

# SUSITNA HYDROELECTRIC PROJECT

PROGRESS REPORT

MARCH-OCTOBER 1982

Prepared by:



ALASKA POWER AUTHORITY

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Period: March to October 1982

This report covers activities on the Susitna Hydroelectric Project from the issuance of the Susitna Hydroelectric Project Feasibility Report - Final Draft to October 1982.

Principal activities include continued design, environmental and geotechnical studies, and preparation of documents for the Federal Energy Regulatory Commission (FERC) license application.

Due to the revision in license submittal date, work performed after the issuance of the Feasibility Report has been included as part of Plan of Study Amendment No. 3 (to September 30, 1982) and Amendment No. 4 (from October 1, 1982). This has resulted in revised task numbers as follows:

<u>Description</u>	<u>Original Task Number</u>	<u>Amendment No. 3</u>	<u>Amendment No. 4</u>
Management	0	50	70
Power Studies	1	NA	NA
Surveys and Site Facilities	2	52	72
Hydrology	3	53	73
Seismic Studies	4	NA	NA
Geotechnical Exploration	5	55	75
Design Development	6	56	76
Environmental Studies	7	57	77
Transmission	8	58	78
Construction Cost Estimates and Schedules	9	59	79
Licensing	10	60	80
Marketing and Financing	11	61	81
Public Participation	12	NA	NA
Administration	13	63	83

The revised task numbers are used in the following discussion.

Summary of Task Activities

Task 52/72, Survey and Site Facilities, continued with the opening of the Watana camp from the maintenance mode to accommodate summer operations. Aircraft support was provided as required. The camp was returned to the maintenance mode in October. Continued review and study resulted in selection of the Denali-North (Plan 18) access plan as the formally adopted approach.

Task 53/73, Hydrology, continued with flow and ground water studies. Principal efforts included accessing environmental impacts and developing a mitigation plan to offset these impacts.

Task 55/75, Geotechnical Exploration, continued with an extensive summer program of geologic mapping, soil drilling and seismic refraction studies. Data reduction continued through October. In addition, a hammer drilling contract for winter drilling was awarded on October 25.

Task 56/76, Design Development, continued based upon additional information as provided by the hydrology geotechnical and environmental program. This resulted in revised intake arrangements at both the Watana and Devil Canyon sites. In addition, work continued on a supplemental report for the Feasibility Report.

Task 57/77, Environmental Studies, continued with fish and wildlife studies. The environmental impacts of the project development were further studied and mitigation plans were developed and incorporated to offset these impacts.

Task 58/78, Transmission, continued with a refinement of line route based upon the revised access plan, with the major change being the relocation of the main switching station to Gold Creek.

Task 59/79, Construction Cost Estimates and Schedules, continued with an April meeting with EBASCO Services at which the independent EBASCO estimate was compared to the Acres estimate with no unreconcilable differences being found. Work continued on updating both the schedules and costs to reflect the revised access plan and other design changes.

Task 60/80, Licensing, continued with the assembly and incorporation of FERC/APA/Agency comments into the developing licensing documents. A November 15 date was established for submittal of the first draft of the license application to FERC/APA.

Task 61/81, Marketing Financing, concentrated on support to requests from the Power Authority. These included participation in public meetings, attendance at board meetings, and discussions with external consultants and reviewers.

Task 63/83, Administration, continued with the preparation and incorporation of Amendments 3 and 4. In addition, contracts with various subcontractors were instituted and/or extended to provide necessary support services.

## Task 52/72, Surveys and Site Facilities

### Provision of Field Camps and Associated Logistic Support Resupply and Emergency Service

During the period March through June the camp population increased from an average of 5 to 12 persons per day as spring field activities picked up. CIRI/Holmes and Narver continued to operate the camp in a "maintenance" mode with a two-man O&M crew until mid-June when the crew was increased to four personnel to accommodate summer field operations. Camp loading averaged 30 people per day during the June to September period. To accommodate the excess personnel High Lake Lodge was leased for this same period, thereby providing housing for the archaeologists and access route survey people. The landing strip for fixed wing flights was able to be used during this same period. The average population at High Lake Lodge ranged from 7.3 in June and 8.6 in July to 5.6 in September.

