ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

PROGRESS REPORT

FOR

SEPTEMBER - OCTOBER 1981

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ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
MONTHLY PROGRESS REPORT

Report No. 20

Period: September and October, 1981

Progress Report No. 20 covers the activities on the Susitna Hydroelectric Project for the months of September and October 1981.

Task 1, Power Studies, is complete.

Task 2, Survey and Site Facilities, began to wind down during September as various teams ceased this field activity. High Lake Lodge camp was terminated on September 30. Winterization of Watana Camp was begun and helicopter support dwindled to one Bell 206.

On October 9, 1981, a 1,200-gallon diesel fuel spill occurred at the Watana camp as a result of a faulty foat switch on one of the generator tanks. Cleanup action was started immediately by CIRI/H&N with assistance from Crowley Environmental Services. The Alaska Department of Environmental Conservation was informed of the spill and it is very satisfied with the cleanup measures taken.

Access road work progressed with reports received on the routes identified in March 1981 as the routes remaining after the initial screening. Parties involved in the selection process met with the Steering Committee and held two public meetings during the period to acquire new input. Layout drawings for the camps and townsites were commenced along with conceptual designs for utilities.

CIRI/H&N were active during the period by carrying out camp winterization. Also, they were involved in the fuel oil spill cleanup during October.

R&M Activities continued with the Subtask 2.08 Closeout Report being submitted to Acres. All ground-control surveys were completed on all alternative access corridors. Additional cross sections were taken in the lower reaches of the Susitna River at four sites.

Task 3, Hydrology, continued with routine monitoring of R&M's field work and review of the processed data. The Watana reservoir filling schedule was updated. Probable maximum flood studies in the basin and design values for spillway capacities were finalized. Results of the R&M open water modeling were reviewed and incorporated in the ice simulation model. Temperature modeling of the reservoirs and the downstream reach above Talkeetna were completed.

R&M activities continued data collection from stream gages, crest stage data, and water surface elevations. All climatic stations are operating routinely. A snow gage was installed at the Watana climatic station. Estimates on reservoir evaporation were calculated. Calibration and verification of the HEC-2 Water Surface Profile Model were completed between Devil Creek and Deadman Creek. An interim report on river morphology and reservoir sedimentation was completed.

Flow duration curves and high/low flow analysis of major rivers were completed. Revisions were made to incorporate recent data into the draft of the Subtask 3.10 report.

Task 4, Seismic Studies, continued with a review of field geologic studies conducted by WCC's review group in early September. A presentation was made to Drs. Seed and Sykes in San Francisco. Acres participated in the APA's consulting board meeting in early October.

WCC activities included an evaluation of historic earthquakes within 200 km of the project site. The size and closest approach of the terrain or floating earthquake to the sites are being analyzed. Analysis of the worldwide Benioff zone earthquakes was completed. Work on the network monitoring manual commenced. Analysis of the stress regimes in portions of the Talkeetna Terrain is essentially complete. The review group has concluded that the main seismic sources to consider are the Denali and Castle Mountain faults and the Benioff zone. Field studies for Task 4 were complete September 3, 1981. Data analysis and report preparation began September 14 and a draft report is due by December 23. Acres' comments are expected by January 18, and a final report is due by February 19. Work commenced on the seismic exposure analysis, including assessment of maximum credible earthquakes, recurrence, slip rate, and other local features. An approach to ground motion studies is under review by Acres and WCC.

Task 5, Geotechnical Investigation, continued with the data reduction necessary for engineering layouts, design and cost estimates. R&M's final photo interpretation report was reviewed. The rock-testing program was finalized, as was the scope for the soil testing program. The results of these programs are expected in December. Subsurface drilling at Watana was completed during September. The rock quality was found to be good to excellent. Instrumentation is to be installed during November. During October, an additional 30,000 lf of seismic lines were laid out in the Fog Lakes area to investigate depths of overburden and the potential for reservoir leakage in the area. The scope and implementation of the mapping program for the Devil Canyon and Watana reservoirs were undertaken during the period.

R&M Activities continued with the Photo Interpretation Closeout Report submitted to Acres. Major field programs were completed, and equipment and personnel left the area by the end of September. Lab testing and reduction of data intensified during October as field crews returned.

Task 6, Design Development, continued with a second draft of the Watana and Devil Canyon design criteria being completed. Static and dynamic analyses of the rockfill dam have been completed. A final review of the economic dam height is in progress. A cost comparison of various spillway alternatives has been completed for the Watana site. A combination of low-level outlet and valve discharges, together with a chute and flip bucket type, main spillway, and emergency spillway with fuse plug, has been selected. At Devil Canyon, a comparison of stilling basin and flip bucket schemes is complete, and these are now being refined. Camp design and cost estimates continued during the period. Studies to date indicate two 35-foot-diameter tunnels are the best Watana diversion scheme. Optimizing this scheme is continuing. A scheme using a single 30-foot-diameter tunnel is being finalized for the Devil Canyon diversion scheme.

During optimizing of the Watana powerhouse it was decided to use an underground powerhouse having a six-generating unit design. The Devil Canyon scheme will utilize an underground powerhouse with a four-generation unit design. Work on refining these designs is underway.

Task 7, Environmental Studies, continued with many discussions being held to gather the information required for TES to conduct its studies. Access road strategies were discussed with APA. A meeting was held with Stephen Braund to clarify the sociocultural work products. Acres personnel attended the Fisheries Mitigation Task Force meeting to contribute information regarding downstream flows and temperatures to the Task Force. The mitigation policy was finalized by the interested parties and forwarded to APA for approval. Access road alternatives and their environmental impacts were discussed with TES and APA during the period.

TES activities continued with reports being prepared to assess the status of Subtasks 7.07, 7.08, 7.09, and 7.14. The status of Phase I modifications and escalation was discussed with Acres. Discussions were held in October with Acres relating to the Fish and Wildlife Mitigation Policy, access routes, and the latest dam designs. The camp requirement for 1982 was discussed with Acres' Resident Manager. FO&A continued a review of the ISER forecasting model and prepared an abstract of the Socioeconomic Analysis for Acres' review. TES and FO&A met with the public participation staff of APA to discuss the impacts of the access route and camp alternatives. The Alaska Museum continued to work on the analysis of cultural material collected during the 1981 field season. Additional archaeological evaluation and survey were performed in the Fog Lakes area along proposed seismic lines. TES sent Acres a draft outline for the report on Aesthetic Resources along with recommendations for Acres design team. An overflight of lower Susitna River tributaries was conducted as part of the navigational use study. A draft report, including maps, is in preparation for this study. During September, TES prepared a draft abstract for Recreation Planning. During the report period, TES addressed the Susitna Hydroelectric Project Steering Committee explaining the TES procedure for addressing impacts and mitigation issues. The prime effort of the TES Wildlife Ecology Group Leader was the completion of the habitat value comparison and its application to the access plans. A final Wildlife Mitigation Policy Statement and decision-making methodology were sent to Acres for review. Field work with birds, non-game mammals, and furbearing mammals continued with avian surveys, radio-collaring, and snow tracking being performed. Plant ecology studies proceeded with vegetation mapping of the transmission line corridors. Work on the Access Route Environmental Analysis Report continued. The TES environmental, socio-economic, and land use access report was completed for Acres' review.

Task 8, Transmission, continued with a final draft of the Subtask 8.01 Closeout Report being forwarded to APA. APA agreed with Acres' suggestion that the transmission lines be brought into Anchorage via submarine cables under the Knik Arm and then to Anchorage Municipal Light and Power and Chugach Electric Association by overhead lines. Study efforts continued within the recommended transmission corridors and on tower configurations. Switchyard arrangements and single line diagram drawings commenced. Cost estimates were updated.

Task 9, Construction Cost Estimates and Schedules, continued with updating quantities and costing on refined designs. The costing system was adapted to the FERC code of accounts, and this format will be used for future estimates. The Watana and Devil Canyon schedules and the computerized logic network were updated during the period. An estimating and scheduling review was conducted in late October with Acres internal estimating consultant.

Task 10, Licensing, continued with FERC approving final rules in October for applications for major unconstructed projects. These are unchanged from the proposed rules issued in February.

Task 11, Financing and Risk Analysis, continued with a meeting in mid-October to address potential changes in the Task 11 scope caused by recently enacted legislation in Alaska. Acres is preparing a revised scope as a result of this meeting. A new scope of work was prepared for risk analysis studies, and adjustments were made to the FEEZBL program for assessing financing alternatives.

Task 12, Public Participation, continued with attendance at workshops in Talkeetna and Cantwell concerning access route alternatives.

Task 13, Admininistration, continued with the schedule being updated to reflect current project direction. An in-house computer cost report was accepted by APA in place of the Lanier System generated report. Acres revised escalation calculations during the month.

Task 14, ADF&G Support, continued routinely during September and October.

TASK 1 - POWER STUDIES

Task 1 complete.

TASK 2 - SURVEY AND SITE FACILITIES

ACRES ACTIVITIES

Subtask 2.02 - Provision of Field Camps and Associated Logistic Support

Watana Camp operations began to wind down during September as the various geology, archaeology, seismology and environmental teams ceased their respective field activities. Support from High Lake Lodge declined gradually, terminating on September 30. Winterization activities were initiated at the Watana Camp prior to an early 16-inch snowfall. Helicopter requirements were also reduced; by month's end, only one Bell 206 remained.

On Friday, October 9, 1981, a fuel spill occurred at the Watana Camp as a result of a faulty float switch on one of the generator day tanks. Approximately 1200 gallons of diesel fuel was lost through the tank vent before it was detected at 11:00 p.m.

Cleanup action began immediately, utilizing sorbent sheets pre-positioned for such an emergency. CIRI/H&N began extensive cleanup operations the next day, and fuel that could be safely burned off, to the extent practicable, was burned, with the remaining spill being contained by sorbent material and plastic membrane-lined snow berms.

Continued monitoring and additional cleanup will take place in the spring as the snow melts to insure all detectable fuel is absorbed or burned off.

Crowley Environmental Services provided technical assistance and recommended the placement of sorbent booms to contain remaining fuel during spring breakup. The Alaska Department of Environmental Conservation was informed of the spill and all subsequent cleanup actions. They are very satisfied with the measures taken. The faulty float valve has been replaced and an electrical alarm system has been installed.

Costs associated with the cleanup activities are approximately $10,000 for labor and materials. Sufficient diesel remains to supply needs through June 30, 1982.

Helicopter use hours decreased substantially this month, with the greatest percent used for Subtasks 7.11.1 and 7.11.2. Total helicopter days totalled 40, or 172.4 hours utilized during the month.

Subtask 2.10 - Access Roads and Camps

Work on the access road continued during the report period. Reports were received from the various groups and subcontractors working on the access road. These reports presented the additional studies carried out on the routes identified in March 1981 as the routes remaining after the initial screening.

The reports included R&M Consultants' report concerning Engineering and Costs, TES's report concerning Environmental Impacts, Steven Braund's report and Alaska Power Authority's (APA's) report addressing public preference, and Acres' report concerning overall project scheduling requirements.

In addition to the reports received, all parties contributing to the selection met with the Susitna Steering Committee; and two public meetings, one in Talkeetna and one in Cantwell, took place during the report period. The meetings were held to convey information and acquire new input from all parties concerned to aid in the access road decision, scheduled during the next report period.

Agency contact meetings were held with the Bureau of Land Management, Alaska District Corps of Engineers, and the Department of Public Safety, Division of ADF&G. Alternative routes were presented and discussions held pursuant to obtaining the necessary permits required prior to construction of the selected access route. Additional meetings are planned with the Department of Transportation, U.S. Fish and Wildlife Service, and the Department of Environmental Conservation.

Continued coordination and planning meetings were held with FMA and R&M to obtain necessary planning data for access road construction activities.

Work continued on the camps and townsites during the report period. Layout drawings have commenced along with conceptual designs concerning site services such as water supply, sewage, and electrical service. Work continued on producing and updating capital cost estimates of the camps and townsites.

CIRI/H&N ACTIVITIES

A declining camp population was serviced during September, reflecting the end of the summer field program. Camp services also continued to be made available on an intermittent basis to those field personnel based at nearby tent camps.

In addition to its regular operation, maintenance, and related inspection of camp facilities, CIRI/H&N carried out winterization activities in preparation for the upcoming season. CIRI/H&N began cleanup of an oil spill of 1,200 gallons of diesel fuel which was caused by an unexpected malfunction of a float switch which controls the amount of diesel fuel being pumped from the camp's POL storage area to the day tank in the generator module. The spill was contained within five days after the spill occurred. Additional preventative measures were undertaken in terms of both the day tank and the absorption of spilled fuel which may flow again during upcoming winter break-up conditions.

R&M ACTIVITIES

Subtask 2.07 - Site-Specific Surveys

The data and information obtained from the river cross sections, channel geometry surveys, and water surface profiles are contained in the Subtask 2.08 - Closeout Report which was submitted to Acres during October.

Subtask 2.08 - Aerial Photography and Photogrammetric Mapping

All ground control surveys have been completed on all alternative access corridor flight courses. This subtask is essentially complete except for contour mapping of selected access corridor areas and removal of flight panels from the field. Terrain unit analyses of transmission corridors are nearing completion. A project closeout report is being prepared.

Subtask 2.10 - Access Corridors

The requested logistics requirements have been provided by Acres. The full report on alternative access plans is now in preliminary draft form and was submitted on October 5, 1981, for review and comment.

Subtask 2.16 - Hydrographic Surveys

Additional cross sections in the lower reaches of the Susitna River have been accomplished at four sites. Office plotting and analysis of these were completed in September and early October. A draft Closeout Report has been submitted to Acres, thus completing this subtask.

TASK 3 - HYDROLOGY

ACRES ACTIVITIES

Subtask 3.03 - Field Data Collection and Processing

Routine monitoring of R&M field work and processing of data continued. Processed climate data collected during 1980-1981 have been received from R&M and is under review.

Subtask 3.04 - Water Resources Study

An update of Watana reservoir filling schedule was made with minimum downstream releases of 2000 cfs and 6000 cfs from the dam. Revised post-project flows downstream from the dams were calculated for input to fisheries studies. Several modes of reservoir operation to take account of downstream flow requirements for fisheries are being analyzed to arrive at the most acceptable operation to satisfy energy and environmental requirements.

Subtask 3.05 - Flood Studies

Studies on the probable maximum flood in the basin have been substantially completed and design values for spillway capacities finalized. Documentation of the study is underway. A variety of flood routing analyses was completed to finalize discharge capacities of spillway and other discharge facilities for the Watana and Devil Canyon Developments.

Subtask 3.06 - Hydraulic and Ice Studies

Results of the R&M open water modeling of the river reach above Talkeetna were reviewed and incorporated into the ice simulation modeling. Temperature modeling of the reservoirs and the downstream river reach above Talkeetna were completed and results were reviewed in the Fisheries Mitigation Task Force meeting on October 1, 1981. Revised operations incorporating multilevel intake at Watana were analyzed to bring post-project summer temperatures to environmentally acceptable levels in this reach. Winter temperatures post-project indicate the possibility of open water regime almost up to Talkeetna confluence, and the impact on fisheries and environment is being studied.

Results of the open water modeling have been consolidated, and information on pre- and post-project discharges and water levels in the downstream reach have been transmitted to the environmental group for their analyses on fisheries and other impacts.

Subtask 3.07 - Sediment Yield and River Morphology

R&M has prepared an interim report on the subject. This was transmitted to environmental group for information. Dr. D. R. Neill of the University of Alberta will serve as Acres' expert consultant in the morphology studies.

Subtask 3.08 - Climatic Studies for Transmission Lines

Preliminary studies made earlier in the year are presently being reviewed with data from climatic stations collected during 1980-1981. Revised design values for wind speeds and icing for the transmission lines are due to be finalized by the end of November.

Subtask 3.10 - Lower Susitna Studies

A meeting was held with TES on September 1, 1981, to finalize transmittal of all available information on pre- and post-project flows, water quality, and sediment transport in the river reaches below the dams. Progress to date on the transmittals is according to accepted schedule.

R&M ACTIVITIES

Subtask 3.03 - Field Data Collection and Processing

All USGS stream gages are operating satisfactorily. The Watana stream gage is operating, and data for September to mid-October were reduced. Crest stage data and water surface elevations were collected at several sites at a flow of about 22,000 cfs at the Gold Creek station. No crest stage data were collected during October. R&M and Peterson & Associates are interpreting available water quality data for the Susitna River Basin. A quality control check on the Chem-Geo laboratory analysis indicated problems with several parameters. Chem-Geo is to explain the discrepancies. Water quality samples were collected in the midst of flowing frazil ice at the Vee Canyon and Gold Creek sites. Malfunction of the sediment sampler prevented collection of suspended sediment samples on the dates of water quality sampling. All climatic stations are operating well. Climatic summaries through June 1981 for all stations have been received and forwarded to Acres. A Wyoming snow gage was installed at the Watana climatic station. Daily

readings were taken at the Watana Camp evaporation pan until late September, when readings were discontinued for the winter. Velocity points on the Susitna Basin glacier were surveyed. These were the final data collected for the 1981 season. Ice study observations were initiated in late September when large amounts of frazil ice appeared at the Gold Creek site and in October at the Susitna River site.

Subtask 3.04 - Watana Resources Studies

Estimates of reservoir evaporation were made. An interim report on glacier studies was received from Dr. Will Harrison.

Subtask 3.05 - Flood Studies

Comments received from Acres on the report, and minor modifications were made.

Subtask 3.06 - Hydraulic and Ice Studies

Calibration and verification of the HEC-2 Water Surface Profile Model were completed for the river between Devil Creek and Deadman Creek, and the results transmitted to Acres.

Subtask 3.07 - Sediment Yield & River Morphology Studies

A literature search on the trap efficiency of lakes on glacial rivers and of the settling characteristics of glacial suspended sediment was completed. An extensive interim report on the river morphology from Devil Canyon to the confluence of the Susitna, Chulitna, and Talkeetna Rivers was completed, as was an interim report on reservoir sedimentation. Additional data on the morphology of several sloughs above Talkeetna are being reduced by ADF&G.

Subtask 3.10 - Lower Susitna Studies

Flow duration curves and low-flow and high-flow analyses of major rivers in the Susitna River basin were completed. Cross-section and staff gage data were collected near several major boat launching sites and other areas with possible navigation problems under post-project conditions, and the data transmitted to the Alaska Department of Natural Resources for inclusion in the navigation studies. An aerial reconnaissance of the lower river was made to help assess its morphology.

Aerial photographs of the lower Susitna were taken at low stage to assist in defining its morphology. Revisions of the earlier draft of the 3.10 report were made, incorporating more recent data.

TASK 4 - SEISMIC STUDIES

ACRES ACTIVITIES

Acres participated in the final review of the field geologic studies conducted by Woodward-Clyde Consultants' (WCC's) review group on September 2 and 3, 1981. The review was conducted at the job site. Later in the month, the results of

field studies and other ongoing Task 4 studies were presented to Drs. Seed and Sykes in San Francisco, California. Acres participated in this meeting and APA staff members were present in both meetings.

Acres participated in the APA Consulting Board Meeting No. 3 held in Buffalo, New York, on October 6 through 8, 1981. Jon Lovegreen of WCC presented the results of the studies to date. Verbal guidance was transmitted to WCC on the long-term seismic network manual, and location maps for the transmission line corridor and the access road corridors were provided to WCC for seismic studies along these routes.

WCC ACTIVITIES

Subtask 4.08 - Preliminary Dam Stability Analysis

Included as part of Subtask 4.13.

Subtask 4.09 - Long-term Seismologic Monitoring Program

Evaluation of selected large historic earthquakes within 200 km of the Susitna project site has been completed. The quality and quantity of seismograms for these earthquakes are variable, and qualitative or quantitative assessments of focal depth, location, and focal mechanism have been made where possible. The following earthquakes were evaluated: 27 August 1904 (M_S 8.3); 7 July 1912 (M_S 7-1/4) 3 July 1929 (M_S 6-1/4); 4 July 1929 (M_S 6-1/2); 27 April 1933 (M_S 7); 3 November 1943 (M_S 7.3); 19 August 1948 (M_S 6-1/4); 29 June 1964 (M_S 5.6); and 1 January 1975 (M_S 5.9).

The epicenter region for the 1943 earthquake (which occurred in the upper crust approximately 150 km from the dam sites) will be reviewed using small-scale imagery and photography in November and December 1981. This review will be conducted to identify potential sources for this earthquake. This study is being conducted in response to concerns of Dr. Lynn Sykes about the source of the event.

The size and closest approach of the terrain (or floating) earthquake to the sites are being analyzed. This analysis includes review of historical worldwide earthquakes which both have and have not had surface rupture. This work is expected to be completed in mid-November 1981.

Analysis of worldwide Benioff zone earthquakes is complete. Paul Somerville of WCC has defined the Benioff zone in the project region as having two major subzones--an interplate subzone and an intraplate subzone separated by a transition zone. The seismologic characteristics and maximum earthquake have been developed for these two zones. The results of this analysis were presented to Dr. Lynn Sykes and were accepted by him as discussed under Subtask 4.12 below.

Work on the network monitoring manual has commenced and is expected to be completed in November 1981. Verbal guidance from both the APA and Acres have been incorporated into development of the manual.

Analysis of the stress regime in portions of the Talkeetna Terrain is essentially complete. Records for selected earthquakes in the Terrain were reviewed at the University of Alaska Geophysical Institute (UAGI) by Barbara Bogaert and Woody Savage and incorporated into the analysis along with records from the 1980 Susitna Project microearthquake network. This work will be completed in early November 1981.

Subtask 4.10 - Reservoir-Induced Seismicity

Review of the model developed in August 1981 has been conducted by Jon Lovegreen and Duane Packer of WCC. Review comments will be incorporated into the model during October and November 1981. The model will then be used as part of the seismic exposure analysis (Subtask 4.13) to determine the ground motions of significance to dam design.

Subtask 4.11 - Seismic Geology Field Studies

The final field review by WCC's review group was conducted on September 2 and 3, 1981, at Watana field camp. Members of Acres and the APA also attended the review. The main conclusion of the review group was that the seismic sources to consider for dam design are the Denali and Castle Mountain faults and the Benioff zone.

All WCC field personnel departed from the field on September 3, 1981. This concludes the seismic geology field studies for Task 4.

The final draft of review comments by the WCC Project Review Team was sent to each of the reviewers for review and comment. The final version of these comments will be completed by mid-November 1981. No other work was conducted on this subtask.

Subtask 4.12 - Evaluation and Reporting

Data analysis and report preparation began on September 14, 1981, and will continue virtually full-time through December 1981. According to the present schedule, WCC is to submit a draft copy of the report to Acres for review on December 23, 1981. Acres' review comments are expected to be transmitted to WCC by January 18, 1982, in order to produce a final report by February 19, 1982.

A review meeting was held in the San Francisco office of WCC. At the meeting, preliminary seismic geology, seismology, and earthquake engineering results were presented to Drs. Seed and Sykes of the APA and Acres' review boards. Selected members of Acres and the APA were also present at the meeting. The primary review comments concerned the size and distance from the site that a terrain (or floating) earthquake could occur, the sources for the 1929 M_S 6-1/4 and 1943 M_3 7.3 earthquakes, the effect on ground motion analyses from these events, and a request for additional confirmation of the judgment that the local features studied in 1981 are not active faults.

An informal request was made by Robert Mohn of the APA to develop a working approach for interacting with the UAGI on WCC's geologic and seismologic results. A proposal to do this work will be submitted by WCC to Acres in early October 1981.

WCC was requested to participate in the October 6 to 8, 1981, review meeting in Buffalo, New York. The preparation for this meeting began in late September 1981. It is requested that Jon Lovegreen will attend and present WCC's preliminary results and conclusions.

WCC addressed review comments by Drs. Seed and Sykes which were made at this meeting, as well as the September 22, 1981, meeting. The additional work being carried out to address the comments include: interpretation of remotely sensed data in the 1943 earthquake epicenter region to identify potential causative faults; analysis of the size and depth of earthquake which could reasonably be expected to cause surface rupture, and implementation of a probabilistic approach to describe the likelihood that the 13 local features are active faults and assess the impact on seismic design. The conceptual approach to the latter topic has been discussed verbally with Acres.

Report writing and figure preparation continues. An in-house draft of the report will be submitted to the WCC Project Review Team on November 23, 1981.

Work has commenced to provide data for the seismic exposure analysis. This work includes assessment of maximum credible earthquake, recurrence, slip rate, b-slope, and likelihood that a fault is active for the known seismic sources and the 13 local features. A similar assessment is being made for the interplate and intraplate sections of the Benioff zone and the terrain earthquake. This work will be completed in early November 1981, and will be provided to the earthquake engineers.

Subtask 4.13 - Ground Motion Studies

A preliminary deterministic estimate of ground motion parameters was prepared by WCC. These estimated parameters were submitted to Acres on September 16, 1981, and presented at the review meeting on September 22, 1981.

It has been agreed within WCC that conducting a probabilistic assessment of ground motion parameters (i.e., what is the likelihood of exceedance of design ground motions if an earthquake were to occur on a particular source) would be in the best interests of the project. This decision is being discussed with Acres. While these discussions are being held, work on this subtask has been limited to that of coordinating input from geology and seismology for the seismic exposure analysis. Ground motion studies will commence in mid-November 1981, when the approach has been agreed upon with Acres.

Subtask 4.14 - Dam Stability Consulting Services

Consulting services were provided by Maurice Power, as requested by Acres.

Subtask 4.15 - Transmission Line Evaluation

Transmission line and access route right-of-way maps have been received from Acres, and interpretation of remotely sensed data has commenced. This work is expected to be completed in early November 1981.

TASK 5 - GEOTECHNICAL INVESTIGATIONS

ACRES ACTIVITIES

General

Acres' work on Task 5 through the months of September and October has principally involved reduction and data interpretation necessary for engineering layouts, design, and cost estimates.

Subtask 5.02 - Photo Interpretation

Acres received the finalized photo interpretation from R&M and reviewed the report to insure that all comments have been incorporated. R&M continued lab testing of materials obtained from test pits in the river near Watana and test trenches and auger holes at Devil Canyon. Work on this subtask was completed during October 1981.

Subtask 5.03 - Exploratory Program Design (1981)

Work under this subtask consisted of locating test pits on the river alluvium upstream from the Watana Dam Site during September. Work was completed on defining the rock-testing program for the project. The scope of the soil-testing program will be completed in October. Both the rock- and soil-testing programs were scoped and samples shipped to the respective laboratories. The testing program is expected to be completed during December.

Subtask 5.06 - Exploratory Program (1981)

Subsurface drilling of the Watana site was completed during September with the completion of BH-3 in the area of the proposed right abutment powerhouse location. BH-4 at the powerhouse was drilled to 950 feet and permeability testing was completed. This completed the planned 1981 program. The rock quality in the area was found to be good to excellent. Several small alteration zones were found in the powerhouse borings, but these zones were not considered to adversely impact the suitability of the location for underground structures. Diamond drill and other equipment crews demobilized from the site by the end of September. All auger holes were completed on the proposed access routes by Semptember 20. During September approximately 20 shallow test pits were excavated on sand bars and small islands in the river channel from upstream of Deadman Creek to about 3 miles downstream of the confluence of Fog Creek and the Susitna River. Remaining field activities consisted of instrumentation which is expected to be completed in November.

During October, an additional 30,000 lf of seismic lines were laid out in the Fog Lakes area to investigate the depth of overburden and the potential for reservoir leakage throughout this area. An archaeologist from the University of Alaska investigated the areas through which the lines passed and recommended clearance so that explosives could be used when required. A two-man seismic crew from WCC, along with two technicians from R&M, started work on the lines near the end of the month.

Geologic logging of the U.S. Corps of Engineers core for Watana was completed during September. Fracture logging was completed during the month.

Logging of the Bureau of Reclamation cores is expected to be completed in early December.

The scoping and implementation of the mapping program for the Devil Canyon and Watana reservoirs were undertaken during September and October. The mapping will be based principally on photo interpretation with field checking where appropriate. The mapping will be directed toward identifying areas that would experience potential slumping and breaching under operating conditions. The mapping is anticipated to be completed during December.

All the geotechnical field work was reviewed during September by Dr. A. Merritt, Consultant for APA.

Subtask 5.08 - Data Compilation

Extensive effort was placed on reduction and the preparation of geologic maps, cross sections, boring logs, and figures in preparation for Task 5 report. A preliminary outline for the final Task 5 report was prepared for comment. Work continued on preparation of text and figures.

R&M ACTIVITIES

Subtask 5.02 - Photo Interpretation

Revisions were made in the Terrain Unit Maps and summary report, and the alternative North Access Corridor photo mapping was nearly completed during September. During October final maps and Closeout Report were submitted. Photo maps for alternative North Access Corridor were also submitted.

Subtask 5.06 - Exploratory Program, 1981

Permeability testing at BH-3 at the Watana damsite was completed, and BH-4 was drilled and tested. The diamond core drill rig was demobilized to Anchorage.

The auger drill rig drilled 26 test holes along the proposed access routes and then demobilized to Anchorage.

The trench shores used in the WCC linement trenches were sent to Anchorage and the trenches were backfilled. The small Kubota backhoe excavated 21 material site test pits in the Susitna River on gravel bars and islands in the general area of the Watana damsite.

All major geotechnical field programs were completed and all associated personnel and equipment left the job site on or before September 26, 1981.

