UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

CLARENCE F. PAUTZKE, COMMISSIONER

VEE PROJECT

SUSITNA RIVER

ALASKA

A DETAILED REPORT ON FISH AND WILDLIFE RESOURCES

UNITED STATES
DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service
Clarence F. Pautzke, Commissioner

A DETAILED REPORT ON FISH AND WILDLIFE RESOURCES

AFFECTED BY

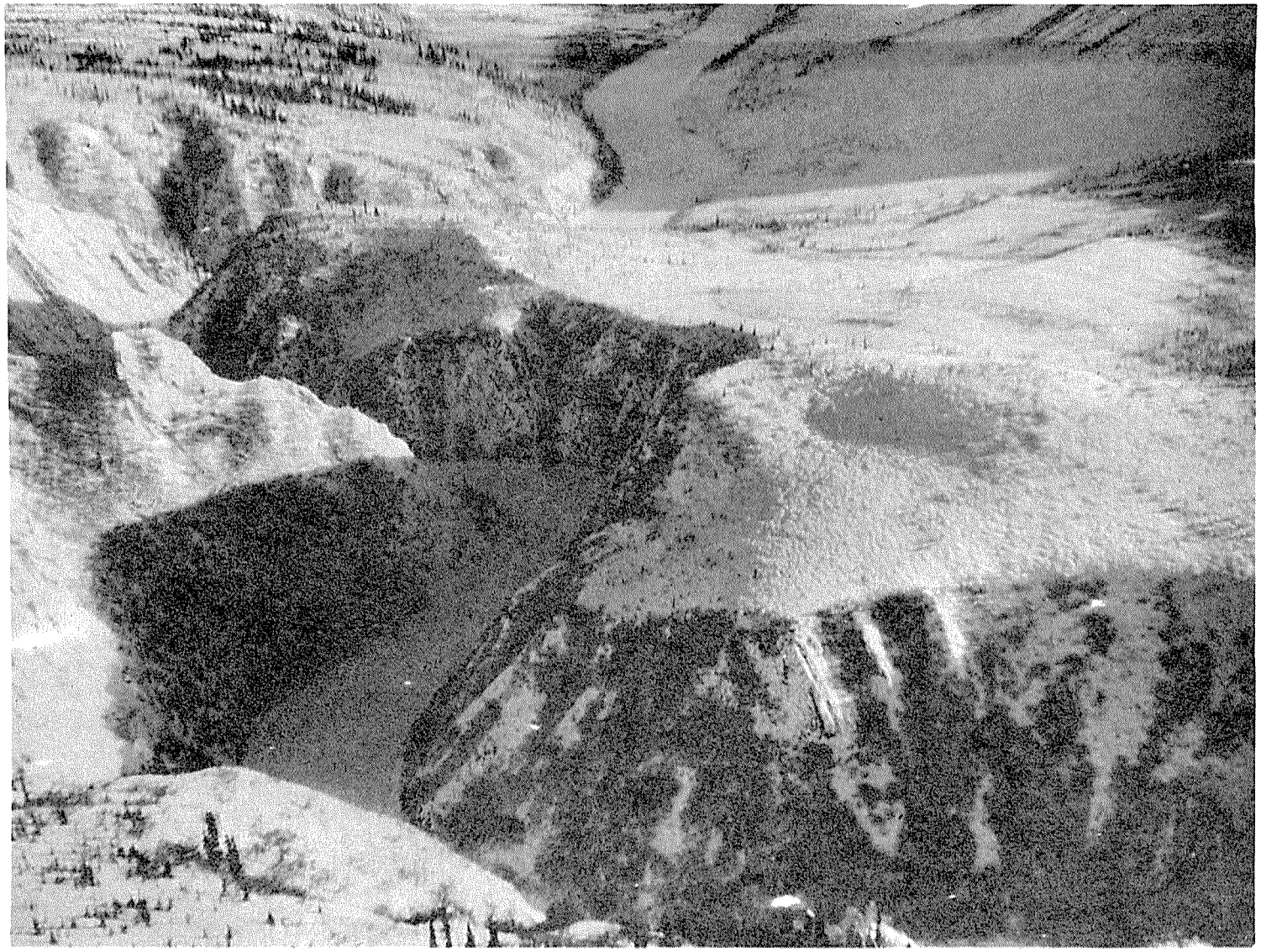
VEE PROJECT

SUSITNA RIVER

ALASKA

Juneau, Alaska

February 1965



View of Vee Canyon damsite.

