Attachment A.5

Amendment No. 4

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

PLAN OF STUDY - REVISION 4

SEPTEMBER 27, 1982

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R.1. - INTRODUCTION

The last amendment (Amendment No. 3) to the contract extended the date for FERC license application from June 30, 1982 to September 30, 1982 and arranged for continuing with certain of the ongoing work through the end of September, 1982. Since the issuance of Amendment NO. 3, the APA has extended the license application deadline from September 30, 1982 to on or about March 31, 1983, and has directed Acres to continue with the following consulting services:

- Continued administration of all subcontracts and Project Management Services through December 31, 1982 and the Continued Consulting Services beyond that date toward the preparation and submital of a FERC license through March 31, 1983.

- To plan and provide for an expeditious, orderly assumption by a new engineer for the detailed Engineering and Design phase.

- Provide APA with full historical documentation of all pertinent files and documents pertaining to the Susitna Feasibility Study and an orderly termination of the Susitna Hydroelectric Feasibility Study.

- Provide continued design and development update through December 31, 1982.

R.2 - REVISIONS TO DETAILED ACTIVITY DESCRIPTIONS BY TASK

Revisions to detailed activity descriptions by Task are presented in the following pages.

Task 50 - Project Management

(a) Objective

To provide ongoing overall management and office support of project activities to the end of 1982 and project management of licensing activities in the first quarter of 1983.

(b) Approach

All project management time will be covered under Task 50 and will include the full time of the manager of Task 57 environmental studies and the supervision of the preparation of Exhibit E.

In addition all time and disbursements for the Project Manager, Resident Administrative Manager, Deputy Resident Administrative Manager and other Senior Management including secretarial support will be provided under Task 50.

(c) Schedule

October 1, 1982 through March 31, 1983.

Task 52.01 - Provision of Field Camps and Associated Logistics Support

(a) Objective

Provide ongoing field camp and logistics support for the continuing field studies.

(b) Approach

During the time period from October 1 to December 31, 1982, the camp operation will be maintained at a minimum level and fuel consumption will be minimized through the use of the smaller 100kw generator. During this time period the actual calculated fuel needs for camp and helicopter operations will be supplied to the camp by helicopter.

By direction of Alaska Power Authority this subtask will be eliminated December 31, 1982.

(c) Schedule

October 1, 1982 through December 31, 1982.

Task 52.02 - Access Roads

(a) Objective

To determine, along the selected access route, the preliminary alignment and right of way widths necessary. Preparation of the preliminary access road and/or railroad exhibit for the FERC license application.

(b) Approach

Following selection of the preferred route, mapping will be done which will permit preliminary road and/or railroad centerline location to be made. Right of way widths required for construction will be determined. Reconnaissance of selected route will be made by an engineer and a geotechnical engineer. Preliminary profiles will be prepared based on level of information available and calculations made to place the proposed alignment in relationship to the Public Land Survey or protractions of Townships and Section Lines. Access road exhibits for FERC license application.

(c) Schedule

October 1, 1982 to December 31, 1982

Task 53.01 - Hydrology Field Data Acquisition

(a) Objective

To continue to collect baseline climate, water quality, sediment, discharge, ice, thermal, groundwater, stage, and snow creep data.

(b) Approach

1. Climate data will continue to be collected on a monthly basis at each climate station and the data subsequently reduced.

2. Two water quality and sediment sampling field trips are planned for the October - December, 1982 time period.

3. Detailed ice observations are planned for the freeze up period from Devil Canyon downstream to Talkeetna.

4. Groundwater data collection will be ongoing through the October - December period. This will include collection of samples for oxygen isotope measurements.

5. The snow creep station at Tsusena will be relocated and another re-installed at Devil Canyon.

6. Thermal data will continue to be collected at Lake Eklutna on a biweekly basis until freezeup and monthly thereafter. This data will be used to validate the model currently being used to predict the thermal regime of Watana and Devil Canyon reservoirs.

7. The results of field data acquisition will be submitted as a report.

(c) Schedule

October 7, 1982 through December 31, 1982

Task 53.02 - Hydrological Analysis

(a) Objective

To prepare reports on groundwater analyses, sedimentation, and post project estuarine affects, and to provide assistance in the preparation of the water quality section of Exhibit E of the license application.

(b) Approach

Refine and update, incorporating additional field data, the water quality and sedimentation preliminary reports submitted 30 September, 1982. To assist in preparation of preliminary report on the post project estuarine affects, taking into consideration field data collected in August and September, 1982. Prepare a groundwater report with groundwater contours of the study sloughs, groundwater sources, and groundwater inflow rates.

As required, provide input in the preparation of Exhibit E, Section 2 - Water Use and Quality.

(c) Schedule

October 1, 1982 through December 31, 1983.

Task 53.03 - Hydrology Studies

(a) Objective

To continue reservoir and instream flow studies to enable the project impacts to be assessed and a mitigation plan to be adopted.

To continue agency and aquatic studies team co-ordination, and to complete Exhibit E, Section 2 - Water Use and Quality of the license application.

(b) Approach

Energy simulations will be optimized and balanced against instream flow requirements. The output of the simulation studies will be used as input to the reservoir temperature model. The reservoir temperature model will be run for a series of climate data and will include winter ice conditions. The interaction of sedimentation and thermal regimes will be incorporated into the model. Trophic status of the reservoir will be further refined. Results from the reservoir temperature model will be used as input to the downstream temperature model. Data from this model will then be used as input in an ice simulation model. Navigation and estuarine affects will also be addressed.

Coordination with the appropriate resource agencies will continue. A one week workshop will be held the first week in December to discuss the aquatic studies. Agency concerns regarding potential deficiencies in the license application will be sought and the long term study program will be discussed. In addition, two other agency co-ordination meetings will be held during the October - December time frame to update the agencies on the status of the aquatic studies program and receive agency feedback. Coordination with R&M, Woody Trihey, Arctic Environmental Information Data Center (AEIDC), Alaska Department of Fish and Game (ADF&G),

Woodward Clyde Consultants and USGS will be continued. Exhibit E, Section 2 - Water Use and Quality, will be completed in draft form and presented to the agencies for their review. Agency comments obtained at the workshop will be incorporated in an appendix to the license application with appropriate responses.

(c) Schedule

October 1, 1982 through March 31, 1982.

Task 55.01 - Preparation of Amendment to Geotechnical Reports

(a) Objective

To prepare an amendment to the 1980-81 Geotechnical Report to include all the geologic and geotechnical data collected during the 1982 summer program.