At the end of October, mobilization was underway for additional seismic refraction surveys in the Fog Lakes area. No other field activities took place. Laboratory testing schedules were developed and some testing was completed. Reduction of survey elevations and coordinants was on-going, and final logs, permeability data and core photos were in preparation for submittal.

TASK 6 - DESIGN DEVELOPMENT

Subtask 6.09 - Design Criteria for the Watana Development

Subtask 6.10 - Design Criteria for the Devil Canyon Development

A second draft of the design criteria has been completed and will continue to be updated as data and criteria are further developed.

Subtask 6.11 - Preliminary Design of Watana Dam

Static and dynamic analyses of the rockfill dam have been completed based on a dam cross-section utilizing alluvial gravel and boulders from the riverbed in the outer shell. Further study of sources of materials has continued.

Final review of the economic dam height is in progress to determine whether any slight adjustment of crest and reservoir pool level is required based on the most recent system load forecasts.

Subtask 6.15 - Watana Spillway Alternatives

Various spillway alternatives have been designed and costed to a level of detail sufficient to give a basis of comparison for the various schemes. A combination of low level outlet and valve discharges together with a chute and flip bucket type, main spillway and emergency spillway with fuse plug has been selected. Work is now in progress on refining this scheme for inclusion in the feasibility report.

Subtask 6.16 - Devil Canyon Spillway Alternatives

Comparison of stilling basin and flip bucket schemes has been completed, and a system of discharges based on a flip bucket spillway coupled with fixed core valves incorporated in the dam has been developed. Refinement of this scheme is in progress.

Subtask 6.20 - Access and Camp Facilities

Work continued on the camp design and cost estimates during the report period. Concepts developed included: a three-level camp; campsite which would house the majority of unmarried workers; permanent townsite which would eventually house the permanent operations and maintenance personnel, while during construction, house management personnel and their families; temporary townsite that would augment the permanent townsite during construction.

Note: Henceforth, Subtask 6.20 will be included with Subtask 2.10.

Subtask 6.21 - Watana Diversion Scheme

The free-flow and submerged tunnel schemes were redeveloped in conjunction with incorporation of a permanent, low-level outlet into one of the diversion tunnels. Studies to date have shown two 35-foot diameter tunnels best meet the overall objectives of the diversion scheme. One tunnel would act as a submerged tunnel during diversion operations and would be plugged for permanent operation. The other tunnel would act as a free-flow tunnel during diversion and would become a permanent low-level outlet with energy dissipation for permanent operation. A system of high-pressure slide gates located in the diversion closure plugs has been developed to provide for low-level releases during reservoir filling and to serve as an emergency facility for drawing down the reservoir.

Work continued during October on the optimizing of the selected diversion scheme in conjunction with producing capital cost estimates for the scheme.

Subtask 6.22 - Devil Canyon Diversion Scheme

The Devil Canyon Diversion Scheme was redeveloped during September. Studies to date indicate a single, 35-foot diameter, concrete-lined pressure tunnel with upstream rockfill cofferdam has been developed for the Devil Canyon Diversion.

The tunnel would act as a submerged tunnel during diversion and would be plugged for permanent operation.

The Devil Canyon Diversion Scheme continued to be refined during October. Continuing studies and evaluations indicated the concrete arch dam has only a 2- to 3-year critical period, not the 6-year complete schedule originally anticipated, when overtopping of the cofferdam would cause substantial damage. For this reason, the design flood was reduced from a 50-year recurrence period flow. This reduced the optimum tunnel diameter from 35 feet to 30 feet.

Subtask 6.23 - Optimize Watana Power Development

A study of the comparative costs of a surface and underground powerhouse has been completed. An underground powerhouse has been selected and comparison of a four-generating-unit configuration to a six smaller unit configuration has indicated the latter to be preferable.

Subtask 6.24 - Devil Canyon Power Development

A four-generating-unit underground powerhouse has been adopted and work is proceeding on a comparison of directing flows from a single unit or providing a separate pumping system to discharge environmental flows down Devil Canyon.

TASK 7 - ENVIRONMENTAL STUDIES

ACRES ACTIVITIES

Subtask 7.01 - Administration

Numerous telephone conversations and two meetings in Buffalo were conducted to supply TES with information necessary to conduct its studies. Discussions and meetings with APA were held regarding access road strategies. A meeting was held with Stephen Braund to clarify the sociocultural work products. Work was begun on obtaining costs and planning logistics to carry out project-wide report distribution.

Outlines of portions of the Volume 1 Feasibility Study were prepared. The DNR-APA interagency agreement was reviewed.

Subtask 7.05 - Socioeconomics

Discussions were held with TES, APA, and Frank Orth and Associates to clarify the socioeconomic study schedule and work product.

Subtask 7.09 - Tranmission Line Analysis

A meeting was held with TES to discuss the results of their studies. The draft 8.01 Closeout Report was completed and submitted to APA.

Subtask 7.10 - Fish Ecology Studies

The Fisheries Mitigation Task Force meeting held in Anchorage was attended by Acres personnel. Information concerning downstream flows and temperatures were provided to the Task Force.

Subtask 7.11 - Wildlife Ecology Studies

Conversations were held with TES and APA regarding finalization of the mitigation policy. The policy was received, reviewed, finalized, and forwarded to APA.

Subtask 7.14 - Access Route Environmental Analysis

Preliminary access route analysis was conducted. Discussions were held with TES regarding environmental impacts of the various alternatives. Information for meetings held with APA in October was assembled. Meetings were held with the Steering Committee and Cook Inlet Regional Corporation to discuss access road alternatives and solicit their input.

TES ACTIVITIES

Subtask 7.01 - Administration

Considerable discussion (a meeting in Buffalo and numerous phone conversations) was held concerning TES information needs. TES received a list and schedule of deliverables from Acres in response to the TES list and schedule of information needs (December 1980, revised August 1981).

During September, TES prepared reports assessing the status of Subtasks 7.07, 7.08, 7.09, and 7.14, and discussed the status of Phase I modifications and escalation with Acres. TES submitted to Acres the escalation report pertaining to the University of Alaska for the period of January 1 to June 30, 1981. Budget constraints associated with escalation costs for Subtask 7.06 were discussed with University officials.

TES obtained cost estimates to supply additional copies of 1980 Subtask Annual Reports and forwarded this information to Acres.

Discussions occurred with Acres at the October 9 meeting regarding the Fish and Wildlife Mitigation Policy, the TES access route evaluation, the Phase II transition budget, and the latest dam designs. Further discussions were held in October concerning the TES list of information needs and Acres' list of deliverables.

The TES Project Environmental Study Manager, and the Anchorage Resident Manager held a second series of agency contact meetings during the week of October 12. A total of 15 state and federal agencies were contacted, with a total of 30 officials participating in the briefings. The TES Resident Aquatic Biologist, Dr. D. Schmidt, joined the team when agencies with a professional interest in fisheries were contacted.

Discussions were held with the Acres Resident Manager to define and plan for camp requirements for the period December 1, 1981, to June 30, 1982.

Subtask 7.02 - Field Monitoring

Organization and preparation of the field office at Watana for winter was completed during the first part of September. The field representative returned to work in the TES Anchorage office on September 8, 1981, and has spent some time since that date compiling information collected during this summer. Additional time was spent researching landownership as part of the transmission line routing studies.

Subtask 7.05 - Socioeconomic Analysis

During September, FO&A prepared an abstract of the Socioeconomic Analysis for inclusion in the draft report sent to Acres (see Subtask 7.15). FO&A continued work on evaluation of the ISER forecasting model (Work Package 4). In concert with this, Peter Rogers met with Scott Goldsmith of ISER to insure consistency between FO&A and ISER methodologies. FO&A conducted a literature review of studies on fish and wildlife values.

During the month, the TES Group Leader and the FO&A Project Manager met in Alaska with the public participation staff of APA. Discussions were held concerning access route alternatives and construction camp arrangements. Potential impacts resulting from optional schemes were identified.

While in Alaska, the Group Leader also met with APA public participation staff and Steve Braund, Acres' sociocultural consultant, to discuss coordination of activities. The Group Leader summarized socioeconomic and land use analysis to date concerning access plan evaluations.

The Group Leader provided additional input on access routes. He also met with Acres' personnel to discuss the construction camp and permanent operations village for Susitna during October. Frank Orth and Associates' staff traveled to Anchorage and Mat-Su Borough (Palmer) to review planning standards for project facilities, and collected housing and related data for the baseline forecast. Staff also participated in technical Susitna team meetings and public meetings concerning access. Ajdustments were made in the Baseline Forecast Methodology (Work Package 4) and the forecast without Susitna was initiated. Frank Orth & Associates also reviewed several methodologies for estimating fish and wildlife values.

Subtask 7.06 - Cultural Resources Analysis

The University of Alaska Museum continued to work on the data analysis of cultural material collected in the Susitna area during the 1981 field season. Reports on cultural resources in the vicinity of the alternative access routes and transmission corridors were prepared for TES. TES and the Museum prepared an abstract of results to date and expected project impacts on these resources.

George S. Smith had a preliminary meeting with Mr. Doug Reger, State Archaeologist, and Mr. Bob Shaw, SHPO, concerning the Susitna Project on Subtask 7.06.

Work is in progress on the analysis of cultural material from the sites located this past field season. All of the faunal material recovered during reconnaissance testing has been analyzed. Lithic analysis is presently underway. Radiocarbon dates are not available at this time. Portions of the final report are in preparation. Graphics to be included in the report are approximately 75% complete.

At the request of Acres, TES had the University of Alaska Museum conduct an archaeological evaluation and survey of a proposed seismic line in the Fog Lakes area. No cultural material was encountered and clearance was recommended provided some minor changes were made in the position of the line.

Subtask 7.07 - Land Use Analysis

TES prepared draft abstracts on the land use and visual and aesthetic impact studies for review by U of A project team members. These were included in the abstract sent to Acres. TES also sent Acres a draft outline for the Report on Aesthetic Resources, which contained preliminary recommendations for consideration by the Acres design team.

During the month, the Group Leader traveled to Alaska to conduct an overflight of tributaries to the lower Susitna River as part of the navigational use study. The flight involved a survey of boating use on the Skwentna, Yentna, Kahiltna, Lower Susitna, Kashwitna, and Deshka (Krotoa Creek) Rivers, and Willow and Alexander Creeks. Locations, types of craft, and power source were noted. As part of this effort, the Group Leader also met with Woody Trihey (in-stream flow consultant) and Paul Janke (DNR - Water Management) to facilitate coordination of the study.

The Group Leader performed additional analysis of alternative access plans for incorporation in the TES report. The land use analysis was coordinated with socioeconomic input previously prepared by FO&A and the Group Leader.

Additional analysis was performed related to assessment of alternative access plans. The University updated draft maps on aesthetics and visual resources management.

The Principal Investigator for Land Use Analysis attended the technical meeting on October 19 concerning analysis of access plans. TES began preparation of maps and a draft report on the navigational use investigation.

Subtask 7.08 - Recreation Planning

During September, TES prepared a draft of the abstract for Recreation Planning. University of Alaska project staff reviewed the draft and TES included it in the abstract sent to Acres.

While in Alaska, the Group Leader met with the U of A Principal Investigator to revise the schedule for the Recreation Planning effort in response to changes in timing of the access road decision.

The Group Leader and Principal Investigator met with Jack Wiles of DNR - Division of Parks to exchange information and provide the Division with an overview and status report on the Recreation Plan.

Work continued on additional analysis and refinement of the working draft recreation plan document by the U of A project staff. This work also involved revisions to the participation survey instrument which is now scheduled to be sent out to the public in early January 1982.

Subtask 7.09 - Transmission Line Analysis

During September, a draft Transmission Line Assessment Procedures Manual was completed and sent to Acres for comment. In addition, a copy of the draft final Subtask 8.01 Closeout Report was received and reviewed by TES. Aerial photographs of the Knik Arm area south of Wasilla were received and reviewed.

Subtask 7.10 - Fish Ecology Studies

Since the last monthly report, Alaska-based activities included a presentation by D. Schmidt to the Susitna Hydroelectric Project Steering Committee explaining the TES procedure for addressing impacts and mitigation issues. Additional dissolved gas measurements were taken in the vicinity of Devil Canyon. Technical support and visits to ADF&G field crews have continued through the month of September.

The major activity of the entire Fish Ecology Study Team has been the preparation of the Fish Ecology Studies Abstract. This was submitted to Acres in draft form during the latter portion of September along with the abstracts from the other subtasks.

The results of the June dissolved-gas measurements in Devil Canyon have been put into report form and were submitted to Acres. The life history and ecology literature reviews of selected fishes underwent internal review and editing.

A policy for the Fisheries Mitigation Technical (Core) Group has been completed. Work is continuing on a joint Fish and Wildlife Mitigation Policy.

Additional activities included the continued literature review for pertinent materials related to impact, mitigation, estuaries, and arctic lakes and impoundments. At Acres request, TES commented on an article concerning hydroelectric development on the Columbia and its relationship to salmon populations.

Major activities of the Fish Ecology Study Team concerned meetings of the Fisheries Mitigation Technical Group in Seattle on October 1-2, 1981, and a second meeting held in Anchorage on October 22 and 23, 1981. Seasonal flows thought necessary to avoid flow impacts upon salmon were developed.

Additional topics including predicted post-project temperature regimes and their possible impacts were discussed at the meetings of the Fisheries Mitigation Technical Group. Potential mitigation options on a variety of impacts are presently being compiled and analyzed by the mitigation technical group.

Final recommendations on the joint Fisheries/Wildlife Mitigation Policy Statement have been submitted to Acres.

Resident fish ecology/life history summaries are completed and analyses on additional dissolved-gas sampling are being undertaken. A report entitled "Life History and Ecology of Selected Fishes That Occur in the Susitna River" was finalized and submitted to Acres. Interviews were conducted with several team members by the APA during the October 22-23 meeting period. Alaska-based activities included presentations of the Susitna fisheries studies at several meetings with agencies.

Subtask 7.11 - Wildlife Ecology Studies

The Wildlife Ecology Group Leader devoted a considerable amount of time to tasks associated with the analysis of access route alternatives. The prime effort in this regard was the completion of the habitat value comparison and its application to the access plans. Additional time was spent reviewing the recommendations of consultants and subcontractors in regard to this issue.

Progress was made on the development of a final wildlife mitigation policy statement and the development of a decision-making methodology. The results of this effort were forwarded to Acres for review and comment.

Steps were also taken to initiate the development of a habitat comparison to assist in the routing of the transmission lines. Subcontractors and ADF&G were requested to supply the necessary life requisite data to be used in this effort.

Field work concerning birds and non-game mammals included the continuation of the avian survey during the fall migration period and a survey of waterfowl on water bodies in the upper Susitna basin. Analysis efforts continued on the breeding bird data collected during the spring/summer as well as habitat data collected during August.

A considerable amount of field work concerning furbearers took place during September. This effort resulted in the radio-collaring of five marten. A survey was conducted of red squirrel middens to ascertain the extent of marten use at this time of the year. Other field work included the continued monitoring of red fox dens and the pre-dispersal activity of pups. Due to the availability of snow, the snow-tracking program commenced during this month.

A considerable amount of furbearer field work took place during October. Additional marten were radio-collared and relocated on a daily basis. Several new marten resting sites were found and over 50 marten scats collected. Through radio monitoring, the timing and extent of fox pup dispersal was documented during late September and early October. Snow tracking began in October but poor snow conditions and inclement weather impeded the desired effort. Site-specific inventories were conducted to increase familiarity with the occurrence of less common furbearer species such as lynx and coyote. Visits were also made to proposed borrow sites not previously visited.

The major effort during the month of October concerned the development of a wildlife mitigation plan. During early October, a meeting was held in Anchorage to discuss mitigation options that could be recommended to deal with the predicted impacts of the Susitna Project. A variety of suggestions and recommendations were discussed during that meeting and selected ideas have been forwarded to Acres for consideration. During the remainder of October, the Wildlife Ecology Group Leader worked on assembling the mitigation ideas and organizing them for consideration by other project personnel. That effort will continue into November and be available for additional consideration by the end of the month.

Avian field work was terminated on October 23. Most of the bird and small mammal work during the month was still preliminary to report writing, and included the autopsy of almost half of the season's small mammal specimens, the placing of the rest of the vegetation-habita data from the supplemental mammal lines onto the computer, and some preliminary statistical runs of the bird analyses. All waterfowl survey data has been tabulated and progress has been made on the preparation of a rough draft of the raptor portion of the report.

Subtask 7.12 - Plant Ecology Studies

The AES located available aerial photographs for the Clear MEWS to Healy area and ordered them for vegetation mapping purposes. The AES continued data analysis of downstream information and proceeded on vegetation mapping of transmission line corridors.

TES/AES discussed the burning project planned by BLM for Alphabet Hills region of the upper Susitna basin.

TES reviewed manuscripts submitted by the AES for possible publication in Agroborealis, and corresponded with Acres concerning approval of articles.

TES reviewed input received from the AES for the access route report and finalized information presented in the report. TES also reviewed and revised the abstract submitted by AES and incorporated this input into the draft abstract submitted to Acres.

The AES continued work on the Feasibility Report during October, with emphasis on data analysis of the downstream information and preliminary impact predictions. AES attended wildlife mitigation meetings on October 13 and 14 and provided input into various aspects of mitigation, with special emphasis on the clearing of the impoundment areas and reclamation of disturbed areas. In addition, possible studies that would be performed in conjunction with the BLM potential burn experiment in the Alphabet Hills region were discussed with ADF&G, AES, and Acres.

TES developed a sensitivity map and recommendations for Acres concerning the utilization of borrow areas for the dam sites.

Subtask 7.14 - Access Route Environmental Analysis

Considerable effort was expended in the preparation of the Access Route Environmental Analysis Report. Input received from Principal Investigators was incorporated into the report in addition to information supplied by Group Leaders in-house. Preparations were begun to attend a series of meetings concerning access with project team members, the Steering Committee, and perhaps the public.

During the first week in October, the TES environmental, socioeconomic, and land use access route report was completed and submitted to Acres.

Time was spent, toward the end of the month, preparing input to submit to R&M consultants regarding environmental concerns associated with identified borrow areas for some of the access corridors. This information will be submitted in early November.

Subtask 7.15 - Preparation of FERC Application

Considerable discussion was held between Acres and TES concerning organization and format of the environmental report. TES submitted to Acres a preliminary draft of an abstract (75 pages) for the Susitna environmental report.

A revised outline for environmental sections of the feasibility report and license application was prepared. Revisions of the July 31 outline were based on discussions and correspondence with Acres and on other practical considerations that became evident during the preparation of the environmental report abstract.

STEPHEN R. BRAUND & ASSOCIATES ACTIVITIES

During September, effort was placed on addressing various access alternatives with residents in the study area. This was accomplished by field trips to Talkeetna, Curry, Chase, Trapper Creek, Gold Creek and Cantwell during the month. Numerous meetings with other project consultants were also held to obtain information and opinions.

During October, the sociocultural access report was submitted to Acres. Interviews with project consultants, APA, and various governmental agencies were held during the month to obtain further data for the Sociocultural Study which is in progress.

TASK 8 - TRANSMISSION

Subtask 8.01 - Tranmsission Line Corridor Screening

A final draft of the close-out report was forwarded to the Alaska Power Authority in September for review and comment.

Subtask 8.02 - Electric System Studies

Work continued on the first draft of a planning memorandum entitled "Preliminary Transmission System Analysis." This memorandum will review all the work completed on electric system studies up to June 15, 1981.

During this period, the termination of the transmission line at Anchorage was under review. It was suggested to APA that the lines be brought into Anchorage via submarine cables under the Knik Arm and then to Anchorage Municipal Light and Power and Chugach Electric Association by overhead lines. This line could probably parallel the transmission line being constructed by Chugach for its 220 kV system. APA agreed with the review and referred Acres to the Municipality of Anchorage for further information on a contemplated bridge crossing of Knik Arm.

Commonwealth Associates requested information on the upper limit of line loading for each of the three 345 kV lines from Devil Canyon to Anchorage. In the letter of October 19, 1981, Acres specified an ultimate line loading of 950 MVA per circuit.

Subtask 8.03 - Transmission Line Route Selection, 1981

The study effort is being concentrated within the recommended corridors. The results of field studies from other tasks is being assembled and will be available shortly. The specific information will be forthcoming from the environmental and geotechnical groups.

Subtask 8.04 - Tower, Hardware and Conductor Studies

Study has commenced on various configurations of towers for the transmission line. Loading criteria parameters were prepared for determining structure requirements.

Subtask 8.05 - Substations

Some preliminary work was started which included single-line diagrams and switchyard arrangements.

Subtask 8.07 - Transmission Line Cost Estimates

Transmission system estimates were updated during this period.

TASK 9 - CONSTRUCTION COST ESTIMATES AND SCHEDULES

ACRES ACTIVITIES

During September, a review and update commenced on base unit cost rates that are to be part of the preliminary cost estimates. Initial quantity takeoffs were started with additional takeoffs to be completed as the design progresses. An extensive review of working area, fill and excavation quantities at various elevations of the Watana Dam was completed. This information will form the basis for formalization of a construction methodology and determination of appropriate production rates and schedules. It will also be used as a basis for on-going design under Task 6.

During October, work continued on Subtask 9.02 on the preparation of preliminary quantities and estimate for use by EBASKO. A review was made of the items to be used for quantity takeoffs and costing. This expanded list of items was adapted to the FERC code of accounts. The FERC system will be used in all future presentations. Work started on the coding of data for use by the Acres estimating system. This will allow future estimates to be computer-generated in the adapted FERC format. Work also continued on preparation of preliminary quantity estimates and of unit costs.

The Watana and Devil Canyon schedules and the computerized logic network for each site were updated under Subtask 9.04. Particular emphasis was placed on the impact of access decisions on the initial few years of work at each site.

An estimating and scheduling review was conducted in late October with Acres external estimating/construction consultant. Results and comments from this review will be incorporated into future work.

TASK 10 - LICENSING - OCTOBER 1981

FERC approved final rules in October for applications for major unconstructed projects. A review of the rules indicated that they were virtually unchanged from the proposed rules published in February.

The formal coordination program was finally initiated with the available documents released to agency heads for official comments.

TASK 11 - FINANCING AND RISK ANALYSIS

ACRES ACTIVITIES

A meeting with the APA Director of Finance and with First Boston was held in Buffalo on October 13, 1981, to address potential changes in Task 11 scope resulting from recently enacted legislation in Alaska. It was agreed that Acres should proceed with submission of a revised scope of work for Task 11. Primary concentration will be on (1) study of financial feasibility under varying assumptions as to State participation, (2) a review of marketability, and (3) a risk analysis focusing upon the probabilities of meeting cost and schedule alternatives. A new scope of work has been prepared for risk analysis studies and ajdustments were made to the FEEZBL program for assessing financing alternatives.

TASK 12 - PUBLIC PARTICIPATION

ACRES ACTIVITIES

Public workshops in Talkeetna and Cantwell concerning access road selection were attended.

TASK 13 - ADMINISTRATION

ACRES ACTIVITIES

Subtask 13.04 - Develop Schedule - Control System

Work continued on monitoring and updating the project schedule. The proposed schedule for each site was reviewed and updated in accordance with current access schemes and pre-construction planning.

Subtask 13.05 - Cost Control

During the month an edited in-house computer cost report was accepted by APA. The in-house computer replaces the Lanier System as the machine developing the monthly cost report. In order to determine whether Acres is in compliance with Article 12 of the Contract, Acres reevaluated our salary increase for the year and submitted a schedule to the client. Acres analyzed the revised escalation calculation for 1980 and estimates for 1981 and incorporated the results into our proposed Amendment #2. Other adminsitrative functions continued routinely.

TASK 14 - ADF&G SUPPORT

ACRES ACTIVITIES

Purchasing for ADF&G continued routinely during September and October.

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

JAY S. HAMMOND, GOVERNOR

333 RASPBERRY ROAD
ANCHORAGE, ALASKA 99502

September 9, 1981

Kevin Young
Acres American, Inc.
Liberty Bank Building
Main at Court Street
Buffalo, New York 14202

Dear Kevin:

Once again I find myself slipping behind on monthly reports. I intentionally skipped the July report as our activities were covered in the quarterly report. Therefore this report covers August, September, and the first two weeks of October.

Field activities were fairly routine. Radiocollared animals generally followed expected patterns. We have identified a different component of the upstream moose population which wintered in the vicinity of the Watana Impoundment then migrated to Coal Creek for the summer.

A short tagging operation was conducted in early August to replace bear collars. One new brown bear and three new black bears were collared. One of the blacks had been collared earlier but had shed the collar.

Black bears entered their dens substantially earlier this year than last. Some had denned by September 9 and all had by October 7. In 1980 they entered dens between September 29 and October 13. There was some evidence that brown bears also were beginning to den earlier but most were still out on October 7. The distribution of black bear dens appears similar to those observed in 1980-81 with those near the Watana Impoundment below the projected water level and those near the Devils Canyon Impoundment somewhat higher than the projected water level. In fact many 1980-81 den sites were being reused in 1981-82 sometimes by the same bear. More detailed information will be collected when the dens are visited next summer.

Movements of moose radiocollared below Talkeetna indicate that the 1980 and 1981 capture operations sampled different subpopulations. Four of five moose captured in 1980 in this area have spent the summer on the east side of the river while 15 of 16 1981 moose are on the west side. It is possible that other subpopulations exist but have not been sampled. There is some evidence of one such subpopulation in the area between the Kashwitna and Little Susitna Rivers but additional collaring will be necessary to confirm this.

TI-K7LH

Several wolves have dispersed from the study packs and have either joined other packs or moved out of radio contact. We also lost contact with several moose and bears during the hunting season. It will take a few weeks to fully assess the loss.

Data entry continued to be our highest priority activity and occupied much of the field staff's time. Manpower shortages and gaps in availability of hardware and software have created some delays but an outstanding effort on the part of the entire staff has overcome these problems. Principal investigators analysed data that are already available and worked on portions of the Phase I report.

BLM's plans to conduct a prescribed burn to enhance habitat for moose have been reviewed. The area lies 10 to 15 miles east of the upper end of the Watana Impoundment and contains habitat similar to that which will remain adjacent to the impoundment after filling. This burn appears to present an opportunity to evaluate prescribed burning as a mitigation tool for the Susitna Project. Additional moose and vegetation studies beyond those planned by BLM will be necessary. Some of these will have to be initiated this fiscal year. We will attempt to develop a recommendation on a course of action in cooperation with TES in the near future.

The fall caribou composition count is scheduled for the week of October 12. The count is the final step in our caribou census procedure and a 1981 population estimate will be available shortly after the count is completed.

Towards the end of the same week we expect to radiocollar wolves. As soon as snow conditions permit, probably early November, we will attempt to capture wolves from new packs and wolverine.

Sincerely,

Karl Schneider

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

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

October 19, 1981

03-81-7.10-0.4

RECEIVED
OCT 27 1981
ACRES AMERICAN INCORPORATED

Dr. John Hayden
Technical Study Director
Acres American Incorporated
The Liberty Bank Building
Buffalo, New York 14202

Dear Dr. Hayden:

RE: Su Hydro Aquatic Studies Monthly Report - September

FIELD STUDIES

Resident Juvenile/Aquatic Habitat

Impoundment Reach

Two trips to the proposed impoundment area were undertaken in September. The first trip, September 15 through September 28 was conducted by a composite RJ/AH crew and resulted in the capture of those resident species listed in Table 1 (Attachment 1) from the trip report. The humpbacked whitefish listed was the first of this species taken in the impoundment area this season.

Catch per unit of effort (angling with sport tackle) on arctic grayling was the lowest recorded this season. Of the 458 total grayling taken, 128 were taken within the designated study areas at a rate of 3.9 fish per man hour.

The total number of fish tagged was 420 (Table 3, Attachment 2). Grayling accounted for 47% of the fish tagged. There were 41 previously tagged grayling and one that had lost it's tag, recaptured.

General observations of Arctic Grayling by stream are reported on Table 4 (Attachment 3). General observations are the fish have moved from their summer habitat of small, shallow pools and riffle areas to large, deep pools in some of the streams and out of those streams that do not have many pools.

Tributary stream levels were low and clear. The mainstem Susitna was the lowest of the season and is now beginning to clear.

ALASKA POWER AUTHORITY
SUSITNA
FILE P5700 .11.70
SEQUENCE NO. F 2043

ACTION	INFORM.	DISTRIB.	INITIAL
		DCW	
	✓	JAL	
		CAD	
		JDG	
	✓	JHH	
		JPS	
		IPGH	
		ENS	
		SNT	
		DWL	
		MRV	
		HRC	
	xc	AK	✓
	✓	FILE	

11-K7LH

Gillnets placed in the mainstem Susitna near the mouths of major tributary creeks resulted in the capture of 13 grayling confirming that they are utilizing the mainstem river. Inspection of tag recoveries at the mouths of tributary streams also reveal that fish tagged upstream are now moving down to the mainstem.

Two small pools near the mouth of Watana Creek were found to contain large numbers of juvenile fish. Dip-net sampling confirmed a species composition of grayling, whitefish, longnose sucker and sculpin. The pools were formed when the water level in the mainstem Susitna dropped for the winter and are now isolated from the mainstem.

The second trip was conducted by two biologists from September 21 through September 23. Study areas on some tributary streams were fished for grayling. Fishing was not as productive as previous trips and only 28 grayling, including one recapture from Watana Creek, were taken.

