes to provide overwintering habitat.

Q Has the success of such a hatchery program been proven?

A ADF&G has a grayling program at Big Lake Hatchery

Agency Comment - I'm familiar with the ADF&G program which is at Clear Ak. and it is my impression that the technology is not all that dependable. I don't believe it can be done on this scale.

There were successful plantings in southeastern Alaska where the fish began reproducing on their own.

ACCESS ROADS - Larry Moulton (WCC)

The primary impacts to aquatic habitat expected to occur are related to road crossings and borrow pits. To the extent practical borrow areas for the access road have been moved to upland sites. Road crossings will be designed according to ADF&G fish passage criteria in accordance with the title 16 draft regulations. If desirable, the borrow areas near lake may be rehabilitated to provide aquatic habitat.

Access to this area may result in an impact from the additional fishing pressures. Natural populations in streams and lakes could be protected if more restrictive harvest techniques and bag limits were placed on areas such as Deadman Creek. The lakes that are stocked with grayling may provide a place for the guy who just wants to catch a lot of fish while the natural streams could provide more of a quality fishing experience. The road has been routed as far away from Deadman Creek as the corridor allows.

Q Do you expect people to drive 200 miles to fish in a gravel pit?

A Yes, they drive that far now. We expect people to leave Anchorage or Fairbanks with a camper or Winnebago, pull up to one of these areas and fish for the weekend.

Q Are you familiar with Copper Highway gravel pits?

A Yes.

Q Is this access discussion only for the Denali-Watana portion?

A No both segments are discussed.

Q What is the type of borrow material? Volume?

A The borrow material should be relatively easy to get. We need about 200 surface acres for Denali-Watana and about same for Watana-Devil Canyon portion. We feel we can get this from upland sites and will not need to use any streambed material.

Q If borrow areas are so easy to locate, how about alignment of the road?

A They have done some realignment.

Agency Comment - We have not yet quantified loss, but we don't think that there is any way to raise the number of fish that we are talking about. There is no compensation for unique experience that can be had today at the mouths of some of these streams.

DOWNSTREAM IMPACTS- Jean Baldrige (WCC)

Before we begin on the downstream impacts I would just like to take a few minutes to discuss our approach to assessing downstream impacts and where we are in the process. Our approach is based on habitat. We looked at areas where the project would alter habitat conditions. Then, we evaluated the changes to determine if they would impact the fishery resources. This is basically a sequential process. First we have to know what the project area is and how the system works. Then we can overlay the project operating scenario and determine the project impacts. After assessing the impacts we develop a mitigation plan to address the expected impacts.

Where are we in this process? Well, we have a good general understanding of how the basin works, what the processes are, the general distribution, and timing of the fishery resources. We know what habitats are important. We have identified generically, the type of impacts likely to occur and we have developed a conceptual approach to mitigation and established some priorities. We have some concepts regarding mitigation features. Larry Moulton will talk more about mitigation later today.

In reviewing the physical processes in the basin as Wayne Dyok and other talked about yesterday, most of the changes will occur in the Talkeetna to Devil Canyon section. We expect most of the changes to occur under the filling and operation of Watana. Devil Canyon Dam may result in slight increases in the types of impacts which will occur under development of Watana.

Q What is filling time for the Devil Canyon?

A About a month. Downstream flows would be maintained at 5000 cfs. (Ed. note - actual filling time from elevation 1135 to 1455 will be in the order of 5 to 8 weeks)

Q Why stick with a 5000 cfs value? Do we know enough to say that's what we need?

A That is what we have had to work with. We feel that in the 8-10 yr period in which Watana alone would operate, a new fishery habitat will develop and substantially changing the established regime will hurt that new fishery.

