AD
02-83-13.06

MEMORANDUM State of Alaska

ESTES

TO: Richard A. Lyon
Commissioner
Department of Commerce
& Economic Development

DATE: October 12, 1983

FILE NO:

TELEPHONE NO: 465-4180

FROM: Don W. Collinsworth for DWC
Commissioner
Department of Fish and Game

SUBJECT: Funding for ADF&G Participation in Hydroelectric Project Planning

The magnitude on environmental modifications created by either the Susitna proposal or other hydroelectric projects will have far reaching consequences on this Department. I would therefore like to bring to your attention, as Chairman of the Alaska Power Authority Board, three items of concern to this Department.

1. The reduction in funding of several project elements of the Susitna baseline study.

2. The possibility of this Department receiving funds to provide proper review and evaluation of the Susitna hydroelectric project.

3. The Department's ability to provide overall review on all proposed hydro projects.

First, the loss of study elements caused by the decrease in funding within the Susitna aquatic studies and wildlife project may prevent the Department from making an adequate evaluation of the project impacts and advising on appropriate mitigation recommendations. We believe it is important for the State to have the information necessary to address impacts and mitigation properly. I have detailed in Enclosures 1-3 the proposed cuts, their consequences and recommended reinstatement priorities.

Second, I have concerns with respect to this Department's ability to provide overall review and comment on proposed Susitna Hydro activities. I propose that the Department be provided $79,200 to prepare adequate policy level analyses and responses. Departmental involvement would focus on minimizing potential adverse impacts from hydroelectric development through analysis of the effects of construction and operation on fish, wildlife, habitat, and human use.

Third, the Power Authority routinely requests analyses and recommendations from the Department as an essential component of its evaluation of Hydro project development and operation on fish, wildlife, habitats, and human use (Enclosure 4). In order that the projects are conducted in a timely manner and with adequate concern for local resources, early, indepth analyses and comments to the Power Authority are essential.

We suggest that it may be useful for this Department and the Power Authority to enter into a memorandum of understanding which would define evaluation tasks and guarantee a level of funding necessary to carry them out.

I will not detail each proposal (except as enclosures) because Dr. Richard Logan, Director of the Sport Fisheries Division, will be present at your Board meeting to answer any questions you or the Board might have.

Enclosures

cc: Commissioner Casey
Director McDowell
Commissioner Wunnicke

bcc: Richard Logan
John Clark (HYD 3.0)
Carl Yanagawa

DWC:RL:sdb

SUSITNA HYDRO PRESENTATION

Aquatic Studies

Impact FY 84 Budget Reductions

Issue: ADF&G Aquatic Studies FY84 Program and Budget Reduction and their General Consequences.

Background: The ADF&G Su Hydro Aquatic Studies Team has made several iterations of program and budget proposals since March of this year. The first proposed program and budget submitted to the APA on March 8, 1983 was for about 4.0 million dollars.

Reductions in program to approximately $3.0 million on June 10, 1983 had the following major consequences:

1. Eliminated continuing impoundment area fisheries work in streams which will be inundated and in the portions of the stream systems above future reservoir elevations. Stream habitat and fisheries above reservoir elevations have not been evaluated. This will result in a lack of information on the fishery resources which may be directly impacted by inundation or secondarily impacted by the improved public access to the project areas.

2. Eliminated the Fairbanks to Anchorage intertie corridor work. This will result in a lack of information on the fishery resources which may be directly impacted or secondarily impacted by improved access or construction activities into the project areas.

3. Eliminated lake survey work necessary to evaluate the assessment of primary and secondary impacts of the project on impoundment area fisheries. Secondary impacts from improved public access and increased human population and utilization on the area fisheries may be particularly important. These impacts will not be effectively evaluated and managed because of the lack of information.

4. Reduces the impoundment area access and transmission corridor work by 50 percent. That is, the geographic area we could effectively survey to provide information to mitigate primary and secondary impacts is one half of the necessary coverage.

5. Eliminates water quantity and quality data collection studies designed to support reservoir modelling studies conducted by project engineers. Without these data it is not possible to test or adjust the accuracy of computer models.

6. Eliminated pilot mitigation studies. Evaluation of the feasibility and effectiveness of certain mitigation techniques has been delayed.