Deadman Lake was fished in an effort to learn something about resident fish within. A falls on Deadman Creek will be inundated by the proposed impoundment thus possibly rendering Deadman Lake accessable to fish now residing below the falls. Deadman Lake produced 3 lake trout and 2 grayling; all of which were tagged and released. Approximately 70 grayling had been previously tagged above the falls but none of these were caught in the lake.

The Sunshine Camp Fishwheel was operated by Resident and Juvenile personnel from September 25 through September 28 to capture resident and non-salmon anadromous species. Forty-one fish were captured during this period. Of these, 39 were tagged and released and 2 were dissected. All fish captured and tagged in the fish wheel were identified as anadromous Bering cisco.

An electro-shocking unit was fished along river stretches from Birch Creek to about 1.5 mile below Montana Creek this same period. The most productive areas were along the outside of gravel bars and riffle areas. Back water slough and quiet water areas of the Mainstem River produced relatively few fish. Total fish tagged by species using this method of capture were:

Bering cisco	42
Round whitefish	12
Arctic grayling	16
Rainbow trout	4
Longnose sucker	3
Burbot	1
Humpback whitefish	2

Yentna River Confluence Reach

Crews continued to sample the river reaches below Devil Canyon according to plan. The most downstream reach was sampled by the Yentna River crew from the Yentna River camp from September 9 through 17 and again from September 26 through October 1, 1981. A total of 421 fish were processed on these trips. Two unusual specimens were noted in the catches. These were a 28 inch Northern pike and a nine-spine stickleback. The Northern was the first of this species taken by Su Hydro crews and the stickleback the second of it's species. Northern Pike were reported to have been introduced into a lake leading to a tributary on the Yentna River several years ago and will in all probability, eventually spread throughout the sloughs and backwaters of the Susitna drainage where suitable habitat is found.

One hundred twenty fish were tagged and released during these trips. No recaptures were reported.

The upstream migration of Bering cisco passed through the lower river reach in Mid September and all those examined were in ripe spawning condition. Cisco were not observed in any of the tributary streams along this river reach.

Talkeetna Reach

Sampling along the river reach monitored by the crew based at the Talkeetna camp was conducted with electroshockers and also with gear types previously used. Conductivity of the water was low thus reducing the effective range of the electroshocking gear. The electroshocker produced rainbow trout, grayling, juvenile coho and scuplins at the various sites fished.

Burbot catches were heavy with 46 taken on trot lines. One was exceptionally large at 36 inches long. All burbot examined were sexually mature.

Scales were read from the juvenile chinook and coho salmon taken from sites along this reach. Chinook were all the 0+ age class and 66 to 89 mm long. Coho were all 0+ and 1+. The 0+ fish were 70 to 95 mm and the 1+ were 95 to 141 mm long.

Three 0+ sockeye salmon were taken as were chinook and coho smolts at several sites.

Ten juvenile grayling were also taken with minnow traps at the mouth of Birch Creek.

Gold Creek Reach

Two survey trips were undertaken by the crew based at Gold Creek camp. The first trip took 252 juvenile 0+ chinook, 147 coho 0+, 1 coho 1+, 22 rainbow trout, 45 grayling, 3 Dolly Varden, 5 suckers, 5 whitefish sp., 13 burbot, 12 sculpins, 5 three spine stickleback, 1 adult chum salmon and one common merganser. The second trip captured 595 chinook 0+ salmon, 35 coho 0+, 7 rainbow trout, 7 grayling, 1 Dolly Varden, 21 whitefish sp., 4 burbot, 8 sculpin and 6 stickleback.

The 0+ chinook fry have apparently moved into sloughs 10 and 20 for winter rearing as the catch of fry in these two sloughs was higher than on any trip since last spring.

The electroshocking boat manned by Adult Anadromous crews assisted the RJ/AH crews with the capture of 1 rainbow trout, 5 grayling and 17 whitefish sp. from the mouth of Portage Creek.

A total of 88 fish were tagged in the Gold Creek reach during September. A tagged rainbow trout was sighted in Slough 8A but eluded capture. Another that was tagged on July 6 in Slough 10 was taken by an angler fishing at the mouth of Sherman Creek in August, and a large, tagged rainbow was recaptured in August on a trot line set in the same slough from which it was tagged. Unfortunately, the fish did not survive the recapture.

On several occasions, adult salmon were observed digging redds in silty, side channels to the mainstem river. The fish were observed to be sockeye and chum salmon.

Aquatic Habitat

The Aquatic Habitat (AH) crew members continued their accompaniment of RJ personnel to take point specific measurements and record other habitat data. Cross sectional surveys on side sloughs by an independent AH crew using leased surveying instruments were also completed. Some of the thermographs buried by high water deposits of silt and gravel have now been recovered. Brown bears destroyed one thermograph.

Adult Anadromous

The field season for the Adult Anadromous crews is essentially over. Table 5 (Attachment 4) gives a condensed summary of salmon catches and counts for the season.

The radio telemetry crew has completed tracking coho salmon and is now implementing a resident fish tracking program with the RJ crews. Tracking of coho was highly successful. Milling behavior in coho was observed as the result of radio tagging as was the location of a mainstem spawning site which was confirmed by "egg pumping" with portable pumps and driftnet catches of fish in spawning condition.

Adult Anadromous personnel expended considerable time working with the data processing staff, cartographer and assistant coordinator on the draft species/subject chinook salmon report which was submitted after the close of the chinook salmon data collection period in August. The report will be further polished and the material included in the Draft Phase I Anadromous Adult report along with similarly reported data on the other species of salmon.

Sincerely,

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

cc: V. Lucid
J. Gill
D. Schmidt
D. Wozniak
M. Warner

Table 1. Fish captured by species and stream Susitna River Impoundment studies, September 15-28, 1981.

	GRAYLING					
STREAM/DATE	TOTAL ALL AREAS	STUDY AREA	NUMBER TAGGED	SCALES	BURBOT	OTHER
Oshetna River 9/15-9/18	167	7	134	34	1	1 Cottid
Goose Creek 9/18-9/20	13	2	11	4	7	-
Jay Creek 9/20-9/22	68	65	64	13	9	-
Kosina Creek 9/22-9/24	167[1/]	23	158	16	2	6 Round Whitefish 1 Humpback Whitefish
Watana Creek 9/24-9/26	26	25	25	3	3	2 Round Whitefish 1 Longnose Sucker
Deadman Creek 9/26	3	-	3	1	-	-
Tsusena Creek 9/27	9	1	8	1	-	-
Fog Creek 9/27	5	5	5	2	-	-
TOTALS	458	128	408	74	22	1 Cottid 8 Round Whitefish 1 Humpback Whitefish 1 Longnose Sucker

1/ Includes fish captured in upper pools which we shuttled into by helicopter

ATTACHMENT 1

Table 3. Fish tagged through September trip, Susitna Impoundment Studies, 1981.

STREAM	DATES	GRAYLING	(CUM.)	BURBOT	(CUM.)	ROUND WHITEFISH	(CUM.)	L.NOSE SUCKER	(CUM.)
Oshetna	9/15-18	134	(427)	-	(0)	-	(3)	-	(13)
Goose	9/18-20	11	(355)	-	(4)	-	(0)	-	(12)
Jay	9/20-22	64	(371)	1	(5)	-	(7)	-	(25)
Kosina	9/22-24	158	(660)	2	(4)	5	(5)	-	(1)
Watana	9/24-26	25	(209)	1	(10)	2	(2)	1	(43)
[illegible]man	9/26	3	(251)	0	(10)	-	(0)	-	(3)
[illegible]ena	9/27	8	(269)	-	(0)	-	(0)	-	(0)
Fog	9/27	5	(74)	-	(0)	-	(0)	-	(0)
TOTALS	9/15-27	408	(2616)	4	(23)	7	(7)	1	(97)

TRIP TOTAL ALL SPECIES: 420

TOTAL ALL SPECIES TO DATE: 2753

ATTACHMENT 2

Table 4. Observed grayling numbers by stream.

STREAM	GRAYLING NUMBERS
Oshetna	155 fish caught in one pool. Few scattered fish in larger pools.
Goose	Few scattered fish, fished large pool - 2 miles upstream - no fish caught.
Jay	Many fish at mouth, observed and caught a few fish in large pools 1.5-2.0 miles upstream.
Kosina	Some fish at mouth, many fish in pools - 1-3 miles upstream.
Watana	Poor fishing at mouth but 15 grayling gillnetted, few fish upstream.
Deadman	No fish at mouth, at least a few fish in deep pool above Section 2.
Tsusena	Large pool .3 mile up with many fish, 1 fish caught at mouth.
Fog Creek	Few fish off mouth.

ATTACHMENT 3

Table 5 . Summary of apportioned sonar counts for Susitna, Yentna, Sunshine and Talkeetna stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

SONAR LOCATION	LAST DATA ENTRY DATE	SPECIES						TOTAL COUNT 1/
		CHINOOK	SOCKEYE	PINK	CHUM	COHO	MISC. 2/	
Susitna Station	9/2/81	1,752	340,232	113,349	46,461	33,468	4,965	540,227
Yentna Station	9/7/81	427	139,401	36,053	17,765	17,018	2,716	215,480
Sunshine Station	9/15/81	2,415	89,906	72,945	59,630	22,793	1,135	248,824
Talkeetna Station	9/15/81	1,154	3,464	2,529	10,036	3,522	752	21,457

Table 5 . Summary of fishwheel catches for Susitna, Yentna, Sunshine and Talkeetna stations, Adult Anadromous Investigations, Su Hydro Studies, 1981.

TAG/RECAPTURE LOCATION	LAST DATA ENTRY DATE	SPECIES						TOTAL COUNT
		CHINOOK	SOCKEYE	PINK	CHUM	COHO	MISC.	
Sunshine Station	9/15/81	612	9,528	7,099	9,167	2,928	263	29,597
Talkeetna Station	9/15/81	134	391	371	1,273	527	112	2,808
Curry Station	9/21/81	284	461	227	1,258	180	51	2,461

1/ This table does not include non-apportioned sonar counts.

2/ Miscellaneous pertains to species other than adult anadromous salmon.

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

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

November 12, 1981

02-81-0.4

RECEIVED
NOV 20 1981
ACRES AMERICAN INCORPORATED

Dr. John Hayden
Technical Study Director
Acres American Incorporated
The Liberty Bank Building
Buffalo, New Yor 14202

Dear Dr. Hayden:

RE: ADF&G Su Hydro Monthly Report October, 1981

ADMINISTRATIVE SUPPORT

During the month of October Tom Trent, Project Coordinator, attended two meetings, one of which was held in Seattle, of the Mitigation Technical Group. These meetings resulted in the development of recommendation letters on organization and impact evaluation considerations and mitigation alternatives.

Staff meetings were held to review second half FY 82 budget requirements. Requirements were identified and memos drafted for submission to APA.

Tom also spent one day in the field reviewing spawning sites with Dana Schmidt and Woody Trihey.

Other administrative office duties were completed as required by all support staff.

ADULT ANADROMOUS PROGRAM

Activities of the Adult Anadromous program were centered around preparation of a Species/Subject report on Chum, Coho, Pink and Sockeye Salmon. Many hours were spent analyzing data in coordination with Data Processing and Cartographic services by AA personnel.

RESIDENT AND JUVENILE ANADROMOUS SPECIES PROGRAM

A final trip to Indian and Portage Creeks was undertaken by one RJ and one Aquatic Habitat crew member from October 2 through 4. Water levels were low and water temperatures ranged from 1.5°C to 3.4°C.

Seasonal catches for these two important tributary systems are listed in Tables 1 and 2 (Attachments 1 and 2).

ALASKA POWER AUTHORITY
SUSITNA
FILE P5700 .11.70
SEQUENCE NO. F.2130

ACTION	INFORM.	DISTRIB.	INITIAL
		LCM	
	✓	JCL	
		CAD	
		JDG	
	✓	JWH	
		JPS	
		IPGH	
		ENS	
		SHT	
		DWL	
		MRV	
		HRC	
	XC	AK	✓
	✓	KRY	
	✓	MMG	
	✓	FILE	

Two electroshocking trips were conducted during October; one in the Montana Creek and one in the Talkeetna area. The first trip was in the Talkeetna area between river mile 70 and 105.5. Approximately 60% of the fish tagged on this trip were Bering Cisco. The fish were in spawning condition and believed to be engaged in spawning activity. Bering cisco were distributed from Mile 70 to approximately mile 101 where the majority were caught in water two feet deep or less over gravel substrate.

Round whitefish in spawning condition and coloration were also observed. This species was found in all habitat types sampled and appeared to be concentrated in areas having lower water velocity than that occupied by the Bering Cisco.

Rainbow trout and burbot were also taken for tadio tag implantation. A dummy tag was placed in a 383 mm (FL) grayling as an acceptance trial. The trial appeared successful as the fish was functioning normally after several days with the tag.

A total of 444 fish were tagged. few tagged fish were recovered. Table 3 (Attachment 3) reports on the tag recoveries for this trip.

The second electroshocking trip to the Montana Creek area produced mostly Bering Cisco as well. Sampling was concentrated in those areas that produced high catches on the first trip of the month. The relative abundance of Cisco appeared down from that experienced on the first trip and those captured were largely spawned out indicating that the majority of spawning activity for this species took place between October 7 and 13.

A rainbow trout was implanted with a radio transmitter for tracking and a Bering Cisco was implanted with a dummy transmitter for a survival test. Both fish recovered while being held in a live box and were subsequently released. A total of 75 fish were tagged on the second trip and five fish, all Bering Cisco, were recaptured. Four of the five recaptures were tagged on the first trip of the month.

Some sites were also sampled with standard gear which proved impractical because of slush ice. Never-the-less, four sites were sampled with 24 hour sets and produced a catch of three chinook 0+, five coho 0+, two rainbow trout, one grayling, 16 burbot, three sculpin and three stickleback. The two rainbow, grayling and 15 of the burbot were tagged. Three of the burbot were radio tagged.

Two thermographs were also recovered in the Talkeetna area.

The Yentna River camp was dismantled for the season with much of the gear being stored on the Deshka River.

AQUATIC HABITAT

Aquatic Habitat personnel accompanied RJ personnel on the electroshocking trips where they collected habitat and instream flow data in areas holding fish. An example of a portion of the type of data collected by AH personnel is displayed by the field notes exhibited in Attachment 4. Data of this type will later be correlated with fish catch data collected by RJ personnel. Some thermographs and staff gages placed earlier were pulled and stored for the winter season.

An AH biologist accompanied the Resident and Juvenile propject leader and Dana Schmidt into the upper river area to identify sites for winter sampling of that area. Altogether, ten sites were identified. .

One AH crew surveyed several side sloughs between October 6 and 15. Headpins were surveyed on several transects of Slough 8-A (RM 125) and Slough 9 (RM 128). Discharge measurements were taken at some transects along with elevation of the water surface.

Sincerely,

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

cc: Vince Lucid
Jim Gill
D. Schmidt
D. Wozniak
M. Warner

Table 1. Numbers of salmonids captured Indian River and Portage Creek by habitat location and month of sampling, 1981.1/

HABITAT LOCATION	SPECIES	INDIAN RIVER ROUND 1	2	3	TOTAL	PORTAGE CREEK ROUND 1	2	3	TOTAL
1	Chinook	2	47	12	71	0	104	44	148
	Coho	0	3	3	6	0	0	6	6
	Dolly V.	0	4	0	4	1	28	3	32
	Rainbow	0	1	0	1	0	0	0	0
	No. Traps	20	8	7	35	20	10	10	40
	Trap Hours	44.2	113.8	126.0	681.8	4.86	260.0	192.5	938.5
2	Chinook	0	63	13	76	0	5	6	11
	Coho	0	22	2	24	0	0	0	0
	Dolly V.	0	16	1	17	3	41	7	51
	Rainbow	0	0	0	0	0	0	0	0
	No. Traps	20	9	7	36	20	10	10	40
	Trap Hours	519	150.0	129.5	798.5	484	255.0	192.5	931.5
3	Chinook	0	44	16	60	0	0	0	0
	Coho	0	40	19	59	0	0	0	0
	Dolly V.	0	22	7	29	3	35	6	44
	Rainbow	0	0	0	0	0	0	0	0
	No. Traps	20	10	7	37	20	10	10	40
	Trap Hours	493	197.5	133.0	823.5	453	237.0	197.5	887.5
Stream Totals	Chinook	2	154	41	197	0	109	50	159
	Coho	0	65	24	89	0	0	6	6
	Dolly V.	0	42	8	50	7	104	13	124
	Rainbow	0	1	0	1	0	0	0	0
	No. Traps	60	27	21	108	60	30	30	120
	Trap Hours	1,454	461.3	388.5	2,303	1,423	752.0	582.5	2,757.5
Total all Species		4	262	73		213	69	99	

1/ Sampling dates: Round 1; 6/7-10, Round 2: 8/25-28, Round 3; 10/2-4.

ATTACHMENT 1

Table 2. Catch of salmonids per trap day by habitat location and round of sampling Indian River and Portage Creek, 19[illegible].

HABITAT LOCATION	SPECIES	INDIAN RIVER 1	INDIAN RIVER 2	INDIAN RIVER 3	ROUND	PORTAGE CREEK 1	PORTAGE CREEK 2	PORTAGE CREEK 3
1	Chinook	0.1	5.88	1.71		0	10.4	4.40
	Coho	0	0.38	0.43		0	0	0.60
	Dolly Varden	0	0.50	0		0.02	2.8	0.30
	Rainbow	0	0.13	0		0	0	0
2	Chinook	0	7.00	1.86		0	0.5	0.6
	Coho	0	2.44	0.29		0	0	0
	Dolly Varden	0	1.78	0.14		0.15	4.1	0.7
	Rainbow	0	0	0		0	0	0
3	Chinook	0	4.40	2.29		0	0	0
	Coho	0	4.00	2.71		0	0	0
	Dolly Varden	0	2.20	1.00		0.15	3.5	0.6
	Rainbow	0	0	0		0	0	0
Stream Totals	Chinook	0.33	5.70	1.95		0	3.63	1.67
	Coho	0	2.41	1.14		0	0	0.20
	Dolly Varden	0	1.56	0.38		0.12	3.46	0.43
	Rainbow	0	0.04	0		0	0	0
Total Species		0.07	9.70	2.88		0.12	7.10	2.30

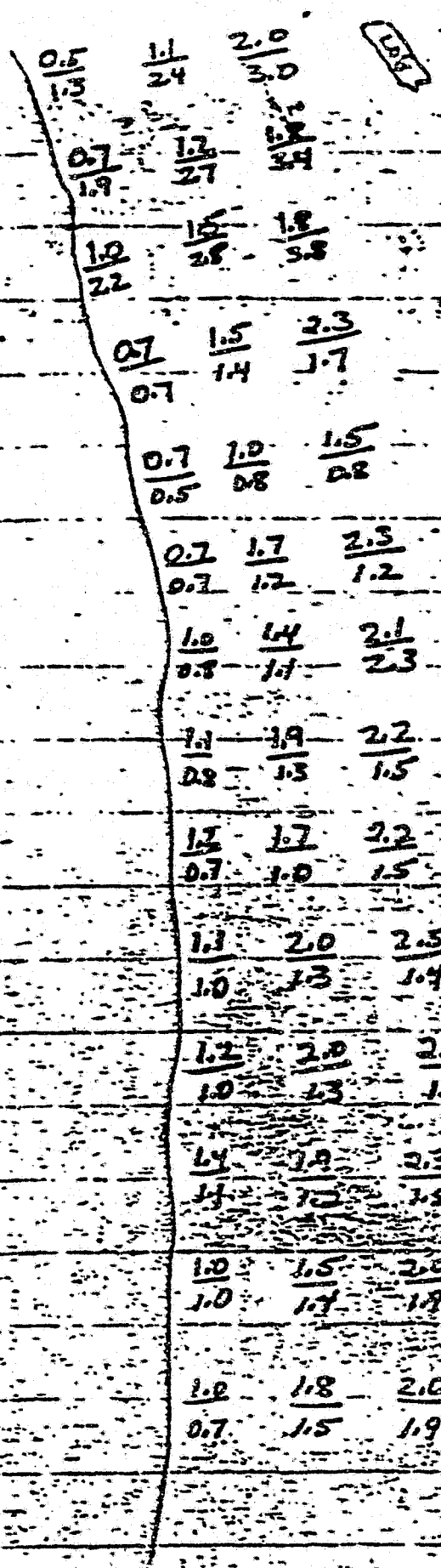
ATTACHMENT 2

Table 3. Recapture:

Tag #	Species	Tagging Location	River Mile	Date Tagged	Capture Location	River Mile	Date Captured	Released
1394	Round Whitefish	Sunshine Fishwheel	78.6	9/9	1 mile North of confluence of Chulitna	99.5	10/2	Yes
5329	Humpback Whitefish	Sunshine Fishwheel	78.6	9/20	Opposite Sunshine Camp	78.5	10/5	Yes
653	Bering Cisco	Opposite Sunshine Camp	78.5	10/5	Opposite Montana Creek	77	10/5	Yes
706	Bering Cisco	Opposite Montana	77	10/5	.25 mile north of Mainstem West Bank	74.5	10/5	Yes
642	Grayling	Opposite Sunshine Camp	78.5	10/5	Opposite Montana Creek	77	10/5	Yes
657	Bering Cisco	Opposite Sunshine Camp	78.5	10/5	Opposite Sunshine Camp	78.5	10/6	Yes
676	Bering Cisco	Opposite Sunshine Camp	78.5	10/5	Opposite Sunshine Camp	78.5	10/6	Yes
670	Long Nose Sucker	Opposite Sunshine Camp	78.5	10/5	Opposite Montana Creek	77	10/6	Yes
625	Bering Cisco	Opposite Montana Creek	77	10/4	Opposite Montana Creek	77	10/6	Yes
888	Bering Cisco	.25 mile North of Mainstem West Bank	74.5	10/6	Opposite Montana Creek	77	10/7	Yes

[illegible] Shocking Area (West Bank)

Cisco Spawning Area



depth (feet) / velocity (fool/sec)

Hydrolab data:

H_2O temp – 3.8°C

Conductivity – 127

pH – 7.0

Dissolved Oxygen – 12.3

Average substrate

40%: 1"–3" gravel

25%: 3"–6" gravel

20%: silt and sand

10%: 1/4"–1" gravel

(gravel is partially embedded by the silt, depending on th velocity)

Shocking depth 0.5–2.0'

WORK REMAINING: FROM NOVEMBER 1, 1981 | ACRES AMERICAN SUSITNA HYDRO-ELECTRIC PROJECT | PAGE 1

TIME NOW: 2NOV81

CPM ANALYSIS LISTING

I-NODE	J-NODE	DUR	SELECT CODES		DESCRIPTION		E.S.	E.F.	L.S.	L.F.	T.F.	F.F.	CL.	
20400	20000	33 R	OPA C2	2022	FIELD CAMP OPERATIONS		2NOV81	18JUN82	9NOV81	25JUN82	1	1	1	
20400	20600	33 R	OPA C2	203	RESUPPLY & EMERGENCY SERVICE		2NOV81	10JUN82	9NOV81	25JUN82	1	1	1	
215A0	215B0	0	OPA 1 C3	204XX	EXHIBIT F MATERIAL COMPLETE		2NOV81	30OCT81	30NOV81	27NOV81	4	0	1	
21000	21100	15 R	OPA C2	206	RIGHT OF ENTRY	FIN	2NOV81	12FEB82	15MAR82	25JUN82	19	19	1	
22400	22600	2	OPA C3	210	ACCESS ROAD	CT-2	2NOV81	13NOV81	14DEC81	25DEC81	6	0	1	
22600	22800	7	OPA CC3	210	ACCESS ROAD	FIN	16NOV81	1JAN82	28DEC81	12FEB82	6	1	1	
36700	36800	33 R	OPB 1 C4	3022	FIELD DATA INDEX OPERATION	FIN	2NOV81	18JUN82	9NOV81	25JUN82	1	1	1	
37600	37700	3 R	OPB 1 C4	3033	FIELD DATA COLLECTION 81-82	ST	2NOV81	20NOV81	9NOV81	27NOV81	1	0	1	
37700	37800	22	OPB 1 C4	3033	FIELD DATA COLLECTION 81-82	FIN	23NOV81	23APR82	25JAN82	25JUN82	9	9	1	
33500	34600	2	OPB 1 C4	3041	WATER RSRCS-FLOW EXTENSION	FIN	2NOV81	13NOV81	30NOV81	11DEC81	4	4	1	
333A0	34600	4	OPB 1 C4	3042	WATER RSRCS-FREQ ANALYSIS	FIN	2NOV81	27NOV81	16NOV81	11DEC81	2	2	1	
34500	34600	6 R	OPB 1 C4	3043	WATER RSRCS-RESERVOIR STUDY	CT-3	2NOV81	11DEC81	2NOV81	11DEC81	0	0	1	CRITICAL
34600	34800	6	OPB 1 C4	3043	WATER RSRCS-RESERVOIR STUDY	FIN	14DEC81	22JAN82	21DEC81	29JAN82	1	1	1	
35000	35200	4	OPB 1 C4	3044	WATER RSRCS-PRE&POST PROJECT	ST	14DEC81	8JAN82	14DEC81	8JAN82	0	0	1	CRITICAL
35200	35400	4	OPB 1 C4	3044	WATER RSRCS-PRE&POST PROJECT	FIN	11JAN82	5FEB82	11JAN82	5FEB82	0	0	1	CRITICAL
39600	39700	14 R	OPB 1 C4	3046	WATER RSRCS-GLACIAL STUDIES	ST	2NOV81	5FEB82	23NOV81	26FEB82	3	0	1	
39700	39800	3	OPB 1 C4	3046	WATER RSRCS-GLACIAL STUDIES	FIN	8FEB82	26FEB82	29MAR82	16APR82	7	7	1	
35400	354A0	0	OPB 1 C4	304XX	EXHIBIT H MATERIAL COMPLETE		8FEB82	5FEB82	19APR82	16APR82	10	10	1	
35400	354B0	0	OPB 1 C4	304XX	EXHIBIT I MATERIAL COMPLETE		8FEB82	5FEB82	19APR82	16APR82	10	10	1	
31800	32000	4 R	OPB 1 C4	3053	FLOODS-RESERVOIR ROUTING	CT-1	2NOV81	27NOV81	2NOV81	27NOV81	0	0	1	CRITICAL
32000	32200	5	OPB 1 C4	3053	FLOODS-RESERVOIR ROUTING	FIN	30NOV81	1JAN82	30NOV81	1JAN82	0	0	1	CRITICAL
30400	30600	9 R	OPB 1 C4	3061	HYDRLICS & ICE WTR LVLS	FIN	2NOV81	1JAN82	2NOV81	1JAN82	0	0	1	CRITICAL
39000	39100	8	OPB 1 C4	3063	HYDR&ICE-RESER SLIDE SURGE	FIN	2NOV81	25DEC81	21DEC81	12FEB82	7	7	1	
35800	36000	3 R	OPB 1 C4	3071	SEDIMENT YIELD & DEPOSITION	FIN	2NOV81	20NOV81	7DEC81	25DEC81	5	0	1	
33600	33800	6 R	OPB 1 C4	3072	RIVER MORPHOLOGY	CT-1	23NOV81	1JAN82	28DEC81	5FEB82	5	5	1	
33800	34000	4	OPB 1 C4	3072	RIVER MORPHOLOGY	FIN	8FEB82	5MAR82	8FEB82	5MAR82	0	0	1	CRITICAL
31100	31300	6 R	OPB 1 C4	309	ACCESS ROADS HYDROLOGY		2NOV81	11DEC81	23NOV81	1JAN82	3	0	1	
31400	31700	6	OPB 1 C4	3102	LWR SUSITNA STUDIES-FOLLOWUP	FIN	4JAN82	12FEB82	18JAN82	26FEB82	2	2	1	
31500	31400	8 R	OPB 1 C4	3102	LWR SUSITNA STUDIES-FOLLOWUP	CT-1	2NOV81	25DEC81	9NOV81	1JAN82	1	1	1	
46000	46200	6	OPB 1 C1	408	DAM STABILITY	FIN	2NOV81	11DEC81	17MAY82	25JUN82	28	28	1	
42800	43000	23 R	OPA 1 C4	409	LONG TERM MONITORING PROGRAM		2NOV81	9APR82	18JAN82	25JUN82	11	11	1	
40200	41800	5 R	OPB 1 C1	410	RESERVOIR INDUCED SEISMICITY		2NOV81	4DEC81	14DEC81	15JAN82	6	5	1	
42400	42600	16 R	OPA 1 C4	411	SEISMIC GEOLOGY-FIELD STUDY		2NOV81	19FEB82	8MAR82	25JUN82	18	17	1	
41400	41600	8 R	OPB 1 C1	412	EVALUATION & REPORT DRAFT	ST	2NOV81	25DEC81	9NOV81	1JAN82	1	0	1	
41600	41800	2	OPB 1 C1	412	EVALUATION & REPORT DRAFT	CT-1	28DEC81	8JAN82	4JAN82	15JAN82	1	0	1	
41800	42000	4	OPB 1 C1	412	EVALUATION & REPORT DRAFT	FIN	11JAN82	5FEB82	18JAN82	12FEB82	1	1	1	
44600	41800	10 R	OPB 1 C1	413	GROUND MOTION STUDIES	FIN	2NOV81	8JAN82	9NOV81	15JAN82	1	0	1	
45600	41800	10 R	OPB 1 C1	414	DAM STABILITY CONSULTING		2NOV81	8JAN82	9NOV81	15JAN82	1	0	1	
45400	45700	6	OPB 1 C1	415	SOIL SUSCEPTRTY-SEISMIC FAIL	FIN	2NOV81	11DEC81	21DEC81	29JAN82	7	6	1	
53800	54000	7 R	OPB 1 C1	507	1982-1984 PROGRAM DESIGN		2NOV81	18DEC81	30NOV81	15JAN82	4	0	1	
53200	53300	3	OPB 1 C1	5082	DATA ASSEMBLY-1981 DRAFT	FIN	2NOV81	20NOV81	25JAN82	12FEB82	12	0	1	
53400	53500	3	OPB 1 C1	5083	DATA ASSEMBLY FINAL-DRAFT	ST	2NOV81	20NOV81	25JAN82	12FEB82	12	0	1	
53500	53600	4	OPB 1 C1	5083	DATA ASSEMBLY FINAL-DRAFT	FIN	23NOV81	18DEC81	15FEB82	12MAR82	12	12	1	
60702	60704	0 H	OPB 1 C5 C	607	PRELIM WATANA DAM ALTERNATES		2NOV81	30OCT81	2NOV81	30OCT81	0	0	1	CRITICAL
60802	60808	2 H	OPB 1 C6	608	PRELIM DEVIL CANYON DAM ALT		2NOV81	13NOV81	2NOV81	15JAN82	9	0	1	
60806	60808	2 R	OPB 1 C6	608	UPDATE DESIGN CRITERIA(DC)	FIN	2NOV81	13NOV81	4JAN82	15JAN82	9	0	1	
60902	60912	8 H	OPB 1 C4	609	ESTAB WATANA DESIGN CRITERIA		2NOV81	25DEC81	2NOV81	15JAN82	3	0	1	
60910	60912	8 R	OPB 1 C4	609	UPDATE CRIT&ASSUMPTIONS(WAT)	FIN	2NOV81	25DEC81	23NOV81	15JAN82	3	0	1	
61002	61012	8 H	OPB 1 C4	610	ESTAB DEVIL CANYON DESIGN CRITERIA		2NOV81	25DEC81	2NOV81	15JAN82	3	0	1	
61010	61012	8 R	OPB 1 C4	610	UPDATE CRIT&ASSUMPTIONS(DC)	FIN	2NOV81	25DEC81	23NOV81	15JAN82	3	0	1	
61102	61168	11 H	OPB 1 C5	611	PRELIM DESIGN WATANA DAM		2NOV81	15JAN82	2NOV81	15JAN82	0	0	1	CRITICAL