WATANA FILLING - Jean Baldrige (WCC)

Filling Watana Reservoir is expected to take three years. This figure presents a comparison of streamflows expected for filling Watana reservoir. I have combined parts of the second and third years to show the months of the greatest changes expected. Many of the changes expected

during the open-water season will occur during the initial filling of the reservoir. We expect changes in:

- o Streamflows
- o Water quality
- o Water temperature

Mainstem and Side-channel Habitat

Mainstem and side-channel habitats will be directed influenced by the project.

o Outmigration

Break-up will be diminished which may affect outmigration. Sufficient water will exist to transport fry downstream but both the rising water levels and temperatures that may stimulate outmigration may not occur under post project condition.

Q Asked whether the reduced flows are indeed sufficient for the fish passage.

A Yes, for river migration.

o Chinook inmigration

There should be sufficient water to pass fish upstream. Studies on navigation by the ADNR show that there will be depths of at least two feet in the shallowest cross-section which is located between sloughs 8 and 9. Chinook will also be able to gain acess to tributary habitats under filling flows as R & M discussed yesterday. Chinook are also expected to be able to ascend the canyon and utilize tributary habitats below the Watana dam.

Q These effects during filling - what about operation?

A Similar effects.

Q Would you really get a decrease in velocity through Devil Canyon.

A Yes, due to the rectangular shape and the confined nature of the canyon, we expect that when we decrease the discharge, the velocities will be reduced. There will still be high velocities in the cayon but chinook should be able to pass.

o Spawning season

A few spawning areas were located in mainstem and side-channel areas. Lower flows during the spawning season may adversely affect some mainstem and side channel spawning areas. Many of these areas are located on the margins of the system in areas protected from high flows. Because these habitats are located on the perifery of the system they are more susceptible to dewatering.

o Water temperatures

During the second year of filling we expect water temperatures in the range of 5 to 6 ^{o}C during the summer time. Temperatures in this range may deter adults form entering the system. If they do enter the system, the cool temperatures may retard sexual maturity and delay spawning activity. Low water temperatures could affect resident and juvenile anadromous fish by retarding growth or by causing fish to move into warmer waters in the tributaries and sloughs.

Slough Habitat

Slough habitats will be slightly buffered from changes in the mainstem, but we expect some adverse impacts in these habitats.In the spring, under the filling flows we will not have the kind of break-up and flushing action we have now. However, we will still have some increase in slough discharge and stage from the increase in local surface runoff as the snow melts and the rains come. This may provide sufficient stimuli for the fry to outmigrate.

In August under 12,000 cfs we may have some passage problems as Woody Trihey discussed yesterday. This afternoon we will discuss ways to

rectify this situation. We may also see some reduction in the areal extent of upwelling and perhaps the rate of upwelling. As the backwater effects from the mainstem are reduced, some of the lower spawning areas may be affected. A decrease in depth may reduce the amount of spawning area available as well as affect holding areas.

Another result of regulated flows would come from increased beaver activity. Beaver dams have already caused some passage problems. At slough 8A, the beaver dams precluded upstream migration until the flow levels increased in September. Then with the additional stage and backwater effects the fish were able to pass.

Q What is the source of flow and ice formation in the slough.

A Right now the sloughs form a thin ice cover over much of their length. At the slough mouths, the ice may resemble the ice cover in the mainstem in its thickness. At slough 8A ADF&G observed that the slough was overtopped as the ice front proceeded upstream past the slough. The discharge increased to 150 cfs. In the spring, the ice melts off the sloughs earlier than break-up in the mianstem. In April the slough are open and free flowing.

Q Is there a spawning population in these sloughs? What velocities are we talking about?

A We don't expect that the velocities are high enough under ice formation to cause scouring.

Comment - Acres clarified the path length of the groundwater flow that influences upwelling on the slough picture.
Groundwater moves along the downriver gradient and not really cross wise through the island.

Tributaries

The only portion of the tributary which will be influenced by the project will be the tributary mouths. As in slough habitats, the mainstem causes a backwater to form which provides passage and rearing habitat for residents and juvenile anadromous species. R & M performed an analysis that indicates that, with an exception of three, the tributary mouth will not become perched. The backwater zone may be slightly reduced. Tributary habitat above Devil Canyon will become available to chinook salmon as we discussed earlier.