(looking upstream)

REPORT OF THE REGIONAL DIRECTOR

Bureau of Commercial Fisheries

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF COMMERCIAL FISHERIES
Juneau, Alaska

ADDRESS ONLY THE
REGIONAL DIRECTOR

FEB 9 1965

District Manager
Bureau of Reclamation
Juneau, Alaska

Dear Sir:

This is the detailed report of the U.S. Fish and Wildlife Service concerning effects of Vee Dam and Reservoir project, Susitna River, Alaska, on fish and wildlife resources. This letter, which summarizes information concerning fish and game species present in the project area and effects of project construction on fish and game, is supported in more detail in the attached substantiating report. The letter and substantiating report have been prepared under the authority of and in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

Construction and operation of Vee project would inundate 42 miles of glacial river habitat and 27.5 miles of clear or slightly turbid stream habitat. Grayling, burbot, suckers, and sculpins occur in these waters; whitefish possibly occur; and lake trout inhabit waters which drain into the impoundment area. Fishing pressure does not occur in the project area and without project development is not expected to occur during the period of analysis. This lack of fishing pressure results from the availability of better fishing in other more accessible areas.

The project would form a deep reservoir in which lake trout, whitefish, and burbot might become established; however, fluctuating reservoir levels and water which is expected to be glacially turbid would not provide optimum conditions for development. Grayling, which are particularly susceptible to turbid water, would not be expected to develop significant populations.

An important sport fishery would not be likely to develop, even if populations of fish were to become established in the reservoir, since fishing in streams and clear lakes is preferred by most anglers.

The Susitna River is now glacially turbid during the summer but is clear during the winter. The extent to which fish inhabit this clear water during winter when tributary flows are reduced is not known. Denali Reservoir, which is the second phase of the Devil Canyon project, would probably retain glacial silt in suspension throughout the winter and winter flows downstream from the Denali Dam would be somewhat turbid. Construction of Vee Dam would not alter this condition. Turbid waters would extend downstream for 46 miles to the upper end of Devil Canyon Reservoir. Any sudden spilling of water past Vee Dam might have a slight adverse effect on fish by scouring and flushing food organisms from the channel below the dam.

Anadromous fish do not occur in the project area and would not be affected.

The reservoir would inundate approximately 26.5 square miles of wildlife habitat. The project would ultimately result in loss of habitat which now winters a population of about 50 moose. Caribous use the impoundment area throughout the year in their travels but individual animals do not remain for extended periods. The reservoir would not seriously hinder their movements, because they could swim across it in summer and cross on the ice in winter. Some mortality might be expected as a result of attempted crossings during periods of thin ice. Black and grizzly bears occur in the area and probably make use of the reservoir site.

Willow ptarmigan, spruce grouse, and snowshoe hare, the small game species in the impoundment area, would suffer reduction of habitat as a result of project construction.

Fur animal species of the area are beaver, muskrat, otter, mink, lynx, fox, wolf, wolverine, and weasel. Although the area is not considered good quality fur-animal habitat, the project would destroy more habitat than it would create. Fluctuating water levels and the steep sides of the reservoir would not favor development of fur-animal populations.

Waterfowl habitat now present in the impoundment area is of low value. Steep banks and a fluctuating shoreline would preclude extensive nesting on the project reservoir. The reservoir might be used for resting by fall-migrating birds but such habitat is not needed urgently because adequate natural water areas occur nearby.

The area presently supports light hunting pressure for big game by hunters using boats and aircraft. Small game is harvested only incidentally to big game hunting. There is no hunting for waterfowl or trapping of fur animals. Without project development these activities will probably increase slightly during the period of analysis. With project development, access to areas surrounding the impoundment would increase and result in increased hunting. The fur harvest might also increase, especially during periods of higher fur prices.

This report and the following recommendations have been endorsed by the Alaska Department of Fish and Game as indicated in the letter to us dated January 11, 1965, from Deputy Commissioner E. S. Marvich, a copy of which is appended to the substantiating report. The report has also been read and approved by the Regional Director, Bureau of Sport Fisheries and Wildlife, Portland, Oregon.

In order to minimize adverse effects to fish and wildlife resources with project development and operation, it is recommended that:

1. During the construction, filling, and operating phases of the project, a minimum flow of 500 c.f.s. be maintained at all times in the Susitna River below the dam.

2. Abrupt changes in the volume of water discharged past the dam be avoided; such changes should be made gradually or in a series of slight increases or decreases.