Two fuel spills were experienced this year. In March a gasoline spill of approximately 3000 gallons occurred when excessive wet snow on a 10,000-gallon bladder forced gasoline out of the bladder vent pipe. All gasoline spilled was contained within the fuel storage containment and nearly all of the fuel was immediately recovered. The bladder vent pipe has been extended to prevent re-occurrence of this type of spill in the future. In July a diesel oil spill of approximately 1200 gallons occurred when the day tank fuel cutoff float switch failed to shut off causing the fuel to overflow. To prevent further occurrences an alarm system comprised of horns and lights has been installed and a 100-gallon overflow tank has been added which will provide a 20-minute reaction time.

Aircraft contracts were awarded on July 1 to Air Logistics for both helicopter and fixed wing support for the summer program. Prior to July, Air Logistics provided helicopter support under a previous contract and all fixed wing aircraft were chartered on an as-needed basis. During the period March through October 26, helicopter use totaled 1698 hours for 206Bs, and 236 hours for the 205A. In addition, 130 hours of BV107 heavy lift helicopter time was required for the three fuel hauls. Fixed wing aircraft for the same period totaled 151 hours for the twin engine Islander, 97 hours for the Cessna 172 single engine, and 166 hours for the twin-engine Cherokee.

Major fuel resupply operations were conducted in May, July, and August with a total of 59,371 gallons of diesel No. 1 and 120,251 gallons of Jet B fuel being transported by the heavy lift helicopter.

The camp was placed in a maintenance mode on October 4, and an 84-kW generator was installed to reduce fuel usage. This generator will only require 6 gpm as compared to the 275-kW generator which uses over 11 gpm. A cost savings in fuel usage of over \$27,000 will be realized in mid-December, more than enough to pay for the smaller generator.

Mobilization for the hammer drilling contract will begin about mid-December and the camp will be reopened to support the 20 to 25 personnel required for winter field operations. A heated sled-mounted 500-gallon water tank has been

fabricated for use in transporting lake water to the camp during the winter months to supplement the inadequate winter well water supply. A second well will be drilled by the hammer drill contractor in early January to augment the existing well. The Corp of Engineers trailer will be relocated to the camp area during January also.

#### Land Status Research

Summary maps of the reservoir areas were prepared by CIRI/H&N to assist in planning studies.

Land Field Services researched the titles for all land on the transmission line and access road corridors, as well as the damsite and reservoir areas.

#### Land Acquisition Analysis

Based on research done on land status, schedules were prepared giving the description and ostensible owner and encumbrances of each land parcel. This information will provide the basis for defining the actual project lands to be acquired and to be shown in Exhibit G of the FERC license.

#### Access Roads

During April, comment was obtained relative to the Feasibility Study which resulted in the pioneer road concept being eliminated. Subsequently, seven additional access plan alternatives were developed and preliminary design was carried out to establish alignments, quantities and cost estimates. The best routes in each of the three access corridors were identified and subjected to a multidisciplinary evaluation and comparison.

The results of this evaluation resulted in the publication of the Access Plan Recommendation Report of August 1982. The APA Board of Directors formally adopted Access Plan 18, Denali-North in September 1982. Subsequent activities include survey and aerial photography for those sections not previously covered, and the preparation of access plan sections of Exhibits A, B, and G for the FERC License Application.

#### Task 53/73 - Hydrology

A detailed progress report for the March - October 1982 time period will be presented in the November progress report. Current efforts include preparation of Exhibit E for the first draft of the FERC license application. Flow and ground water studies were conducted to determine and to mitigate environmental impacts.

## Task 55/75 - Geotechnical Exploration

Since March 1982, Acres has undertaken detailed development and execution of a 1982 summer exploratory program. In addition, scope and contracts have been prepared for a winter drilling and testing program as described below.

### Fiscal Year 1983 Program (FY83)

During the months of March through May 1982, Acres developed a detailed geotechnical exploration program for FY83. The program was defined in three phases consisting of summer, winter, and spring programs. Detailed cost estimates for the summer and winter programs were also prepared. Results of this work were submitted to the Power Authority in the "FY83 Geotechnical Exploration Program" in May 1983.