CPM ANALYSIS LISTING

I-NODE	J-NODE	DUR	SELECT CODES		DESCRIPTION		E.S.	E.F.	L.S.	L.F.	T.F.	F.F.	CL	
61117	61118	5 R	OPB 1 C5	611	INCORP GENL AMENDMENTS (WAT)	CT-1	2NOV81	4DEC81	7DEC81	8JAN82	5	0	1	
61118	61119	1	OPB 1 C5	611	INCORP GENL AMENDMENTS (WAT)	FIN	7DEC81	11DEC81	11JAN82	15JAN82	5	5	1	
61140	61144	2 R	OPB 1 C5	611	OPTIMIZE DAM HEIGHT		2NOV81	13NOV81	4JAN82	15JAN82	9	9	1	
61146	61150	9 R	OPB 1 C5	611	ADJUST ALIGNMENT(WAT)	FIN	2NOV81	1JAN82	9NOV81	8JAN82	1	0	1	
61148	61154	7	OPB 1 C5	611	DAM FOUNDATION TREATMENT-WAT	FIN	2NOV81	18DEC81	23NOV81	8JAN82	3	2	1	
61162	61164	6 R	OPB 1 C5	611	DRAFT REPORT DRAWINGS(WAT)	CT-2	2NOV81	11DEC81	2NOV81	11DEC81	0	0	1	CRITICAL
61164	61168	5	OPB 1 C5	611	DRAFT REPORT DRAWINGS(WAT)	CT-3	14DEC81	15JAN82	14DEC81	15JAN82	0	0	1	CRITICAL
61168	61170	4	OPB 1 C5	611	DRAFT REPORT DRAWINGS(WAT)	CT-4	18JAN82	12FEB82	18JAN82	12FEB82	0	0	1	CRITICAL
61170	61172	4	OPB 1 C5	611	DRAFT REPORT DRAWINGS(WAT)	FIN	15FEB82	12MAR82	15FEB82	12MAR82	0	0	1	CRITICAL
61202	61264	11 H	OPB 1 C6	612	PRELIM DESIGN DEVIL CANYON DAM		2NOV81	15JAN82	2NOV81	15JAN82	0	0	1	CRITICAL
61224	61226	1	OPB 1 C6	612	INCORP GENL AMENDMENTS(DC)	FIN	2NOV81	6NOV81	23NOV81	27NOV81	3	0	1	
61246	61249	1 R	OPB 1 C6	612	DESIGN DAM(DC)	CT-3	2NOV81	6NOV81	23NOV81	27NOV81	3	2	1	
61249	61252	7	OPB 1 C6	612	DESIGN DAM(DC)	FIN	23NOV81	8JAN82	30NOV81	15JAN82	1	0	1	
61250	61254	8 R	OPB 1 C6	612	FOUNDATION TREATMENT(DC)	FIN	2NOV81	25DEC81	16NOV81	8JAN82	2	1	1	
61260	61262	6 R	OPB 1 C6	612	DRAFT REPORT DWGS(DC)	CT-2	2NOV81	11DEC81	2NOV81	11DEC81	0	0	1	CRITICAL
61262	61264	5	OPB 1 C6	612	DRAFT REPORT DWGS(DC)	CT-3	14DEC81	15JAN82	14DEC81	15JAN82	0	0	1	CRITICAL
61264	61266	4	OPB 1 C6	612	DRAFT REPORT DWGS(DC)	CT-4	18JAN82	12FEB82	18JAN82	12FEB82	0	0	1	CRITICAL
61266	61268	4	OPB 1 C6	612	DRAFT REPORT DWGS(DC)	FIN	15FEB82	12MAR82	15FEB82	12MAR82	0	0	1	CRITICAL
61325	61350	10 H	OPB C4	613	DAM SELECTION REPORT		30NOV81	5FEB82	14DEC81	12FEB82	1	0	1	
61325	61330	2	OPB 1 C4	613	DAM SELECTION REPORT	ST	30NOV81	11DEC81	14DEC81	25DEC81	2	0	1	
61330	61335	2	OPB 1 C4	613	DAM SELECTION REPORT	CT-1	14DEC81	25DEC81	28DEC81	8JAN82	2	1	1	
61335	61340	2	OPB 1 C4	613	DAM SELECTION REPORT	CT-2	4JAN82	15JAN82	11JAN82	22JAN82	1	0	1	
61340	61345	2	OPB 1 C4	613	DAM SELECTION REPORT	CT-3	18JAN82	29JAN82	25JAN82	5FEB82	1	0	1	
61345	61350	1	OPB 1 C4	613	DAM SELECTION REPORT	FIN	1FEB82	5FEB82	8FEB82	12FEB82	1	0	1	
61402	61412	8 H	OPB 1 C4	614	SPILLWAY DESIGN CRITERIA		2NOV81	25DEC81	2NOV81	15JAN82	3	0	1	
61408	61410	6 R	OPB 1 C4	614	UPDATE CRIT&ASSUMPTIONS(SPWY)	CT-1	2NOV81	11DEC81	23NOV81	1JAN82	3	0	1	
61410	61412	2	OPB 1 C4	614	UPDATE CRIT&ASSUMPTIONS(SPWY)	FIN	14DEC81	25DEC81	4JAN82	15JAN82	3	0	1	
61502	61518	0 H	OPB 1 C5 C	615	WATANA SPILLWAY ALTERNATIVES		2NOV81	30OCT81	2NOV81	30OCT81	0	0	1	CRITICAL
61602	61626	0 H	OPB 1 C6	616	DEVIL CANYON SPILLWAY ALTERNATIVE		2NOV81	30OCT81	2NOV81	30OCT81	0	0	1	CRITICAL
61702	61786	11 H	OPB 1 C5	617	PRELIM DESIGN WATANA SPILLWAY		2NOV81	15JAN82	7DEC81	15JAN82	0	0	1	CRITICAL
61704	61705	5 R	OPB 1 C5	617	INCORP GENL AMENDMENTS (WAT)	CT-1	2NOV81	4DEC81	7DEC81	8JAN82	5	0	1	
61705	61706	1	OPB 1 C5	617	INCORP GENL AMENDMENTS (WAT)	FIN	7DEC81	11DEC81	11JAN82	15JAN82	5	1	1	
61716	61726	2 R	OPB 1 C5	617	OPT AGAINST DAM FREEBRD	ST	2NOV81	13NOV81	23NOV81	4DEC81	3	0	1	
61721	61722	3 R	OPB 1 C5	617	PREL DESGN CHUTE/ROCK ANCRS	CT-1	2NOV81	20NOV81	16NOV81	4DEC81	2	0	1	
61732	61738	5 R	OPB 1 C5	617	OPT AGAINST DAM FREEBOARD	FIN	16NOV81	18DEC81	14DEC81	15JAN82	4	4	1	
61733	61743	6 R	OPB 1 C5	617	PREL DESGN CONTRL STRUCTURES	FIN	2NOV81	11DEC81	7DEC81	15JAN82	5	5	1	
61736	61744	5 R	OPB 1 C5	617	PREL DESGN CHUTE/ROCK ANCRS	FIN	23NOV81	1JAN82	7DEC81	15JAN82	2	2	1	
61742	61746	4 R	OPB 1 C5	617	DESGN GROUTING/DRAINAGE-WAT		2NOV81	27NOV81	16NOV81	11DEC81	2	0	1	
61752	61762	2 R	OPB 1 C5	617	DESIGN CLOSURE/CONTRL STRUCT	ST	2NOV81	13NOV81	7DEC81	18DEC81	5	2	1	
61760	61768	4 R	OPB 1 C5	617	DESIGN WATER PASSAGES	FIN	2NOV81	27NOV81	23NOV81	18DEC81	3	0	1	
61770	61776	4 R	OPB 1 C5	617	DESIGN CLOSURE/CONTRL STRUCT	FIN	30NOV81	25DEC81	21DEC81	15JAN82	3	3	1	
61772	61774	2	OPB 1 C5	617	DESIGN ENERGY DISSIPATION	FIN	2NOV81	13NOV81	14DEC81	25DEC81	6	4	1	
61782	61784	6 R	OPB 1 C5	617	DRAFT REPORT DRAWINGS(WAT)	CT-2	2NOV81	11DEC81	2NOV81	11DEC81	0	0	1	CRITICAL
61784	61786	5	OPB 1 C5	617	DRAFT REPORT DRAWINGS(WAT)	CT-3	14DEC81	15JAN82	14DEC81	15JAN82	0	0	1	CRITICAL
61786	61788	4	OPB 1 C5	617	DRAFT REPORT DRAWINGS(WAT)	CT-4	18JAN82	12FEB82	18JAN82	12FEB82	0	0	1	CRITICAL
61788	61790	4	OPB 1 C5	617	DRAFT REPORT DRAWINGS(WAT)	FIN	15FEB82	12MAR82	15FEB82	12MAR82	0	0	1	CRITICAL
61802	61870	11 H	OPB 1 C6	618	PRELIM DESIGN DEVIL CAN SPILLWAY		2NOV81	15JAN82	9NOV81	15JAN82	0	0	1	CRITICAL
61803	61804	2 R	OPB 1 C6	618	INCORP GENL AMENDMENTS(DC)	CT-1	2NOV81	13NOV81	9NOV81	20NOV81	1	0	1	
61804	61806	1	OPB 1 C6	618	INCORP GENL AMENDMENTS(DC)	FIN	16NOV81	20NOV81	23NOV81	27NOV81	1	0	1	
61810	61838	3 R	OPB 1 C6	618	SPILLWAYS ENERGY DISIPATINS		2NOV81	20NOV81	28DEC81	15JAN82	8	8	1	
61828	61830	4 R	OPB 1 C6	618	PREL DESGN CONTRL STRUCT(DC)	FIN	2NOV81	27NOV81	21DEC81	15JAN82	7	7	1	

CPM ANALYSIS LISTING

I-NODE	J-NODE	DUR	SELECT CODES		DESCRIPTION		E.S.	E.F.	L.S.	L.F.	T.F.	F.F.	CL	
61834	61840	3	R OPB 1 C6	618	OPT AGAINST DAM FREEBRD(DC)	FIN	2NOV81	20NOV81	28DEC81	15JAN82	8	8	1	
61836	61844	4	R OPB 1 C6	618	PREL DESGN CHUTE/ROCK ANCRS	FIN	2NOV81	27NOV81	21DEC81	15JAN82	7	7	1	
61842	61846	6	OPB 1 C6	618	PREL DESGN GROUTING/DRAINAGE		9NOV81	18DEC81	7DEC81	15JAN82	4	4	1	
61856	61860	2	OPB 1 C6	618	LL RELEASES ENERGY DISIPATIN	FIN	2NOV81	13NOV81	4JAN82	15JAN82	9	9	1	
61866	61868	6	R OPB 1 C6	618	DRAFT REPORT DWGS(DC)	CT-2	2NOV81	11DEC81	2NOV81	11DEC81	0	0	1	CRITICAL
61868	61870	5	OPB 1 C6	618	DRAFT REPORT DWGS(DC)	CT-3	14DEC81	15JAN82	14DEC81	15JAN82	0	0	1	CRITICAL
61870	61872	4	OPB 1 C6	618	DRAFT REPORT DWGS(DC)	CT-4	18JAN82	12FEB82	18JAN82	12FEB82	0	0	1	CRITICAL
61872	61874	4	OPB 1 C6	618	DRAFT REPORT DWGS(DC)	FIN	15FEB82	12MAR82	15FEB82	12MAR82	0	0	1	CRITICAL
61925	61955	13	H OPB C4	619	SPILLWAY SELECTION REPORT		2NOV81	29JAN82	7DEC81	5MAR82	5	0	1	
61925	61930	2	OPB 1 C4	619	SPILLWAY SELECTION REPORT	ST	2NOV81	13NOV81	7DEC81	18DEC81	5	0	1	
61930	61935	2	OPB 1 C4	619	SPILLWAY SELECTION REPORT	CT-1	16NOV81	27NOV81	21DEC81	1JAN82	5	0	1	
61935	61940	4	OPB 1 C4	619	SPILLWAY SELECTION REPORT	CT-2	30NOV81	25DEC81	4JAN82	29JAN82	5	0	1	
61940	61945	2	OPB 1 C4	619	SPILLWAY SELECTION REPORT	CT-3	28DEC81	8JAN82	1FEB82	12FEB82	5	0	1	
61945	61950	2	OPB 1 C4	619	SPILLWAY SELECTION REPORT	CT-4	11JAN82	22JAN82	15FEB82	26FEB82	5	0	1	
61950	61955	1	OPB 1 C4	619	SPILLWAY SELECTION REPORT	FIN	25JAN82	29JAN82	1MAR82	5MAR82	5	0	1	
62010	62052	13	H OPB 1 C5	620	ACCESS & CAMP FACILITIES		2NOV81	29JAN82	7DEC81	5MAR82	5	0	1	
62029	62038	2	R OPB 1 C5	620	DETERMINE AUX REQUIREMENTS	FIN	2NOV81	13NOV81	7DEC81	18DEC81	5	0	1	
62030	62040	2	R OPB 1 C5	620	IDENTIFY & EVALUATE SITES		2NOV81	13NOV81	7DEC81	18DEC81	5	0	1	
62032	62042	2	R OPB 1 C5	620	PRELIM LAYOUT OF TOWNSITE		2NOV81	13NOV81	7DEC81	18DEC81	5	0	1	
62044	62046	4	R OPB 1 C5	620	REVISE & FINALIZE LOAD PARAMETERS		16NOV81	11DEC81	21DEC81	15JAN82	5	0	1	
62046	62049	4	OPB 1 C5	620	PREF DESIGN TRANSMITTAL		14DEC81	8JAN82	18JAN82	12FEB82	5	0	1	
62050	62052	3	OPB 1 C5	620	FINALIZE DESIGN TRANSMITTAL		11JAN82	29JAN82	15FEB82	5MAR82	5	0	1	
62102	62132	15	H OPB 1 C5	621	WATANA DIVERSION SCHEMES		2NOV81	12FEB82	2NOV81	12FEB82	0	0	1	CRITICAL
62110	62116	5	R OPB 1 C5	621	DESIGN CLOSURE/CONTRL STRUCTURE		2NOV81	4DEC81	14DEC81	15JAN82	6	6	1	
62118	62122	4	OPB 1 C5	621	DESIGN WATER PASSAGES-WAT	FIN	30NOV81	25DEC81	21DEC81	15JAN82	3	3	1	
62120	62121	7	R OPB 1 C5	621	DESIGN COFFERDAM HEIGHT	FIN	2NOV81	18DEC81	30NOV81	15JAN82	4	4	1	
62126	62128	[illegible]	OPB 1 C5	621	DRAFT REPORT DRAWINGS(WAT)	CT-2	2NOV81	11DEC81	2NOV81	11DEC81	0	0	1	CRITICAL
62128	62130	5	OPB 1 C5	621	DRAFT REPORT DRAWINGS(WAT)	CT-3	14DEC81	15JAN82	14DEC81	15JAN82	0	0	1	CRITICAL
62130	62132	4	OPB 1 C5	621	DRAFT REPORT DRAWINGS(WAT)	CT-4	18JAN82	12FEB82	18JAN82	12FEB82	0	0	1	CRITICAL
62132	62134	4	OPB 1 C5	621	DRAFT REPORT DRAWINGS(WAT)	FIN	15FEB82	12MAR82	15FEB82	12MAR82	0	0	1	CRITICAL
62202	62236	15	H OPB 1 C6	622	DEVIL CANYON DIVERSION SCHEMES		2NOV81	12FEB82	16NOV81	12FEB82	0	0	1	CRITICAL
62208	62214	2	R OPB 1 C6	622	DESGN COFFERDAM HEIGHT(DC)	ST	2NOV81	13NOV81	30NOV81	11DEC81	4	0	1	
62210	62216	3	R OPB 1 C6	622	CLOSURE CONTROL STRUCTURE(DC)		2NOV81	20NOV81	16NOV81	4DEC81	2	2	1	
62218	62222	8	R OPB 1 C6	622	DESGN WATER PASSAGES(DC)	FIN	2NOV81	25DEC81	23NOV81	15JAN82	3	3	1	
62220	62224	5	OPB 1 C6	622	DESGN COFFERDAM HEIGHT(DC)	FIN	16NOV81	18DEC81	14DEC81	15JAN82	4	4	1	
62230	62232	6	R OPB 1 C6	622	DRAFT REPORT DWGS(DC)	CT-2	2NOV81	11DEC81	2NOV81	11DEC81	0	0	1	CRITICAL
62232	62234	5	OPB 1 C6	622	DRAFT REPORT DWGS(DC)	CT-3	14DEC81	15JAN82	14DEC81	15JAN82	0	0	1	CRITICAL
62234	62236	4	OPB 1 C6	622	DRAFT REPORT DWGS(DC)	CT-4	18JAN82	12FEB82	18JAN82	12FEB82	0	0	1	CRITICAL
62236	62238	4	OPB 1 C6	622	DRAFT REPORT DWGS(DC)	FIN	15FEB82	12MAR82	15FEB82	12MAR82	0	0	1	CRITICAL
62302	62374	11	H OPB 1 C4	623	OPT WATANA POWER DEVELOPMENT		2NOV81	15JAN82	2NOV81	15JAN82	0	0	1	CRITICAL
62341	62346	2	R OPB 1 C4	623	REVIEW ALIGNMENTS-WAT	FIN	2NOV81	13NOV81	4JAN82	15JAN82	9	9	1	
62342	62348	1	R OPB 1 C4	623	REVIEW INTAKE WATER PASSAGES		2NOV81	6NOV81	30NOV81	4DEC81	4	0	1	
62344	62358	3	R OPB 1 C4	623	OPTIMIZE POWER FACILITIES		2NOV81	20NOV81	28DEC81	15JAN82	8	8	1	
62356	62364	6	R OPB 1 C4	623	PREL DESIGN INTAKE STRUCTURE	FIN	9NOV81	18DEC81	7DEC81	15JAN82	4	4	1	
62362	62368	9	OPB 1 C4	623	PREL DESIGN OF POWERHOUSE		2NOV81	1JAN82	16NOV81	15JAN82	2	2	1	
62372	62373	6	R OPB 1 C4	623	DRAFT REPORT DRAWINGS(WAT)	CT-2	2NOV81	11DEC81	2NOV81	11DEC81	0	0	1	CRITICAL
62373	62374	5	OPB 1 C4	623	DRAFT REPORT DRAWINGS(WAT)	CT-3	14DEC81	15JAN82	14DEC81	15JAN82	0	0	1	CRITICAL
62374	62375	4	OPB 1 C4	623	DRAFT REPORT DRAWINGS(WAT)	CT-4	18JAN82	12FEB82	18JAN82	12FEB82	0	0	1	CRITICAL
62375	62378	4	OPB 1 C4	623	DRAFT REPORT DRAWINGS(WAT)	FIN	15FEB82	12MAR82	15FEB82	12MAR82	0	0	1	CRITICAL
62402	62470	11	H OPB 1 C4	624	OPT DEVL CAN POWER DEVELOPMENT		2NOV81	15JAN82	2NOV81	15JAN82	0	0	1	CRITICAL
62441	62450	3	OPB 1 C4	624	REVIEW ALIGNMENTS(DC)	FIN	2NOV81	20NOV81	28DEC81	15JAN82	8	8	1	

CPM ANALYSIS LISTING

I-NODE	J-NODE	DUR		SELECT CODES			------DESCRIPTION----------		E.S.	E.F.	L.S.	L.F.	T.F.	F.F.	CL	
62442	62443	2	R	OPB 1 C4		624	REVIEW INTAKE WATER PASSAGES		2NOV81	13NOV81	7DEC81	18DEC81	5	0	1	
62444	62452	2	R	OPB 1 C4		624	OPTIMIZE POWER FACILITIES		2NOV81	13NOV81	30NOV81	11DEC81	4	0	1	
62446	62458	4	R	OPB 1 C4		624	PREL DESIGN OF INTAKE		16NOV81	11DEC81	21DEC81	15JAN82	5	5	1	
62448	62454	2	R	OPB 1 C4		624	PREL DESIGN WATER PASSSAGES		2NOV81	13NOV81	4JAN82	15JAN82	9	9	1	
62456	62460	7	R	OPB 1 C4		624	PREL DESIGN POWERHOUSE		16NOV81	1JAN82	14DEC81	29JAN82	4	4	1	
62466	62468	6	R	OPB 1 C4		624	DRAFT REPORT DWGS(DC)	CT-2	2NOV81	11DEC81	2NOV81	11DEC81	0	0	1	CRITICAL
62468	62470	5		OPB 1 C4		624	DRAFT REPORT DWGS(DC)	CT-3	14DEC81	15JAN82	14DEC81	15JAN82	0	0	1	CRITICAL
62470	62472	4		OPB 1 C4		624	DRAFT REPORT DWGS(DC)	CT-4	18JAN82	12FEB82	18JAN82	12FEB82	0	0	1	CRITICAL
62472	62474	4		OPB 1 C4		624	DRAFT REPORT DWGS(DC)	FIN	15FEB82	12MAR82	15FEB82	12MAR82	0	0	1	CRITICAL
62502	62522	0	H	OPB 1 C4	C	625	OPTIMIZE DAM HEIGHTS		2NOV81	30OCT81	2NOV81	30OCT81	0	0	1	CRITICAL
62602	62604	11	H	OPB 1 C5		626	PREL DESGN WATANA POWER DEVEL		2NOV81	15JAN82	30NOV81	15JAN82	0	0	1	CRITICAL
62604	62605	6	R	OPB 1 C5		626	INCORP GENL AMENDMENTS (WAT)	CT-1	2NOV81	11DEC81	30NOV81	8JAN82	4	0	1	
62605	62606	1		OPB 1 C5		626	INCORP GENL AMENDMENTS (WAT)	FIN	14DEC81	18DEC81	11JAN82	15JAN82	4	0	1	
62616	62620	3		OPB 1 C5		626	LAYOUT SURFACE P/H T/R CHANNEL		2NOV81	20NOV81	28DEC81	15JAN82	8	8	1	
62618	62619	1		OPB 1 C5		626	COST LAYOUT SURFACE U/G STRU	ST	2NOV81	6NOV81	30NOV81	4DEC81	4	0	1	
62619	62625	2		OPB 1 C5		626	COST LAYOUT SURFACE U/G STRU	CT-1	9NOV81	20NOV81	7DEC81	18DEC81	4	0	1	
62622	62624	1		OPB 1 C5		626	SELECT TYPE OF POWERHOUSE		23NOV81	27NOV81	21DEC81	25DEC81	4	0	1	
62625	62626	1		OPB 1 C5		626	COST LAYOUT SURFACE U/G STRU	FIN	23NOV81	27NOV81	21DEC81	25DEC81	4	0	1	
62629	62634	2	R	OPB 1 C5		626	REVIEW ALIGNMENTS	FIN	2NOV81	13NOV81	2NOV81	13NOV81	0	0	1	CRITICAL
62630	62632	2	R	OPB 1 C5		626	REVIEW INTAKE WATER PASSAGES		2NOV81	13NOV81	2NOV81	13NOV81	0	0	1	CRITICAL
62632	62646	3	R	OPB 1 C5		626	OPTIMIZE POWER FACILITIES		30NOV81	18DEC81	28DEC81	15JAN82	4	4	1	
62638	62644	5		OPB 1 C5		626	PREL DESIGN INTAKE STRUCTURE	ST	16NOV81	18DEC81	16NOV81	18DEC81	0	0	1	CRITICAL
62644	62652	4		OPB 1 C5		626	PREL DESIGN INTAKE STRUCTURE	FIN	21DEC81	15JAN82	21DEC81	15JAN82	0	0	1	CRITICAL
62650	62655	9		OPB 1 C5		626	PREL DESIGN OF POWERHOUSE(WAT)		16NOV81	15JAN82	16NOV81	15JAN82	0	0	1	CRITICAL
62660	62662	6	R	OPB 1 C5		626	DRAFT REPORT DRAWINGS(DC)	CT-2	2NOV81	11DEC81	2NOV81	11DEC81	0	0	1	CRITICAL
62662	62664	5		OPB 1 C5		626	DRAFT REPORT DRAWINGS(DC)	CT-3	14DEC81	15JAN82	14DEC81	15JAN82	0	0	1	CRITICAL
62664	62666	4		OPB 1 C5		626	DRAFT REPORT DRAWINGS(DC)	CT-4	18JAN82	12FEB82	18JAN82	12FEB82	0	0	1	CRITICAL
62666	62668	4		OPB 1 C5		626	DRAFT REPORT DRAWINGS(DC)	FIN	15FEB82	12MAR82	15FEB82	12MAR82	0	0	1	CRITICAL
62702	62750	11	H	OPB 1 C6		627	PREL DESGN DEVL CAN POWER DEVEL		2NOV81	15JAN82	16NOV81	15JAN82	0	0	1	CRITICAL
62703	62704	1	R	OPB 1 C6		627	INCORP GENL AMENDMENTS(DC)	CT-1	2NOV81	6NOV81	16NOV81	20NOV81	2	0	1	
62704	62706	1		OPB 1 C6		627	INCORP GENL AMENDMENTS(DC)	FIN	9NOV81	13NOV81	23NOV81	27NOV81	2	1	1	
62721	62730	4	R	OPB 1 C6		627	REVIEW ALIGNMENTS(DC)	FIN	2NOV81	27NOV81	21DEC81	15JAN82	7	7	1	
62724	62732	3	R	OPB 1 C6		627	OPTIMIZE WATER FACILITIES		2NOV81	20NOV81	7DEC81	25DEC81	5	0	1	
62726	62738	6	R	OPB 1 C6		627	PREL DESIGN OF INTAKE		2NOV81	11DEC81	7DEC81	15JAN82	5	5	1	
62728	62734	2	R	OPB 1 C6		627	PREL DESIGN WATER PASSAGES		2NOV81	13NOV81	4JAN82	15JAN82	9	9	1	
62736	62740	9		OPB 1 C6		627	PREL DESGN POWERHOUSE		23NOV81	22JAN82	28DEC81	26FEB82	5	5	1	
62746	62748	6	R	OPB 1 C6		627	DRAFT REPORT DWGS(DC)	CT-2	2NOV81	11DEC81	2NOV81	11DEC81	0	0	1	CRITICAL
62748	62750	5		OPB 1 C6		627	DRAFT REPORT DWGS(DC)	CT-3	14DEC81	15JAN82	14DEC81	15JAN82	0	0	1	CRITICAL
62750	62752	4		OPB 1 C6		627	DRAFT REPORT DWGS(DC)	CT-4	18JAN82	12FEB82	18JAN82	12FEB82	0	0	1	CRITICAL
62752	62754	4		OPB 1 C6		627	DRAFT REPORT DWGS(DC)	FIN	15FEB82	12MAR82	15FEB82	12MAR82	0	0	1	CRITICAL
62810	62860	9	H	OPB C4		628	POWER DEVELOPMENT REPORT-DRAFT		4JAN82	5MAR82	4JAN82	5MAR82	0	0	1	CRITICAL
62810	62820	2		OPB 1 C4		628	POWER DEVELOPMENT REPORT	ST	4JAN82	15JAN82	4JAN82	15JAN82	0	0	1	CRITICAL
62820	62830	2		OPB 1 C4		628	POWER DEVELOPMENT REPORT	CT-1	16JAN82	29JAN82	18JAN82	29JAN82	0	0	1	CRITICAL
62830	62840	2		OPB 1 C4		628	POWER DEVELOPMENT REPORT	CT-2	1FEB82	12FEB82	1FEB82	12FEB82	0	0	1	CRITICAL
62840	62850	2		OPB 1 C4		628	POWER DEVELOPMENT REPORT	CT-3	15FEB82	26FEB82	15FEB82	26FEB82	0	0	1	CRITICAL
62850	62860	1		OPB 1 C4		628	POWER DEVELOPMENT REPORT	FIN	1MAR82	5MAR82	1MAR82	5MAR82	0	0	1	CRITICAL
62902	62912	15	H	OPB 1 C5		629	WATANA GENERAL ARRANGEMENT		2NOV81	12FEB82	7DEC81	19MAR82	5	0	1	
62906	62908	6	R	OPB 1 C5		629	DRAFT REPORT DWGS(DC)	CT-2	2NOV81	11DEC81	7DEC81	15JAN82	5	0	1	
62908	62910	5		OPB 1 C5		629	DRAFT REPORT DWGS(DC)	CT-3	14DEC81	15JAN82	18JAN82	19FEB82	5	0	1	
62910	62912	4		OPB 1 C5		629	DRAFT REPORT DWGS(DC)	CT-4	18JAN82	12FEB82	22FEB82	19MAR82	5	0	1	
62912	62914	4		OPB 1 C5		629	DRAFT REPORT DWGS(DC)	FIN	15FEB82	12MAR82	22MAR82	16APR82	5	0	1	