(b) Approach

As stated in Subtask 5.11 under Contract Amendment No. 3, all the field data will be in a draft form suitable for final reduction and report preparation at the termination of the exploration program in September. During the period from October to December, additional field data will be developed and include:

- geologic mapping;
- drill logs;
- in hole testing;
- laboratory testing; and
- seismic refraction data

Data will be assembled in a final amendment to the Geotechnical Report. Where appropriate, the data will be plotted on Figures developed for the report. Cross sections, maps and figures will be added and/or revised to reflect this new information. Upon finalization, the amendment will be issued to the Power Authority for review.

(c) Schedule

October 1, 1982 to December 15, 1982.

Task 55.02 - Winter Exploration Program

(a) Objective

To initiate and perform a winter exploration program up to December 1982. Upon direction from APA, a new contractor will assume all duties and responsibilities effective January 1, 1983.

(b) Approach

A detailed winter geotechnical exploration program has been proposed at the Watana site. The scope of that program has been detailed in the "FY-83" Proposed Geotechnical Exploration Program", July 1982. In summary, it will include the use of a "Becker" type drilling rig and limited seismic refraction surveys in the Susitna River.

The objective of the Becker drilling program is to further investigate the relict channel, borrow areas D, E, and I and the river alluvium beneath the main dam. Because of the size of the rig, it will have to be transported during the winter. Several options are currently being assessed for demobilization. These include the possibility of securing the rig on site during the summer if additional use of the rig is considered warranted for the following winter.

Due to the long lead time necessary for mobilizing the Becker rig, contracts for the program were prepared under Contract Amendment No. 3. The time for mobilization to the site will be dependent on weather conditions; however, it is anticipated to occur during mid to later December. Drilling will commence upon completion of mobilization and continue on 24-hour seven-day a week basis through March or early April, 1983. However, a new contractor will be assuming all duties and responsibilities effective January 1, 1983.

(c) Schedule

December 15, 1982 through December 31, 1982.

Subtask 56.01 - Design and Development Update

(a) Objective

Continue with the updating of various design aspects of project and address those design changes necessary to meet changing environmental criteria and improve license application.

(b) Approach/Discussion

Although not precisely defined, there will be certain proposed design changes or investigation of various possible alternatives to the design which will be required to meet chaning environmental criteria. Examples of these are, transmission line routing, and power intakes. Appropriate budget has been designated for this work.

(c) Schedule

October 1, 1982, through December 31, 1982.

Subtask 56.02 - Feasibility Report Update

(a) Objective

To update Feasibility Report and address all agency, public, and other comments concerning original issue.

(b) Justification

Subsequent to publication of the original feasibility report, a number of changes have been made, particularly in response to public and agency comments. These include selection of a new access plan, transmission line routing changes, further flow studies, and similar activities. It is appropriate to provide an update to reflect these changes as well as to respond to various comments which have been received.

(c) Approach

It is planned that the Feasibility Report Update will be in the form of a supplemental report. This supplemental report will address all agency and other comments concerning the original Feasibility Report issue and will incorporate design changes resulting from the ongoing geotechnical, environmental, and mitigation planning work. Additional field data will also be included, where appropriate. It is anticipated that 500 copies of the Feasibility Report Update will be required.

(d) Schedule

Present plans call for report update issue by December 1, 1982.

Subtask 56.03 - Assignment to New Engineer

(a) Objective

To provide for smooth and expeditious take-over of project by new engineer.

(b) Approach

Arrangements will be made for transfer of project maps, photographs, design calculations, and relevant correspondence files developed by Acres for the Susitna Feasibility Study to be copied, and originals handed over to the Power Authority by November 30, 1982.

Duplication of this material will be accomplished by utilizing microfilm.

Appropriate Acres staff will participate in briefing meetings and consultations with the new engineer as required by the Power Authority. Relevant Task Closeout reports, final billings, and cost reports will be prepared, and Acres accounting staff will participate as necessary in auditing of these documents by Power Authority staff.

A joint inventory will be conducted and all Power Authority assets now controlled by Acres will be turned over to the new engineer, or otherwise disposed of in accordance with the terms of the contract.

A budget for demobilization of Anchorage based personnel has been included in this subtask.

(c) Schedule

These activities will take place as required through December 1982.

Subtask 56.04 - Economic Analysis Update

(a) Objective

Update on an as-needed basis the economic studies and sensitivity analysis which were performed during the feasibility study.

(b) Scope

The purpose of this task is to have available, on a continuing basis, Acres service in updating the feasibility study's economic studies.

Acres will maintain, on a ready basis, the capability to update and operate the Railbelt generation planning model on the General Electric OGP Program. This will involve the maintenance of data files on the computer and staff with ready capability to perform the needed analysis.

Updates will be performed on an "as-requested" basis and billed separately to APA. As such, no monies have been included in Amendment No. 4 for this work.

(c) Schedule

October 1, 1982, through December 31, 1982.

Subtask 57.01 - Coordination of Environmental Studies

(a) Objective

To provide continued coordination among environmental study subtasks and subcontractors; to implement close budget management, establish and maintain proper reporting schedules, continue informal agency contact, and prepare Exhibit E.

(b) Justification

Multiple subcontractors are responsible for conducting continuing investigations and analyses, as well as for preparing portions of Exhibit E. Effective management of these activites must be continued throughout the period of study until responsibility for these subcontracts is assumed by the selected design contractor.

(c) Approach/Discussion

An Environmental Manager, located in and directing the studies from Anchorage, Alaska, will continue to assure completeness and correctness of all such contracts and will maintain direct control of and accountability for all contractual and budgetary matters. The manager will also ensure the division of responsibility for the accomplishment of subtask objectives on a continuous basis for the duration of the study. He will be responsible for the implementation of necessary studies and for establishing and maintaining schedules. The manager will supervise staff functions in the Anchorage office and will conduct the all-important informational contacts with state and Alaska-based federal agencies.

A direct cost of $24,450 has been included to support ADF&G office and warehouse leases.

(d) Schedule

October 1, 1982, through December 31, 1982, and monthly thereafter as directed by APA.

Subtask 57.02 - Cultural Resource Investigations

(a) Objectives

1. To conduct a Reconnaissance Level 1 survey along the proposed transmission corridor from Fairbanks to Healy, Willow to Anchorage, and Watana damsite to the Intertie. (See definitions for explanation of survey levels.)

2. To conduct a Reconnaissance Level 1 survey of the "new" segment of the proposed access route, on the north side of the Susitna River, from Devil Canyon to the Parks Highway.