### 5.07 Report

During the months of March through June 1982, a detailed geotechnical program for the Susitna Project through 1984 was prepared. Results of this work were submitted to the Power Authority in the "1982-84 Geotechnical Program - Subtask 5.07 Report."

### Planning Summer Exploration Program

A detailed summer exploration program was planned during the months of April through June. Specifications for drilling and seismic refraction surveys were prepared by Acres and issued for bids. Following bid evaluation, contracts to perform the work were issued to Denali Drilling Corporation and Woodward-Clyde Consultants, respectively.

### Execution of Summer Program

The summer exploration program was carried out from July 1 through September 30. The work consisted of:

- Geologic mapping;
- Soil drilling and testing; and
- Seismic refraction surveys.

#### - Geologic Mapping - Watana

Geologic mapping was carried out in the relict channel, Borrow Areas D, E, and I and the main damsite. The program expanded on the work performed in 1980-81, and was principally directed at verifying and further delineating features and structures defined during the previous summer program. In addition, surficial geology mapping was performed in Borrow Areas D, E, and I. Mapping performed in Borrow Area D was used in the interpretation of the Watana Relict Channel stratigraphy.

### - Soil Drilling and Testing

A total of 16 borings were drilled to a maximum depth of 220 feet. The drilling and soil testing program was designed to further define the stratigraphy in the upper portions of the relict channel and to obtain additional information regarding material properties for Borrow Area D.

### - Seismic Refraction Survey

A total of 70,000 linear feet of seismic refraction lines were run at the Watana site. Three areas were investigated by the seismic surveys.

- . Damsite;
- . Watana Relict Channel; and
- . Fog Lakes relict channel.

The objective of the survey was to:

- . Delineate the overburden thickness in the damsite abutments and to determine the linear extent of fractures, shears, and altered zones.
- . Further delineate the geometry of the Watana Relict Channel.
- . Determine the extent of the Fog Lakes relict channel.

All geotechnical work at site was completed by September 30.

### Data Reduction and Report Preparation

Data reduction continued through the month of October. Maps and figures developed for the 1980-81 Geotechnical Report are currently being revised and updated to reflect the new information collected during the summer program. All this information will be compiled into a supplemental geotechnical report to be issued during December.

### Winter Drilling Program

During the months of August and September, Acres prepared the hammer drilling specification for the winter drilling program. Bids were received and reviewed during September and October. The contract for performing the work was awarded to Denali Drilling Company on October 25.

Mobilization of the drilling equipment will continue through November and December. Drilling activities are expected to begin under the direction of the new consultant by January 1, 1983.

### Task 56/76 - Design Development

#### Design Development Update

Work on design development continued through the summer with particular emphasis being directed to changes to meet environmental criteria. Work performed by the



hydrologists, in coordination with the environmentalists, resulted in the redesign of the intake structures at Watana and Devil Canyon. The design now reflects a forebay arrangement upstream of the gates. This new arrangement allows for better temperature control and mixing. As a result of this redesign, the power intake crest elevation has increased to elevation 2030 and 1365 for Watana and Devil Canyon, respectively. In addition, the minimum operating level for the Watana reservoir was increased from elevation 2045 to 2065.

#### Feasibility Report Update

Work commenced on preparation of a supplemental report to the Feasibility Report during October. A draft outline indicating due dates and responsible engineers was developed for the report. Final preparation of the report will be carried out during November and issued to the Power Authority during December.

#### Task 57/77 - Environmental Studies

A detailed progress report for the March - October 1982 time period will be presented in the November progress report. Current efforts include fish and wildlife studies to further define and to mitigate environmental impacts. Work also included preparation of material for Exhibit E for the first draft of the FERC license application.

#### Task 58/78 - Transmission

Subsequent to the submission of the feasibility study, a further refinement process on the line route has taken place to reflect the possibility of land acquisition problems at locations along the corridor. This process has resulted in an improved routing, generally close to the earlier proposal, in the Fairbanks to Healy and the Willow to Anchorage line sections.