7. Reduced the level of aquatic habitat and instream flow studies and resident and juvenile anadromous fisheries studies in the Devil Canyon to Talkeetna reach of the river. Impacts to aquatic habitat and the indigenous fish species at various flow increments will therefore be delayed or not determined.

8. Eliminated food habit and aquatic invertebrate studies in the Talkeetna to Devil Canyon reach. As a result we will not be able to assess whether project flows will affect the food resources of fish and whether post-project conditions will have beneficial or detrimental impacts on fish.

9. Eliminated the initiation of studies on effects of incremental flow on aquatic habitats, instream flow and resident and juvenile anadromous fish populations in the Susitna River below Talkeetna. FERC indicated in their deficiencies comments that an incremental analysis of flows is needed below Talkeetna. These studies are instrumental to the appraisal of impacts at various flows.

10. Eliminated the proposed Flathorn Station study site which would have quantified salmon escapements between river mile (RM) 25 to 77 in the Talkeetna to Cook Inlet reach of the river. The magnitude of the fish populations and production of salmon utilizing this portion of the river will not be determined.

The APA's proposed reduction of the June 10, 1983, program by an additional $700K has the following consequences.

1. Eliminated the capability of the Aquatic Studies Program to reduce, analyze and report the 1983 open water season results at the same level as in prior segments. This will delay the process of quantification of impacts and will detract from the quality of impact assessment and mitigation planning by other environmental study participants. It also eliminates our ability to provide early provisional data transmittal requests on a case-by-case basis.

2. Eliminates winter temperature monitoring. This will affect the modeling and impact assessment efforts to determine if the river system may have enhanced or detrimental temperatures changes for fish.

3. Eliminates the slough and tributary incubation studies and other resident and juvenile anadromous fish work. Quantitative information to evaluate changes in flows and the impacts on sloughs or resident and juvenile anadromous fish will not be available to make necessary impact analysis and objective mitigation decisions.

4. Essentially eliminates the projects capability to effectively field productive 1984 open water studies in the spring required for the incremental evaluation of aquatic habitat and instream flow and of resident and juvenile anadromous populations. This program reduction will eliminate or postpone the open water field season programs after July 1. Consequently we feel that the review and licensing process may have to be postponed until these field programs are conducted.

5. Eliminates any further work on stream and lake fisheries along access corridors routes. This will affect the ability of the resource managers to: assess primary and secondary impacts from construction, improved public access and to mitigate these efforts through stipulations on the timing and method of construction or through regulation of the fisheries to avoid overfishing or other management problems.

Recommendations:

1. The ADF&G recommends, at a minimum, the restoration of $418.7K to support item number one programs listed in the Priority One list, (Table 1).

2. Restoration of the remaining Priority One studies, (numbers two through five) to restore:

   a. data analysis, and reporting capabilities to the extent possible at this late date.

   b. capabilities to have a functioning field program in the Devil Canyon to Talkeetna reach of the river during the open water field season in 1984.

   Total reinstatement of Priority One items would amount to $645.9K including the additional administrative costs.

3. all Priority Two items to provide for assessment of fish habitats and instream flow and fish populations down stream of Talkeetna. These funds and programs were basically eliminated from our March 8, 1983 proposal and the funds would be dedicated to the start of data collection in the 1984 spring open water field season.

AQUATIC STUDIES

PRIORITIZATION TABLE OF FY 84 FUNDING REINSTATEMENT REQUESTS FOR AUGMENTING EXISTING FUNDING LEVELS

	Priority One					Priority Two					
					Total Add'l. Cost						Total Cost
1.	AH A,B	RJ A	DP A-E	Helicopter 94 hrs	$418.7K	1.		RJ A			$ 91.9K
2.		RJ B		94 hrs	107.7K	2.	AH A	RJ B	DP A		128.5K
3.		RJ C			22.9K	3.		RJ C,D			91.8K
4.		RJ D			26.4K	4.				AA	20.0K
5.	AH C	RJ E			45.2K						
6.	Administrative Costs				25.0K						
TOTAL					$645.9K	TOTAL					$332.2K

KEY TO PROGRAMS LISTED IN PRIORITIZATION FUNDING REQUEST TABLES ABOVE

Aquatic Habitat and Instream Flow Studies (AH)

