



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

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BOX 2481
JUNEAU, ALASKA 99801

December 24, 1964

Mr. Walter Kirkness, Commissioner
Alaska Department of Fish and Game
Subport Building
Juneau, Alaska

Dear Walt:

Enclosed for your records is a copy of the reconnaissance
letter report on the Tyee Lake project in southeastern
Alaska, recently transmitted to the Bureau of Reclamation.

Sincerely yours,

Harry L. Rietze
Regional Director

Enclosure: as cited

lake near
Bradford Canal Stikine

December 24, 1964

Mr. George N. Pierce
District Manager
Bureau of Reclamation
P. O. Box 2567
Juneau, Alaska

Dear Mr. Pierce:

This letter is in response to your letter of October 19, 1964, requesting the appraisal of this Service concerning possible effects upon fish and wildlife of a hydroelectric project at Tyee Lake in southeastern Alaska.

This report is based upon minimal field investigation and is only of a reconnaissance nature. It does not constitute the report of the U.S. Fish and Wildlife Service within the meaning of Section 2 of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). This letter has been reviewed and approved by the Alaska Department of Fish and Game, as indicated by Commissioner Walter Kirkness' letter to me of December 14, 1964, a copy of which is attached.

Tyee Lake basin is located on the south shore of Bradfield Canal, approximately 48 airline miles north of Ketchikan, Alaska. The basin contains 14.2 square miles of drainage area, and includes a few small snowfields. Tyee Lake has a water surface area of 445 acres at an elevation of 1,370 feet. A single major inlet stream discharges into the lake at its head or southeasterly end. This stream is clear, approximately 5 miles long and possesses a steep gradient throughout the upper 3.5 miles of its length. It then passes over a low falls, and the lowermost 1.3 miles immediately upstream from the lake is relatively flat in gradient. This section contains gravels well suited to fish spawning. Two lesser inlet streams discharge into the lake along its lateral shorelines but these have extremely steep gradients. Tyee Lake itself is clear, cold, deep, and relatively unproductive. The outlet stream descends 1,370 feet to tidewater in a distance of only 2 miles. Most of this distance is composed of falls and whitewater rapids. A falls is present immediately above the high tide line that obstructs fish from entering the stream.

Nearly the entire basin is composed of solid rock and the topography is extremely rugged. Spruce-hemlock forest covers the surrounding slopes to elevations above 3,000 feet. Much of the drainage area lies above timberline, however, and consists of bare rock with no vegetative cover. Tyce Lake contains very little shoal area. The delta of the main inlet stream at the head of the lake extends for a short distance into the lake, then drops off abruptly to deep water.

No features of human origin are known to be present within Tyce Lake basin.

The project as presently contemplated would not include use of a dam; all storage would be obtained by tapping the lake below its natural water surface elevation. Water would flow from the lake through a pressure tunnel and underground penstock to the power plant constructed near tide-water. Maximum water surface elevation would coincide with the lake's natural surface elevation of 1,370 feet. Minimum water surface would be at approximately elevation 1,235. Water from the power plant would discharge at an average rate of 182 c. f. s. into Bradfield Canal.

Tyce Lake in its natural state contained no fish population. In recent years, the Alaska Department of Fish and Game has attempted to introduce a population of grayling into the lake by planting fertilized eggs. Gillnetting effort subsequent to this introduction failed to take fish. Thus the lake probably still lacks a fish population, although further attempts to introduce a population might ultimately be successful. The excellent spawning gravels present in the lower 1.5 miles of the major tributary of the lake would provide adequate spawning area for a fish population if one could be successfully introduced into the lake. The outlet stream from Tyce Lake is largely unsuited to fish production owing to the extremely steep gradient throughout most of its length, and the presence of a series of obstructions, one of which is the falls immediately above the high-tide line. No evidence of salmon spawning was observed in the intertidal zone downstream from this falls during a survey conducted in October, 1964. Pink and chum salmon, the species that would be most likely to utilize such an area, were still present in nearby drainage systems at the time of this survey.

The big game present in the basin include deer, black bear, and an occasional transient brown bear. Populations of all three of these species are small. Goats inhabit the upper slopes of surrounding terrain, and Tyce Lake is used to some extent as a base camp by fly-in goat hunters. Mink,

marten, otter, wolves, wolverine, weasel, blue grouse, and ptarmigan are other wildlife species that occur in this area. The lake provides some breeding area for Canada geese, and the lake and intertidal zone of the outlet stream provide resting area for both ducks and geese during the seasonal migration periods.

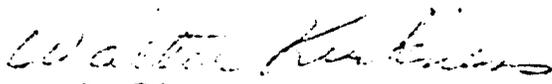
November 24, 1966

Construction of a hydroelectric project at Tye Lake would produce minimal effects upon fish and wildlife resources. Whether the lake possesses a fish population at the present time is doubtful. If a population could be successfully introduced, Tye Lake would probably receive some fly-in angling pressure, despite its inaccessibility, because of its scenic setting. Although an introduced fish population would probably survive water level fluctuations resulting from project operation, such fluctuations would reduce further the lake's naturally low productivity, and would disrupt the scenic attractiveness of the basin. Wildlife would be little affected by the project, although a small segment of waterfowl breeding habitat would be disrupted by reservoir drawdown.

If the contemplated project for the Tye Lake site were authorized, detailed studies should be conducted to determine possibilities for improving fishery values of the basin. Consideration should be given to the following measures: (1) the introduction of a fish population into the lake, if this has not already been accomplished by the time of project authorization, (2) provisions for assuring that any fish population in the lake could migrate into the main inlet stream for spawning purposes, because the reservoir drawdown would expose this stream's lower reaches, perhaps producing an obstruction at the stream delta, and (3) the possible use of tailrace waters to supply a spawning channel for anadromous fish.

We appreciate the opportunity to comment on the project and should like to be notified of any major changes in project plans.

Sincerely yours,


Harry L. Rietze Commissioner
Regional Director

W.A.H.H:cn