Q Of those streams that are going to be perched, why is it that they will perch.

A Size of stream bed material.

WATANA OPERATION

Under operation, the flows will be a bit higher in the spring and fall, definitely higher in the winter and about the same much of the summer. We will have greater control on the downstream temperatures. In addition we will reduce the number and magnitude of floods in the system. Presently we have an annual flood of 50,000 cfs. Under operation that annual flood will be about 13,000. We will also have a change in the sediment transport in the system. Right now the system carries lots of sand suspended in the water. You can hear it hit your boat. The reservoir will remove the sand. The river will pick up some sediments below the dam and will carry some sediment but it will be much clearer than the existing conditions.

Because of these physical changes we expect rearing conditions to improve in mainstem and side-channel habitats. We expect increased benthic production from improved light penetration and reduction of suspended sands which presently sandblast the substrate.

Q Is there a seasonal consideration of your discussion with regard to increased benthic production in mainstem habitats?

A Mainly summer.

Winter Conditions

Discharges will be higher in the winter. Water temperatures will also be increased. Upstream of Portage or Sherman, temperatures will be 2 to 4 ^{o}C at the dam outlet thus there would be no ice on that portion of the river. Warmer water temperatures are expected to benefit overwintering fish by reducing mortalities associated with freezing. Stable flows will prevent dewatering of overwintering habitat and spawning areas available under the postproject summer flows. Warmer water temperatures may alter the embryo development rates. Temperature increases may result in early emergence, which has been linked to decreased survival. If these fish move downstream, they will encounter 0^{o}C water in the Chulitna and may experience thermal shock. Chum slamon would be less susceptable as they select areas with upwelling, which would buffer the embryos from mainstem temperature changes. The suspended sediments will increase slightly during the winter.

Downstream of Sherman, we will have an ice cover. Here again, increased winter discharge is not expected to adversely affect rearing fish. We may have some increased velocities but we expect there will be sufficent areas along the margins of the river and in pools for fish to overwinter. Juveniles spend much of their time in or near the substrate so mean column velocities may not be as important to them in the winter as they are in the summer.

Sloughs

The change in ice processes will affect slough habitats. Upstream of the ice front we will have open-water condition. As Tom Lavender discussed yesterday we will have less stage than under the present ice cover. Since winter and summer discharges are virtually the same, spawning

habitat available under the post project summer flows should be maintained by the winter flows.

Downstream of the ice front we expect an increase in stage over pre-project conditions. This stage is expected to increase sufficiently to overtop the sloughs at the head end which would allow cooler mainstem water to enter the slough system. This would reduce surface temperatures in the sloughs and may adversely affect the quality of overwintering habitat.

If this process causes aufeis formations in the upper portion of the sloughs, water temperatures in the sloughs may be reduced well into June. No flushing flow would be available to remove the ice and it would have to melt. If cooler water temperatures persist through the spring it could adversely afffect nursey areas for emergent fry.

Q What river mile is Watana? So we are talking about 30-55 miles of open river under post-project winter ice conditions.

A Yes.

Q What temperature is causing this? I thought the ice front would be at Talkeetna.

A Under the operation of Watana we expect the ice cover to be between Portage Creek and Sherman. Under the operation of Devil Canyon we expect the ice cover to be somewhere between Sherman and Talkeetna.

Q Do we have any idea of relative percentages of overwintering in mainstem vs. sloughs.

A Do not have percentages but both habitats are being used.

Q Aren't we also seeing a lot of stranded river ice now?

A Yes, but they are much smaller than an aufeis field.

Q Juvenile fish coming out of tributaries - will there be enough water to get back into sloughs?

A Outmigration from tributaries occurs all summer long.

Q What do Indian and Portage contribute to flow.

A The contribution is relatively small.

A (Acres) Gave some numbers.

Q When we hear discharge at Gold Creek, that is not the discharge at Watana.