3. The following language be incorporated in the recommendations of the report of the District Manager, Bureau of Reclamation:

   a. "That additional detailed studies of fish and wildlife resources affected by the project, be conducted as necessary, after the project is authorized, in accordance with Section 2 of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.); and that such reasonable modifications in the authorized project facilities be made by the Secretary of the Interior as he may find appropriate for the conservation, improvement, and development of these resources."

   b. "That Federal lands and project waters in the project area be open to public use for hunting and fishing so long as title to the lands and structures remains in the Federal Government, except for sections reserved for safety, efficient operation, or protection of public property."

   c. "That leases of Federal land in the project area reserve the right of public use of such land for hunting and fishing."

The analysis of project effects as set forth in the substantiating report is based on engineering data made available through November 6, 1964. The Fish and Wildlife Service should be advised of any changes in engineering plans so that effects of such changes on fish and wildlife resources of the project area may be determined.

Very truly yours,

Harry L. Rietze

Harry L. Rietze
Regional Director
Bureau of Commercial Fisheries

SUBSTANTIATING REPORT

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PREFACE

1. This report of the U.S. Fish and Wildlife Service appraises fish and wildlife resources which would be affected by Vee project, Susitna River, Alaska. It substantiates conclusions and recommendations contained in the letter from the Regional Director of the Bureau of Commercial Fisheries to the District Manager, Bureau of Reclamation. This report is based on engineering data received from the Bureau of Reclamation by letter dated November 6, 1964. It has been prepared under the authority of and in accordance with the provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

2. Previous reports issued by the U.S. Fish and Wildlife Service that pertain to Vee project are as follows:

1. 1952. A Preliminary Report on Fish and Wildlife Resources in Relation to the Susitna River Basin Plan, Alaska.
2. 1954. A Progress Report on the Fishery Resources of the Susitna River Basin, Alaska.
3. 1954. A Progress Report on the Wildlife Resources of the Susitna River Basin, Alaska.
4. 1959. 1958 Field Investigations, Denali and Vee Canyon Damsites and Reservoir Areas, Susitna River Basin, Alaska.
5. 1960. A Detailed Report on Fish and Wildlife Resources Affected by the Devil Canyon Project, Alaska.

INTRODUCTION

3. The Susitna River is a major drainage of southcentral Alaska, the most populous section of the state. To meet existing and predicted power needs in this area, the Bureau of Reclamation is investigating the development of the Susitna Basin's power potential. The Devil Canyon project, with

dams and reservoirs at the Devil Canyon and Denali sites, would be the first two units to be constructed. This project would have an installed capacity of 580,000 kilowatts. A report issued by the U.S. Fish and Wildlife Service in 1960 concluded that Devil Canyon project would have only minor effects on fish and wildlife resources. If power needs in southcentral and interior Alaska develop as predicted, Vee project would be considered as the third stage for development. The installed capacity of this project would be 338,000 kilowatts.

4. Vee project would be located in southcentral Alaska midway between the population centers of Anchorage and Fairbanks. The dam would be located at Susitna River mile 209 between the Devil Canyon and Denali Dams (see location map). A possible fourth stage in development of the Susitna Basin water power resource is the Watana project. It might be built after Vee project in the section of the basin lying between Vee and Devil Canyon.

DESCRIPTION OF THE AREA

5. The Susitna River drains about 19,300 square miles of land having only a small human population. The Susitna Basin is bordered on the south by Cook Inlet and the Talkeetna Mountains, on the east by the Talkeetna Mountains and the Copper River Plateau, and on the north and west by the Alaska Range. From its glacial origin in the Alaska Range, the river flows south for about 60 miles, then west through the Talkeetna Mountains for about 100 miles, and then south for 115 miles to Cook Inlet. The drainage can be separated into upper and lower basins at approximately river mile 100.

6. Topography in the upper basin ranges from gentle slopes and a high, poorly drained plateau in the east to rolling hills and mountainous terrain in the west. The Maclaren River, which is turbid because of its glacial

source, is the largest tributary. Other tributaries in the upper basin are either clear or possess only slight glacial turbidity.

7. The lower basin is a broad valley bordered on each side by mountains. Both large, glacially turbid streams and smaller, clear tributaries discharge into the Susitna River in the lower basin.

8. The Talkeetna Mountains, which border the lower Susitna Basin on the east, are primarily granitic. The Alaska Range, bordering the basin on the north and west, is composed of sedimentary rocks, some of which have been metamorphosed and intruded by granitic masses. Valleys of the upper basin are filled to considerable depth with glacial materials. The floor of the lower basin is filled largely by glacial stream deposits.

9. Stream flows in the Susitna Basin are high from May through September and low from October through April. Snow melt, rainfall, and glacial melt contribute to flows. Glacier-fed streams are turbid during summer but clear in winter.