3. To conduct archaeological evaluations of areas to be impacted by geotechnical testing.

4. To conduct a Reconnaissance Level 2 survey on the proposed Tsusena Creek "cat trail" from the Watana Camp area to the mouth of the Tsusena Creek. If sites are found along this route, which is expected to be constructed during the winter of 1982-83, it will be necessary to mitigate the impact of the trail on these sites. The options available are avoidance (via rerouting), preservation, and/or excavation. It is necessary to conduct the field examination and submit a report to the SHPO for his review before construction of the "cat trail" can proceed during the winter of 1982.

Preparation of the cultural resource components of Exhibit E.

(b) Approach

Cultural resource investigations for the 1982 field season are designed to provide preliminary information on the occurrence of archaeological and historical sites along the proposed Transmission Line corridors and the new portion of the proposed access route, as well as to examine areas to be impacted by geotechnical testing. With the use of the original five-step program as discussed in the 1982 final report, modified for the specific tasks to be conducted during the 1982 field season, the following steps will be implemented:

1. Preparation of Field Studies:

Apply for a State of Alaska Antiquities Permit (the Federal Antiquities Permit has already been secured).

Conduct a literature review of available documents that pertain to the history, prehistory, ethnology, geology, flora, and fauna of the transmission corridor. Museum staff will utilize the records of the State Office of History and Archaeology, data files of the University of Alaska museum, library, and archives, and consultation with other professionals who have worked in or have knowledge of the area. Aerial photos available for the study area will be reviewed, and known sites will be plotted.

2. Reconnaissance Level 1 Survey:

The study area will be observed from the air and select areas will be examined on the ground using both surface and subsurface testing techniques.

3. Systematic Testing:

Systematic testing is not expected to be part of the 1982 field season.

4. Analysis and Report Preparation:

This step consists of synthesizing all recovered data and making the appropriate recommendations for mitigating adverse effects to cultural resources.

5. Curation:

As mandated by federal and state law, all recovered material and supporting documentation will be curated. The repository for this material is the University of Alaska Museum, Fairbanks, Alaska. Material will be curated in accordance with state and federal requirements pertinent to the preservation of antiquities.

(c) Recommended Field Logistics

1. Transmission Corridors:

It is recommended that, for the portion of the proposed transmission corridor between Fairbanks and Healy and Willow and Anchorage, helicopter support be provided from these areas on a daily basis, since it will be more efficient and cost-effective than conducting the survey out of the Watana Base Camp. It is estimated that survey of these corridors will require a helicopter all day for two to three weeks, with an estimated flying time of three hours per day. The segment of the transmission corridor from the Watana damsite to the Intertie can be surveyed effectively from either High Lake Lodge or the Watana Base Camp, with High Lake Lodge being the more efficient. It is necessary, therefore, to provide helicopter service from both Fairbanks and Anchorage for the above-mentioned corridors.

2. Proposed Access Route:

For the new portion of the proposed access route from Devil Canyon to the Parks Highway, it would be more effective to work out of High Lake Lodge because of the proximity of the new Lodge to the study area.

3. Geotechnical:

Geotechnical clearances could be effectively conducted out of either High Lake Lodge or the Watana Base Camp.

(d) Schedule

It is expected that the field work will be completed by September 30, 1982. Report preparation will be conducted between October 1, 1982, and December 20, 1982. The final report will be submitted on December 20, 1982. Preparation of the cultural resource components of draft Exhibit E be by November 1, 1982.

- Definitions

1. Reconnaissance Level Survey 1 (preliminary survey):

This survey level consists of a literature review, review of records at the State Office of History and Archaeology, review of available aerial photographs, evaluation of archaeological potential, and field examination of a limited number of areas consisting of examining surface exposures and blowouts with a minimum amount of surface testing.

Purpose:

To produce baseline data on the study area and conduct a cursory field examination to provide data which can be used during Reconnaissance Level Survey 2 studies.

2. Reconnaissance Level Survey 2 (intensive survey):

The level of subsurface testing and the number of field personnel are increased to provide more thorough coverage of the study area, and the entire area is subject to surface reconnaissance.

Purpose:

To locate as many historic and archaeological sites as possible given the current state of archaeological method and theory. This level of survey will cover the entire surveyable portion of the study area.

3. Systematic Testing:

This level consists of mapping a site, superimposing a metric grid over it, and systematically excavating units using standard archaeological techniques.

Purpose:

To attempt to generate sufficient data on which to base an evaluation of site significance as required by federal law. In most cases, systematic testing is required to assess significance; notable exceptions, however, are historic cabins.

NOTE: This scope statement supersedes similar scope statement (Subtask 7.06) contained in Amendment No. 3. No additional costs are included in Amendment No. 4 in that Amendment No. 3 covers the revised scope of work.

Subtask 57.03 - Land Ownership and Acquisition

(a) Objective

Further define land ownership and acquisition in connection with access road and transmission line corridor and assist in preparation of Exhibit G for FERC license application.

(b) Approach

1. Update the ostensible title information now existing for the access road and transmission line proposed routing. This will entail examination of the BLM records in Anchorage and Fairbanks; examination of the state (ADNR) records in Anchorage and Fairbanks; examination of the land records of the Mat-Su Borough and the Fairbanks North Star Borough; examination of the land records of the appropriate native regional corporations; examination of the land records of the appropriate native village corporations; and examination of the records in the Anchorage Recording District, Palmer Recording District, Talkeetna Recording District, Nenana Recording District, and Fairbanks Recording District to determine the ostensible ownership of the privately owned parcels involved in the alignment.

2. Fine tune the alignment for the access road and transmission line corridor. The transmission line right-of-way width will be a 400-foot-wide corridor and will involve analysis of the land constraints and their various effects on the corridor location.

3. Formulate a public and ostensible ownership schedule depicting the various land interests which will be affected by the road and transmission line alignments.

4. Prepare a schedule depicting the methodology and proposed timing of an acquisition schedule for the land rights to be acquired.

5. Assist in the preparation of Exhibit G for the FERC license application.

(c) Schedule

October 1, 1982, through December 31, 1982.

NOTE: Although this represents additional scope of work, the costs are covered by Amendment No. 3, i.e, no additional costs are included in Amendment No. 4.

Subtask 57.04 - Land Use Analysis - Mitigation of Aesthetic Impacts
(Work Package 1)

(a) Objective

To further assess aesthetic impacts and develop a draft plan for mitigation of impacts of the Susitna Hydroelectric Project on the aesthetic resources of the Upper Susitna River Basin.

(b) Justification

FERC requires a license application to contain, in a report on aesthetic resources, "a description of mitigative measures proposed by the applicant, including architectural design, landscaping, and other reasonable treatment to be given project works to preserve and enhance aesthetic and related resources during construction and operation of proposed project facilities."