A That is correct. We will have immediate feedback of Gold Creek streamflow data to modify releases at the dam.

Q Trying to figure out slough access comments in FERC - Exhibit E (Chapter 2). What is most sloughs?

A Access not a well-defined factor on a slough-by-slough basis. Fish did get into many sloughs under 12,000 cfs but access was difficult.

Wayne Dyok (Acres) presented some information on ice processes in sloughs. Reiterated that presently the ice front causes mainstem water to flow through the slough and the mainstem ice cover progresses up the slough. This is probably of short duration.

Q Ground water seeps small - Will large flows cause scour?

A We don't expect they will but we don't know.

Q Won't this have an effect on changing the upstream berm?

A They may change the height of the berm at the upstream end. We will have to evaluate this.

DEVIL CANYON

Filling of Devil Canyon will be a short time, 5 weeks. We reported 5 months in the Exhibit E. Filling will be accomplished in the winter. Downstream discharges will be maintained at 5000 cfs. Under the operation of Devil Canyon you can see that we have small increases in the percent change of streamflow (Figure). We do not expect these changes to result in new impacts but the magnitude of impacts discussed under the operation of Watana will be slightly increased. One notable difference as we mentioned earlier, the ice front will be between Talkeetna and Sherman after Devil Canyon comes on line.

DOWNSTREAM OF TALKEETNA

Let's just take a brief look at the system below Talkeetna. You can see here at Sunshine station (Figure) that the changes are of a smaller magnitude. In addition we do not expect much difference in either the temperature regime nor the sediment transport processes.
Moving down to Susitna station we see even a further dampening of project effects. The Eulachon will be in the system in May which has a decrease of about 10 per cent. Changes of this magitude are not expected to significantly affect the Eulachon spawners.

Q Have you considered the relatively short time that the Euluchon are in the system and does mean monthly represent the situation?

A It may not but under peak flows the percent reduction would be less. This will be looked at when the data is available. We will be trying to get into daily and weekly streamflow values for all fish and the entire system if appropriate. AEIDC will be looking at this in their quantitative impact assessment.

Q Processes will remain the same as under Watana, just be more of it.

A Wayne Dyok (Acres) Yes.

Q During filling and operation may there be large slides into reservoir affecting water quality downstream.

A There will be some slumping especially under the initial filling, but we do not expect much effect downstream. The slide would contain large soil particles which would probably settle out in the reservoir.

Q With the loss of some sloughs can something be done to mitigate by making new sløughs or are they a total loss.

A We do have some ideas on slough mitigation which we will discuss now.

Q What level of turbidity do you expect downstream in winter months?

A Slightly higher than now.

Q What is that comparable to under present conditions up- and downstream of Talkeetna?

A Similar to those experienced in September.

Q How is this all going to be compiled into a composite impact?

A (WCC) (ADF&G-SuHydro) and (AEIDC) will be doing this in the next several months.

Q Will also have to integrate the terrestrial and other studies.

A There is coordination between the different groups.

Agency Comment - ADF&G had a good point on cumulative impacts.

Q I'm not happy with the philosophy of "We have only a 10 percent change and therefore we don't expect alot of impact." Many of our species already at the edge of a range and 10% can push it over the edge.

A We are still trying to refine and define these problems.

Wayne Dyok (Acres) made announcement regarding handout.
Larry Moulton (WCC) announced typo changes on Table E34.

MITIGATION - Larry Moulton (WCC)

Water Temperature

The muliple level outlet will provide some temperature control during operation and the last year of filling. Temperatures during the second year of filling are still a problem. We may be able to solve this problem by including a low-level intake. This would also give us more temerpature control during the spring and fall when we may want to provide warmer or cooler water. The engineers are presently looking into this.

Streamflow

Under the present operating senario, we can't avoid all impacts to the fish, but we may be able to rectify some of these impacts through habitat modification. One concept is through slough modification. (Figure E 3.9). We would modify a slough using downstream control structures to increase the depth and allow fish passage. The upper end of the slough would be diked off to prevent the mainstem discharge from entering. A gate with a pipe would allow us to have flow through the slough for flushing or for outmigrants.