10. The northwest section of the basin lies in Mount McKinley National Park. The 3,030 square mile park, established in 1917, preserves a wide variety of wild game animals in their natural tundra and mountain habitats. Mount McKinley Park is one of the most visited tourist attractions of the entire state.

11. The Alaska Railroad extends north and south through the lower Susitna Basin and affords the only means of overland transportation through it. A highway paralleling the railroad is now under construction. The Denali Highway passes through the headwater portion of the upper basin. The only additional routes of access are limited to a few roads and trails on the fringes of the drainage. Boats are used for travel on portions of

the main river and tributaries, and aircraft are used throughout the drainage wherever landings and takeoffs are feasible.

12. The human population is concentrated along the railbelt. Scattered settlements of trappers, miners, and persons providing services to hunters are present throughout the drainage.

13. Economic activities associated with the Susitna drainage include the harvest of Susitna River salmon in Cook Inlet, trapping, mining, and some businesses that furnish services to hunters and fishermen. Oil and timber are two resources of the basin that have potential for future development.

PLAN OF DEVELOPMENT

14. Engineering data for Vee project were received from the Bureau of Reclamation by letter dated November 6, 1964. The dam would be a concrete arch structure with a maximum structural height of 605 feet at crest elevation of 2,360 feet m.s.l. It would involve a main dam across the river and an earthfill saddle dam on the left abutment with a gated spillway provided on the right abutment. The reservoir would inundate about 17,000 acres (26.5 square miles) and contain 1,760,000 acre-feet of water at maximum pool elevation of 2,355 feet m.s.l. Maximum drawdown would be 215 feet and the average operating head would be 431 feet. The tailwater elevation would be 1,905 feet m.s.l. A powerplant with an installed capacity of 338,000 kilowatts would be constructed with prime power production expected to be 189,000 kilowatts. Maximum and minimum water releases would be 10,000 and 1,800 c.f.s. respectively, with an average of 6,580 c.f.s. Spilling might occur from June to September.

FISH RESOURCES

Without the Project

15. The Vee project area includes the area which would be inundated and the section of the Susitna River extending below the dam to the upstream end of the Devil Canyon Reservoir.

16. The project area contains two types of fish habitat: (1) glacial waters of the Susitna River and the Maclaren River, the largest tributary, and (2) clear or slightly turbid waters of the other tributaries (table 1).

Table 1. Fish Habitat Affected by Vee Project Reservoir.

Drainage	River Miles Above Damsite	Total Stream Length (Miles)	Stream Length Flooded (Miles)	Character of Water
Susitna River		275	41.0	Heavy glacial turbidity
Goose Creek	7	20	2.5	Clear
Oshetna River	9	51	4.5	Light glacial turbidity
Tyone River	21	52[1/]	15.5	Clear
Tyone Creek	[2/]	82	3.0	Clear
Maclaren River	34	50	1.0	Heavy glacial turbidity
Coal Creek	37	28	1.5	Clear
Clearwater Creek	39	34	0.5	Clear

1/ Includes length of lakes.
2/ Tributary to Tyone River.

17. About 42 miles of glacial river habitat lie within the proposed reservoir boundaries. These flows are turbid in summer but clear during winter, when glacial melt ceases. The dam upstream from Vee Canyon at Denali, however, would probably cause somewhat turbid flow at Vee Canyon

to continue year-around, because glacial silt would probably remain suspended in Denali reservoir throughout the winter. Winter turbidity is expected to be considerably less than during summer, however, for high summer flows sustain substantial amounts of coarser materials. Grayling, burbot, sculpins, and suckers have been captured in the mainstem Susitna in the project area. Abundance and extent of movement of these fish in the Susitna and Maclaren Rivers are unknown. Some fish in tributaries may respond to diminished winter flows by moving downstream to the mainstem Susitna River. Turbidity precludes sport fishing in the summer and inaccessibility and availability of better fishing elsewhere preclude winter angling in these glacial rivers.

18. Tributaries other than the Maclaren are clear except for the Oshetna River which has a slight glacial turbidity produced by small glaciers at its headwaters. The proposed Vee Reservoir would inundate a total of 69.5 miles of tributary streams. Grayling, burbot, sculpins, and suckers have been captured in these tributaries. Whitefish and lake trout occur in lakes of the upper Tyone system and lake trout occur in Black Lake in the Oshetna drainage. Tyone Lake, Susitna Lake, and Lake Louise form a series along the upper Tyone River in the section extending from 14 to 36 miles upstream from the proposed reservoir. These lakes are accessible by automobile from the Glenn Highway and they sustain fishing pressure that is heavy by Alaskan standards, primarily for lake trout. Black Lake in the Oshetna drainage sustains light pressure for lake trout by fishermen who fly in with float-equipped aircraft. Few or no fishermen travel by boat downstream from Tyone Lake to fish in the section of the Tyone River that lies within the proposed reservoir area because of (1) difficulties of boat travel and (2) the availability of good fishing in the lakes. For these same reasons also, very few fishermen travel

on the Susitna to reach inaccessible tributary streams. A few hunters traveling by boat may fish incidentally to hunting.