Additional work is necessary because: (1) the transmission line has been relocated; (2) the intertie is now to be addressed in the FERC license application; and (3) a new access plan has been selected by the Power Authority. Land use analysis and mitigation planning must be accomplished for these changes.

(c) Approach/Discussion

The essence of this effort will be an assessment of aesthetic impacts and coordination between the engineering and the environmental teams. The preparation of the draft mitigation plan requires substantial cooperation and written input from project architects and engineers.

Project facilities that will be discussed with design engineers include the architectural design and landscaping of the permanent village at Watana and the appearance and design of other facility components. The plans for restoration of borrow areas, to reduce the degree of permanent visual impact, also need further refinement. Further planning and design of recreation facilities will require coordination to assure that these facilities themselves are compatible with the landscape and also that unattractive aspects of project facilities do not detract from the setting of the recreation facilities.

This initial aesthetic mitigation effort should consider potential impacts involving the proposed transmission facilities and/or access roads. Further mitigation of the potential aesthetic impacts associated with these facilities will eventually be required. Emphasis will be placed on the avoidance or minimization of permanent impacts to aesthetic resources, rather than on temporary intrusions during the construction period when public access could be restricted.

(d) Schedule

The product of this work package will be a draft plan in early December 1982 for the mitigation of aesthetic impacts.

Subtask 57.04 - Recreation Planning (Work Package 2)

(a) Objective

Refine the recreation plan around the selected road access.

(b) Justification

Although a conceptual recreation plan has been developed, including specific proposed sites for recreation facilities, many details of these facilities remain to be worked out. As plans are refined, the cost and schedule of recreation development will be refined accordingly.

The recreation plan must take into account recent changes in transmission route, a newly selected access plan, and the decision to include a discussion of the intertie in the FERC license application.

(c) Approach/Discussion

Refinement of the recreation plan itself will consist of development concept planning and preliminary site drawings for specific recreation facilities. To avoid unnecessary expenditures, this effort will be limited at this time to those facilities which form the nucleus of the recreation plan. Such site planning will present agencies with a more detailed proposal and, thus, may facilitate the approval process. This effort will include, in particular, continuing and strengthening dialogue on a technical level with ADNR, Division of Parks, and is especially important in the plan refinement stages to ensure consistency in objectives and standards. Long-term recreational objectives of the private landholders should be generally evaluated. Refinement of the schedule and costs associated with the proposed recreation facilities will also be accomplished as additional details are developed. This program will be coordinated with the ongoing socioeconomic studies.

(d) Schedule

The results of this subtask will be presented in a supplementary report on recreation resources, which is scheduled to be completed in draft form in early December 1982. Additional site planning and design of recreation facilities will be required in subsequent Phase II studies.

NOTE: Costs for this work are included in Amendment No. 3.

Subtask 57.05 - Aquatic Impact Assessment

(a) Objective

To analyze and interpret available baseline knowledge of the Susitna River aquatic system and examine and present in models and reports the impacts on fishery resources of hydroelectric development in the Upper Susitna Basin, as follows:

1. Coordinate and cooperate with the Alaska Department of Fish and Game, Su Hydro Study Group on the fishery and aquatic habitat studies. Cooperate with various other groups on hydrologic, suspended sediment, river mechanics, and other related aquatic studies. This effort is to ensure that continuous and accurate communications occur between study elements so that information is developed in a timely manner for fishery impact assessment efforts and, ultimately, mitigation planning by others. Continuously identify deficiencies in all aquatic-related data gathering or analysis programs in terms of information requirements for accurate quantitative assessment of project effects, and suggest means to improve data gathering and analysis efforts. Interact with the Alaska Department of Fish and Game, Su Hydro Group, in preparation of their procedures manuals.

2. Assemble an information management program to collect and compile available knowledge of the Susitna River aquatic system relating specifically to the ultimate examination of project impact on fishery resources. Review existing unanalyzed fishery/aquatic data, available Susitna Hydro reports (1980-82), and other related documents on the Susitna Basin to become familiar with the current base of knowledge in these fields. Examine this available background information and continuously assess newly collected data and information from the ongoing Susitna Hydro aquatic studies and prepare, as appropriate, synthesis reports of this available information and an assessment of the effects of the proposed Susitna Hydroelectric Project on the fishery resources of the Susitna Basin. Part of this effort will include examination of the 1974-78 Alaska Department of Fish and Game (ADF&G) reports and interaction with ADF&G on the utility of information contained in these reports for integration into the new ADF&G Su Hydro study team computer data base.

3. Construct a dynamic "model" of the Susitna River Basin which will be used to develop quantitative relationships between aquatic habitats and resources pursuant to various hydro operational scenarios. This model will be built incrementally over the time and have a complex set of components obtained from various elements of the overall Susitna Hydro study effort, including information from river temperature models, suspended sediment models, various reservoir models, water quality interpretive reports, bedload transport models, perching and scour studies, ground water dynamics interpretive reports, and other related documents and information. Over the short-term (early winter 1982-83) a preliminary model of the aquatic system will be assembled to assess impacts

of the project operation on fish habitat and the aquatic system. This short-term effort is to assist in the preparation of mitigation measures required in the spring of 1983. The short-term and long-term modeling assessments will be accomplished in cooperation with all study participants and in consultation with the Instream Flow and Aquatic Systems Group, U.S. Fish and Wildlife Service, Fort Collins, Colorado.

4. Establish a format, schedule, and content of periodic briefings on aquatic study, analysis, and impact assessment efforts to the Alaskan resource agencies, presumably through the Susitna Hydro Steering Committee. Establish a regimen of appropriate presentations (minimum of one presentation per month) commencing in August 1982 and continuing through the life of the preconstruction phase. This effort will facilitate communication of study findings and interpretations to the appropriate federal and state regulatory or commenting agencies for their review and comment.

(b) Justification

Efforts are required to facilitate a smooth and accurate transmission of data collected in the field and the documents ultimately prepared for the licensing process required by the Federal Energy Regulatory Commission. This will require facilitation and accurate quantitative impact assessment in the fishery/aquatic resources area. The effects of hydroelectric development in the Upper Susitna Basin with its construction of large impoundments, access roads, and transmission lines will include altered downstream riverine conditions, inundation of habitat, and other disturbances in the aquatic system. The effects of these alterations must be considered in terms of the interrelationships among hydrology, geomorphology, water quality, and biology. Changes in streamflows or inundation of habitat can affect fish mitigation, reproduction, production, and quantity and quality of habitat. Ultimately, federal and state agencies will condition licenses or permits with provisions for construction and operation of the Susitna project. In order that this permitting and licensing process proceed in a timely manner, it is critical that a comprehensive, accurate, and quantitative assessment be undertaken in a smooth and coordinated manner.