Priority One Programs

A.	Fish Habitat Studies (FHS) Talkeetna to Devil Canyon	$129.5K
B.	Instream Flow and Evaluation Studies (IFE) Cook Inlet to Impoundment	86.2K
C.	Quality Assurance and Laboratory Operations (QuALO)	17.5K
		$233.2K

Priority Two Programs

A.	FHS - Cook Inlet to Talkeetna	$ 80.0K
		$ 80.0K

Anadromous Adult Studies (AA)

A.	Pilot Mitigation Studies	$ 20.0K
		$ 20.0K

Resident and Juvenile Anadromous Studies (RJ)

Priority One Programs

A.	Juvenile Anadromous Habitat Studies (JAHS) - Devil Canyon to Talkeetna	$ 80.8K
B.	Resident Fish Studies Devil Canyon to Talkeetna	73.7K
C.	Emergent and Outmigrant Juvenile Anadromous Studies - Devil Canyon to Talkeetna	22.9K
D.	Access and Transmission Corridor Study	26.4K
E.	Additional Quality Assurance and Support	27.7K
		$231.5K

Priority Two Programs

A.	Emergent and Outmigrant Study Cook Inlet to Talkeetna	$ 91.9K
B.	Juvenile Anadromous Habitat Studies and Resident Fish Studies - Cook Inlet to Talkeetna	29.0K
C.	Access and Transmission Corridor	41.0K
D.	Quality Assurance and Support	50.8K
		$212.7K

Data Processing and Cartography Support Unit (DP)

Priority One Programs

A.	Cartography Support	$ 9.6K
B.	Programming Support	20.9K
C.	Liaison and Quality Control	4.3K
D.	Additional Programming Support	25.8K
E.	Data Entry and Control	27.6K
		$ 88.2K

Priority Two Programs

A.	Data Entry, Control and Cartography Support	$ 19.5K
		$ 19.5K

ENCLOSURE 2

SUSITNA HYDRO PRESENTATION

Reinstatement of Aquatic Studies Downstream of Talkeetna

Issue: Proposed funding and the potential for fisheries and aquatic habitat impacts by the proposed Susitna Hydroelectric Project downstream of the Chulitna, - Susitna - Talkeetna rivers confluence.

Background: The Alaska Department of Fish and Game (ADF&G) has been on record since 1974 that potential Susitna Hydroelectric Project impacts need to be assessed from the prospective dam sites downstream to the Cook Inlet estuary. This view was reiterated in ADF&G's November 1979 proposal to the Alaska Power Authority (APA) for fish and wildlife studies.

Geographic priorities for study established by the APA in 1980 were as follows:

1. Impoundment areas below peak reservoir elevations.
2. Devil Canyon dam site to Talkeetna reach of the river.
3. Talkeetna to Cook Inlet reach of the river.

In 1981 and 1982 the funded field studies worked toward quantification of the aquatic resource impacts in the first two priority areas. Work in the third priority area was funded at a reconnaissance level. Reconnaissance level work is designed to provide preliminary information for future use in delineating

appropriate integrated studies. Because of the general nature of the data collected by the reconnaissance surveys, this information, from Talkeetna to Cook Inlet, cannot be used to provide for any quantifiable impact assessments.

In 1983, APA requested ADF&G to focus programs on aquatic resource impacts and issues in the Devil Canyon to Talkeetna reach of the Susitna River. Presently, no fisheries or aquatic habitat work is directed toward quantifying fishery and aquatic habitat impacts in the Talkeetna to Cook Inlet reach of the river.

ADF&G feels that work in the Devil Canyon to Talkeetna River reach, must continue to focus on programs which will provide quantification of resource impacts. However, we believe the question of impacts downstream of Talkeetna should not be left to a judgemental evaluation of reconnaissance level data For example, an impact that might affect 10 percent of the fish below Talkeetna may be equivalent to an impact affecting 100 percent of the fish above Talkeetna. It is technically possible to provide data which will enable a much improved assessment of aquatic resource impacts below Talkeetna.

In the opinion of the APA, critical impacts will not occur in this reach. In the opinion of the ADF&G, there is not a substantive base of information to make that judgement nor establish the level or extent of impact. Unsubstantiated judgement of impacts is unacceptable to ADF&G; the goal should be to quantify impacts to the best extent possible.