19. The Susitna River between the Vee damsite and the upper end of the Devil Canyon Reservoir receives flows from five major clear-water tributaries: Jay, Kosina, Watana, Deadman, and Tsusena Creeks. Stream survey data for this section are limited; however, grayling, whitefish, burbot, suckers, and sculpins are probably present. Fishermen do not use this section because of difficult access and availability of good fishing elsewhere. Vee Canyon at the upper end of this stream section and Devil Canyon at the lower end preclude boat travel. Pilots are reluctant to land aircraft on the river here, also.

20. Changes in access and in the human population must be considered in predicting fishing and hunting pressures in the project area. Means of access to the upper project area are increasing as new trails develop through the use of swamp buggies and tracked vehicles for hunting. This trend can be expected to continue and extend to the lower project area if present human population predictions are correct. Population projections vary, but all show increases. Expanded human populations will result in greater use of aircraft and boats within the project area. Expanded human populations, coupled with improved means of access, will produce increases in fishing pressure, much of which is incidental to hunting. The presence of better fishing elsewhere will continue to limit the number of people traveling to the project area primarily to fish. Further, the glacial waters of the mainstem Susitna and Maclaren Rivers will preclude summer fishing and the extreme cold and discontinuous ice cover on these rivers will deter any significant winter fishery.

21. Investigations conducted intermittently by the U.S. Fish and Wildlife Service during the period 1952 to 1958 revealed that salmon migrate upstream only to the lower end of Devil Canyon at river mile 134. They were not found beyond this point. It was assumed that the long stretch of swift, turbulent water in Devil Canyon constitutes a hydraulic block to fish migration. Therefore, fish passage facilities were not recommended in the Service Report on the Devil Canyon project. Since facilities were not recommended at Devil Canyon, they clearly are not required at Vee Dam. The earlier reports noted, however, the possibility that the Louise, Susitna, and Tyone Lake series, as well as certain other lakes in the basin, might possess a potential for producing sockeye salmon. Also, the many clear-water streams tributary to the Susitna River above the Devil Canyon and Vee damsites might sustain other salmonid species. This Service plans additional studies to determine the extent of potential spawning areas. Should studies indicate a reasonable probability that the area can be developed for production of anadromous fish, and should this be economically justified, then some type of fish passage facility might later be recommended for both Devil Canyon and Vee Dams. If passage over these dams is infeasible, then the prevailing lack of salmon in the upper basin will continue.

With the Project

22. Construction and operation of Vee project would inundate 42 miles of glacial river and 27.5 miles of clear or slightly turbid stream habitat. Fish known to occur in the project area include grayling, burbot, suckers, and sculpins. Whitefish possibly also occur here, and lake trout are known to inhabit waters which drain into the project area.

23. The project reservoir would be deep, a condition which would favor development of a lake trout population. Burbot and whitefish might also

become established in the reservoir and if so, would offer some sportfishing value. Conditions would not be optimum for these species, however, since the reservoir would be steep-walled and have little food-producing shoal area. Drawdown would also restrict food production. Lakes of somewhat the same size in other glacial drainages (Tazlina, 21 miles long, 3 miles wide; and Klutina, 16 miles long, 2 miles wide) remain turbid throughout the year. It is assumed that Vee Reservoir would also remain turbid. Turbidity would suppress development of a grayling population.

24. Present distribution of fishing effort suggests that even if fish populations were to develop in the turbid reservoir, fishing pressures would be fairly light because most anglers prefer streams and clear lakes. If a fishery developed, it would probably be limited to (1) casting and trolling for lake trout in summer and (2) fishing through the ice for lake trout and burbot in winter.

25. Construction and operation of Vee project would affect 46 miles of the Susitna River from Vee Dam to the upper end of Devil Canyon Reservoir. Any stoppage of flows during the construction and filling period would eliminate nearly all fish use of this section because incremental flows constitute only a small percentage of the main river flow. Since the project would not be placed in operation until after construction of Denali Dam, flows would probably be little changed, although the flow regime would reflect regulation for power production at Vee. Vee tailrace flows are expected to remain somewhat turbid throughout the year.