(c) Approach/Discussion

Close communications are essential to the success of the interface between data collection activities and mitigation planning. Staff will be assembled having the appropriate expertise, management structure, and technical/analytical capabilities for accomplishing this work. Included will be expertise in fishery biology, instream flow assessment, and statistics and water quality effects on biology. Expertise in hydrology and hydraulic engineering, river mechanics and river modeling, temperature modeling, and ice dynamics will also be drawn from other engineering groups. Expertise will also be provided in graphics, cartography, information systems management, and technical editing to compile and prepare suitable products for presentation to appropriate agencies or groups and for mitigation planning efforts.

Assigned to the project will be a principal investigator, assisted by senior staff in fisheries biology, instream flow assessment, computer systems management, and other support personnel. This group will continuously interact with all study team members gathering and analyzing data relating to understanding the aquatic sytem, and will prepare a dynamic model of the functioning of the Susitna aquatic basin. Ultimately, this model will depend upon available information, but is expected to include several components, including reservoir thermal and suspended sediment characteristics and quantification of fish habitat relationships with streamflow and water quality change. Various other information reports will be integrated including information on sediment transport, perching and scour assessment, ground water dynamics, and other related information. It is envisioned that these modular components and information sources will be integrated into a comprehensive model or other system of information which can be used to prepare impact assessment reports. Included will be assessments of the effect of staged project development (Watana first with Devil's Canyon second), flow peaking, access roads and transmission corridors, inundation of habitat, reservoir filling periods, and other related effects on the aquatic system and resources of the Susitna River drainage.

The transfer of aquatic information to the wildlife study participants will also be facilitated. Information on downstream riverine change is prerequisite to the determination of impacts on riparian habitats and related terrestrial and aquatic wildlife species.

Plans are to establish an advisory relationship with the U.S. Fish and Wildlife Service's Instream Flow and Aquatic Systems Group (IFG) in Fort Collins, Colorado. Assistance from the IFG would be requested specifically in areas of new methodological modeling techniques such as in quantification of thermal or sediment transport and channel change relationships with fish habitat.

(d) Schedule

The various tasks will be accomplished commencing July 1, 1982, and continue through September 30, 1983, as shown below. It is expected that envisioned contract negotiations for fiscal year 1984 would be conducted during June 1983.

Date	Milestone/Deliverable
October 1982	Preliminary model of Susitna aquatic system based on available aquatic information.
November 30, 1982	Nonquantitative conceptual model of Susitna aquatic system impacts.
July 1, 1983	Work plan for fiscal year 1984.
September 30, 1983	Draft impact assessment report.

Subtask 57.06 - Fisheries Mitigation Planning

(a) Objective

The primary objective of the fisheries mitigation planning effort is to develop a mitigation plan consisting of quantified mitigation options for each phase of the project. The ultimate goal is to provide the mitigation document required by the FERC for license approval. A secondary objective is to identify information deficiencies and prioritize studies needed to fulfill the quantification requirements of the mitigation plan.

(b) Tasks

- Task A - Preparation of Fisheries Portion of Exhibit E

The fisheries portion of Exhibit E for the FERC application will be prepared using existing baseline descriptions, impact analysis, and mitigation discussions such as are found in the Feasibility Report and subsequent documents.

- Task B - Agency and Project Coordination

The mitigation planning will require an unusual amount of coordination and communication among the various Fisheries Study Group components, regulatory agencies and other environmental studies components.

- Task C - Information and Data Review

There is a considerable volume of existing fisheries and hydraulic information and data relating to the Susitna Hydroelectric Project. Since this information will form the basis of the mitigation plan, project staff must be thoroughly familiar with it prior to initiating the mitigation planning effort. Only those project personnel directly involved in a decision-making role need to be familiar with all phases of the proposed project.

- Task D - Mitigation Plan Outline

A mitigation plan outline must be developed early in the project to structure the mitigation effort, allow an evaluation of the adequacy of existing information, identify information deficiencies, and prioritize study needs. The outline will be as detailed as possible and will address all phases of the proposed project. The draft outline will be developed with input from the Fisheries Study Group for review and comment and the Su Hydro Steering Committee for informal review. The final outline will allow for a structured study approach and orderly development of a mitigation plan.

Subtask 57.06 - Fisheries Mitigation Planning

(a) Objective

The primary objective of the fisheries mitigation planning effort is to develop a mitigation plan consisting of quantified mitigation options for each phase of the project. The ultimate goal is to provide the mitigation document required by the FERC for license approval. A secondary objective is to identify information deficiencies and prioritize studies needed to fulfill the quantification requirements of the mitigation plan.

(b) Tasks

- Task A - Preparation of Fisheries Portion of Exhibit E

The fisheries portion of Exhibit E for the FERC application will be prepared using existing baseline descriptions, impact analysis, and mitigation discussions such as are found in the Feasibility Report and subsequent documents.

- Task B - Agency and Project Coordination

The mitigation planning will require an unusual amount of coordination and communication among the various Fisheries Study Group components, regulatory agencies and other environmental studies components.

- Task C - Information and Data Review

There is a considerable volume of existing fisheries and hydraulic information and data relating to the Susitna Hydroelectric Project. Since this information will form the basis of the mitigation plan, project staff must be thoroughly familiar with it prior to initiating the mitigation planning effort. Only those project personnel directly involved in a decision-making role need to be familiar with all phases of the proposed project.

- Task D - Mitigation Plan Outline

A mitigation plan outline must be developed early in the project to structure the mitigation effort, allow an evaluation of the adequacy of existing information, identify information deficiencies, and prioritize study needs. The outline will be as detailed as possible and will address all phases of the proposed project. The draft outline will be developed with input from the Fisheries Study Group for review and comment and the Su Hydro Steering Committee for informal review. The final outline will allow for a structured study approach and orderly development of a mitigation plan.

- Task E - Identification and Prioritization of Study Needs

This task will be a cooperative effort with other members of the Fisheries Study Group with input from the Su Hydro Steering Committee. The identification and prioritization of study needs will logically follow from the mitigation outline. The task should be initiated early in the study so that field efforts can be redirected as necessary to provide information required in the mitigation plan. The task will be an ongoing process throughout the project but is identified as a separate task to formalize and emphasize the importance of this study component.