Also since the feasibility study, the proposals for access to the power development have undergone reassessment. This has resulted in a decision to provide access to Watana from the Denali Highway and not build the Watana to Devil Canyon link until the latter site is developed. Because of this lack of early access to Devil Canyon, the main switching station for the transmission has been relocated to Gold Creek. The earlier line routing proposals were accordingly reviewed to establish the optimum location for lines for Watana to Gold Creek and from Devil Canyon to Gold Creek. This route was established within the corridors examined in detail earlier, using the same methodology as before.

The revised line route has been identified on the 1-inch to 1 mile topographic maps by Land Field Surveys.

As part of the above refinement, a further assessment of the aesthetic and recreational impacts of the transmission facilities has been carried out by EDAW, Inc.



Work has proceeded on the preparation of the sections of the FERC license application relating to the transmission line facility. This has involved the preparation of descriptive text outlining the features of the project, as well as drawings showing typical layouts of the facilities and the project boundaries, all reflecting the most current proposals for transmission.

#### Task 59/79 - Cost Estimates and Schedules

Following submission of the cost estimate for the feasibility report in early March, all cost calculations and quantity take-off records were collected and filed.

EBASCOs comparison estimate was received and reviewed in early April. Preparations were made and a meeting held with EBASCO in New York City on April 14 to review and reconcile differences in project estimates. It was concluded that no changes would be required in the estimate prepared by Acres for the feasibility report.

In May and June, a preliminary review of costs and schedules was undertaken of alternative access plans to the pioneer road concept that was proposed in the feasibility report. Costs of accelerated road and site construction work leading up to river diversion in 1987 were assessed. An accelerated schedule for initial access road construction was developed. A preliminary report was prepared.

In July, further cost estimating and scheduling for alternative access plans was done. The cost impacts resulting from an accelerated schedule for initial road site construction were evaluated. A detailed review was made of the time required to construct the initial access road to Watana along the south route (Plan 16). The results of this work were presented to APA on July 21, 1982. An assessment was made of the impact of limited access on the development of the Watana site and transmitted to APA.

During August the Access Plan Recommendation Report was prepared and submitted to APA. Cost estimates for the three selected alternative plans were completed and compared. A schedule review of each plan was made, as well as the potential risk of each plan on the overall project schedule.

Following the access plan decision in mid-September, the project schedule for Watana was revised and included with the first draft of Exhibit C of the FERC license application for APA's review.

In October the revisions to the project estimate for inclusion in Exhibit D of the FERC license application were started. The main revisions undertaken were:

- (a) Revise access roads and railheads to Plan 18.
- (b) Adjust transportation costs to longer route.
- (c) Revise work leading up to diversion due to accelerated schedule.
- (d) Revise construction power from intertie power to site generated power.
- (e) Revise power intake (at Watana and at Devil Canyon).
- (f) Adjust all work to 10-hour shifts.

Revisions to the project schedule reflecting the changes in access plan and accelerated construction were made. Project schedules were revised for inclusion in the draft of Exhibit C of the FERC license application.

#### Task 60/80 - Licensing

The primary focus of the May activity was to get comments from FERC on materials submitted in March and April. Numerous telephone discussions with staff members and three meetings were held.

On May 5 and 6, major meetings were held between Acres staff, FERC staff and Power Authority representatives. The focus of the meeting was the feasibility report and the Susitna project. Presentations were given by Acres and the Power Authority. Individuals from the Susitna Project Team were asked in detail about portions of the feasibility study. FERC personnel presented their comments in general.

The second day's meeting discussed the environmental aspects of the project.

A meeting was also held on May 26 to discuss the transmission lines. At this meeting the major comment was the result of the FERC staff transmission line review. Virtually all the transmission lines related to the project will be included in the licensed project. This will include the intertie which is built before the project and the additional lines to be constructed with the project. The project lines at this time are assumed to end at the end substations, i.e., Ester, Anchorage, Willow, Knik, etc.

Also during May, efforts were made at putting together a first draft of Exhibits A, B, and C from the feasibility reports. These were edited primarily from the information which was included in the Feasibility Report, Volume 1.

On May 21, direction came from the Power Authority to stop work on the project until further notice.

On July 1, a letter was received from the Power Authority indicating that since specific target periods for submission of the FERC license were set, work should again proceed.