26. During project operation, fish movement in the river below the dam would not be impeded. However, sudden changes in spill volume could result in scouring of the channel with detrimental effects on production of fish food organisms. Access roads constructed for the project would encourage

people to visit the area and some summer fishing would develop in tributaries downstream from the dam. However, year-round turbidity would limit fishing in the main river.

27. Anadromous fish are apparently unable to pass through Devil Canyon and thus do not occur in the Vee project area. Controlled water releases at Devil Canyon could compensate for any possible adverse effects to anadromous or resident fish downstream.

WILDLIFE RESOURCES

Without the Project

28. The proposed Vee project reservoir area contains approximately 26.5 square miles. The area includes four major wildlife habitat types: (1) bars and islands of the main river, (2) flat bottom land along the main river, (3) relatively steep sidehills on each side of the river, and (4) bottom land along tributary streams.

29. Big game species of the project area are moose, caribou, black bear, and grizzly bear.

30. Quantitative data on moose numbers are limited. However, the habitat of the proposed impoundment area, though limited in extent, is of good quality. An average population of about 50 moose winters there. Hunting pressure for moose is light and is exerted by hunters using boats on the Tyone and Susitna Rivers and by a few hunters using aircraft. Hunting pressures and success for moose are increasing at present, just as they are throughout the state as a result of extended season lengths. Significant habitat changes in the project area will probably not occur during the period of project analysis. Hunting of moose will increase as overland access improves and as the human population increases.

31. Segments of the Nelchina caribou herd inhabit areas surrounding the impoundment site; their abundance on these areas fluctuates seasonally. Caribou use of the impoundment area is limited mainly to transient animals traveling from one to another of these surrounding areas. Lack of suitable lichen growth probably deters caribou use of the impoundment area itself. Although seasons are long and the bag limit of three animals of either sex is liberal, harvests of the Nelchina caribou herd are considered inadequate for proper management. This results in part from the limited access to the area which causes hunters to confine their activities largely to locations near the road system. Hunting in the impoundment area is light, being limited to hunters using boats on Tyone River and Creek. During the period of project analysis caribous will continue to use the impoundment area as a route of travel between surrounding tracts of desirable habitat. The present liberal seasons will probably be continued until harvests reach levels adequate for proper management of the herd. As improved means of access develop and as the human population increases, the impoundment area and the area surrounding it will sustain more hunting pressure for caribous.

32. There is little hunting specifically for black bears in the Nelchina area, although a few are taken incidentally by hunters seeking other game. Some hunting is done specifically for grizzly bears in the Nelchina area, mostly by hunters using aircraft. Because of the small size of the impoundment area, the total number of bears involved is very small. The area, however, is probably visually searched each year by several hunters using aircraft and any grizzly bear seen is subject to being hunted. Grizzlies are also taken in the Nelchina area incidentally to moose and caribou hunting. Probably more black bears will be killed as the number of people visiting the

area increases. Grizzly bear populations will probably decline as civilization encroaches the area.

33. Small game species in the impoundment area are willow ptarmigan, spruce grouse, and snowshoe hare. Populations of all three fluctuate periodically. No change in species or habitat is expected without the project. Hunting pressure is now negligible and is expected to increase only slightly in the future because big game hunting will probably continue to receive primary emphasis.

34. Fur animal species that have been identified in or adjacent to the project area are beaver, muskrat, otter, lynx, fox, wolf, and wolverine. Other species which probably also occur here are mink and weasel. The area is not considered good quality fur-animal habitat. There are few ponds which would favor aquatic species and the dominant cover of spruce does not favor terrestrial species. There is no trapping because other, more accessible areas possess better populations of fur animals. The area would possibly receive light trapping pressure if access were to improve and if fur values increased during the period of project analysis.

35. The Vee impoundment area has low value as waterfowl habitat owing mainly to the lack of pond and marsh areas. No changes in habitat are expected during the period of analysis. Waterfowl hunting is not now pursued here and is not expected in the project area during the period of project analysis.

With the Project

36. Wildlife habitat sustaining variable numbers of animals would be inundated by Vee Reservoir.

37. Good winter moose habitat would be destroyed. This would result ultimately in the loss of about 50 moose which now winter in this habitat.

This loss is not considered serious owing to the small size of the flooded area relative to the amount of adjacent range. The hunter population is expected to increase, and would use all means of access constructed as project facilities. Improved access would include both overland trails to the damsite and the reservoir itself, which would be used for boat and float plane operations. More hunting pressure on moose in areas surrounding the reservoir would thus develop.