- Task F - Quantification of Mitigation Plan

This task consists of quantifying the various mitigation options identified in the mitigation plan outline and other appropriate options that may be identified. The quantification will consist of identifying expected gains or losses of fish and/or fish habitat from various construction alternatives and mitigation techniques during the various phases of project development. Because of the time lag between data collection and data availability, the FY83 mitigation plan will be based primarily on data available prior to September 30, 1982. The fishery census data obtained by ADF&G during the summer of 1982 will also be incorporated in the license application. By limiting the mitigation planing process to data available in this time frame, the plan will be qualitative in nature. Information being gathered during the 1982-83 field seasons will be used to prepare a quantitative mitigation plan during CY83.

Quantification will be achieved by utilizing available predictive models and standard statistical analysis calibrated with existing Susitna Basin data. If the necessary data specific to the Susitna Basin are not available, information from other systems will be utilized, where appropriate, until basin-specific information is available. The quantification effort will be performed with input from other mitigation experts as part of the Fisheries Study Group.

- Task G - Preparation of Mitigation Document

The mitigation document will present the various mitigation options in a format structured according to construction phase. The options will be presented in order of perceived desirability in a manner that allows easy comparison of the alternatives. The desirability ranking will be based on USFWS Mitigation Policy, which prioritizes mitigations goals. These defined goals, in order of priority, are:

1. Avoiding the impact;
2. Minimizing impact;
3. Rectifying impact;
4. Reducing impact over time; and
5. Compensating for impact.

Liberal use of appropriate figures and tables will facilitate comparison of alternatives. The narrative will thoroughly discuss alternatives, state assumptions, and document sources of information. Although the

quantitative aspects of the document will be based on pre-FY83 data, the FY83 studies will be considered in assessing future data needs. The document will be prepared as an interim mitigation plan. The interim plan can be circulated for agency review with the intent of obtaining conceptual approval for the scope of the mitigating options and the recommended study plan.

- Task H - Review and Assessment of FY83 Data, Identification of Study Needs

  Following preparation of the interim mitigation plan, a formal review and assessment of the data collected during FY83 field season will begin. This assessment will focus on the applicability of the data to the mitigation plan and will be used to finalize recommendations for FY84 studies and update recommendations for continuing studies.

- Task I - Quantification and Update of Mitigation Plan

  After receiving and evaluating the FY83 field data, study efforts will concentrate on quantifying and updating the mitigation plan based on the newly acquired data. This task will continue to FY84 and lead to a sequential refining of the mitigation document.

(c) Approach/Discussion

In order to expeditiously prepare a FERC license application it will be necessary to:

1. Prepare an acceptable scope and format for the mitigation plan;

2. Quantify the mitigation options as thoroughly as possible with available information;

3. Prepare an interim mitigation plan;

4. Obtain conceptual approval for the scope and data requirements from appropriate agencies; and

5. Finalize and select mitigation options as needed data become available.

An important component of this study approach is obtaining local agency acceptance of the concept that the initial mitigation document submitted with the FERC license application need not be complete. This acceptance can be facilitated by developing a detailed interim mitigation plan, as proposed here, identifying data requirements and study needs (with agency input) and committing to provide the needed studies prior to FERC license approval. With this commitment to support the required studies and with agreement from local agencies that these studies will address the proper concerns, it should be possible to proceed with the FERC license application. Conditional approval, subject to the submission of an acceptable mitigation document, has been obtained for other projects.

(d) Deliverables

- First Quarter FY83

A detailed outline of the mitigation plan will be prepared in the first quarter to define and direct the mitigation planning effort. This outline will allow a review of the mitigation effort by other project components and concerned agencies, which in turn will provide valuable input for directing the mitigation planning.

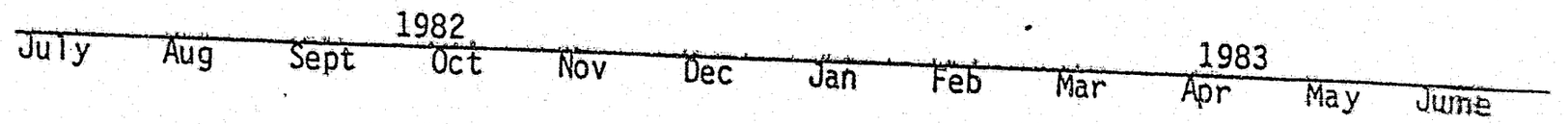
November 15, 1982 - Submission of FERC Exhibit E for formal agency review.

- Second and Third Quarter FY83

Draft Interim Mitigation Plan. If a timely review can be accomplished, the final interim plan will be completed during the third quarter; if not, it will be completed in the fourth quarter, FY83.

- FY84

Final Interim Plan (see comment under Third Quarter).



TASK

A. Exhibit E Preparation

B. Agency and Project Coordination

C. Information and Data Review

D. Mitigation Plan Outline

E. Identification and Priortization of Study Needs

F. Quantification of Mitigation Plan

G. 1) Preparation of Draft Mitigation Plan Document

2) Preparation of Final Document

H. Review and Assessment of 1983 Data, Identification of Study Needs

I. Quantification and Preparation of Mitigation Plan Supplement

Subtask 57.07 - Susitna Hatchery Siting Study

(a) Introduction

A thorough analysis of potential impacts of the two dams proposed for the Susitna River in Central Alaska is nearing completion. Of particular concern is the potential for alteration of habitat access and environmental conditions affecting salmonid populations, particularly the chum salmon (Onchorhynchus keta). It is appropriate that consideration be given to the feasibility of siting an enhancement hatchery to insure maintenance of the existing stocks at or above their present population levels.

(b) Objectives

The purpose of the proposed study is to provide the Power Authority with feasibility and budgetary information relating to the development of a chum salmon hatchery. The hatchery would be capable of accommodating an annual return of 30,000 adult salmon.

The study will include the following components:

- Facility criteria information;
- Potential site(s) identification;
- Conceptualization of facility on most suitable site;
- Estimation of design, construction, and O&M cost; and
- Development schedule.

(c) Approach/Discussion

Following is a brief description of each of the tasks to be performed:

- Task A - Facility Criteria Formulation

A biological program for the proposed facility will be developed as a basis for reviewing potential sites. Included in the program will be: establishment of incubation and rearing techniques; water quality and quantity requirements; and building spaces needs to accommodate personnel, feed, storage, laboratory, and production activities. All facility criteria will be consistent with operation techniques presently endorsed by the Alaska Department of Fish and Game.

- Task B - Site Identification

Using the criteria established in Task A, potential sites within the Upper Cook Inlet and Susitna Basin area will be inspected. The purpose of the inspections will be to identify site(s) that:

1. Have suitable building conditions and access to keep construction costs to a minimum.

2. Provide easily accessible water source which meets the biological criterias for temperature and quality during all months of facility operation.