Q Do you have a generic price to go along with the generic design?

A $\$3-\$4 \times 10^6$ per 30 million eggs.

Q How many would be built.

A However many are required to mitigate the loss.

Q Have you compared this to hatchery costs.

A Yes, It appears to be about ½ the cost.

Q Who would operate the valve?

A Manual operation.

Q You are thus proposing to design an artificial slough?

A We would use an existing slough.

Q Do the flow control weirs get removed for flushing?

A They will be dropped or laid back but we haven't worked out the details yet.

Q How would you get to these areas for maintenance?

A Most of these areas will be near the existing railroad.

Q Will the juvenile chinnok and coho be able to use the sloughs for overwintering?

A We presently have no mechanism for them to get in but can consider it.

Q When holding the chum, do the coho and chinook feed on the chum?

A They probably would.

Agency Comment - I think they would really be able to chow down since the chum would be held in confined areas.

Q How is the time of emergence span going to be accounted for on the release schedule.

A We don't have that information yet as to when the emergence time is and what flows would be required.

Q We tried feeding chum in Cold Bay and the fish wouldn't leave. How are you going to get the fish out?

A We were proposing to feed the fry only if we had early emergence and downstream conditions were not suitable. With the recent results of groundwater studies it looks as though we will not have to feed the fry.

Project Comment - These are proposed mitigation measures and combined with flow regulation, we have some flexibility. We will probably use a combination of mitigation techniques. Some sloughs may not require modifications, others may require a structure at the entrance to help the fish get in, others may require only the berm at the head end. The goal is to maintain as natural and passaive a set of modifications as possible.

Agency Comment - There are no spawning channels in operation in Alaska. The ones at Fourth of July Creek in Seward were washed out. I think you will probably have a lot of problems with these.

Agency Comment - Beaver will love these channels and will be hard to control.

Q Are we going to talk about priorities. I'd like to see more emphasis on alternative flows.

A We have been covering this.
1st is flow regimes
2nd is modification of sloughs
3rd is hatchery.

Agency Comment - Seems like these slough modifications are getting down to the bottom of the list.

Agency Comment - We have already covered flows. These plans are "a joke". I don't think they will work. We might as well be looking at hatcheries.

Q Do you know what the effects of time would have on these plans. River changes abandoning slough.

A We would not propose a mitigation that would be abandoned.

Acres Comment - Ice scour is not a problem under project operation and we do not expect the river to change its channel.

Q What is the objective of this slough modification program?

Q Are you trying to create new habitat or maintain existing habitat?

A We are trying to maintain the existing habitat.

Q Is the information that ADF&G and AEIDC will provide going to be helpful in defining which areas will need this mitigation?

Agency Comment - That's right - if it is not broken, don't fix it.

A Yes definitely, The information on habitat relationships and impacts will provide the basis for mitigation. This is a sequential process. We are going to undertake a feasibility study to determine if these concepts are practical. We need to understand better how specific sloughs work and then design a specific mitigation for each slough.

DEMONSTRATION SLOUGH - Jean Baldrige (WCC)

First, I would like to review the problems in slough habitat under operation of the project. Through slough modification we would attempt to resolve these problems:

- o Access for adult salmon
- o Winter thermal regime (overflow from mainstem)
- o Reduced upwelling
- o Sedimentation
- o Vegetation encroachment
- o Beaver activity

The objective of the demonstration project is to test the feasibiliy of slough modification as a mitigative measure for the Susitna Project. We propose to modify a slough to demonstrate that we can provide access and/or enhance upwelling.

We have started a site selection process to find a suitable area to use. At the end of October, Woodward-Clyde in conjunction with Fish and Game conducted a reconnaisance to find some candidate sloughs. We established some criteria to assist us in this selection.