Recommendations

1. Multidisciplinary studies in hydraulics, hydrology, fisheries and aquatic habitat in the Talkeetna to Cook Inlet reach of the Susitna River must be begun as soon as practicable.

The goal of the studies should be to proceed from a reconnaissance level to a qualitative, and then quantitative level of impact assessment consistent with state-of-the art techniques and study methods.

Flow releases for fisheries and aquatic habitat, wildlife, and navigation impact mitigation cannot be negotiated, until the State and federal agencies and the public fully understand the consequences of the operational flows from the Susitna Hydroelectric Project dam sites to Cook Inlet.

Susitna Hydroelectric Project

Big Game Studies

Issue: Game studies FY 84 program and budget reductions.

Background: At the start of the Susitna Project, it was anticipated that it would take about five years to produce an adequate assessment of the impacts on wildlife. This time frame assumed a carefully designed, well documented, interdisciplinary approach. We believed it would take about two years to learn enough about local wildlife populations to identify impact mechanisms and develop hypotheses. The next three years were to be used to evaluate these hypotheses and quantify impacts. Annual variation in factors such as winter severity also required that some activities be repeated for at least five years.

Unfortunately, a carefully designed, well documented approach was not developed and interdisciplinary coordination was poor. In particular, needed vegetation and hydrology information was either not collected or was of insufficient quality to support an assessment of impacts on wildlife. ADF&G pointed out the problems repeatedly but could do little more, as the hydrology, vegetation and impact assessment were the responsibility of other contractors. Virtually nothing was done to improve the situation until mid-1982 when new consultants (LGL) took over the impact assessment.

The new consultants improved the level of coordination substantially and tasks were identified to resolve some of the major deficiencies. Some key issues such as downstream effects on moose habitat were not adequately addressed and no system for organizing and documenting the impact assessment was developed.

It was at this stage that the license application was written. In general, data collected after fall 1981 were not included and the improved coordination had not yet produced results that could be incorporated. Consequently, the wildlife sections of Exhibit E are incomplete, contain much unsubstantiated speculation, and present very little quantification. They do contain many specific promises of continued study and refinement of impact assessment.

Current Status

Wildlife studies have progressed to a point where it is likely most of the potential impact mechanisms have been identified. However, there is some doubt, and in some cases complete disagreement, as to the significance of some of the mechanisms which could require major mitigation as conclusions have been based on hypotheses that have not been adequately tested. Few mechanisms have been quantified in a meaningful manner. In many cases, it is impossible even to assign an order of magnitude to the impact. Many mechanisms are likely to work in concert with other mechanisms resulting in a greater cumulative impact on wildlife populations. Preliminary simulation models have been developed in an attempt to organize impacts so their cumulative effects can be examined. However, these models have not yet produced results.

Before an acceptable impact assessment can be completed, there needs to be a systematic identification of potential impact mechanisms. Each mechanism needs to be evaluated. Those impacts that appear serious and may require specific mitigation measures need to be quantified to the extent practical. Finally, these impacts need to be viewed together so that reasonable predictions of what will happen to wildlife populations if the project is built can be made and a workable foundation for mitigation planning can be laid.

Much of what needs to be done requires only careful planning and analysis of available data. However, there is still a need to conduct field studies to determine annual variation, particularly in factors influenced by winter severity, and to quantify specific habitat and population parameters.

Effect of "Full" FY 84 Funding

The so-called "full" FY84 funding would have provided ADF&G with $1,000.0 plus a $98.4 severe winter contingency fund and other contractors with sufficient funds to plan and document the program, conduct specific vegetation study tasks identified in a series of coordination meetings and to continue development of models.

This level of funding, if accompanied by good planning, would have preserved the progress made in FY83. Substantial progress would have been made on some of the major impact issues although some of these will not be resolved until 1985 regardless of funding. There would still be some major issues that would not be addressed. Therefore, the "full" funding would have allowed significant progress toward impact assessment, but would not have allowed its completion.

Effect of Current Funding

The current funding level is not likely to significantly advance the licensing process for the following reasons.