3. Afford acceptable access for servicing and provisioning.

4. Permit operation and release and return of hatchery fish without adverse impact on indigenous species.

Initially, potential sites will be identified through discussion with the various groups familiar with the basin. These discussions will help focus on the prime areas for hatchery facility development. At this time, it is assumed that staff will conduct site inspections during a five-day period, visiting four to eight locations. Field work will include water quality sampling and some in situ analysis, spot elevations, and site photo documentation.

At the conclusion of the field reconnaissance, a brief report on each of the potential sites will be prepared, and the most suitable site(s) will be identified.

- Task C - Facility Conceptualization

The purpose of this task is to develop a basic facility plan for the most suitable site. The conceptual plan will be detailed only to the extent necessary to permit estimation of construction and O&M cost within a 25-percent accuracy range. The conceptual plan will consist of a written description of major components, a site plan, and a hydraulic schematic.

- Task D - Cost Estimation

Based upon the conceptualized facility, 1983 costs for design, construction, and operation and maintenance will be estimated. These will be tailored for budgeting purposes. A development schedule will also be prepared to indicate time required from project initiation to facility operation.

- Task E - Report Preparation

All findings during the performance of this study will be documented in a brief report. It will be submitted in draft and, subsequently, in final form to the client.

(d) Schedule

The previously described activities will be completed between August 16, 1982 and November 15, 1982 with the report being submitted on or prior to November 15, 1982.

NOTE: Although this represents additional scope of work, the costs are covered by Amendment No. 3, i.e., no additional costs are included in Amendment No. 4.

Subtask 37.08 - Wildlife and Habitat Impact Assessment and Mitigation Planning

(a) Objective

Continue with ongoing data collection, workshops, and field studies; prepare supporting reference documents; assess various project impacts; and develop final comprehensive mitigation plans for inclusion in FERC license application.

(b) Approach/Discussion

A brief definition of the Scope of Work for the environmental studies follows:

1. Preparation of the Report of First Workshop

Following the August modeling workshop, two major tasks will be undertaken: the refinement of the model and the reporting of the workshop and the model. The model developed during the short period of a five-day workshop will require revision to incorporate better data and new understandings. This will necessitate a series of technical meetings with key participants and some reprogramming to integrate these ideas and data. Once the model has been refined, it will be used to compare difference scenarios, such as with and without the project and with and without different mitigation alternatives. The report will include a complete description of what is and is not considered in the model and why; as well as the functional relationships developed, the assumptions made, and the data used. This report will be completed by the first week in December.

2. Development of Construction Mitigation Plan

The construction mitigation plan, which will be a section of the FERC license application, will outline mitigation measures to be implemented during the design and construction phases of the project. This plan will include mitigation measures such as controlling dust along the roads, leaving clumps of trees for eagle nesting along the reservoir margins, fencing construction camps, and minimizing aircraft disturbance to wildlife. These measures are easily defined and understood, and many have already been agreed upon by resource agencies. Sections of this plan will be worked on intermittently through its completion in March 1983.

3. Completion of Reports Covering 1982 Field Studies

Although data analysis for most 1982 studies was completed before the workshop in August, draft final reports will not be prepared until fall. These reports from the principal investigators will be completed by December 1, 1982.

4. Preparation of Impact Assessment and FERC License Application

Following a review and synthesis of existing information (to be completed by the end of September), the impact assessment and mitigation planning will proceed systematically through a series of steps:

- Identification of habitat and population indicators (e.g., number of beavers, hectares of some important habitat type, density of willow stems);

- Quantification of impacts in terms of indicators (what will be the changes in the indicators over the life of the project); and

- Comparison and evaluation of mitigation options.

The last step requires that some valuation of the indicators and the tradeoffs between indicators be made; this will be done in coordination with the fish and wildlife policy of the Power Authority. The valuations can be accomplished using any number of approaches, including HEP analysis. Chapters for the FERC license application describing the vegetation, bird, and mammal resources of the project area; predicting the effects of the project on the vegetation and wildlife resources; and outlining plans to mitigate potential negative impacts will be prepared and submitted in time for inclusion in the February 15, 1983, submittal to FERC.

5. Spring Modeling Workshop

A second workshop bringing together all of the original participants will be held in February 1983. The purpose of the second workshop is not to greatly modify or add to the application (which will be in the final writing phase by this time), but rather to discuss and display different scenarios based on the revised, improved model aiding the mitigation planning. This workshop will be less intensive than the first, and should require only two or three days. Any change to the model at this time will help to develop the second mitigation plan and add focus on future research.

6. Development of the Final Comprehensive Mitigation Plan

The FERC application requires a detailed plan to mitigate the adverse effects of the project on fish and wildlife resources. The final comprehensive plan will address complex issues that cannot be decided prior to construction (e.g., the desirability of onsite habitat enhancement measures as opposed to the outright purchase of habitat equivalent in value to that which will be lost). This plan will not be completed at the time of the license application; however, outlines of the relative merits of various approaches will be completed in time for inclusion in the application.

7. Presentation of License Application to Resource Agency Personnel

Meetings will be held with resource agency personnel to present the impact assessment and mitigation plans as described in the license application. Following these meetings the agency comments will be incorporated into the application.

(c) Schedule

October 1, 1982, through March 31, 1983.

Subtask 58.01 - Transmission Line Survey

(a) Objectives

- Provide accurate information as to the location of the exact centerline of the transmission lines along with exact width and location of the right-of-way.

- Define all the points of intersection (P.I.) along the centerline by measuring the station for each P.I. and its bearings.

- Provide information regarding the transmission equipment and appurtenances.

- Prepare drawings and documentations as required to meet the FERC requirements for license application.

(b) Approach/Discussion

Transmission line routing requires thorough investigation and study to assure that the most practical route is selected, taking into consideration the technical, economic, and environmental criteria.

In order to select and identify the acceptable transmission line route, it is necessary to identify all requirements imposed by state and federal legislation. State public utility commissions and departments of natural resources may also designate avoidance and exclusion areas which must be considered in the final routing process.

The lines between Willow and Healy will essentially parallel the selected intertie route but will require definition and, to a lesser degree, assessment.

Other entities will be consulted which may have previously used aerial photographs. Such entities include borough planning agencies, pipeline companies, county highway departments, and land development corporations. A preliminary field survey will also be made to locate possible new features which do not appear on USGS maps or aerial photographs.

Final route selection is a matter of judgment and requires sound evaluation of divergent requirements, including costs of easements and clearing, and ease of maintenance as well as what affect the line may have on the environment. Public relations and public input are necessary in the corridor selection and preliminary survey stages.