CPM ANALYSIS LISTING

I-NODE	J-NODE	DUR		SELECT CODES		DESCRIPTION		E.S.	E.F.	L.S.	L.F.	T.F.	F.F.	CL	
62914	62916	0		OPB 1 C5	629XX	EXHIBIT J MATERIAL COMPLETE		15MAR82	12MAR82	19APR82	16APR82	5	5	1	
63002	63014	23	H	OPB 1 C6	630	DEVL CANYON GENERAL ARRANGEMENT		2NOV81	9APR82	9NOV81	16APR82	1	0	1	
63004	63006	3		OPB 1 C6	630	DRAFT REPORT DRAWINGS(DC)	CT-1	2NOV81	20NOV81	9NOV81	27NOV81	1	0	1	
63006	63008	7		OPB 1 C6	630	DRAFT REPORT DRAWINGS(DC)	CT-2	23NOV81	8JAN82	30NOV81	15JAN82	1	0	1	
63008	63010	5		OPB 1 C6	630	DRAFT REPORT DRAWINGS(DC)	CT-3	11JAN82	12FEB82	18JAN82	19FEB82	1	0	1	
63010	63012	4		OPB 1 C6	630	DRAFT REPORT DRAWINGS(DC)	CT-4	15FEB82	12MAR82	22FEB82	19MAR82	1	0	1	
63012	63014	4		OPB 1 C6	630	DRAFT REPORT DRAWINGS(DC)	FIN	15MAR82	9APR82	22MAR82	16APR82	1	0	1	
62860	62862	0		OPB 1 C4	630XX	EXHIBIT M MATERIAL COMPLETE		8MAR82	5MAR82	19APR82	16APR82	6	0	1	
63014	63016	0		OPB 1 C6	630XX	EXHIBIT K MATERIAL COMPLETE		12APR82	9APR82	19APR82	16APR82	1	1	1	
63125	63150	9	H	OPB C4	631	PROJ FEASIBILITY REPORT	FIN	18JAN82	19MAR82	18JAN82	19MAR82	0	0	1	CRITICAL
63125	63130	2		OPB 1 C4	631	PROJ FEASIBILITY REPORT	ST	18JAN82	29JAN82	18JAN82	29JAN82	0	0	1	CRITICAL
63130	63135	2		OPB 1 C4	631	PROJ FEASIBILITY REPORT	CT-1	1FEB82	12FEB82	1FEB82	12FEB82	0	0	1	CRITICAL
63135	63140	2		OPB 1 C4	631	PROJ FEASIBILITY REPORT	CT-2	15FEB82	26FEB82	15FEB82	26FEB82	0	0	1	CRITICAL
63140	63145	2		OPB 1 C4	631	PROJ FEASIBILITY REPORT	CT-3	1MAR82	12MAR82	1MAR82	12MAR82	0	0	1	CRITICAL
63145	63150	1		OPB 1 C4	631	PROJ FEASIBILITY REPORT	FIN	15MAR82	19MAR82	15MAR82	19MAR82	0	0	1	CRITICAL
63150	63152	0		OPB 1 C4	631XX	EXHIBIT L MATERIAL COMPLETE		22MAR82	19MAR82	19APR82	16APR82	4	4	1	
6C100	6C200	5	R	OPB 1 C2	637	UPDATE GENERATION PLAN		2NOV81	4DEC81	29MAR82	30APR82	21	29	1	
6B800	6B900	33	R	OPD 1 C2	638	LIAISON POWER ALTS CONSULTANT		2NOV81	18JUN82	9NOV81	25JUN82	1	1	1	
71400	71600	0		OPB 1 C8	7011	STUDY COORD-ALTERNATIVE SITE	FIN	2NOV81	30OCT81	2NOV81	30OCT81	0	0	1	CRITICAL
71800	72000	0		OPB 1 C8	7012	STUDY COORD-PRELIM ALTERNATV	FIN	2NOV81	30OCT81	2NOV81	30OCT81	0	0	1	CRITICAL
72100	72200	20	R	OPB 1 C8	7013	STUDY COORD-OPTIMIZED DESIGN	FIN	2NOV81	19MAR82	30NOV81	16APR82	4	4	1	
79300	79400	33	R	OPB 1 C8	702	MONITOR FIELD ACTIVITIES	CT-1	2NOV81	18JUN82	9NOV81	25JUN82	1	0	1	
79400	79500	0		OPB 1 C8	702	MONITOR FIELD ACTIVITIES	FIN	21JUN82	18JUN82	28JUN82	25JUN82	1	1	1	
72000	70600	17	R	OPB 1 C8	7043	WTR RES-OPT WAT&DEVL CAN DES		2NOV81	26FEB82	21DEC81	16APR82	7	7	1	
73200	73400	9		OPB 1 C8	705	SOCIOECONOMIC ANALYSIS	FIN	15FEB82	16APR82	15FEB82	16APR82	0	0	1	CRITICAL
73300	73200	15	R	OPB 1 C8	705	SOCIOECONOMIC ANALYSIS	CT-2	2NOV81	12FEB82	2NOV81	12FEB82	0	0	1	CRITICAL
79000	79100	5	R	OPB 1 C6	7062	CULTURAL PRELIM ALTERNATIVES	CT-1	2NOV81	11DEC81	2NOV81	11DEC81	0	0	1	CRITICAL
79100	79700	0		OPB 1 C8	7062	CULTURAL PRELIM ALTERNATIVES	FIN	14DEC81	11DEC81	14DEC81	11DEC81	0	0	1	CRITICAL
79600	79700	5	R	OPB 1 C8	7063	CULTURAL-OPTIMIZED DESIGN	ST	2NOV81	4DEC81	9NOV81	11DEC81	1	1	1	
79700	79800	18		OPB 1 C8	7063	CULTURAL-OPTIMIZED DESIGN	CT-1	14DEC81	16APR82	14DEC81	16APR82	0	0	1	CRITICAL
79800	79900	0		OPB 1 C8	7063	CULTURAL-OPTIMIZED DESIGN	FIN	19APR82	16APR82	19APR82	16APR82	0	0	1	CRITICAL
79900	799A0	0		OPB 1 C8	706XX	EXHIBIT V MATERIAL COMPLETE		19APR82	16APR82	19APR82	16APR82	0	0	1	CRITICAL
75300	76000	4	R	OPB 1 C8	7071	LAND USE ALTERNATIVE SITES	FIN	2NOV81	27NOV81	2NOV81	27NOV81	0	0	1	CRITICAL
75900	76000	4	R	OPB 1 C8	7072	LAND USE PRELIM ALTERNATIVES	ST	2NOV81	27NOV81	2NOV81	27NOV81	0	0	1	CRITICAL
76000	76100	10		OPB 1 C8	7072	LAND USE PRELIM ALTERNATIVES	CT-1	30NOV81	5FEB82	30NOV81	5FEB82	0	0	1	CRITICAL
76100	76800	0		OPB 1 C8	7072	LAND USE PRELIM ALTERNATIVES	FIN	8FEB82	5FEB82	8FEB82	5FEB82	0	0	1	CRITICAL
76700	76800	11	R	OPB 1 C8	7073	LAND USE OPTIMIZED DESIGN	ST	2NOV81	15JAN82	23NOV81	5FEB82	3	3	1	
76800	76900	20		OPB 1 C8	7073	LAND USE OPTIMIZED DESIGN	CT-1	8FEB82	25JUN82	8FEB82	25JUN82	0	0	1	CRITICAL
76900	77000	0		OPB 1 C8	7073	LAND USE OPTIMIZED DESIGN	FIN	28JUN82	25JUN82	28JUN82	25JUN82	0	0	1	CRITICAL
72600	72800	5		OPB 1 C8	708	RECREATION PLANNING	FIN	8FEB82	12MAR82	15MAR82	16APR82	5	5	1	
72700	72600	14	R	OPB 1 C8	708	RECREATION PLANNING	CT-2	2NOV81	5FEB82	9NOV81	12FEB82	1	0	1	
73500	73600	3	R	OPB 1 C8	7092	TRANS LINE ASSESS RTE SELCTN	CT-1	2NOV81	20NOV81	2NOV81	20NOV81	0	0	1	CRITICAL
73600	736B0	21		OPB 1 C8	7092	TRANS LINE ASSESS RTE SELCTN	FIN	23NOV81	16APR82	23NOV81	16APR82	0	0	1	CRITICAL
73700	74200	0		OPB 1 C8	7101	FISH ECOLOGY ALTERNATV SITES	FIN	16NOV81	13NOV81	21DEC81	18DEC81	5	4	1	
73900	73700	2	R	OPB 1 C8	7101	FISH ECOLOGY ALTERNATV SITES	CT-1	2NOV81	13NOV81	7DEC81	18DEC81	5	0	1	
74100	74200	6	R	OPB 1 C8	7102	FISH ECOLOGY PRELIM ALTERNAT	ST	2NOV81	11DEC81	9NOV81	18DEC81	1	0	1	
74200	74300	10		OPB 1 C8	7102	FISH ECOLOGY PRELIM ALTERNAT	CT-1	14DEC81	19FEB82	21DEC81	26FEB82	1	0	1	
74300	74600	0		OPB 1 C8	7102	FISH ECOLOGY PRELIM ALTERNAT	FIN	22FEB82	19FEB82	1MAR82	26FEB82	1	0	1	
74500	74600	12	R	OPB 1 C8	7103	FISH ECOLOGY OPTIMIZED DESGN	ST	2NOV81	22JAN82	7DEC81	26FEB82	5	4	1	
74600	74700	17		OPB 1 C8	7103	FISH ECOLOGY OPTIMIZED DESGN	CT-1	22FEB82	18JUN82	1MAR82	25JUN82	1	0	1	
74700	74800	0		OPB 1 C8	7103	FISH ECOLOGY OPTIMIZED DESGN	FIN	21JUN82	18JUN82	28JUN82	25JUN82	1	1	1	

CPM ANALYSIS LISTING

I-NODE	J-NODE	DUR		SELECT CODES			------D E S C R I P T I O N ----------		E.S.	E.F.	L.S.	L.F.	T.F.	F.F.	CL	
75000	75100	10		OPB 1 CB	7111	WILDLIFE ECOLOGY ALTER SITES	FIN	23NOV81	29JAN82	30NOV81	5FEB82	1	0	1	
750A0	75000	3	R	OPB 1 CB	7111	WILDLIFE ECOLOGY ALTER SITES	CT-2	2NOV81	20NOV81	9NOV81	27NOV81	1	0	1	
75500	75600	3	R	OPB 1 CB	7112	WILDLIFE ECOLOGY PRELM ALTER	ST	2NOV81	20NOV81	9NOV81	27NOV81	1	0	1	
75600	75700	10		OPB 1 CB	7112	WILDLIFE ECOLOGY PRELM ALTER	CT-1	23NOV81	29JAN82	30NOV81	5FEB82	1	0	1	
75700	76400	0		OPB 1 CB	7112	WILDLIFE ECOLOGY PRELM ALTER	FIN	1FEB82	29JAN82	8FEB82	5FEB82	1	0	1	
76300	76400	13	R	OPB 1 CB	7113	WILDLIFE ECOLOGY OPTIM DESGN	ST	2NOV81	29JAN82	9NOV81	5FEB82	1	0	1	
76400	76500	20		OPB 1 CB	7113	WILDLIFE ECOLOGY OPTIM DESGN	CT-1	1FEB82	18JUN82	8FEB82	25JUN82	1	0	1	
76500	76600	0		OPB 1 CB	7113	WILDLIFE ECOLOGY OPTIM DESGN	FIN	21JUN82	18JUN82	28JUN82	25JUN82	1	1	1	
77200	77500	4		OPB 1 CB	7121	PLANT ECOLOGY ALTERNTV SITES	FIN	2NOV81	27NOV81	2NOV81	27NOV81	0	0	1	CRITICAL
77400	77500	4	R	OPB 1 CB	7122	PLANT ECOLOGY PRELM ALTERNAT	ST	2NOV81	27NOV81	2NOV81	27NOV81	0	0	1	CRITICAL
77500	77600	10		OPB 1 CB	7122	PLANT ECOLOGY PRELM ALTERNAT	CT-1	30NOV81	5FEB82	30NOV81	5FEB82	0	0	1	CRITICAL
77600	77900	0		OPB 1 CB	7122	PLANT ECOLOGY PRELM ALTERNAT	FIN	8FEB82	5FEB82	8FEB82	5FEB82	0	0	1	CRITICAL
77800	77900	13	R	OPB 1 CB	7123	PLANT ECOLOGY OPTIMIZD DESGN	ST	2NOV81	29JAN82	9NOV81	5FEB82	1	1	1	
77900	78000	20		OPB 1 CB	7123	PLANT ECOLOGY OPTIMIZD DESGN	CT-1	8FEB82	25JUN82	8FEB82	25JUN82	0	0	1	CRITICAL
78000	78100	0		OPB 1 CB	7123	PLANT ECOLOGY OPTIMIZD DESGN	FIN	28JUN82	25JUN82	28JUN82	25JUN82	0	0	1	CRITICAL
710A0	74400	13	R	OPB 1 CB	714	ACCESS RD ENVIRONMENT ANALY	CT-1	2NOV81	29JAN82	9NOV81	5FEB82	1	0	1	
74400	74000	10		OPB 1 CB	714	ACCESS RD ENVIRONMENT ANALY	FIN	1FEB82	9APR82	8FEB82	16APR82	1	1	1	
78200	78300	9		OPB 1 CB	715	PREP FOR FERC EXHIBIT-DRAFT	ST	2NOV81	1JAN82	4JAN82	5MAR82	9	9	1	
78300	78400	6		OPB 1 CB	715	PREP FOR FERC EXHIBIT-DRAFT	CT-1	8MAR82	16APR82	8MAR82	16APR82	0	0	1	CRITICAL
78400	78500	0		OPB 1 CB	715	PREP FOR FERC EXHIBIT-DRAFT	FIN	19APR82	16APR82	19APR82	16APR82	0	0	1	CRITICAL
78500	785A0	0		OPB 1 CB	715XX	EXHIBIT W MATERIAL COMPLETE		19APR82	16APR82	19APR82	16APR82	0	0	1	CRITICAL
78500	785B0	0		OPB 1 CB	715XX	EXHIBIT S MATERIAL COMPLETE		19APR82	16APR82	17MAY82	14MAY82	4	4	1	
82800	83000	0		OPB 1 C3	80221	PRELIMINARY ELEC SYSTEM	FIN	2NOV81	30OCT81	2NOV81	30OCT81	0	0	1	CRITICAL
85700	85800	19	R	OPB 1 C3	80222	RECOMMEND ELEC SYS	ST	2NOV81	12MAR82	2NOV81	12MAR82	0	0	1	CRITICAL
85B00	85900	3		OPB 1 C3	80222	RECOMMEND ELEC SYS	FIN	15MAR82	2APR82	29MAR82	16APR82	2	2	1	
80800	81000	1	R	OPB 1 C3	803	FINAL ROUTE SELECTION 1981	CT-1	2NOV81	6NOV81	14DEC81	18DEC81	6	0	1	
81000	81200	4		OPB 1 C3	803	FINAL ROUTE SELECTION 1981	CT-2	9NOV81	4DEC81	21DEC81	15JAN82	6	0	1	
81200	81400	0		OPB 1 C3	803	FINAL ROUTE SELECTION 1981	FIN	7DEC81	4DEC81	18JAN82	15JAN82	6	5	1	
83400	83600	10		OPB 1 C3	804	TOWER HARDWRE&CONDUCTR STUDY	CT-1	2NOV81	6JAN82	9NOV81	15JAN82	1	0	1	
83600	85400	2		OPB 1 C3	804	TOWER HARDWRE&CONDUCTR STUDY	FIN	11JAN82	22JAN82	18JAN82	29JAN82	1	0	1	
84600	84800	4	R	OPB 1 C3	805	SUBSTATIONS	ST	2NOV81	27NOV81	9NOV81	4DEC81	1	0	1	
84B00	85400	8		OPB 1 C3	805	SUBSTATIONS	FIN	30NOV81	22JAN82	7DEC81	29JAN82	1	0	1	
84000	84200	4	R	OPB 1 C3	806	DISPATCH CTR & COMMUNICATNS	ST	2NOV81	27NOV81	9NOV81	4DEC81	1	0	1	
84200	85400	8		OPB 1 C3	806	DISPATCH CTR & COMMUNICATNS	FIN	30NOV81	22JAN82	7DEC81	29JAN82	1	0	1	
85200	85400	1	R	OPB 1 C3	807	TRANS LINE COST ESTIMATES	ST	2NOV81	6NOV81	25JAN82	29JAN82	12	11	1	
85400	85600	6		OPB 1 C3	807	TRANS LINE COST ESTIMATES	FIN	25JAN82	5MAR82	1FEB82	12MAR82	1	1	1	
90202	90204	1	R	OPB 1 C7	902	PREP PRELIM CST ESTIMATES	CT-1	2NOV81	6NOV81	2NOV81	6NOV81	0	0	1	CRITICAL
90204	90206	2		OPB 1 C7	902	PREP PRELIM CST ESTIMATES	CT-2	9NOV81	20NOV81	9NOV81	20NOV81	0	0	1	CRITICAL
90206	90208	2		OPB 1 C7	902	PREP PRELIM CST ESTIMATES	CT-3	23NOV81	4DEC81	23NOV81	4DEC81	0	0	1	CRITICAL
90208	91000	2		OPB 1 C7	902	PREP PRELIM CST ESTIMATES	FIN	7DEC81	18DEC81	7DEC81	18DEC81	0	0	1	CRITICAL
91200	91213	2		OPB 1 C7	903	COST ESTIMATE UPDATES	ST	21DEC81	1JAN82	21DEC81	1JAN82	0	0	1	CRITICAL
91213	91214	2		OPB 1 C7	903	COST ESTIMATE UPDATES	CT-1	4JAN82	15JAN82	4JAN82	15JAN82	0	0	1	CRITICAL
91214	91216	2		OPB 1 C7	903	COST ESTIMATE UPDATES	CT-2	18JAN82	29JAN82	18JAN82	29JAN82	0	0	1	CRITICAL
91216	91218	2		OPB 1 C7	903	COST ESTIMATE UPDATES	CT-3	1FEB82	12FEB82	1FEB82	12FEB82	0	0	1	CRITICAL
91218	91400	2		OPB 1 C7	903	COST ESTIMATE UPDATES	FIN	15FEB82	26FEB82	15FEB82	26FEB82	0	0	1	CRITICAL
91400	914A0	0		OPB 1 C7	903XX	EXHIBIT N MATERIAL COMPLETE		1MAR82	26FEB82	19APR82	16APR82	7	7	1	
91600	91800	7	R	OPB 1 C7	9041	ENGR/CONST SCHEDULE PRELIM		2NOV81	18DEC81	2NOV81	18DEC81	0	0	1	CRITICAL
92000	92013	2		OPB 1 C7	9042	ENGR/CONST SCHEDULE FINAL	ST	21DEC81	1JAN82	21DEC81	1JAN82	0	0	1	CRITICAL
92013	92014	2		OPB 1 C7	9042	ENGR/CONST SCHEDULE FINAL	CT-1	4JAN82	15JAN82	4JAN82	15JAN82	0	0	1	CRITICAL
92014	92016	2		OPB 1 C7	9042	ENGR/CONST SCHEDULE FINAL	CT-2	18JAN82	29JAN82	18JAN82	29JAN82	0	0	1	CRITICAL
92016	92018	2		OPB 1 C7	9042	ENGR/CONST SCHEDULE FINAL	CT-3	1FEB82	12FEB82	1FEB82	12FEB82	0	0	1	CRITICAL

CPM ANALYSIS LISTING

I-NODE	J-NODE	DUR	SELECT CODES	------D E S C R I P T I o N ----------	E.S.	E.F.	L.S.	L.F.	T.F.	F.F.	CL	
92010	92200	2	OPB 1 C7	9042 ENGR/CONST SCHEDULE FINAL FIN	15FEB82	26FEB82	15FEB82	26FEB82	0	0	1	CRITICAL
92200	922A0	0	OPB 1 C7	904XX EXHIBIT O MATERIAL COMPLETE	1MAR82	26FEB82	19APR82	16APR82	7	7	1	
92400	92600	10	OPB 1 C7	905 CONTINGENCY ANALYSIS	21DEC81	26FEB82	21DEC81	26FEB82	0	0	1	CRITICAL
A1200	A1600	9	FLC C110	1001 IMPACT OF NEW FERC REGULATIONS	2NOV81	1JAN82	30NOV81	29JAN82	4	0	1	
A3200	A2600	4	FLC C110	10022 1ST UPDATE-REGULATORY REQ	2NOV81	27NOV81	22MAR82	16APR82	20	20	1	
A3300	A2600	4	FLC C110	10023 2ND UPDATE-REGULATORY REQ	30NOV81	25DEC81	22MAR82	16APR82	16	16	1	
A3600	A3800	5	FLC C110	1003 DATA FROM OTHERS	2NOV81	4DEC81	12APR82	14MAY82	23	0	1	
A3800	A4000	0	FLC C110	1003XX EXHIBIT A B & C MATERIAL COMPLETE	7DEC81	4DEC81	17MAY82	14MAY82	23	23	1	
A1400	A1600	9 R	FLC C110	1004 COORD EXHIBIT PREPARATION ST	2NOV81	1JAN82	30NOV81	29JAN82	4	0	1	
A1600	A16A0	1	FLC C110	1004 COORD EXHIBIT PREPARATION CT-1	4JAN82	8JAN82	1FEB82	5FEB82	4	0	1	
A16A0	A1700	2	FLC C110	1004 COORD EXHIBIT PREPARATION CT-2	11JAN82	22JAN82	8FEB82	19FEB82	4	0	1	
A1700	A17A0	3	FLC C110	1004 COORD EXHIBIT PREPARATION CT-3	25JAN82	12FEB82	22FEB82	12MAR82	4	3	1	
A17A0	A17B0	2	FLC C110	1004 COORD EXHIBIT PREPARATION CT-4	8MAR82	19MAR82	15MAR82	26MAR82	1	0	1	
A17B0	A1800	3	FLC C110	1004 COORD EXHIBIT PREPARATION CT-5	22MAR82	9APR82	29MAR82	16APR82	1	1	1	
A1800	A2400	0	FLC C110	1004 COORD EXHIBIT PREPARATION FIN	19APR82	16APR82	19APR82	16APR82	0	0	1	CRITICAL
A0400	A0600	10	FLC C110	10051 PREPARE EXHIBIT E	2NOV81	8JAN82	4JAN82	12MAR82	9	8	1	
A0700	A0900	10	FLC C110	10052 PREPARE EXHIBIT D	30NOV81	5FEB82	8MAR82	14MAY82	14	14	1	
A0800	A1000	10	FLC C110	1006 PREPARE EXHIBIT R ST	30NOV81	5FEB82	8FEB82	16APR82	10	10	1	
A0000	A0200	4	FLC C110	1007 PREPARE EXHIBIT T ST	2NOV81	27NOV81	8MAR82	2APR82	18	0	1	
A0200	A1100	2	FLC C110	1007 PREPARE EXHIBIT T FIN	30NOV81	11DEC81	5APR82	16APR82	18	18	1	
A2300	A2400	6	FLC C110	1008 PREP APPLICATN FORM-DRAFT ST	1FEB82	12MAR82	8MAR82	16APR82	5	5	1	
A2400	A2600	0	FLC C110	1008 PREP APPLICATN FORM-DRAFT FIN	19APR82	16APR82	19APR82	16APR82	0	0	1	CRITICAL
A2600	A2800	2	FLC C110	1009 REVIEW AND CORRECT	19APR82	30APR82	19APR82	30APR82	0	0	1	CRITICAL
A2800	A3000	2	FLC C110	1010 EXTERNAL REVIEW	3MAY82	14MAY82	3MAY82	14MAY82	0	0	1	CRITICAL
A3000	A3400	6	FLC C110	10XXX PRINT LICENSE APPLICATION	17MAY82	25JUN82	17MAY82	25JUN82	0	0	1	CRITICAL
B0000	B0200	33 R	FLC C210	1101 PROJECT OVERVIEW	2NOV81	18JUN82	9NOV81	25JUN82	1	1	1	
B0400	B0600	23 R	FLC C210	1102 INTERNAL REPORTS	2NOV81	9APR82	9NOV81	16APR82	1	0	1	
B0600	B06A0	0	FLC C210	1102XX EXHIBIT U MATERIAL COMPLETE	12APR82	9APR82	19APR82	16APR82	1	1	1	
B1200	B1400	15 R	FLC C210	1103 SUSITNA BASE PLAN RISK ANALY ST	2NOV81	12FEB82	21DEC81	2APR82	7	0	1	
B1400	B1600	0	FLC C210	1103 SUSITNA BASE PLAN RISK ANALY FIN	15FEB82	12FEB82	5APR82	2APR82	7	2	1	
B1600	B1800	12 R	FLC C210	1104 SUSITNA BASE PLAN EXTEN/REVIS	1MAR82	21MAY82	5APR82	25JUN82	5	5	1	
B2000	B2200	30	FLC C210	1105 SUSITNA FINANCE RISK ANALYSIS	2NOV81	28MAY82	30NOV81	25JUN82	4	4	1	
B2400	B2600	24	FLC C210	1106 RESOLUTION TAX ISSUE	2NOV81	16APR82	11JAN82	25JUN82	10	10	1	
B2800	B3000	30	FLC C210	1107 IDENTIFY PARTIES INTEREST	2NOV81	28MAY82	30NOV81	25JUN82	4	4	1	
B3200	B3400	22 R	FLC C210	1108 REVENUE ASSURANCE	2NOV81	2APR82	16NOV81	16APR82	2	0	1	
B3600	B3800	23 R	FLC C210	1109 LIAISON APA BOND UNDERWRITER	2NOV81	9APR82	9NOV81	16APR82	1	1	1	
B3400	B34A0	0	FLC C210	1109XX EXHIBIT G MATERIAL COMPLETE	5APR82	2APR82	19APR82	16APR82	2	2	1	
C0600	C0800	4	OPB 1 CB10	12022 CONDUCT PUBLIC MEETING #2	23NOV81	18DEC81	30NOV81	25DEC81	1	0	1	
C1200	C1400	4	OPB 1 CB10	12023 CONDUCT PUBLIC MEETING #3	15MAR82	9APR82	22MAR82	16APR82	1	1	1	
C0200	C0400	3 R	OPB 1 CB10	12031 CONDUCT WORKSHOPS 1,2,3	2NOV81	20NOV81	9NOV81	27NOV81	1	0	1	
C0800	C1000	12	OPB 1 CB10	12032 CONDUCT WORKSHOPS 4,5,6	21DEC81	12MAR82	28DEC81	19MAR82	1	0	1	
C1600	D1200	33 R	OPB 1 CB10	1204 PREP PUBLISH DISTRIB MATERIAL	2NOV81	18JUN82	9NOV81	25JUN82	1	1	1	
C1800	D1200	33 R	OPB 1 CB10	1205 PREP MAINTAIN ACTION LIST	2NOV81	18JUN82	9NOV81	25JUN82	1	1	1	
D1000	D1200	33 R	PSB 2 C310	13013 PROJECT PROCED MANUAL-UPDATE	2NOV81	18JUN82	9NOV81	25JUN82	1	1	1	
D2200	D2400	33 R	PSB 2 C310	13042 SCHEDULE CONTROL SYS UPDATE	2NOV81	18JUN82	9NOV81	25JUN82	1	1	1	
D2800	D3000	33 R	PSB 2 C310	13052 COST CONTROL SYSTEM-UP	2NOV81	18JUN82	9NOV81	25JUN82	1	1	1	
D3400	D3600	33 R	PSB 2 C310	13062 MANPOWER LOADNG SCHED-UPDATE	2NOV81	18JUN82	9NOV81	25JUN82	1	1	1	
D3800	D4000	33 R	PSB 2 C310	1310 SUB CONTRACT ADMINISTRATION	2NOV81	18JUN82	9NOV81	25JUN82	1	1	1	
D1200	D1300	0	10	XXX PROJECT COMPLETE XXX	28JUN82	25JUN82	28JUN82	25JUN82	0	183	1	CRITICAL