38. Caribou use of the reservoir area is largely limited to transient animals moving between blocks of habitat around the impoundment. The project reservoir would probably not impede this movement. Caribous are strong swimmers and would encounter no difficulty swimming the narrow reservoir. In winter they could cross the reservoir on the ice. Some mortality might occur because of attempted crossings during periods when the ice is thin. An expanding human population utilizing the improved access afforded by the project would hunt the herd more heavily. Increased human activity associated with the project might cause caribous in adjacent areas to move to less disturbed portions of the Nelchina range.

39. Grizzly and black bear habitat would be inundated. This loss is not considered significant owing to the small size of the reservoir compared to the amount of suitable habitat available nearby. Increased numbers of hunters using access created by the project would probably harvest a few more bears than are now taken from areas surrounding the impoundment.

40. Habitat for limited numbers of willow ptarmigans, spruce grouse, and snowshoe hares would be destroyed. Areas surrounding the reservoir would support displaced animals for a period of time but eventually populations would decline to former levels and the number of animals which had been supported in the reservoir area would be lost.

41. Habitat for beavers, muskrats, minks, otters, lynx, foxes, wolves, wolverines, and weasels would be lost by inundation. Some marginal habitat would be created for aquatic species by formation of shoal areas at the upper end of the reservoir and at the mouths of tributaries. Productivity of this habitat would be severely limited by reservoir drawdown. Habitat for aquatic fur animals around the remainder of the reservoir would be limited by steep banks and reservoir drawdown. The project would not create new habitat for terrestrial species. The area surrounding the impoundment might receive light trapping effort, especially during periods of higher fur prices.

42. Only low value waterfowl habitat would be flooded by a dam at Vee Canyon. A limited amount of habitat would be created by the formation of shallow water areas at the upper end of the impoundment and in the upper ends of bays formed in tributary valleys. However, reservoir drawdown would limit food production and successful nesting in these shoal areas. Nesting around the rest of the reservoir would be limited by steep exposed banks and reservoir drawdown.

43. Waterfowl would probably use the reservoir for resting during their fall migration and might also use it during their spring migration. Spring use would depend on whether the reservoir had open water areas before or at the same time as nearby lakes and potholes. Although use for resting by migrating birds would be a project benefit it would not be significant since numerous lakes and potholes adjacent to the project area presently furnish adequate resting areas.

44. Limited waterfowl hunting might occur with project development. However, the area would never be prime habitat and waterfowl hunting would be incidental to other activities in the area.

DISCUSSION

45. The project would replace 42 miles of glacial river habitat and 27.5 miles of clear or nearly clear tributary habitat, with a deep reservoir 41 miles in length and 0.65 miles average width. The reservoir would remain turbid year around. Sport fish populations might become established in the reservoir. Habitat would not be optimum, however, since glacial turbidity, fluctuating water levels, and lack of shoal areas would limit fish food production. Turbidity, fluctuating water levels, and availability of better fishing in adjacent areas would preclude intensive angler use of the reservoir.

46. Anticipated effects of Vee project on the fishery resources are not regarded as serious. Mitigation measures are not recommended, and feasible means of enhancement cannot now be foreseen. The most serious effects foreseeable as a result of Vee project would be (1) destruction of fish habitat by severe reduction or stoppage of flows downstream from the dam, and (2) scouring fish food organisms from the river by excessive releases. These effects could extend downstream 46 miles to the upper end of Devil Canyon Reservoir. To assure maintenance of fish habitat in this section of the river, a minimum flow of 500 c.f.s. should be maintained in the river downstream from the dam during project construction and operation. Also, changes in water releases should be made gradually, so as to minimize flushing and scouring of the channel.

47. Passage facilities at Vee Dam might be recommended as an enhancement measure at a later date if future studies should demonstrate the feasibility of developing salmon runs in the Louise, Susitna, and Tyone Lake series, as well as certain other lakes in the basin. Implementation of such a plan would require fish passage facilities at both Vee Dam and Devil Canyon Dam.

48. Vee project would inundate approximately 26.5 square miles of habitat used to varying degrees by wildlife. The small area involved and the present and anticipated low hunting pressure sustained by the affected wildlife populations minimize the importance of such losses. Perhaps the most serious effect of the project upon wildlife would be destruction of a small area of moose winter range. Nonetheless, feasible means of mitigating these losses of wildlife habitat are not known and no mitigation measures are recommended.

STATE OF ALASKA

WILLIAM A. EGAN, GOVERNOR

DEPARTMENT OF FISH AND GAME

OFFICE OF THE COMMISSIONER / SUBPORT BUILDING—JUNEAU

January 11, 1965

Harry L. Rietze, Regional Director
Bureau of Commercial Fisheries
U. S. Fish and Wildlife Service
P. O. Box 2481
Juneau, Alaska 99801

Dear Mr. Rietze:

The Alaska Department of Fish and Game has reviewed the Bureau's draft copy of a detailed report on the fish and game resources that would be affected by a hydroelectric project at Vee Canyon on the Susitna River.