The initial startup activity on the licensing preparation focused on getting together a schedule to meet the Power Authority's deadlines and to reinitiate assembling drafts of the Exhibits.

An initial submittal was sent in on July 15 that had preliminary schedules for each of the Exhibits and preliminary content outlines. A meeting was held on August 3 at which time more detailed program of participating individuals and content was agreed upon.

Work was reinitiated on drafts of A and B and work was started on the remaining exhibits; particularly, C and D and the ten chapters of Exhibit E.

A meeting was held on August 3 in Columbia to discuss the schedule and individuals responsible for the portions of the license application document. Agreement was reached upon schedules for producing each of the exhibits and persons responsible for them on the Acres team. Also discussed at that meeting were land status questions to be resolved with FERC. The Power Authority provided a list of questions which were discussed and resolved at that time.

A meeting was held on August 4 with Acres and FERC staff members. Discussion of that meeting was twofold. First was a discussion of the process how FERC would handle and manage the Susitna licensing application when it was filed and the possibility of having a draft review of the entire application. The second part of the meeting was dedicated to the discussion of particular aspects of Exhibit E. These included land use, aesthetics, and fisheries.

On August 19, a package for agency correspondence was forwarded to the Power Authority. Included were sets of draft letters to each of the agencies requesting specific comment on their area of responsibility. The purpose of this letter was to provide one clear point in time when comments would be solicited from the agencies in order to address them prior to the final draft Exhibit E.

Initial drafts of Exhibits A, B, C, and D were submitted to the Power Authority in September. Additionally, at the end of the month, David Wozniak of the Power Authority visited the Columbia office where preliminary drafts of Exhibits G, F, and the design part of F were provided for his review and were discussed in detail.

On October 1 a meeting was held with FERC representatives, Power Authority members, and Acres. Discussions at this point surrounded how FERC would handle and schedule the Susitna licensing application during the draft review and the actual review of the filed license in February. At this time, it was agreed that all materials would be submitted to FERC on or about November 15. FERC was interested in receiving some of the exhibits early. Efforts will be made to supply to the FERC copies of Exhibits A, B, and C and the drawings of Exhibit F prior to that time.

During October efforts were focused on assembling the draft for FERC exhibits. Most efforts on Exhibits A, B, C, D, and F surrounded addressing the comments made by the Power Authority, adding new material which was developed from access road and transmission line decisions and making design changes. A final version of Exhibit G was assembled to include material developed by subcontractors during earlier parts of the study.

A meeting was held in Seattle on October 20 to receive the Power Authority's comments on Exhibit D. First drafts of all the Exhibit E materials were received from subcontractors and Acres responsible authors on October 25. These drafts were submitted as initial versions to be reviewed by Acres and the Power Authority with comments incorporated as possible for the November 15 submittal.

## Task 61/81 - Economic, Marketing and Financial Analysis

### General

Following the submission of the feasibility study, concentrated activity on Task 11 ceased and the team responded to specific requests for support from the Alaska Power Authority. These included:

1. Participation in Public Meetings in Alaska, March 21 - 26, 1982.
2. Discussions with External Consultant Board member, D. Rohan, April 1, 1982.
3. Attendance at the Power Authority board meeting, April 22, 1982.
4. Attendance at FERC meetings, Washington, D.C., May 5 - 6, 1982.
5. Preparation of commentary on review by A.R. Tussing and G. Ericson, August/September 1982.
6. Preparation of support material for license application concerning financing aspects of the Susitna Hydroelectric Power Development, September/October 1982.

### Public Meetings in State of Alaska

J.G. Warnock, Task Manager, attended and introduced a series of public meetings in Soldotna, Anchorage, Talkeetna, Fairbanks, and Juneau during the period March 21 through March 26, 1982. The series concluded with a presentation to Governor Hammond and his staff to introduce the substance and conclusions of the feasibility study on Friday, March 26.

### Discussions with D. Rohan, Member of the External Board of Consultants

Following submission of the feasibility report, the reaction and opinion of D. Rohan was sought and a telephone conversation ensued on April 1, 1982. It was apparent that D. Rohan felt that:

- (a) with the softening in oil prices;
- (b) with the record high interest rates on current bond issues; and
- (c) with some doubt about the true future energy needs of the Railbelt Region,

he was bound to recommend caution in proceeding with the Susitna Hydroelectric Project.