CPM ANALYSIS LISTING

I-NODE	J-NODE	DUR	SELECT CODES	------DESCRIPTION----------	E.S.	E.F.	L.S.	L.F.	T.F.	F.F.	CL
10000	10600	0	C OPB 1 C2	101 REVIEW OF METHODOLOGIES							COMPLETE
10400	10500	0	C OPB 1 C2	102 FCST PEAK LOAD DEMAND TRANS							COMPLETE
12100	11800	0	C OPB 1 C2	103 INDENT OF POWER ALTERNAT							COMPLETE
11800	11900	0	C OPB 1 C2	108 TERMINATION REPORT							COMPLETE
20200	20300	0	C OPA C2	2021 FIELD CAMP SET-UP	ST						COMPLETE
20300	20400	0	C OPA C2	2021 FIELD CAMP SET-UP	FIN						COMPLETE
21200	21500	0	C OPA C2	204 LAND STATUS RESEARCH							COMPLETE
21600	21700	0	C OPA C2	205 LAND AQUISITION ANALYSIS	ST						COMPLETE
21700	220A0	0	C OPA C2	205 LAND ACQUISITION ANALYSIS	CT-1						COMPLETE
220A0	22000	0	C OPA C2	205 LAND ACQUISITION ANALYSIS	FIN						COMPLETE
20800	21000	0	C OPA C2	206 RIGHT OF ENTRY	ST						COMPLETE
25000	25200	0	C OPA C3	207 SITE SPECIFIC SURVEYS	ST						COMPLETE
25200	25400	0	C OPA C3	207 SITE SPECIFIC SURVEYS	CT-1						COMPLETE
25400	25500	0	C OPA C3	207 SITE SPECIFIC SURVEY	FIN						COMPLETE
23000	23200	0	C OPA C3	2081 AIR PHOTOS & MAPPING-1980	ST						COMPLETE
23200	23400	0	C OPA C3	2081 AIR PHOTOS & MAPPING-1980	FIN						COMPLETE
24000	24100	0	C OPA C3	2082 AIR PHOTOS & MAPPING-1981	ST						COMPLETE
24100	241A0	0	C OPA C3	2082 AIR PHOTOS & MAPPING-1981	CT-1						COMPLETE
241A0	24200	0	C OPA C3	2082 AIR PHOTOS & MAPPING-1981	FIN						COMPLETE
23600	23800	0	C OPA C3	209 CONTROL NETWORK SURVEYS							COMPLETE
22200	22300	0	C OPA C3	210 ACCESS ROAD	ST						COMPLETE
22300	22400	0	C OPA C3	210 ACCESS ROAD	CT-1						COMPLETE
25600	26600	0	C OPA C3	211 MAP & PHOTO SEARCH							COMPLETE
26400	26600	0	C OPA C4	212 FIELD RECON FOR RSRVR CLEAR	ST						COMPLETE
26600	26800	0	C OPA C4	212 FIELD RECON FOR RSRVR CLEAR	FIN						COMPLETE
27600	27700	0	C OPA C3	213 MARKETABLTY & DISPOSAL STDY	ST						COMPLETE
27700	27200	0	C OPA C3	213 MARKETABLTY & DISPOSAL STDY	FIN						COMPLETE
27000	27200	0	C OPA C3	214 CST ESTMTS RSVR CLEARING	ST						COMPLETE
27200	27400	0	C OPA C3	214 CST ESTMTS RSVR CLEARING	FIN						COMPLETE
25800	26000	0	C OPA C4	215 SLOPE EROSION & STBLTY STUDY	ST						COMPLETE
26000	26200	0	C OPA C4	215 SLOPE EROSION & STBLTY STUDY	FIN						COMPLETE
24400	24600	0	C OPA C3	216 HYDROGRAPHIC SURVEYS	ST						COMPLETE
24600	24800	0	C OPA C3	216 HYDROGRAPHIC SURVEYS	FIN						COMPLETE
32600	32800	0	C OPB 1 C4	301 REVIEW AVAILABLE MATERIAL	ST						COMPLETE
32800	33000	0	C OPB 1 C4	301 REVIEW AVAILABLE MATERIAL	FIN						COMPLETE
36200	36400	0	C OPB 1 C4	3021 FIELD DATA INDEX-SETUP	ST						COMPLETE
36400	36600	0	C OPB 1 C4	3021 FIELD DATA INDEX-SETUP	FIN						COMPLETE
36600	36700	0	C OPB 1 C4	3022 FIELD DATA INDEX OPERATION	ST						COMPLETE
37000	37200	0	C OPB 1 C4	3031 FIELD DATA COLLECTION-SPECS							COMPLETE
37400	37500	0	C OPB 1 C4	3032 FIELD DATA COLLECTION 80-81	ST						COMPLETE
37500	37600	0	C OPB 1 C4	3032 FIELD DATA COLLECTION 80-81	FIN						COMPLETE
32800	33200	0	C OPB 1 C4	3041 WATER RSRCS-FLOW EXTENSION	ST						COMPLETE
33200	33300	0	C OPB 1 C4	3041 WATER RSRCS-FLOW EXTENSION	CT-1						COMPLETE
33300	333A0	0	C OPB 1 C4	3042 WATER RSRCS-FERQ ANALYSIS	ST						COMPLETE
34200	34400	0	C OPB 1 C4	3043 WATER RSRCS-RESERVOIR STUDY	ST						COMPLETE
34400	344A0	0	C OPB 1 C4	3043 WATER RSRCS-RESERVOIR STUDY	CT-1						COMPLETE
344A0	34500	0	C OPB 1 C4	3043 WATER RSRCS-RESERVOIR STUDY	CT-2						COMPLETE
33700	33900	0	C OPB 1 C4	3045 EVAPORATION STUDIES							COMPLETE
32700	32900	0	C OPB 1 C4	3051 FLOODS-FREQUENCY ANALYSIS							COMPLETE
32300	32400	0	C OPB 1 C4	3052 FLOODS PMF REVIEW	FIN						COMPLETE
32800	32300	0	C OPB 1 C4	3052 FLOODS PMF REVIEW	ST						COMPLETE

CPM ANALYSIS LISTING

I-NODE	J-NODE	DUR	SELECT CODES		DESCRIPTION		E.S.	E.F.	L.S.	L.F.	T.F.	F.F.	CL
31600	31800	0	C OPB 1 C4	3053	FLOODS-RESERVOIR ROUTING	ST							COMPLETE
30000	30200	0	C OPB 1 C4	3061	HYDRLS&ICE-CHANNEL WTR LVLS	ST							COMPLETE
30200	30400	0	C OPB 1 C4	3061	HYDRLICS & ICE WTR LVLS	CT-1							COMPLETE
38800	39000	0	C OPB 1 C4	3063	HYDR&ICE-RESER SLIDE SURGE	ST							COMPLETE
39200	392A0	0	C OPB 1 C4	3064	HYDR & ICE-RSVR TEMP REGIME	ST							COMPLETE
392A0	39300	0	C OPB 1 C4	3064	HYDR & ICE RSVR TEMP REGIME	FIN							COMPLETE
35600	35800	0	C OPB 1 C4	3071	SEDIMENT YIELD & DEPOSITION	ST							COMPLETE
33400	33600	0	C OPB 1 C4	3072	RIVER MORPHOLOGY	ST							COMPLETE
38000	38200	0	C OPB 1 C4	3081	TRANSMSN LINE-PRLM PARAMTR								COMPLETE
38200	38400	0	C OPB 1 C4	3082	TRANSMSN LINE-DET PARAMTR	ST							COMPLETE
38400	38600	0	C OPB 1 C4	3082	TRANSMSN LINE-DET PARAMTR	FIN							COMPLETE
30800	31000	0	C OPB 1 C4	3101	LWR SUSITNA STUDIES-PRELIM	ST							COMPLETE
31000	31200	0	C OPB 1 C4	3101	LWR SUSITNA STUDIES-PRELIM	FIN							COMPLETE
31200	31500	0	C OPB C4	3102	LWR SUSITNA STUDIES-FOLLOWUP	ST							COMPLETE
43100	43200	0	C OPB 1 C1	401	REVIEW AVAILABLE DATA	ST							COMPLETE
43200	43400	0	C OPB 1 C1	401	REVIEW AVAILABLE DATA	CT-1							COMPLETE
43400	41200	0	C OPB 1 C1	401	REVIEW AVAILABLE DATA	FIN							COMPLETE
44000	44200	0	C OPA C4	402	SHORT TERM MONITORNG PROGRAM	ST							COMPLETE
44200	41200	0	C OPA C4	402	SHORT TERM MONITORNG PROGRAM	FIN							COMPLETE
40000	40200	0	C OPB 1 C1	403	PRELIM RESERVR INDUCD SEISMC								COMPLETE
40300	40600	0	C OPB 1 C1	404	REMOTE SENSING IMAG ANALYSIS	ST							COMPLETE
40600	40800	0	C OPB 1 C1	404	REMOTE SENSING IMAG ANALYSIS	CT-1							COMPLETE
40800	42000	0	C OPB 1 C1	404	REMOTE SENSING IMAG ANALYSIS	FIN							COMPLETE
42200	42400	0	C OPA C4	405	SEISMIC GEOLOGIC RECONASANCE								COMPLETE
41000	41200	0	C OPB 1 C1	406	PRELIM EVALUATN&REPORT-DRAFT	ST							COMPLETE
41200	41400	0	C OPB 1 C1	406	PRELIM EVALUATION & REPORT	CT-1							COMPLETE
41300	41600	0	C OPB 1 C1	406	PRELIM EVAL & REPORT DRAFT	FIN							COMPLETE
44200	45000	0	C OPB 1 C1	407	PRELIM GROUND MOTION STUDIES								COMPLETE
45600	45800	0	C OPB 1 C1	408	DAM STABILITY	ST							COMPLETE
45800	46000	0	C OPB 1 C1	408	DAM STABILITY	CT-1							COMPLETE
44400	44500	0	C OPB 1 C1	413	GROUND MOTION STUDIES	ST							COMPLETE
44500	44600	0	C OPB 1 C1	413	GROUND MOTION STUDIES	CT-1							COMPLETE
45200	45300	0	C OPB 1 C1	415	SOIL SUSCEPTBTY-SEISMIC FAIL	ST							COMPLETE
45300	45400	0	C OPB 1 C1	415	SOIL SUSCEPTBTY-SEISMIC FAIL	CT-1							COMPLETE
50000	50200	0	C OPB 1 C1	501	DATA COLLECTION	ST							COMPLETE
50200	50400	0	C OPB 1 C1	501	DATA COLLECTION	CT-1							COMPLETE
50400	50600	0	C OPB 1 C1	501	DATA COLLECTION	FIN							COMPLETE
50200	51200	0	C OPB 1 C1	502	AIR PHOTO INTERPRETATION	ST							COMPLETE
51200	51600	0	C OPB 1 C1	502	AIR PHOTO INTERPRETATION	FIN							COMPLETE
50800	51600	0	C OPB 1 C1	503	1980 PROGRAM DESIGN								COMPLETE
51000	51600	0	C OPA C4	504	1980 EXPLORATION PROGRAM								COMPLETE
52000	52200	0	C OPB 1 C1	505	1981 PROGRAM DESIGN	ST							COMPLETE
52200	52600	0	C OPB 1 C1	505	1981 PROGRAM DESIGN	FIN							COMPLETE
52400	52600	0	C OPA C4	506	1981 EXPLORATION PROGRAM	ST							COMPLETE
52600	526A0	0	C OPA C4	506	1981 EXPLORATION PROGRAM	CT-1							COMPLETE
526A0	52700	0	C OPA C4	506	1981 EXPLORATION PROGRAM	FIN							COMPLETE
51400	51600	0	C OPB 1 C1	5081	DATA ASSEMBLY-1980-DRAFT	ST							COMPLETE
51600	51800	0	C OPB 1 C1	5081	DATA ASSEMBLY-1980-DRAFT	FIN							COMPLETE
52800	53000	0	C OPB 1 C1	5082	DATA ASSEMBLY-1981-DRAFT	ST							COMPLETE
53000	53200	0	C OPB 1 C1	5082	DATA ASSEMBLY-1981 DRAFT	CT-1							COMPLETE
60120	60122	0	C OPB 1 C4	601	REVIEW PREVIOUS STUDIES	ST							COMPLETE

CPM ANALYSIS LISTING

I-NODE	J-NODE	DUR	SELECT CODES	------D E S C R I P T I O N ----------	E.S.	E.F.	L.S.	L.F.	T.F.	F.F.	CL
60122	60125	0	C OPB 1 C4 601	REVIEW PREVIOUS STUDIES FIN							COMPLETE
60200	60524	0	C OPB 1 C4 602	INVESTIGATE TUNNEL ALTERNATIVES							COMPLETE
60325	60330	0	C OPB 1 C4 603	EVAL ALT SUSITNA DEVELOPMENT ST							COMPLETE
60330	60335	0	C OPB 1 C4 603	EVAL ALT SUSITNA DEVELOPMENT CT-2							COMPLETE
60335	60340	0	C OPB 1 C4 603	EVAL ALT SUSITNA DEVELOPMENT CT-3							COMPLETE
60340	60345	0	C OPB 1 C4 603	EVAL ALT SUSITNA DEVELOPMENT FIN							COMPLETE
60420	60425	0	C OPB 1 C4 604	DEVL CAN ARCH DAM EVALUATION ST							COMPLETE
60425	60430	0	C OPB 1 C4 604	DEVL CAN ARCH DAM EVALUATION FIN							COMPLETE
60510	60520	0	C OPB 1 C4 6051	SELECT REPORT DRAFT							COMPLETE
60520	60522	0	C OPB 1 C4 6052	SELECT FINAL REPORT DRAFT ST							COMPLETE
60522	60524	0	C OPB 1 C4 6052	SELECT FINAL REPORT DRAFT C1-1							COMPLETE
60524	60528	0	C OPB 1 C4 6052	SELECT REPORT FINAL DRAFT FIN							COMPLETE
60528	60530	0	C OPB 1 C4 6053	SELECT REPORT FINAL EDITION							COMPLETE
60612	60614	0	C OPB 1 C4 606	STAGED DEVELOPMENT ALT ST							COMPLETE
60614	60616	0	C OPB 1 C4 606	STAGED DEVELOPMENT ALT CT-1							COMPLETE
60616	60618	0	C OPB 1 C4 606	STAGED DEVELOPMENT ALT FIN							COMPLETE
60702	60703	0	C OPB 1 C5 607	DEVELOP CONCEPTUAL PLAN(WAT) ST							COMPLETE
60703	60704	0	C OPB 1 C5 607	DEVELOP CONCEPTUAL PLAN(WAT) FIN							COMPLETE
60802	60804	0	C OPB 1 C6 608	UPDATE DESIGN CRITERIA(DC) ST							COMPLETE
60804	60806	0	C OPB 1 C6 609	UPDATE DESIGN CRITERIA(DC) CT-1							COMPLETE
62506	62508	0	C OPB 1 C6 608	OPTIMIZE DAM HEIGHTS(DC)							COMPLETE
60902	60903	0	C OPB 1 C4 609	UPDATE DESIGN CRITERIA(WAT) ST							COMPLETE
60903	60904	0	C OPB 1 C4 609	UPDATE DESIGN CRITERIA(WAT) CT-1							COMPLETE
60904	60905	0	C OPB 1 C4 609	UPDATE DESIGN CRITERIA(WAT) CT-2							COMPLETE
60905	60906	0	C OPB 1 C4 609	UPDATE DESIGN CRITERIA(WAT) FIN							COMPLETE
60907	60908	0	C OPB 1 C4 609	UPDATE CRIT&ASSUMPTIONS(WAT) ST							COMPLETE
60908	60909	0	C OPB 1 C4 609	UPDATE CRIT&ASSUMPTIONS(WAT) CT-1							COMPLETE
60909	60910	0	C OPB 1 C4 609	UPDATE CRIT&ASSUMPTIONS(WAT) CT-2							COMPLETE
61002	61003	0	C OPB 1 C4 610	UPDATE DESIGN CRITERIA(WAT) ST							COMPLETE
61003	61004	0	C OPB 1 C4 610	UPDATE DESIGN CRITERIA(DC) CT-1							COMPLETE
61004	61005	0	C OPB 1 C4 610	UPDATE DESIGN CRITERIA(DC) CT-2							COMPLETE
61005	61006	0	C OPB 1 C4 610	UPDATE DESIGN CRITERIA(DC) FIN							COMPLETE
61007	61008	0	C OPB 1 C4 610	UPDATE CRIT&ASSUMPTIONS(DC) ST							COMPLETE
61008	61009	0	C OPB 1 C4 610	UPDATE CRIT&ASSUMPTIONS(DC) CT-1							COMPLETE
61009	61010	0	C OPB 1 C4 610	UPDATE CRIT&ASSUMPTIONS(WAT) CT-2							COMPLETE
61102	61103	0	C OPB 1 C5 611	DEV ENGRG SKCHS/LAYOTS(WAT) ST							COMPLETE
61103	61104	0	C OPB 1 C5 611	DEV ENGRG SKCHS/LAYOTS(WAT) CT-1							COMPLETE
61104	61105	0	C OPB 1 C5 611	DEV ENGRG SKCHS/LAYOTS(WAT) CT-2							COMPLETE
61105	61106	0	C OPB 1 C5 611	DEV ENGRG SKCHS/LAYOTS(WAT) FIN							COMPLETE
61108	61110	0	C OPB 1 C5 611	DEV DWGS/COST COMPRISN(WAT) ST							COMPLETE
61110	61111	0	C OPB 1 C5 611	DEV DWGS/COST COMPRISN(WAT) CT-1							COMPLETE
61111	61112	0	C OPB 1 C5 611	DEV DWGS/COST COMPRISN(WAT) CT-2							COMPLETE
61112	61114	0	C OPB 1 C5 611	DEV DWGS/COST COMPRISN(WAT) FIN							COMPLETE
61116	61117	0	C OPB 1 C5 611	INCORP GENL AMENDMENTS (WAT) ST							COMPLETE
61120	61122	0	C OPB 1 C5 611	DESIGN DAM(WAT)							COMPLETE
61124	61126	0	C OPB 1 C5 611	DAM FOUNDATION TREATMENT-WAT ST							COMPLETE
61128	61130	0	C OPB 1 C5 611	OPTIMIZE DAM HEIGHT ST							COMPLETE
61132	61138	0	C OPB 1 C5 611	ADJUST ALIGNMENT(WAT) ST							COMPLETE
61134	61142	0	C OPB 1 C5 611	DAM FOUNDATION TREATMENT-WAT CT-1							COMPLETE
61136	61143	0	C OPB 1 C5 611	DESIGN DAM(WAT) ST							COMPLETE
61138	61146	0	C OPB 1 C5 611	ADJUST ALIGNMENT(WAT) CT-1							COMPLETE

CPM ANALYSIS LISTING

I-NODE	J-NODE	DUR	SELECT CODES		DESCRIPTION		E.S.	E.F.	L.S.	L.F.	T.F.	F.F.	CL
61143	61147	0	C OPB 1 C5	611	DESIGN DAM(WAT)	CT-1							COMPLETE
61147	61156	0	C OPB 1 C5	611	DESIGN DAM(WAT)	FIN							COMPLETE
61158	61160	0	C OPB 1 C5	611	DRAFT REPORT DRAWINGS(WAT)	ST							COMPLETE
61160	61162	0	C OPB 1 C5	611	DRAFT REPORT DRAWINGS(WAT)	CT-1							COMPLETE
61202	61204	0	C OPB 1 C6	612	DEV ENGRG SKCHS/LAYOTS(DC)	ST							COMPLETE
61204	61206	0	C OPB 1 C6	612	DEV ENGRG SKCHS/LAYOTS(DC)	CT-1							COMPLETE
61206	61208	0	C OPB 1 C6	612	DEV ENGRG SKCHS/LAYOTS(DC)	CT-2							COMPLETE
61208	61210	0	C OPB 1 C6	612	DEV ENGRG SKCHS/LAYOTS(DC)	FIN							COMPLETE
61212	61214	0	C OPB 1 C6	612	DEV DWGS/COST COMPRISN(DC)	ST							COMPLETE
61214	61216	0	C OPB 1 C6	612	DEV DWGS/COST COMPRISN(DC)	CT-1							COMPLETE
61216	61218	0	C OPB 1 C6	612	DEV DWGS/COST COMPRISN(DC)	CT-2							COMPLETE
61218	61220	0	C OPB 1 C6	612	DEV DWGS/COST COMPRISN(DC)	FIN							COMPLETE
61222	61223	0	C OPB 1 C6	612	INCORP GENL AMENDMENTS(DC)	ST							COMPLETE
61223	61224	0	C OPB 1 C6	612	INCORP GENL AMENDMENTS(DC)	CT-1							COMPLETE
61228	61229	0	C OPB 1 C6	612	DESIGN DAM(DC)	ST							COMPLETE
61229	61230	0	C OPB 1 C6	612	DESIGN DAM(DC)	CT-1							COMPLETE
61232	61234	0	C OPB 1 C6	612	OPTIMIZE DAM HEIGHT(DC)	ST							COMPLETE
61236	61240	0	C OPB 1 C6	612	DESIGN DAM(DC)	CT-2							COMPLETE
61238	61242	0	C OPB 1 C6	612	FOUNDATION TREATMENT(DC)	ST							COMPLETE
61244	61248	0	C OPB 1 C6	612	OPTIMIZE DAM HEIGHT(DC)	FIN							COMPLETE
61256	61258	0	C OPB 1 C6	612	DRAFT REPORT DWGS(DC)	ST							COMPLETE
61258	61260	0	C OPB 1 C6	612	DRAFT REPORT DWGS(DC)	CT-1							COMPLETE
61402	61403	0	C OPB 1 C4	614	SPILLWAY DESIGN CRITERIA	ST							COMPLETE
61403	61404	0	C OPB 1 C4	614	SPILLWAY DESIGN CRITERIA	CT-1							COMPLETE
61404	61405	0	C OPB 1 C4	614	SPILLWAY DESIGN CRITERIA	CT-2							COMPLETE
61405	61406	0	C OPB 1 C4	614	SPILLWAY DESIGN CRITERIA	FIN							COMPLETE
61407	61408	0	C OPB 1 C4	614	UPDATE CRIT&ASSUMPTIONS(SPWY)	ST							COMPLETE
61502	61503	0	C OPB 1 C5	615	DEV ENGRG SKCHS/LAYOTS(WAT)	ST							COMPLETE
61503	61504	0	C OPB 1 C5	615	DEV ENGRG SKCHS/LAYOTS(WAT)	CT-1							COMPLETE
61504	61505	0	C OPB 1 C5	615	DEV ENGRG SKCHS/LAYOTS(WAT)	CT-2							COMPLETE
61505	61506	0	C OPB 1 C5	615	DEV ENGRG SKCHS/LAYOTS-WAT/SY	FIN							COMPLETE
61507	61508	0	C OPB 1 C5	615	DEV ENGRG SKCHS/LAYOTS-WAT/SY	ST							COMPLETE
61508	61510	0	C OPB 1 C5	615	DEV ENGRG SKCHS/LAYOTS-WAT/SY	FIN							COMPLETE
61510	61511	0	C OPB 1 C5	615	DEV DWGS/COST COMPRISN(WAT)	CT-2							COMPLETE
61511	61512	0	C OPB 1 C5	615	DEV DWGS/COST COMPRISN(WAT)	CT-2							COMPLETE
61512	61514	0	C OPB 1 C5	615	DEV DWGS/COST COMPRISN-WAT/SY	FIN							COMPLETE
61515	61516	0	C OPB 1 C5	615	SELECT SPILLWAY FORMAT	ST							COMPLETE
61516	61518	0	C OPB 1 C5	615	SELECT SPILLWAY FORMAT	FIN							COMPLETE
61602	61604	0	C OPB 1 C6	616	DEV ENGRG SKCHS/LAYOTS(DC)	ST							COMPLETE
61604	61606	0	C OPB 1 C6	616	DEV ENGRG SKCHS/LAYOTS(DC)	CT-1							COMPLETE
61606	61608	0	C OPB 1 C6	616	DEV ENGRG SKCHS/LAYOTS(DC)	CT-2							COMPLETE
61608	61610	0	C OPB 1 C6	616	DEV ENGRG SKCHS/LAYOTS(DC)	FIN							COMPLETE
61612	61614	0	C OPB 1 C6	616	DEV DWGS/COST COMPRISN(DC)	FIN							COMPLETE
61614	61616	0	C OPB 1 C6	616	DEV DWGS/COST COMPRISN(DC)	CT-1							COMPLETE
61616	61618	0	C OPB 1 C6	616	DEV DWGS/COST COMPRISN(DC)	CT-2							COMPLETE
61618	61620	0	C OPB 1 C6	616	DEV DWGS/COST COMPRISN(DC)	FIN							COMPLETE
61622	61624	0	C OPB 1 C6	616	SELECT SPILLWAY FORMAT	ST							COMPLETE
61624	61628	0	C OPB 1 C6	616	SELECT SPILLWAY FORMAT	FIN							COMPLETE
61702	61704	0	C OPB 1 C5	617	INCORP GENL AMENDMENTS (WAT)	ST							COMPLETE
61708	61718	0	C OPB 1 C5	617	ADJUST ALIGNMENTS	ST							COMPLETE
61710	61720	0	C OPB 1 C5	617	ENERGY DISSIPATION-WAT	ST							COMPLETE