1. Exhibit E makes specific promises of continued studies and refinement of impacts. Failure to fulfill these promises is likely to undermine APA's credibility with FERC. Few of the studies identified will be fulfilled with the present budget.

2. APA's failure to systematically plan and document their program has been a chronic problem. They simply don't know what still needs to be done. The progress that was made in FY83 has already been undermined. Little planning or coordination has been done since April. This is not entirely a budget problem. The only time progress was made was during LGL's brief tenure as the consultant responsible for terrestrial impact assessment. Momentum was lost when LGL moved to a subservient role to Harza-Ebasco. Harza-Ebasco has provided little direction to the program. Under the current budget the consultants will not be able to devote enough manpower of the proper caliber to ensure adequate planning and documentation.

3. Specific vegetation tasks were identified during coordination meetings in FY83 and mentioned in Exhibit E. They include a phenology study, a pilot browse study, a moose food habits study, vegetation mapping and intensive browse sampling. Current funding levels will not even allow analysis of existing data. Personnel who collected the data are on the verge of seeking other employment. Money spent in 1983 will be in part wasted and planned FY85 work compromised.

4. ADF&G's big game studies have been cut back to a level where there is a substantial risk that we will not be able to detect changes from previous years. This is important because we have seen major changes in how moose and bears use the impoundment areas each year, indicating that we do not

yet fully understand the importance of those areas. We have had a series of moderate or mild winters. There will be a major setback if we have severe winter and fail to detect it or be unable to evaluate it.

Continuity is important. Batteries in radiocollared animals will run down whether data are being collected or not. If we "put off" data collection a year it will be necessary to re-collar animals. This will increase project costs substantially and because of the seasonality of the work could delay results more than one year.

Recommendations

ADF&G should be funded at the full $1,000.0 plus a $98.4 severe winter contingency fund level shown in the RSA. The University of Alaska should be given adequate funding to complete the plant phenology, pilot browse and moose food habits studies. New vegetation maps should be produced. Most important a systematic planning effort should be initiated to document the status of the program, identify further needs and guide mitigation planning. This planning effort requires a greater commitment than has been demonstrated by APA or Harza-Ebasco.

Alternative 1

The minimum funding level to prevent loss of current investments and get the program on track would be to fund items 1-5 on the attached list, fully implement planning and documentation and fund data analysis and reporting writing on the plant phenology and pilot browse studies.

Alternative 2

An intermediate approach that would preserve ongoing work without starting new studies entails Alternative 1 plus reinstatement of items 6 thru 11 and the remainder of the vegetation tasks. (Items 12-15 can be delayed one year without harming other aspects of the program.)

The following are items deleted from the FY84 big game study budget to reduce the budget from 1,000K to 700K. They are listed in the order in which they would be reinstated. Several projects have been reduced by percentages increasing the risk of failing to meet objectives.

		Cost (x$1000)
1.	Increase the level of monitoring upstream moose to 80% of the level necessary to reliably document winter and spring movements and habitat selection in the immediate vicinity of the impoundments.	33
2.	Increase level of data analysis and reporting to a level that will support improvement of the impact assessment and modelling effort.	20
3.	Increase the level of monitoring of upstream bears to 85% of desired level.	15
4.	Census moose in the upstream primary impact zone.	20
5.	Reinstate monitoring of downstream bears.	7
6.	Caribou calf survival count.	5
7.	Increase monitoring of downstream moose to the level necessarily to reliably document changes in winter and spring movements and habitat selection.	25
8.	Increase upstream moose monitoring to 100% of of desired level, as above.	15
9.	Increase bear monitoring to 100% as above.	25
10.	Increase caribou monitoring to level necessary to reliably detect major movements in the vicinity of the impoundments and access routes.	12
11.	Reinstate wolf program at minimal level necessary to determine size of currently marked packs.	23
12.	Moose calf mortality study.	35
13.	Evaluate moose use of downstream disturbed sites.	45
14.	Caribou census	10
15.	Intensive monitoring of bears to support calf mortality study.	10

The below information of the final bid tabulation for the ALASKA HUNTER SAFE-RESPONSIBLE embroidered emblems is furnished per your request.

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Thank you.

Sincerely,

Joseph S. Tamas
Purchasing Coordinator
(907) 267-2208