- o Marginal fish use
- o Ground water upwelling
- o Suitable substrate
- o Surface water source
- o Adequate water quality
- o Accessibility for heavy equipment

We are in the process of screening the sloughs according to this criteria. We hope to identify likely candidates to begin a baseline data collection program on this next field season and we will then be able to actually modify a slough after that. Presently we don't understand [specific] slough processes well enough to be able to design a modification progam that we know will work.

Acres Comment - With regard to the sloughs, we have a pretty good handle on the processes. The major missing link is applying the processes to each of the sloughs individually to get the impacts to each slough. A few sloughs have been studied and results will be available. We may find that no modification is necessary for some sloughs, minor modifications for others, and major modifications (artificial channels) to others. Is it worth doing the major channel modification? We don't know enough right now to decide.

ADF&G (Su hydro) Comment - Exhibit E Has been prepared on one flow regime. Mitigation is based on one operational flow. One problem to be dealt with is avoidance. Flow may be available for avoidance but it may not be prudent to go with that flow and the flow regime will still be under negotiation. Our studies and AEIDC's models will help address the question of flows.

Q Is slough modification a technique proposed to the agencies or is this the mitigation proposed in Exhibit E?

A This is a proposed mitigation for the project.

Q We aren't going to know until we try it. If it doesn't work what happens since the project will be well along the way?

A Most FERC licenses stipulate a certain acceptable limit of escapement or production that is monitored during construction and operation. If the mitigation does not work then we can undertake additional mitigation.

Agency Comment - Whenever we are mitigating, we have to mitigate whatever potential there is under natural patterns.

Agency Comment - Mitigation policy has been established but a program is needed to outline a plan for monitoring.

A It's included in the Exhibit E. Monitoring is part of the mitigation plan.

Q Is the slough modification project going to look at improving an existing slough.

A Yes.

Q Are you using the fish to see the effects of mitigation. You aren't doing anything about fish production to evaluate the impacts or effectiveness of these modifications. How is fish production being evaluated?

A We do not evaluate the habitat in terms of x number of coho units. We are constrained to use the physical parameters, we identify current conditions and try to maintain those conditions. The measure of success of those modifications would be in terms of escapement or fry production as gathered through a monitoring program.

Q I didn't get the idea how conceptual are the mitigation plans that are proposed in the Exhibit E. Today's presentation has cleared this up. No one wants to see hatcheries on the Susitna River except as the last alternative but why aren't hatcheries mentioned in Exhibit E. Don't you want to include some hatchery program to address what can be done if the other mitigation prove not to work. What would be the senario with a hatchery?

A Krammer, Chin and Mayo have just completed a hatchery siting study. FRED division is looking at upper basin enhancement possiblities without the project.

Comment - We have already selected a case that allows release such that hatcheries are not required.

Q What is your perception as to how FERC looks at these mitigation approaches. What is your understanding of these approaches. Are they put in to placate the agencies?

A We can not state what FERC will do.

ACHS Comment - FERC has not reacted to anything proposed to them yet. That is the way FERC works - they will not plan the project for the Alaska Power Authority.

Alaska Power Authority Comment - We are dealing with a continuous series of mitigation schemes and a continuous series of flow regimes to deal with changes in a continuous series of habitat types.

Q Are we where we should be on the mitigation plans for the FERC process?

A Regs say that a workable design drawing is required, but definition of a design drawing is vague. Design drawings usually not required except where an integral part of the dam, though schematics for systems usually are included.

Agency Comment - It is a continuum; they may request more data or accept it as is. We may feel that we are not very far up on the continuum, but FERC may not be concerned about this. They may require that problems be worked out between the Alaska Power Authority and the agencies and return to FERC with resolution. How is FERC going to properly review the Exhibit in the short time frame?

A This is a Draft review.

Q What is FERC going to come back with.

A We don't know.

Wayne Dyok (Acres) gave a handout.

John Hayden (Acres) thanked everyone.

MEETING ADJORNED