Counter arguments were presented in support of the position taken by Acres in the feasibility report and in the subsequent public meeting in Alaska.

### Board Meeting of the Alaska Power Authority, April 22, 1982

J.G. Warnock and Dr. J.W. Hayden represented Acres American at the meeting of the Board of Directors of the Alaska Power Authority in Anchorage, April 22, 1982.

### Meetings with Federal Energy Regulatory Commission, Washington, D.C.

J.G. Warnock, representing the Task 11 (61/81) study team, attended the FERC/APA/Acres meetings in Washington, May 5 - 6, 1982. No significant

discussion relating to economics, marketing, financial evaluation arose at these meetings which concentrated mainly on geotechnical, environmental or civil engineering aspects of the work.

Commentary on Review by A.R. Tussing and G. Ericson

Following the issue of a draft of the Review of Substantiative Issues Concerning Susitna Hydroelectric Project in late July, a meeting was held with Arnold Tussing which J.G. Warnock and A.J. Merratt attended with other from the Columbia office Task 11 team. The contents of the review were discussed and objections raised to certain content. A subsequent modified draft was later subjected to a detailed review and a commentary published on September 7.

This commentary was subsequently incorporated in the Alaska Power Authority's response to J. Souby, of the Alaska state government, in Juneau.

Preparation of Support Material for FERC License Application

Text material and supporting financial analysis has been prepared for the relevant exhibits to be included in the application for license to FERC. Subject material was reviewed at a meeting with Ray Beamish, Director of Finance, Alaska Power Authority, and Don Grimes, First Southwest Corporation, at a meeting in Seattle, Washington, on October 20.

Task 63/83 - Administration

Task 63/83 continued with the incorporation and monitoring of Amendments 3 and 4. Amendment 3 was prepared to cover work performed from the issuance of the Feasibility Study Draft Report to September 30, 1982, and Amendment 4 was prepared to cover the period from October 1, 1982 to March 31, 1983. In addition, numerous subcontracts were initiated or extended to provide necessary support services.

The status of these contracts as of the end of October are as follows:

1. Contractor: Air Logistics  
Contracted Services: Fixed Wing Aircraft Support  
Amendment No.: Original Contract  
Duration of this Amendment: July '82 through September '82 with option to extend  
Value of this Amendment: \$52,485  
Status of Contract: Expired
2. Contractor: Air Logistics  
Contracted Services: Helicopter Support  
Amendment No.: Original Contract  
Duration of this Amendment: July '82 through July '83  
Value of this Amendment: \$336,252 (to date)  
Status of Contract: Contractor presently active. Contract signed by all parties



3. Contractor: AEIDC  
Contracted Services: Aquatic Environmental Studies  
Amendment No.: Original Contract  
Duration of this Amendment: July '82 through June '83  
Value of this Amendment: \$126,000  
Status of Contract: Contractor presently active. Awaiting Acres' signature
  
4. Contractor: CIRI/Holmes & Narver  
Contracted Services: Logistic Support  
Amendment No.: 4  
Duration of this Amendment: October '82 through December '82  
Value of this Amendment: \$210,000  
Status of Contract: Contractor presently active. Awaiting approval of APA Acres' Amendment No. 4 before submittal of this amendment to APA
  
5. Contractor: Denali Drilling  
Contracted Services: Hammer Drilling Program  
Amendment No.: Original Contract  
Duration of this Amendment: Mid-October '82 through June '84  
Value of this Amendment: \$1,417,680 plus expendibles  
Status of Contract: Contractor presently active. Contract approved by APA and signed by all parties. Program as now scoped should be complete by mid-April '83
  
6. Contractor: Denali Drilling  
Contracted Services: Hydrologic Drilling Services  
Amendment No.: Original Contract  
Duration of this Amendment: Mid-October '82 through end of work  
Value of this Amendment: \$18,960 plus expendibles  
Status of Contract: Drilling underway; should be complete by mid-November '82. Contract approved by APA and signed by all parties.
  