Line surveys are not required for the FERC application, hence are not part of this scope of work.

(c) Schedule

October 1, 1982, through December 31, 1982.

Subtask 59.01 - Prepare Cost Estimate Update

(a) Objective

Update project cost estimate in connection with the elimination of the pioneer road and the selected access route, and other planning and design changes for inclusion in FERC license application.

(b) Approach/Discussion

Revise the project cost estimate based on the elimination of the pioneer road and the final selection of access. Estimate will require a breakdown of quantities and the development of costs for both initial and permanent access. Estimate revisions will be based on comparative cost studies done under Subtask 2.10 to prepare an access plan recommendation.

Revise costs for Watana site work in 1985-86 due to the compression of schedule resulting from the elimination of the pioneer road and the later expected issuing of FERC license. The compression of work leading up to river diversion in 1987 requires a reanalysis of the labor and equipment requirements for a number of activities. Prices for this work will have to be revised to reflect the change in scheduled work periods.

Technical changes made since the issuing of the Feasibility Report will result in the revision of some quantities and prices.

The cash flow for the project will also have to be revised to include the above changes.

(c) Schedule

October 1 through December 31, 1982, and intermittently through March 31, 1983.

(d) Report

A revised project cost estimate will be prepared to supersede Appendix C of the Feasibility Report.

Subtask 59.02 - Update Engineering/Construction Schedule

(a) Objective

Update construction schedule in connection with the elimination of the pioneer road and the selected access route, and other planning and design changes for inclusion in FERC license application.

(b) Approach/Discussion

Similar to Subtask 59.01 concerning cost estimate, revise the construction schedule based on the elimination of the pioneer road and the selected access route. The schedule revision will reflect the compression of construction activities leading up to river diversion. Changes to the power intake schedule will also be reviewed.

The above changes will require changes to the backup schedule network logic for the Watana development as well as the revision of some activity durations. The results of the schedule review will be presented in a revised construction schedule.

(c) Schedule

October 1 through December 31, 1982, and intermittently through March 31, 1983.

(d) Report

A supplemental report will be prepared with revised construction schedules for both Watana and Devil Canyon.

Subtask 60.02 - Coordination with FERC

(a) Objective

Obtain an optimal amount of review and input from the FERC staff prior to application filing.

(b) Approach

The purpose of this task is to continue to fully coordinate the development of exhibits of the license application with the FERC. It is intended that several meetings will be held between the FERC staff and the study team to go over the format and content of information in the exhibits and to receive staff comments.

Drafts of the application exhibits, approved by the Power Authority, will be presented to FERC for their informal review prior to filing of the final document. The purpose of this activity will be to minimize the possibility of deficiencies in the final document.

(c) Schedule

October 1, 1982, through March 31, 1983.

Subtask 60.03 - Coordination of Exhibit Preparation

(a) Objective

Continue coordination of FERC Exhibit (prior Subtask 10.04) preparation by the study team.

(b) Approach

This subtask will include the coordination of the activities within the study team producing materials for the final application. Included in the scope will be in-house expediting, final incorporation of all project inputs, and final editorial review.

At the request of the Power Authority, preparation of Exhibits was deferred from Phase I to start July 1, 1982. The scope of work is substantially as stated in the Phase I POS modified in accordance with revised FERC regulations. Funds which were not expended during Phase I of Task 10 are made available for this work together with an additional expense of $50,000 for estimated printing costs.

(c) Schedule

July 1, 1982 through March 1983.

Subtask 60.04 - Finalization of Exhibit G

(a) Objective

Complete the maps delineating project boundaries for Exhibit G of the FERC application.

(b) Approach

This subtask will take inputs from the field mapping (1:400), recreation plans, and access roads and transmission line route selections and produce the final Exhibit G for filing. The maps will be produced in accordance with Section 4.32 of the FERC regulations. It is anticipated that approximately 100 sheets will be necessary for inclusion in Exhibit G, with separate sets of mapping for reservoirs, transmission lines, and access roads.

(c) Schedule

September 15 through November 15, 1982. Finalization by January 1983.

Subtask 61.01 - Review Energy Planning Studies (A. Tussing)

(a) Objective

To further review A. Tussing's draft report "Alaska Energy Planning Studies"; hold meetings to resolve outstanding differences between Tussing's and Acres reports on Susitna project risk analysis; and prepare appropriate responses.

(b) Approach

Work to be undertaken would consist of the following:

1. Preparation of factual tracking of Churchill Falls project costs from feasibility status to actual completion costs. Tussing recognizes this is a highly relevant case of effective capital cost-control basis on which more positive conclusions can be drawn to support Acres risk analysis.

2. Further commentary will be prepared on oil and gas pricing to reinforce the position taken by Batelle and Acres, particularly on the principle of net back from export market price levels. This will further reinforce arguments supporting convergent trend of energy prices from alternatives and correct misunderstandings and some misleading statements on pages 27 to 44 of Tussing's Review.

3. A paper will be prepared to present further discussions of long-term interest rates and appropriate discount rates to emphasize the point on which Acres agrees with Tussing that it is the cost of borrowing at the time that financial commitment is made that is important. This should counter Tussing's inference that a 3 percent discount rate is incorrect.

(c) Schedule

Work to be completed by September 7, 1982.

Subtask 61.02 - Marketing and Financing Update

(a) Objective

To resolve issues concerning sources and extent of financing and annual revenues as the basis for preparing applicable portions of Exhibit D; to provide for continuing liaison activities.

(b) Approach

Continuing liaison will be conducted with the Power Authority and with financial, legal, insurance, economic, and other professional advisors assembled by the Power Authority. Additional runs on the Acres FEASBL model are anticipated to examine the results of new financing alternatives which may be postulated and, to the extent necessary, these results will be further subjected to rigorous financing risk analysis in a manner analogous to that accomplished for the feasibility study.

(c) Schedule

October 1, 1982, through December 31, 1982 and thereafter as directed by the Power Authority.

Subtask 63.01 - Develop Cost-Control System

(a) Objective

Continue with the necessary management tools and control systems for monitoring, reporting, and controlling of project costs for the period October 1, 1982, through December 31, 1982, and beyond, as required.

(b) Approach

The cost-control system will continue to use the expertise of both Acres and Moolin personnel through December 31, 1982. Frank Moolin and Associates will terminate their services as of December 31, 1982.

Both man-hours and dollars expended will be reported for the extended period and the total to date. Completion costs will be forecasted, and projected overruns/underruns will be tabulated. Reports will be submitted to the Power Authority monthly.

(c) Schedule

October 1, 1982, through March 31, 1983 as required.