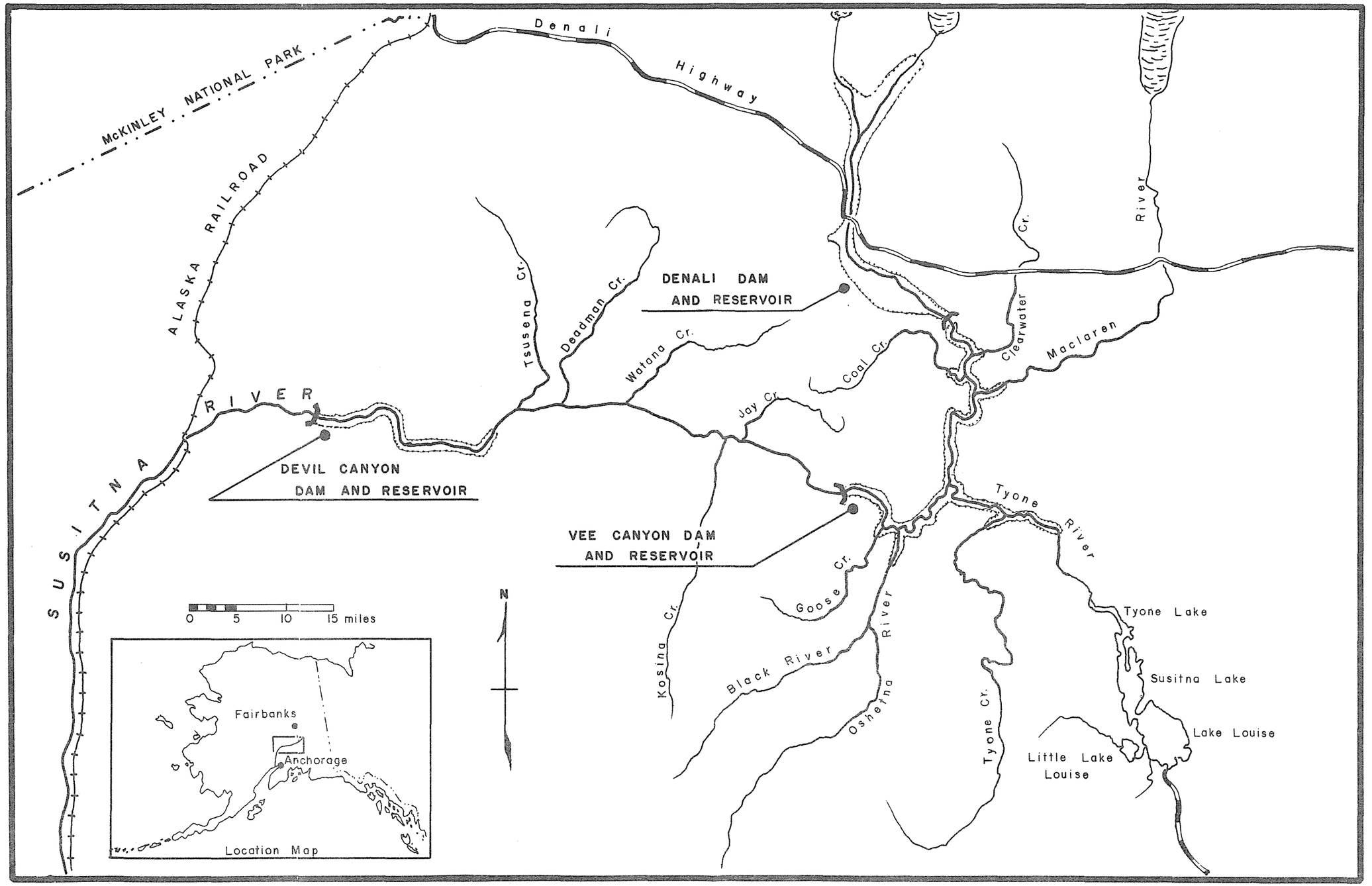
We agree with the findings as to the effect of the project on fish and game and concur in the recommendations for the protection and enhancement of these resources as outlined in the report.

Sincerely,

ALASKA DEPARTMENT OF FISH AND GAME

E. S. Marvich, Deputy Commissioner

cc: Frank Stefanich, ADF&G, Anchorage
Jim Rearden, ADF&G, Homer



Location map, Vee Canyon project.