7. Contractor: EDAW, Inc.  
Contracted Services: Recreation and Aesthetic Studies  
Amendment No.: Original Contract  
Duration of this Amendment: September '82 through mid-February '83  
Value of this Amendment: \$138,064  
Status of Contract: Contractor presently active. Approval from APA with their letter of October 19. Signatures pending from Acres
  
8. Contractor: Frank Moolin & Associates  
Contracted Services: Cost Control Services  
Amendment No.: 3  
Duration of this Amendment: October '82 through December '82  
Value of this Amendment: \$33,000  
Status of Contract: Contractor presently active

9. Contractor: Frank Orth & Associates  
 Contracted Services: Socioeconomic Studies  
 Amendment No.: Original Contract  
 Duration of this Amendment: July '82 through June '83  
 Value of this Amendment: \$112,077 (including \$5,000 as noted in P. Roger's letter of September 2, 1982, to J.W. Hayden)  
 Status of Contract: Contractor presently active. Approval from APA with their letter of October 19. Signatures pending from Acres
10. Contractor: Kramer, Chin & Mayo  
 Contracted Services: Susitna Hatchery Siting Study  
 Amendment No.: Original Contract  
 Duration of this Amendment: Mid-August '82 through mid-November '82  
 Value of this Amendment: \$40,700  
 Status of Contract: Contractor presently active. Approval from APA with their letter of October 19. Signatures pending from Acres
11. Contractor: Land Field Services  
 Contracted Services: Land status studies for transmission lines  
 Amendment No.: Original Contract  
 Duration of this Amendment: September and October '82  
 Value of this Amendment: \$43,500  
 Status of Contract: Contractor presently active. APA approval pending
12. Contractor: LGL-Alaska  
 Contracted Services: Wildlife and Habitat Studies  
 Amendment No.: Original Contract  
 Duration of this Amendment: July '82 through June '83  
 Value of this Amendment: \$1,217,837  
 Status of Contract: Contractor presently active. Approval from APA with their letter of October 19. Acres signatures pending
13. Contractor: Dr. J.M. Patterson  
 Contracted Services: Software Development  
 Amendment No.: Original Contract  
 Duration of this Amendment: June '82 through December '82  
 Value of this Amendment: \$2,400 to \$10,000  
 Status of Contract: Contractor presently active. Signed by Acres June, 1982
14. Contractor: R&M  
 Contracted Services: Access Road Studies, Hydrologic Studies, Geotechnical Studies  
 Amendment No.: 4  
 Duration of this Amendment: October '82 through December '82  
 Value of this Amendment: \$134,000 (access roads); \$214,413 (hydrology); \$54,194 (geotechnical)  
 Status of Contract: Contractor presently active. Awaiting approval of APA Acres Amendment 4 before submitting this amendment to APA for their review.



15. Contractor: University of Alaska Museum  
 Contracted Services: Cultural Resources Studies  
 Amendment No.: Original Contract  
 Duration of this Amendment: Mid-June '82 through December '82  
 Value of this Amendment: \$231,489  
 Status of Contract: Contractor presently active. Approval from APA with their letter of October 19. Acres signatures pending.
16. Contractor: Woodward-Clyde  
 Contracted Services: Fisheries Impact Mitigation Studies  
 Amendment No.: 2  
 Duration of this Amendment: July '82 through June '83  
 Value of this Amendment: \$386,688  
 Status of Contract: Contractor presently active. Approval from APA with their letter of October 19, subject to changes to allow Acres and APA to audit WCC fringe and overhead rates. Signed by Acres and WCC.
17. Contractor: Woodward-Clyde  
 Contracted Services: Seismic Studies  
 Amendment No.: Original Contract  
 Duration of this Amendment: Mid-August '82 through December '82  
 Value of this Amendment: \$90,208  
 Status of Contract: Contractor presently active.
18. Contractor: Mr. Woody Trihey  
 Contracted Services: In-Stream Flow Studies  
 Amendment No.: Original Contract  
 Duration of this Amendment: July '82 through June '83  
 Value of this Amendment: \$75/hour as needed; estimated at \$97,000  
 Status of Contract: Contractor presently active. Approval from APA with their letter of October 1.