CPM ANALYSIS LISTING

I-NODE	J-NODE	DUR	SELECT CODES	------D E S C R I P T I O N ----------	E.S.	E.F.	L.S.	L.F.	T.F.	F.F.	CL
61712	61721	0	C OPB 1 C5 617	PREL DESGN CHUTE/ROCK ANCRS	ST						COMPLETE
61714	61723	0	C OPB 1 C5 617	PREL DESGN CONTRL STRUCTURES	ST						COMPLETE
61718	61734	0	C OPB 1 C5 617	ADJUST ALIGNMENTS	FIN						COMPLETE
61720	61728	0	C OPB 1 C5 617	ENERGY DISSIPATION-WAT	CT-1						COMPLETE
61723	61724	0	C OPB 1 C5 617	PREL DESGN CONTRL STRUCTURES	CT-1						COMPLETE
61724	61730	0	C OPB 1 C5 617	PREL DESGN CONTRL STRUCTURES	CT-2						COMPLETE
61728	61740	0	C OPB 1 C5 617	ENERGY DISSIPATION-WAT	FIN						COMPLETE
61748	61750	0	C OPB 1 C5 617	CONFIRM CONCEPT/ALIGNMENTS	ST						COMPLETE
61750	61754	0	C OPB 1 C5 617	CONFIRM CONCEPT/ALIGNMENTS	FIN						COMPLETE
61756	61760	0	C OPB 1 C5 617	DESIGN WATER PASSAGES	ST						COMPLETE
61758	61764	0	C OPB 1 C5 617	DESIGN ENERGY DISSIPATION	ST						COMPLETE
61764	61766	0	C OPB 1 C5 617	DESIGN ENERGY DISSIPATION	CT-1						COMPLETE
61778	61780	0	C OPB 1 C5 617	DRAFT REPORT DRAWINGS(WAT)	ST						COMPLETE
61780	61782	0	C OPB 1 C5 617	DRAFT REPORT DRAWINGS(WAT)	CT-1						COMPLETE
61802	61803	0	C OPB 1 C6 618	INCORP GENL AMENDMENTS(DC)	ST						COMPLETE
61808	61814	0	C OPB 1 C6 618	ADJUST ALIGNMENTS(DC)	ST						COMPLETE
61812	61820	0	C OPB 1 C6 618	PREL DESGN CHUTE/ROCK ANCRS	ST						COMPLETE
61814	61832	0	C OPB 1 C6 618	ADJUST ALIGNMENTS(DC)	FIN						COMPLETE
61816	61824	0	C OPB 1 C6 618	OPT AGAINST DAM FREEBRD(DC)	ST						COMPLETE
61818	61822	0	C OPB 1 C6 618	PREL DESGN CONTRL STRUCT(DC)	ST						COMPLETE
61822	61828	0	C OPB 1 C6 618	PREL DESGN CONTRL STRUCT(DC)	CT-1						COMPLETE
61824	61826	0	C OPB 1 C6 618	OPT AGAINST DAM FREEBRD(DC)	CT-1						COMPLETE
61826	61834	0	C OPB 1 C6 618	OPT AGAINST DAM FREEBRD(DC)	CT-2						COMPLETE
61848	61850	0	C OPB 1 C6 618	CONFIRM CONCEPT							COMPLETE
61852	61854	0	C OPB 1 C6 618	LL RELEASES ENERGY DISIPATIN	ST						COMPLETE
61862	61864	0	C OPB 1 C6 618	DRAFT REPORT DWGS(DC)	ST						COMPLETE
61864	61866	0	C OPB 1 C6 618	DRAFT REPORT DWGS(DC)	ST						COMPLETE
62010	62020	0	C OPB 1 C5 620	ESTABLISH LOADING SCHEDULE							COMPLETE
62010	62022	0	C OPB 1 C5 620	ESTAB PERMANENT OPERATING FORCE							COMPLETE
62024	62034	0	C OPB 1 C5 620	DETERMINE SERVICES-H2O,ELEC,SEWGE							COMPLETE
62026	62036	0	C OPB 1 C5 620	DETERMINE HOUSING REQUIREMENT							COMPLETE
62029	62029	0	C OPB 1 C5 620	DETERMINE AUX REQUIREMENTS	ST						COMPLETE
62102	62104	0	C OPB 1 C5 621	CONFIRM CONCEPT							COMPLETE
62106	62112	0	C OPB 1 C5 621	DESIGN WATER PASSAGES-WAT	ST						COMPLETE
62108	62114	0	C OPB 1 C5 621	DESIGN COFFERDAM HEIGHT	ST						COMPLETE
62123	62124	0	C OPB 1 C5 621	DRAFT REPORT DRAWINGS(WAT)	ST						COMPLETE
62124	62126	0	C OPB 1 C5 621	DRAFT REPORT DRAWINGS(WAT)	CT-1						COMPLETE
62202	62204	0	C OPB 1 C6 622	CONFIRM CONCEPT(DC)							COMPLETE
62206	62212	0	C OPB 1 C6 622	DESGN WATER PASSAGES(DC)	ST						COMPLETE
62226	62228	0	C OPB 1 C6 622	DRAFT REPORT DWGS(DC)	ST						COMPLETE
62228	62230	0	C OPB 1 C6 622	DRAFT REPORT DWGS(DC)	CT-1						COMPLETE
62302	62303	0	C OPB 1 C4 623	DEV ENGRG SKCHS/LAYOTS(WAT)	ST						COMPLETE
62303	62304	0	C OPB 1 C4 623	DEV ENGRG SKCHS/LAYOTS(WAT)	CT-1						COMPLETE
62304	62305	0	C OPB 1 C4 623	DEV ENGRG SKCHS/LAYOTS(WAT)	CT-2						COMPLETE
62305	62306	0	C OPB 1 C4 623	DEV ENGRG SKCHS/LAYOTS(WAT)	FIN						COMPLETE
62309	62310	0	C OPB 1 C4 623	DEV DWGS/COST COMPRISN(WAT)	ST						COMPLETE
62310	62311	0	C OPB 1 C4 623	DEV DWGS/COST COMPRISN(WAT)	CT-2						COMPLETE
62311	62312	0	C OPB 1 C5 623	DEV DWGS/COST COMPRISN(WAT)	FIN						COMPLETE
62312	62314	0	C OPB 1 C4 623	DEV DWGS/COST COMPRISN(WAT)	FIN						COMPLETE
62315	62316	0	C OPB 1 C5 623	TAKEOFF FOR ALTNTIVE LAYOUT	ST						COMPLETE
62316	62318	0	C OPB 1 C5 623	TAKEOFF FOR ALTNTIVE LAYOUT	FIN						COMPLETE

CPM ANALYSIS LISTING

I-NODE	J-NODE	DUR	SELECT CODES	------DESCRIPTION----------	E.S.	E.F.	L.S.	L.F.	T.F.	F.F.	CL
62320	62323	0	C OPB 1 C4 623	REVIEW ALIGNMENTS-WAT ST							COMPLETE
62322	62326	0	C OPB 1 C4 623	LAYOT U/G P/H & TAILR C 800 MW							COMPLETE
62323	62324	0	C OPB 1 C4 623	REVIEW ALIGNMENTS-WAT CT-1							COMPLETE
62328	62332	0	C OPB 1 C4 623	LAYOT SURFACE P/H T/R C 800 MW							COMPLETE
62330	62331	0	C OPB 1 C4 623	COST LAYOUT IN 2 & 3 ST							COMPLETE
62331	62337	0	C OPB 1 C4 623	COST LAYOUT IN 2 & 3 CT-1							COMPLETE
62334	62336	0	C OPB 1 C4 623	SELECT TYPE OF POWER HOUSE							COMPLETE
62337	62338	0	C OPB 1 C4 623	COST LAYOUT IN 2 & 3 FIN							COMPLETE
62340	62341	0	C OPB 1 C4 623	REVIEW ALIGNMENTS-WAT CT-2							COMPLETE
62350	62356	0	C OPB 1 C4 623	PREL DESIGN INTAKE STRUCTURE ST							COMPLETE
62352	62354	0	C OPB 1 C4 623	PREL DESIGN WATER PASSAGES ST							COMPLETE
62370	62371	0	C OPB 1 C4 623	DRAFT REPORT DRAWINGS(WAT) ST							COMPLETE
62371	62372	0	C OPB 1 C4 623	DRAFT REPORT DRAWINGS(WAT) CT-1							COMPLETE
62402	62404	0	C OPB 1 C4 624	DEV ENGRG SKCHS/LAYOTS(DC) ST							COMPLETE
62404	62406	0	C OPB 1 C4 624	DEV ENGRG SKCHS/LAYOTS(DC) CT-1							COMPLETE
62406	62408	0	C OPB 1 C4 624	DEV ENGRG SKCHS/LAYOTS(DC) CT-2							COMPLETE
62408	62410	0	C OPB 1 C4 624	DEV ENGRG SKCHS/LAYOTS(DC) FIN							COMPLETE
62412	62414	0	C OPB 1 C4 624	DEV DWGS/COST COMPRISN(DC) ST							COMPLETE
62414	62416	0	C OPB 1 C4 624	DEV DWGS/COST COMPRISN(DC) CT-1							COMPLETE
62416	62418	0	C OPB 1 C4 624	DEV DWGS/COST COMPRISN(DC) CT-2							COMPLETE
62418	62420	0	C OPB 1 C4 624	DEV DWGS/COST COMPRISN(DC) FIN							COMPLETE
62422	62424	0	C OPB 1 C4 624	TAKEOFFS ALTERNTIVE LAYOUT ST							COMPLETE
62424	62426	0	C OPB 1 C4 624	TAKEOFFS ALTERNTIVE LAYOUT FIN							COMPLETE
62428	62429	0	C OPB 1 C4 624	REVIEW ALIGNMENTS(DC) ST							COMPLETE
62429	62432	0	C OPB 1 C4 624	REVIEW ALIGNMENTS(DC) CT-1							COMPLETE
62430	62434	0	C OPB 1 C4 624	LAYOT U/G P/H & TAILR C 800 MW							COMPLETE
62436	62438	0	C OPB 1 C4 624	COST LAYOUT IN 2B							COMPLETE
62440	62441	0	C OPB 1 C4 624	REVIEW ALIGNMENTS(DC) CT-2							COMPLETE
62462	62464	0	C OPB 1 C4 624	DRAFT REPORT DWGS(DC) ST							COMPLETE
62464	62466	0	C OPB 1 C4 624	DRAFT REPORT DWGS(DC) CT-1							COMPLETE
62502	62504	0	C OPB 1 C4 625	OPTIMIZE DAM HEIGHT							COMPLETE
62510	62512	0	C OPB 1 C4 625	SELECT 2-LYOTS-DETAILED STDY							COMPLETE
62520	62521	0	C OPB 1 C4 625	SELECT 2-LYOTS-DETAILED STDY ST							COMPLETE
62521	62522	0	C OPB 1 C4 625	SELECT 2-LYOTS-DETAILED STDY FIN							COMPLETE
62602	62604	0	C OPB 1 C5 626	INCORP GENL AMENDMENTS (WAT) ST							COMPLETE
62608	62611	0	C OPB 1 C5 626	REVIEW ALIGNMENTS ST							COMPLETE
62610	62614	0	C OPB 1 C5 626	LAYOUT U/G P/H & TAILR CHANNEL							COMPLETE
62611	62612	0	C OPB 1 C5 626	REVIEW ALIGNMENTS CT-1							COMPLETE
62628	62629	0	C OPB 1 C5 626	REVIEW ALIGNMENTS CT-2							COMPLETE
62640	62642	0	C OPB 1 C5 626	PREL DESIGN WATER PASSAGES ST							COMPLETE
62642	62648	0	C OPB 1 C5 626	PREL DESIGN INTAKED STRUCTUREFIN							COMPLETE
62656	62658	0	C OPB 1 C5 626	DRAFT REPORT DRAWINGS(DC) ST							COMPLETE
62658	62660	0	C OPB 1 C5 626	DRAFT REPORT DRAWINGS(DC) CT-1							COMPLETE
62702	62703	0	C OPB 1 C6 627	INCORP GENL AMENDMENTS(DC) ST							COMPLETE
62708	62709	0	C OPB 1 C6 627	REVIEW ALIGNMENTS(DC) ST							COMPLETE
62709	62712	0	C OPB 1 C6 627	REVIEW ALIGNMENTS(DC) CT-1							COMPLETE
62710	62714	0	C OPB 1 C6 627	LAYOUT U/G P/H & TAILR CHAL							COMPLETE
62716	62718	0	C OPB 1 C6 627	COST LAYOUT IN 2B							COMPLETE
62720	62721	0	C OPB 1 C6 627	REVIEW ALIGNMENTS(DC) CT-2							COMPLETE
62722	62723	0	C OPB 1 C6 627	REVIEW INTAKE WATER PASSAGES							COMPLETE
62742	62744	0	C OPB 1 C6 627	DRAFT REPORT DWGS(DC) ST							COMPLETE

CPM ANALYSIS LISTING

I-NODE	J-NODE	DUR	SELECT CODES		DESCRIPTION		E.S.	E.F.	L.S.	L.F.	T.F.	F.F.	CL
62744	62746	0	C OPB 1 C6	627	DRAFT REPORT DWGS(DC)	CT-1							COMPLETE
62902	62904	0	C OPB 1 C5	629	DRAFT REPORT DWGS(DC)	ST							COMPLETE
62904	62906	0	C OPB 1 C5	629	DRAFT REPORT DWGS(DC)	CT-1							COMPLETE
63002	63004	0	C OPB 1 C6	630	DRAFT REPORT DRAWINGS(DC)	ST							COMPLETE
6A500	6A600	0	C OPB 1 C2	632	THERMAL GENERATION RESOURCE	ST							COMPLETE
6A600	6A700	0	C OPB 1 C2	632	THERMAL GENERATION RESOURCE	CT1							COMPLETE
6A700	6A800	0	C OPB 1 C2	632	THERMAL GENERATION RESOURCE	FIN							COMPLETE
6A900	6B100	0	C OPB 1 C2	633	HYDRO GENERATION RESOURCES	ST							COMPLETE
6B100	6B200	0	C OPB 1 C2	633	HYDRO GENERATION RESOURCES	CT-1							COMPLETE
6B200	6B300	0	C OPB 1 C2	633	HYDRO GENERATION RESOURCES	FIN							COMPLETE
6B500	6B600	0	C OPB 1 C8	6341	ENVIRONMENT ASSESSMENT	ST							COMPLETE
6B600	6B700	0	C OPB 1 C8	6341	ENVIRONMENT ASSESSMENT	CT1							COMPLETE
6B700	6C300	0	C OPB 1 C8	6341	ENVIRONMENT ASSESSMENT	FIN							COMPLETE
6C600	6C700	0	C OPB 1 C8	6342	ENVIRONMENT ASSESSMENT-FINAL								COMPLETE
6C800	6C900	0	C OPB 1 C2	635	LOAD MANAGE & CONSERVE								COMPLETE
6D100	6D200	0	C OPB 1 C2	6361	GENERATION PLAN PARAMATERS								COMPLETE
6D300	6D3A0	0	C OPB 1 C2	6362	GENERAT PLAN ANALY & REPORT	ST							COMPLETE
6D3A0	6D400	0	C OPB 1 C2	6362	GENERAT PLAN ANALY & REPORT	CT-1							COMPLETE
6D400	6D500	0	C OPB 1 C2	6362	GENERAT PLAN ANALY & REPORT	CT-2							COMPLETE
6D500	6D600	0	C OPB 1 C2	6362	GENERAT PLAN ANALY & REPORT	FIN							COMPLETE
71200	71400	0	C OPB 1 C8	701	STUDY COORD-ALTERNATIVE SITE	CT-2							COMPLETE
70800	71000	0	C OPB 1 C8	7011	STUDY COORD-ALTERNATIVE SITE	ST							COMPLETE
71000	71200	0	C OPB 1 C8	7011	STUDY COORD-ALTERNATIVE SITE	CT-1							COMPLETE
71300	71800	0	C OPB 1 C8	7012	STUDY COORD-PRELIM ALTERNATV	ST							COMPLETE
72000	72100	0	C OPB 1 C8	7013	STUDY COORD-OPTIMIZED DESIGN	ST							COMPLETE
79200	79300	0	C OPB 1 C8	702	MONITOR FIELD ACTIVITIES	ST							COMPLETE
71000	71100	0	C OPB 1 C8	7041	WATER RESOURCE ALT SITES								COMPLETE
71600	70000	0	C OPB 1 C8	7042	WTR RES-PRE WAT&DEVL CAN ALT								COMPLETE
73000	73100	0	C OPB 1 C8	705	SOCIOECONOMIC ANALYSIS	ST							COMPLETE
73100	73200	0	C OPB 1 C8	705	SOCIOECONOMIC ANALYSIS	CT-1							COMPLETE
78600	78800	0	C OPB 1 C8	7061	CULTURAL ALTERNATIVE SITES	ST							COMPLETE
78700	79000	0	C OPB 1 C8	7061	CULTURAL ALTERNATIVE SITES	FIN							COMPLETE
78800	78700	0	C OPB 1 C8	7061	CULTURAL ALTERNATIVE SITES	CT-1							COMPLETE
78900	79000	0	C OPB 1 C8	7062	CULTURAL PRELIM ALTERNATIVES	ST							COMPLETE
75200	75400	0	C OPB 1 C8	7071	LAND USE ALTERNATIVE SITES	ST							COMPLETE
75400	75300	0	C OPB 1 C8	7071	LAND USE ALTERNATIVE SITES	CT-1							COMPLETE
72400	72500	0	C OPB 1 C8	708	RECREATION PLANNING	ST							COMPLETE
72500	72700	0	C OPB 1 C8	708	RECREATION PLANNING	CT-1							COMPLETE
71200	73500	0	C OPB 1 C8	7091	TRANS LINE ASSESS SCREENING								COMPLETE
735A0	73500	0	C OPB 1 C8	7092	TRANS LINE ASSESS RTE SELCTN	ST							COMPLETE
736A0	73900	0	C OPB 1 C8	7101	FISH ECOLOGY ALTERNATV SITES	ST							COMPLETE
74900	749A0	0	C OPB 1 C8	7111	WILDLIFE ECOLOGY ALTER SITES	ST							COMPLETE
749A0	750A0	0	C OPB 1 C8	7111	WILDLIFE ECOLOGY ALTER SITES	CT-1							COMPLETE
77100	77300	0	C OPB 1 C8	7121	PLANT ECOLOGY ALTERNTV SITES	ST							COMPLETE
77300	77200	0	C OPB 1 C8	7121	PLANT ECOLOGY ALTERNTV SITES	CT-1							COMPLETE
71000	710A0	0	C OPB 1 C9	714	ACCESS RD ENVIRONMENT ANALY	ST							COMPLETE
80000	80200	0	C OPB 1 C3	801	SELECT INITIAL CORRIDORS	ST							COMPLETE
80200	80400	0	C OPB 1 C3	801	SELECT INITIAL CORRIDORS	CT-1							COMPLETE
80400	80500	0	C OPB 1 C3	801	SELECT INITIAL CORRIDORS	FIN							COMPLETE
81600	81800	0	C OPB 1 C3	8021	LOAD FLOW ANALYSIS	ST							COMPLETE
81800	82800	0	C OPB 1 C3	8021	LOAD FLOW ANALYSIS	FIN							COMPLETE

CPM ANALYSIS LISTING

I-NODE	J-NODE	DUR	SELECT CODES	------DESCRIPTION----------	E.S.	E.F.	L.S.	L.F.	T.F.	F.F.	CL
82400	82600	0	C OPB 1 C3	80221 PRELIMINARY ELEC SYSTEM	ST						COMPLETE
82600	82800	0	C OPB 1 C3	80221 PRELIMINARY ELEC SYSTEM	CT-1						COMPLETE
80600	80800	0	C OPB 1 C3	803 FINAL ROUTE SELECTION 1981	ST						COMPLETE
83200	83400	0	C OPB 1 C3	804 TOWER HARDWRE&CONDUCTR STUDY	ST						COMPLETE
90100	90400	0	C OP 1 C7	901 ASSEMBLE COST-SCHEDULE DATA	ST						COMPLETE
90400	90600	0	C OPB 1 C7	901 ASSEMBLE COST-SCHEDULE DATA	FIN						COMPLETE
90200	90202	0	C OPB 1 C7	902 PREP PRELIM CST ESTIMATES	ST						COMPLETE
A2000	A1600	0	C FLC C110	10021 ESTABLISH REGULATORY REQUIRE							COMPLETE
C0000	C0200	0	C OPB 1 C810	12021 CONDUCT PUBLIC MEETING #1							COMPLETE
D0200	D0400	0	C PSB 2 C310	13011 PROJECT PROCED MANUAL-DRAFT	ST						COMPLETE
D0400	D0600	0	C PSB 2 C310	13011 PROJECT PROCED MANUAL-DRAFT	CT-1						COMPLETE
D0600	D0800	0	C PSB 2 C310	13011 PROJECT PROCED MANUAL-DRAFT	FIN						COMPLETE
D0800	D1000	0	C PSB 2 C310	13012 PROJECT PROCED MANUAL-FINAL							COMPLETE
D0000	D0600	0	C PSB 2 C310	1302 FINANCIAL CONTROL PROCEDURES							COMPLETE
D1400	D1500	0	C PSB 2 C310	1303 PROJECT MASTER SCHEDULE							COMPLETE
D2000	D2200	0	C PSB 2 C310	13041 SCHEDULE CONTROL SYSTEM-DEV							COMPLETE
D2400	D2800	0	C PSB 2 C310	13051 COST CONTROL SYSTEM-DEV							COMPLETE
D3200	D3400	0	C PSB 2 C310	13061 MANPOWER LOADNG SCHEULE-DEV							COMPLETE
D1600	D0600	0	C PSB 2 C410	1307 DEVELOP ACCOUNTING POLICIES							COMPLETE
D1800	D1900	0	C PSB 2 C310	1308 DOCUMENTATION CONTROL							COMPLETE

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                ACRES AMERICAN SUSITNA HYDRO-ELECTRIC PROJECT                                              PAGE      1
                                                 C P M   SCHEDULE                                    TIME NOW  2NOV81
WORK REMAINING:  FROM NOVEMBER 1, 1981       ------------------
                                                                                          83
        D E S C R I P T I O N            NOV  DEC JAN FEB MAR  APR MAY  JUN JUL AUG  SEP OCT NOV  DEC JAN  FEB MAR APR MAY  JUN JUL
                                         001230122011200120012201120112301220112001230122011200122012201123012201220112001230122011 2
                                         29630741841851852185295296307417418529629630630741851852963073074174187418418529630630 74185
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2022   FIELD CAMP OPERATIONS                 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXL
203    RESUPPLY & EMERGENCY SERVICE          XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXL
204XX  EXHIBIT F MATERIAL COMPLETE            .  L
206    RIGHT OF ENTRY                    FIN XXXXXXXXXXXXXXXX                   L
210    ACCESS ROAD                       CT-2XX      L
210    ACCESS ROAD                       FIN , XXXXXXX      L
3022   FIELD DATA INDEX OPERATION        FIN XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXL
3033   FIELD DATA COLLECTION 81-82       ST  XXXL
3033   FIELD DATA COLLECTION 81-82       FIN ,  XXXXXXXXXXXXXXXXXXXXXXX         L
3041   WATER RSRCS-FLOW EXTENSION        FIN XX   L
3042   WATER RSRCS-FREQ ANALYSIS         FIN XXXX L
3043   WATER RSRCS-RESERVOIR STUDY       CT-3CCCCCL
3043   WATER RSRCS-RESERVOIR STUDY       FIN .      XXXXXXL
3044   WATER RSRCS-PRE&POST PROJECT      ST  .      CCCL
3044   WATER RSRCS-PRE&POST PROJECT      FIN .          CCCL
3046   WATER RSRCS-GLACIAL STUDIES       ST  XXXXXXXXXXXXXX  L
3046   WATER RSRCS-GLACIAL STUDIES       FIN .              XXX       L
304XX  EXHIBIT H MATERIAL COMPLETE           .                        L
304XX  EXHIBIT I MATERIAL COMPLETE           .                        L
3053   FLOODS-RESERVOIR ROUTING          CT-1CCCL
3053   FLOODS-RESERVOIR ROUTING          FIN .   CCCCL
3061   HYDRLICS & ICE WTR LVLS           FIN CCCCCCCCL
3063   HYDR&ICE-RESER SLIDE SURGE        FIN XXXXXXXX      L
3071   SEDIMENT YIELD & DEPOSITION       FIN XXX    L
3072   RIVER MORPHOLOGY                  CT-1.  XXXXXX     L
3072   RIVER MORPHOLOGY                  FIN .              CCCL
309    ACCESS ROADS HYDROLOGY                XXXXXX  L
3102   LWR SUSITNA STUDIES-FOLLOWUP      FIN .          XXXXXX L
3102   LWR SUSITNA STUDIES-FOLLOWUP      CT-1XXXXXXXL
408    DAM STABILITY                     FIN XXXXXX                             L
409    LONG TERM MONITORING PROGRAM          XXXXXXXXXXXXXXXXXXXXXXXX           L
410    RESERVOIR INDUCED SEISMICITY          XXXXX     L
411    SEISMIC GEOLOGY-FIELD STUDY           XXXXXXXXXXXXXXXXX                  L
412    EVALUATION & REPORT DRAFT         ST  XXXXXXXXL
412    EVALUATION & REPORT DRAFT         CT-1.       XXL
412    EVALUATION & REPORT DRAFT         FIN .         XXXXL
413    GROUND MOTION STUDIES             FIN XXXXXXXXXXL
414    DAM STABILITY CONSULTING              XXXXXXXXXXL
415    SOIL SUSCEPTBTY-SEISMIC FAIL      FIN XXXXXX     L
507    1982-1984 PROGRAM DESIGN              XXXXXXX   L
5082   DATA ASSEMBLY-1981 DRAFT          FIN XXX           L
5083   DATA ASSEMBLY FINAL-DRAFT         ST  XXX           L
5083   DATA ASSEMBLY FINAL-DRAFT         FIN .  XXXX           L
608    PRELIM DEVIL CANYON DAM ALT           XX        L
608     UPDATE DESIGN CRITERIA(DC)       FIN XX        L
609    ESTAB WATANA DESIGN CRITERIA          XXXXXXXX  L
609     UPDATE CRIT&ASSUMPTIONS(WAT) FIN XXXXXXXX  L
610    ESTAB DEVIL CANYON DESIGN CRITERIAXXXXXXXX  L
610     UPDATE CRIT&ASSUMPTIONS(DC)  FIN XXXXXXXX  L
611    PRELIM DESIGN WATANA DAM              CCCCCCCCCCCL
611     INCORP GENL AMENDMENTS (WAT) CT-1XXXXX     L
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	DESCRIPTION	NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL 00123012201120012001220112011230122011200123012201120012201220112301220122011200123012201120 29630741841851852185295296307417418529629630630741851852963073074174187418418529630630741851
611	INCORP GENL AMENDMENTS (WAT)	FIN . X L
611	OPTIMIZE DAM HEIGHT	XX L
611	ADJUST ALIGNMENT(WAT)	FIN XXXXXXXXXL
611	DAM FOUNDATION TREATMENT-WAT	FIN XXXXXXX L
611	DRAFT REPORT DRAWINGS(WAT)	CT-2CCCCCL
611	DRAFT REPORT DRAWINGS(WAT)	CT-3. CCCCL
611	DRAFT REPORT DRAWINGS(WAT)	CT-4. CCCL
611	DRAFT REPORT DRAWINGS(WAT)	FIN . CCCL
612	PRELIM DESIGN DEVIL CANYON DAM	CCCCCCCCCCL
612	INCORP GENL AMENDMENTS(DC)	FIN X L
612	DESIGN DAM(DC)	CT-3X L
612	DESIGN DAM(DC)	FIN . XXXXXXXL
612	FOUNDATION TREATMENT(DC)	FIN XXXXXXXX L
612	DRAFT REPORT DWGS(DC)	CT-2CCCCCL
612	DRAFT REPORT DWGS(DC)	CT-3. CCCCL
612	DRAFT REPORT DWGS(DC)	CT-4. CCCL
612	DRAFT REPORT DWGS(DC)	FIN . CCCL
613	DAM SELECTION REPORT	. XXXXXXXXXXL
613	DAM SELECTION REPORT	ST . XX L
613	DAM SELECTION REPORT	CT-1. XX L
613	DAM SELECTION REPORT	CT-2. XXL
613	DAM SELECTION REPORT	CT-3. XXL
613	DAM SELECTION REPORT	FIN . XL
614	SPILLWAY DESIGN CRITERIA	XXXXXXXX L
614	UPDATE CRIT&ASSUMPTIONS(SPWY)	CT-1XXXXXX L
614	UPDATE CRIT&ASSUMPTIONS(SPWY)	FIN . XX L
617	PRELIM DESIGN WATANA SPILLWAY	CCCCCCCCCCL
617	INCORP GENL AMENDMENTS (WAT)	CT-1XXXXX L
617	INCORP GENL AMENDMENTS (WAT)	FIN . X L
617	OPT AGAINST DAM FREEBRD	ST XX L
617	PREL DESGN CHUTE/ROCK ANCRS	CT-1XXX L
617	OPT AGAINST DAM FREEBOARD	FIN . XXXXX L
617	PREL DESGN CONTRL STRUCTURES	FIN XXXXXX L
617	PREL DESGN CHUTE/ROCK ANCRS	FIN . XXXXXX L
617	DESGN GROUTING/DRAINAGE-WAT	XXXX L
617	DESIGN CLOSURE/CONTRL STRUCT	ST XX L
617	DESIGN WATER PASSAGES	FIN XXXX L
617	DESIGN CLOSURE/CONTRL STRUCT	FIN . XXXX L
617	DESIGN ENERGY DISSIPATION	FIN XX L
617	DRAFT REPORT DRAWINGS(WAT)	CT-2CCCCCL
617	DRAFT REPORT DRAWINGS(WAT)	CT-3. CCCCL
617	DRAFT REPORT DRAWINGS(WAT)	CT-4. CCCL
617	DRAFT REPORT DRAWINGS(WAT)	FIN . CCCL
618	PRELIM DESIGN DEVIL CAN SPILLWAY	CCCCCCCCCL
618	INCORP GENL AMENDMENTS(DC)	CT-1XXL
618	INCORP GENL AMENDMENTS(DC)	FIN . XL
618	SPILLWAYS ENERGY DISIPATINS	XXX L
618	PREL DESGN CONTRL STRUCT(DC)	FIN XXXX L
618	OPT AGAINST DAM FREEBRD(DC)	FIN XXX L
618	PREL DESGN CHUTE/ROCK ANCRS	FIN XXXX L
618	PREL DESGN GROUTING/DRAINAGE	.XXXXXX L

	DESCRIPTION		83 NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL
			00123012201120012001220112011230122011200123012201120012201220112301220122011200123012201120
			29630741841851852185295296307417418529629630630741851852963073074174187418418529630630741850
618	LL RELEASES ENERGY DISIPATIN	FIN	XX L
618	DRAFT REPORT DWGS(DC)	CT-2	CCCCCL
618	DRAFT REPORT DWGS(DC)	CT-3.	CCCCL
618	DRAFT REPORT DWGS(DC)	CT-4.	CCCL
618	DRAFT REPORT DWGS(DC)	FIN .	CCCL
619	SPILLWAY SELECTION REPORT		XXXXXXXXXXXX L
619	SPILLWAY SELECTION REPORT	ST	XX L
619	SPILLWAY SELECTION REPORT	CT-1.	XX L
619	SPILLWAY SELECTION REPORT	CT-2.	XXXX L
619	SPILLWAY SELECTION REPORT	CT-3.	XX L
619	SPILLWAY SELECTION REPORT	CT-4.	XX L
619	SPILLWAY SELECTION REPORT	FIN .	X L
620	ACCESS & CAMP FACILITIES		XXXXXXXXXXXX L
620	DETERMINE AUX REQUIREMENTS	FIN	XX L
620	IDENTIFY & EVALUATE SITES		XX L
620	PRELIM LAYOUT OF TOWNSITE		XX L
620	REVISE & FINALIZE LOAD PARAMETERS.		XXXX L
620	PREP DESIGN TRANSMITTAL	.	XXXX L
620	FINALIZE DESIGN TRANSMITTAL	.	XXX L
621	WATANA DIVERSION SCHEMES		CCCCCCCCCCCCCL
621	DESIGN CLOSURE/CONTRL STRUCTURE		XXXXX L
621	DESIGN WATER PASSAGES-WAT	FIN .	XXXX L
621	DESIGN COFFERDAM HEIGHT	FIN	XXXXXXX L
621	DRAFT REPORT DRAWINGS(WAT)	CT-2	CCCCCL
621	DRAFT REPORT DRAWINGS(WAT)	CT-3.	CCCCL
621	DRAFT REPORT DRAWINGS(WAT)	CT-4.	CCCL
621	DRAFT REPORT DRAWINGS(WAT)	FIN .	CCCL
622	DEVIL CANYON DIVERSION SCHEMES		CCCCCCCCCCCCCL
622	DESGN COFFERDAM HEIGHT(DC)	ST	XX L
622	CLOSURE CONTROL STRUCTURE(DC)		XXX L
622	DESGN WATER PASSAGES(DC)	FIN	XXXXXXXX L
622	DESGN COFFERDAM HEIGHT(DC)	FIN .	XXXXX L
622	DRAFT REPORT DWGS(DC)	CT-2	CCCCCL
622	DRAFT REPORT DWGS(DC)	CT-3.	CCCCL
622	DRAFT REPORT DWGS(DC)	CT-4.	CCCL
622	DRAFT REPORT DWGS(DC)	FIN .	CCCL
623	OPT WATANA POWER DEVELOPMENT		CCCCCCCCCCL
623	REVIEW ALIGNMENTS-WAT	FIN	XX L
623	REVIEW INTAKE WATER PASSAGES		X L
623	OPTIMIZE POWER FACILITIES		XXX L
623	PREL DESIGN INTAKE STRUCTURE	FIN .	XXXXXX L
623	PREL DESIGN OF POWERHOUSE		XXXXXXXXX L
623	DRAFT REPORT DRAWINGS(WAT)	CT-2	CCCCCL
623	DRAFT REPORT DRAWINGS(WAT)	CT-3.	CCCCL
623	DRAFT REPORT DRAWINGS(WAT)	CT-4.	CCCL
623	DRAFT REPORT DRAWINGS(WAT)	FIN .	CCCL
624	OPT DEVL CAN POWER DEVELOPMENT		CCCCCCCCCL
624	REVIEW ALIGNMENTS(DC)	FIN	XXX L
624	REVIEW INTAKE WATER PASSAGES		XX L
624	OPTIMIZE POWER FACILITIES		XX L
624	PREL DESIGN OF INTAKE	.	XXXX L

ACRES AMERICAN SUSITNA HYDRO-ELECTRIC PROJECT

C P M SCHEDULE

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                                                                                  83
D E S C R I P T I O N                       NOV  DEC JAN FEB MAR  APR MAY  JUN JUL AUG  SEP OCT NOV  DEC JAN  FEB MAR APR MAY  JUN JUL
                                            001230122011200120012201120112301220112001230122011200122012201123012201220112001230122 0112
                                            2963074184185185218529529630741741852962963063074185185296307307417418741841852963063074185
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624    PREL DESIGN WATER PASSSAGES          XX        L
624    PREL DESIGN POWERHOUSE               . XXXXXXX   L
624    DRAFT REPORT DWGS(DC)            CT-2CCCCCL
624    DRAFT REPORT DWGS(DC)            CT-3.     CCCCL
624    DRAFT REPORT DWGS(DC)            CT-4.          CCCL
624    DRAFT REPORT DWGS(DC)            FIN .              CCCL
626   PREL DESGN WATANA FOWER DEVEL          CCCCCCCCCCL
626    INCORP GENL AMENDMENTS (WAT) CT-1XXXXXX   L
626    INCORP GENL AMENDMENTS (WAT) FIN .     X    L
626    LAYOUT SURFACE P/H T/R CHANNEL        XXX        L
626    COST LAYOUT SURFACE U/G STRU ST   X   L
626    COST LAYOUT SURFACE U/G STRU CT-1.XX   L
626    SELECT TYPE OF POWERHOUSE            .  X   L
626    COST LAYOUT SURFACE U/G STRU FIN .  X   L
626    REVIEW ALIGNMENTS                FIN CL
626    REVIEW INTAKE WATER PASSAGES         CL
626    OPTIMIZE POWER FACILITIES            .   XXX    L
626    PREL DESIGN INTAKE STRUCTURE ST  . CCCCL
626    PREL DESIGN INTAKE STRUCTURE FIN .       CCCL
626    PREL DESIGN OF POWERHOUSE(WAT)   .   CCCCCCCCL
626    DRAFT REPORT DRAWINGS(DC)        CT-2CCCCCL
626    DRAFT REPORT DRAWINGS(DC)        CT-3,     CCCCL
626    DRAFT REPORT DRAWINGS(DC)        CT-4.          CCCL
626    DRAFT REPORT DRAWINGS(DC)        FIN .              CCCL
627   PREL DESGN DEVL CAN POWER DEVEL        CCCCCCCCCCL
627    INCORP GENL AMENDMENTS(DC)       CT-1X L
627    INCORP GENL AMENDMENTS(DC)       FIN .X L
627    REVIEW ALIGNMENTS(DC)            FIN XXXX      L
627    OPTIMIZE WATER FACILITIES            XXX    L
627    PREL DESIGN OF INTAKE                XXXXXX    L
627    PREL DESIGN WATER PASSAGES           XX        L
627    PREL DESGN POWERHOUSE                .   XXXXXXXXX     L
627    DRAFT REPORT DWGS(DC)            CT-2CCCCCL
627    DRAFT REPORT DWGS(DC)            CT-3.     CCCCL
627    DRAFT REPORT DWGS(DC)            CT-4.          CCCL
627    DRAFT REPORT DWGS(DC)            FIN .              CCCL
628   POWER DEVELOPMENT REPORT-DRAFT        .         CCCCCCCCL
628    POWER DEVELOPMENT REPORT         ST  .         CL
628    POWER DEVELOPMENT REPORT         CT-1.           CL
628    POWER DEVELOPMENT REPORT         CT-2.             CL
628    POWER DEVELOPMENT REPORT         CT-3.               CL
628    POWER DEVELOPMENT REPORT         FIN .                 L
629   KATANA GENERAL ARRANGEMENT             XXXXXXXXXXXXXXX    L
629    DRAFT REPORT DWGS(DC)            CT-2XXXXXX    L
629    DRAFT REPORT DWGS(DC)            CT-3.     XXXXX    L
629    DRAFT REPORT DWGS(DC)            CT-4.          XXXX    L
629    DRAFT REPORT DWGS(DC)            FIN .              XXXX    L
629XX  EXHIBIT J MATERIAL COMPLETE          .                      L
630    DEVL CANYON GENERAL ARRANGEMENT       XXXXXXXXXXXXXXXXXXXXXXL
630    DRAFT REPORT DRAWINGS(DC)        CT-1XXXL
630    DRAFT REPORT DRAWINGS(DC)        CT-2.  XXXXXXXL
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	DESCRIPTION		NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL
			83
			00123012201120012001220112011230122011200123012201120012201220112301220122011200123012201122
			29630741841851852185295296307417418529629630630741851852963073074174187418418529630630741
630	DRAFT REPORT DRAWINGS(DC)	CT-3	XXXXXL
630	DRAFT REPORT DRAWINGS(DC)	CT-4	XXXXL
630	DRAFT REPORT DRAWINGS(DC)	FIN	XXXXL
630XX	EXHIBIT M MATERIAL COMPLETE		L
630XX	EXHIBIT K MATERIAL COMPLETE		L
631	PROJ FEASIBILITY REPORT	FIN	CCCCCCCCL
631	PROJ FEASIBILITY REPORT	ST	CL
631	PROJ FEASIBILITY REPORT	CT-1	CL
631	PROJ FEASIBILITY REPORT	CT-2	CL
631	PROJ FEASIBILITY REPORT	CT-3	CL
631	PROJ FEASIBILITY REPORT	FIN	L
631XX	EXHIBIT L MATERIAL COMPLETE		L
637	UPDATE GENERATION PLAN		XXXXX L
638	LIAISON POWER ALTS CONSULTANT		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXL
7013	STUDY COORD-OPTIMIZED DESIGN	FIN	XXXXXXXXXXXXXXXXXXX L
702	MONITOR FIELD ACTIVITIES	CT-1	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXL
702	MONITOR FIELD ACTIVITIES	FIN	L
7043	WTR RES-OPT WAT&DEVL CAN DES		XXXXXXXXXXXXXXXXX L
705	SOCIOECONOMIC ANALYSIS	FIN	CCCCCCCCL
705	SOCIOECONOMIC ANALYSIS	CT-2	CCCCCCCCCCCCCCCL
7062	CULTURAL PRELIM ALTERNATIVES	CT-1	CCCCCL
7062	CULTURAL PRELIM ALTERNATIVES	FIN	L
7063	CULTURAL-OPTIMIZED DESIGN	ST	XXXXXL
7063	CULTURAL-OPTIMIZED DESIGN	CT-1	CCCCCCCCCCCCCCCCCL
7063	CULTURAL-OPTIMIZED DESIGN	FIN	L
706XX	EXHIBIT V MATERIAL COMPLETE		L
7071	LAND USE ALTERNATIVE SITES	FIN	CCCL
7072	LAND USE PRELIM ALTERNATIVES	ST	CCCL
7072	LAND USE PRELIM ALTERNATIVES	CT-1	CCCCCCCCCL
7072	LAND USE PRELIM ALTERNATIVES	FIN	L
7073	LAND USE OPTIMIZED DESIGN	ST	XXXXXXXXXXX L
7073	LAND USE OPTIMIZED DESIGN	CT-1	CCCCCCCCCCCCCCCCCCL
7073	LAND USE OPTIMIZED DESIGN	FIN	L
708	RECREATION PLANNING	FIN	XXXXX L
708	RECREATION PLANNING	CT-2	XXXXXXXXXXXXXXL
7092	TRANS LINE ASSESS RTE SELCTN	CT-1	CCL
7092	TRANS LINE ASSESS RTE SELCTN	FIN	CCCCCCCCCCCCCCCCCCCL
7101	FISH ECOLOGY ALTERNATV SITES	FIN	L
7101	FISH ECOLOGY ALTERNATV SITES	CT-1	XX L
7102	FISH ECOLOGY PRELIM ALTERNAT	ST	XXXXXXL
7102	FISH ECOLOGY PRELIM ALTERNAT	CT-1	XXXXXXXXXXL
7102	FISH ECOLOGY PRELIM ALTERNAT	FIN	L
7103	FISH ECOLOGY OPTIMIZED DESGN	ST	XXXXXXXXXXXX L
7103	FISH ECOLOGY OPTIMIZED DESGN	CT-1	XXXXXXXXXXXXXXXXXL
7103	FISH ECOLOGY OPTIMIZED DESGN	FIN	L
7111	WILDLIFE ECOLOGY ALTER SITES	FIN	XXXXXXXXXXL
7111	WILDLIFE ECOLOGY ALTER SITES	CT-2	XXXL
7112	WILDLIFE ECOLOGY PRELM ALTER	ST	XXXL
7112	WILDLIFE ECOLOGY PRELM ALTER	CT-1	XXXXXXXXXXL
7112	WILDLIFE ECOLOGY PRELM ALTER	FIN	L
7113	WILDLIFE ECOLOGY OPTIM DESGN	ST	XXXXXXXXXXXXXL

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	DESCRIPTION		83 NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL
			00123012201120D1200122011201123012201120012301220112001220122011230122012201120012300220112
			29630741841851852185295296307417418529629630630741851852963073074174187418418529630630741 85
7113	WILDLIFE ECOLOGY OPTIM DESGN	CT-1.	XXXXXXXXXXXXXXXXXXXL
7113	WILDLIFE ECOLOGY OPTIM DESGN	FIN .	L
7121	PLANT ECOLOGY ALTERNTV SITES	FIN CCCL	
7122	PLANT ECOLOGY PRELM ALTERNAT	ST CCCL	
7122	PLANT ECOLOGY PRELM ALTERNAT	CT-1. CCCCCCCCCL	
7122	PLANT ECOLOGY PRELM ALTERNAT	FIN . L	
7123	PLANT ECOLOGY OPTIMIZD DESGN	ST XXXXXXXXXXXXL	
7123	PLANT ECOLOGY OPTIMIZD DESGN	CT-1.	CCCCCCCCCCCCCCCCCCCL
7123	PLANT ECOLOGY OPTIMIZD DESGN	FIN .	L
714	ACCESS RD ENVIRONMENT ANALY	CT-1XXXXXXXXXXXXL	
714	ACCESS RD ENVIRONMENT ANALY	FIN . XXXXXXXXXL	
715	PREP FOR FERC EXHIBIT-DRAFT	ST XXXXXXXXX L	
715	PREP FOR FERC EXHIBIT-DRAFT	CT-1. CCCCCL	
715	PREP FOR FERC EXHIBIT-DRAFT	FIN . L	
715XX	EXHIBIT W MATERIAL COMPLETE	. L	
715XX	EXHIBIT S MATERIAL COMPLETE	. L	
80222	RECOMMEND ELEC SYS	ST CCCCCCCCCCCCCCCCCCL	
80222	RECOMMEND ELEC SYS	FIN . XXX L	
803	FINAL ROUTE SELECTION 1981	CT-1X L	
803	FINAL ROUTE SELECTION 1981	CT-2.XXXX L	
803	FINAL ROUTE SELECTION 1981	FIN . L	
804	TOWER HARDWRE&CONDUCTR STUDY	CT-1XXXXXXXXXL	
804	TOWER HARDWRE&CONDUCTR STUDY	FIN . XXL	
805	SUBSTATIONS	ST XXXXL	
805	SUBSTATIONS	FIN . XXXXXXXXL	
806	DISPATCH CTR & COMMUNICATNS	ST XXXXL	
806	DISPATCH CTR & COMMUNICATNS	FIN . XXXXXXXXL	
807	TRANS LINE COST ESTIMATES	ST X L	
807	TRANS LINE COST ESTIMATES	FIN . XXXXXXL	
902	PREP PRELIM CST ESTIMATES	CT-1L	
902	PREP PRELIM CST ESTIMATES	CT-2.CL	
902	PREP PRELIM CST ESTIMATES	CT-3. CL	
902	PREP PRELIM CST ESTIMATES	FIN . CL	
903	COST ESTIMATE UPDATES	ST . CL	
903	COST ESTIMATE UPDATES	CT-1. CL	
903	COST ESTIMATE UPDATES	CT-2. CL	
903	COST ESTIMATE UPDATES	CT-3. CL	
903	COST ESTIMATE UPDATES	FIN . CL	
903XX	EXHIBIT N MATERIAL COMPLETE	. L	
9041	ENGR/CONST SCHEDULE PRELIM	CCCCCCL	
9042	ENGR/CONST SCHEDULE FINAL	ST . CL	
9042	ENGR/CONST SCHEDULE FINAL	CT-1. CL	
9042	ENGR/CONST SCHEDULE FINAL	CT-2. CL	
9042	ENGR/CONST SCHEDULE FINAL	CT-3. CL	
9042	ENGR/CONST SCHEDULE FINAL	FIN . CL	
904XX	EXHIBIT O MATERIAL COMPLETE	. L	
905	CONTINGENCY ANALYSIS	. CCCCCCCCCL	
1001	IMPACT OF NEW FERC REGULATIONS	XXXXXXXXX L	
10022	1ST UPDATE-REGULATORY REQ	XXXX L	
10023	2ND UPDATE-REGULATORY REQ	. XXXX L	
1003	DATA FROM OTHERS	XXXXX L	

ACRES AMERICAN SUSITNA HYDRO-ELECTRIC PROJECT
C P M SCHEDULE

	DESCRIPTION		NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL 83 00123012201120012001220112011230122011200123012201120012201220112301220122011200123012201120 29630741841851852185295296307417418529629630630741851852963073074174187418418529630630741851
1003XX	EXHIBIT A B & C MATERIAL COMPLETE.		L
1004	COORD EXHIBIT PREPARATION	ST	XXXXXXXXX L
1004	COORD EXHIBIT PREPARATION	CT-1.	X L
1004	COORD EXHIBIT PREPARATION	CT-2.	XX L
1004	COORD EXHIBIT PREPARATION	CT-3.	XXX L
1004	COORD EXHIBIT PREPARATION	CT-4.	XXL
1004	COORD EXHIBIT PREPARATION	CT-5.	XXXL
1004	COORD EXHIBIT PREPARATION	FIN .	L
10051	PREPARE EXHIBIT E		XXXXXXXXXX L
10052	PREPARE EXHIBIT D		. XXXXXXXXXX L
1006	PREPARE EXHIBIT R	ST	. XXXXXXXXXX L
1007	PREPARE EXHIBIT T	ST	XXXX L
1007	PREPARE EXHIBIT T	FIN	. XX L
1008	PREP APPLICATN FORM-DRAFT	ST	. XXXXXX L
1008	PREP APPLICATN FORM-DRAFT	FIN	. L
1009	REVIEW AND CORRECT		. CL
1010	EXTERNAL REVIEW		. CL
10XXX	PRINT LICENSE APPLICATION		. CCCCCL
1101	PROJECT OVERVIEW		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXL
1102	INTERNAL REPORTS		XXXXXXXXXXXXXXXXXXXXXXL
1102XX	EXHIBIT U MATERIAL COMPLETE		L
1103	SUSITNA BASE PLAN RISK ANALY ST		XXXXXXXXXXXXXX L
1103	SUSITNA BASE PLAN RISK ANALY FIN		. L
1104	SUSITNA BASE PLAN EXTEN/REVIS		. XXXXXXXXXXX L
1105	SUSITNA FINANCE RISK ANALYSIS		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX L
1106	RESOLUTION TAX ISSUE		XXXXXXXXXXXXXXXXXXXXXXXX L
1107	IDENTIFY PARTIES INTEREST		XXXXXXXXXXXXXXXXXXXXXXXXXXXXX L
1108	REVENUE ASSURANCE		XXXXXXXXXXXXXXXXXXXXX L
1109	LIAISON APA BOND UNDERWRITER		XXXXXXXXXXXXXXXXXXXXXXL
1109XX	EXHIBIT G MATERIAL COMPLETE		L
12022	CONDUCT PUBLIC MEETING #2		. XXXXL
12023	CONDUCT PUBLIC MEETING #3		XXXXL
12031	CONDUCT WORKSHOPS 1,2,3		XXXL
12032	CONDUCT WORKSHOPS 4,5,6		. XXXXXXXXXXXXL
1204	PREP PUBLISH DISTRIB MATERIAL		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXL
1205	PREP MAINTAIN ACTION LIST		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXL
13013	PROJECT PROCED MANUAL-UPDATE		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXL
13042	SCHEDULE CONTROL SYS UPDATE		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXL
13052	COST CONTROL SYSTEM-UP		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXL
13062	MANPOWER LOADNG SCHED-UPDATE		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXL
1310	SUB CONTRACT ADMINISTRATION		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXL
XXX	PROJECT COMPLETE XXX		. L

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TASK NO.	DESCRIPTION
100	POWER STUDIES
101	REVIEW OF METHODOLOGIES
102	FORECAST PEAK LOAD DEMAND TRANS.
103	IDENTIFICATION OF POWER ALT.
104	TERMINATION REPORT
200	SURVEYS AND SITE FACILITIES
202	FIELD CAMP SET-UP AND OPERATIONS
203	RESUPPLY AND EMERGENCY SERVICE
204	LAND STATUS SEARCH
205	LAND ACQUISITION ANALYSIS
206	RIGHT OF ENTRY
207	SITE SPECIFIC SURVEY
208	AIR PHOTOS AND MAPPING
209	CONTROL NETWORK SURVEYS
210	ACCESS ROAD
211	MAP AND PHOTO SEARCH
212	FIELD RECON. FOR RESERVOIR CLEAR.
213	MARKETABILITY AND DISPOSAL STUDY
214	COST EST. FOR RESERVOIR CLEARING
215	SLOPE EROSION AND STABILITY STUDY
216	HYDROGRAPHIC SURVEYS
300	HYDROLOGY
301	REVIEW OF AVAILABLE MATERIAL
302	FIELD DATA INDEX OPERATION
303	FIELD DATA COLLECTION 80 - 82
304	WATER RESOURCES - STUDIES
305	FLOOD STUDIES
306	HYDRAULIC AND ICE STUDIES
307	SEDIMENT YIELD AND RIVER MORPHOLOGY
308	TRANSMISSION LINE - PRELIM PARAMETER
309	ACCESS ROAD HYDROLOGY
310	LOWER SUSITNA STUDIES
400	SEISMIC STUDIES
401	REVIEW AVAILABLE DATA
402	SHORT TERM MONITORING PROGRAM
403	PRELIM RESERVOIR INDUCED SEISMIC
404	REMOTE SENSING IMAGE ANALYSIS
405	SEISMIC GEOLOGY RECONNAISSANCE
406	PRELIM. EVALUATION AND REPORT
407	PRELIM GROUND MOTION STUDIES
408	DAM STABILITY
409	LONG TERM MONITORING PROGRAM
410	RESERVOIR INDUCED SEISMICITY
411	SEISMIC GEOLOGY FIELD STUDY
412	EVALUATION AND REPORT
413	GROUND MOTION STUDIES
414	DAM STABILITY (CONSULTING)
415	SOIL SUSCEPTIBILITY TO SEISMIC FAILURE
500	GEOTECH EXPLORATION
501	DATA COLLECTION
502	AIR PHOTO INTERPRETATION
503	1980 PROGRAM DESIGN
504	1980 EXPLORATION PROGRAM
505	1981 PROGRAM DESIGN
506	1981 EXPLORATION PROGRAM
507	1982-84 PROGRAM DESIGN
508	DATA COMPILATION

ACTIVITIES PRIOR TO LICENSE APPLICATION

1980 | 1981 | 1982

ACTIVITIES PRIOR TO AWARD OF CONSTRUCTION LICENSING

1983 | 1984 | 1985

LEGEND

WORK COMPLETED TO NOV. 1, 1981

WORK REMAINING FROM NOV. 1, 1981

CONTINUED WORK FOLLOWING LICENSE APPLICATION

SUSITNA HYDROELECTRIC PROJECT
PLAN OF STUDY MASTER SCHEDULE

FIGURE 1 OF 3

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TASK NO.	DESCRIPTION
600	DESIGN DEVELOPMENT
601	REVIEW PREVIOUS STUDIES
602	INVESTIGATE TUNNEL ALTERNATIVES
603	EVALUATE ALTERNATE SUSITNA DEVEL.
604	DEVIL CANYON ARCH DAM EVALUATION
605	SELECT DRAFT TO FINAL REPORT
606	STAGED DEVELOPMENT ALTERNATIVES
607	PRELIM. WATANA DAM ALTERNATIVES
608	PRELIM. DEVIL CANYON DAM ALTERNATIVES
609	ESTABLISH WATANA DESIGN CRITERIA
610	ESTAB. DEVIL CANYON DESIGN CRITERIA
611	PRELIM. DESIGN WATANA DAM
612	PRELIM. DESIGN DEVIL CANYON DAM
613	DAM SELECTION REPORT
614	SPILLWAY DESIGN CRITERIA
615	WATANA SPILLWAY ALTERNATIVES
616	DEVIL CANYON SPILLWAY ALTERNATIVES
617	PRELIM. DESIGN WATANA SPILLWAY
618	PRELIM. DESIGN DEVIL CANYON SPILLWAY
619	SPILLWAY SELECTION REPORT-DRAFT
620	ACCESS AND CAMP FACILITIES
621	WATANA DIVERSION SCHEMES
622	DEVIL CANYON DIVERSION SCHEMES
623	OPTIMIZE WATANA POWER DEVELOP.
624	OPTIMIZE DEVIL CANYON POWER DEVELOP.
625	OPTIMIZE DAM HEIGHTS
626	PRELIM. DESIGN WATANA POWER DEVELOP.
627	PRELIM. DESIGN DEVIL CANYON POWER DEV.
628	POWER DEVELOPMENT REPORT - DRAFT
629	WATANA GENERAL ARRANGEMENT
630	DEVIL CANYON GENERAL ARRANGEMENT
631	PROJECT FEASIBILITY REPORT
632	THERMAL GENERATION PLAN
633	HYDRO GENERATION REPORT
634	ENVIRONMENT ASSESSMENT
635	LOAD MANAGE AND CONSERVE
636	GENERATION PLAN, ANALYSIS AND REPORT
637	UPDATE GENERATION PLAN
638	LIASON POWER ALTERNATIVES CONSULTANT
700	ENVIRONMENTAL STUDIES
701	STUDY COOPERATIVE ALTERNATIVE SITE
702	MONITOR FIELD ACTIVITIES
704	WATER RESOURCES ANALYSIS
705	SOCIOECONOMIC ANALYSIS
706	CULTURAL RESOURCE INVESTIGATION
707	LAND USE ANALYSIS
708	RECREATION PLANNING
709	TRANS LINE ROUTE SELECTION
710	FISH ECOLOGY
711	WILDLIFE ECOLOGY
712	PLANT ECOLOGY
714	ACCESS ROAD ENVIRONMENT ANALYSIS
718	PREPARATION FOR FERC EXHIBIT
800	TRANSMISSION
801	SELECT INITIAL CORRIDORS
802	LOAD FLOW AND ELEC SYSTEM ANALYSIS
803	FINAL ROUTE SELECTION 1981
804	TOWER, HARDWARE AND CONDUCTOR STUDY
805	SUBSTATIONS
806	DISPATCH CENTER AND COMMUNICATIONS
807	TRANSMISSION LINE COST ESTIMATE

ACTIVITIES PRIOR TO LICENSE APPLICATION

1980 | 1981 | 1982

ACTIVITIES PRIOR TO AWARD OF CONSTRUCTION LICENSING

1983 | 1984 | 1985

LEGEND

WORK COMPLETED TO NOV. 1, 1981

WORK REMAINING FROM NOV. 1, 1981

CONTINUED WORK FOLLOWING LICENSE APPLICATION

SUSITNA HYDROELECTRIC PROJECT

PLAN OF STUDY MASTER SCHEDULE

ACRES

FIGURE 2 OF 3

TASK NO.	DESCRIPTION
9.00	CONST. COST ESTIMATES AND SCHEDULES
9.01	ASSEMBLE COST-SCHEDULE DATA
9.02	PREPARE PRELIM COST ESTIMATE
9.03	PREPARE COST ESTIMATE UPDATE
9.04	DEVELOP ENGR/CONST. SCHEDULE
9.05	PERFORM CONTINGENCY ANALYSIS
10.00	LICENSING
10.01	IMPACT OF NEW FERC REGULATION
10.02	UPDATE REGULATORY REQUIREMENT
10.03	DATA FROM OTHERS
10.04	COORDINATE EXHIBIT PREP.
10.05	PREPARE EXHIBIT E AND D
10.06	PREPARE EXHIBIT R
10.07	PREPARE EXHIBIT T
10.08	PREP APPLICATION FORM-DRAFT
10.09	REVIEW AND CORRECT
10.10	EXTERNAL REVIEW
10.11	PRINT LICENSE APPLICATION
11.00	MARKETING AND FINANCE
11.01	PROJECT OVERVIEW
11.02	INTERNAL REPORTS
11.03	SUSITNA BASE PLAN INITIAL RISK ANALYSIS
11.04	SUSITNA BASE PLAN EXTENSION AND REV.
11.05	SUSITNA FINANCE RISK ANALYSIS
11.06	RESOLUTION OF TAX EXEMPT BOND ISSUE
11.07	IDENTIFY PARTIES INTEREST
11.08	REVENUE ASSURANCE PROCEDURES
11.09	LIAISON APA BOND UNDERWRITERS
12.00	PUBLIC PARTICIPATION
12.02	CONDUCT PUBLIC MEET. #1, #2, AND #3
12.03	CONDUCT PUBLIC WORKSHOPS #1 - #6
12.04	PREP. PUBLISH DISTRIB. MATERIALS
12.05	PREP. MAINTAIN ACTION LIST
13.00	ADMINISTRATION
13.01	PROJECT PROCEDURE MANUAL
13.02	FINANCIAL CONTROL PROCEDURES
13.03	PROJECT MASTER SCHEDULE
13.04	SCHED. CONTROL SYSTEM - DEV & UPDATE
13.05	COST. CONTROL SYSTEM - DEV AND UPDATE
13.06	MANPOWER LOADING SCHED - DEVELOPER
13.07	DEVELOP ACCOUNTING POLICIES
13.08	DOCUMENTATION CONTROL
13.10	SUB CONTRACT ADMINISTRATION

ACTIVITIES PRIOR TO LICENSE APPLICATION

ACTIVITIES PRIOR TO AWARD OF CONSTRUCTION LICENSING

1980 | 1981 | 1982 | 1983 | 1984 | 1985

J F M A M J J A S O N D | J F M A M J J A S O N D | J F M A M J | J A S O N D | J/F/M | A/M/J | J/A/S | O/N/D | J/F/M | A/M/J | J/A/S | O/N/D | J/F/M | A/M/J | J/A/S | O/N/D

LEGEND

WORK COMPLETED TO NOV 1, 1981

WORK REMAINING FROM NOV. 1, 1981

CONTINUED WORK FOLLOWING LICENSE APPLICATION

SUSITNA HYDROELECTRIC PROJECT

PLAN OF STUDY MASTER SCHEDULE

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FIGURE 3 OF 5