



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, AK 99802-1668

September 11, 2023

Ms. Samantha Owen
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Re: Fish and Wildlife Program preferred alternative for the Eklutna Hydroelectric Project; 1991 Fish and Wildlife Agreement

Dear Ms. Owen:

In your capacity representing the three owners of the Eklutna Hydroelectric Project, the National Marine Fisheries Service (NMFS) herein provides you with our recommendations (enclosed) for a Fish and Wildlife Program plan (Fish and Wildlife Program) pursuant to the *1991 Fish and Wildlife Agreement for Snettisham and Eklutna Projects* (1991 Agreement). The 1991 Agreement is contained in the *Divestiture Summary Report: Sale of Eklutna and Snettisham Hydroelectric Projects*¹. As a party to the 1991 Agreement, we have been involved in the development of the Fish and Wildlife Program, including the study plan development, review of findings, and evaluation of alternatives for the protection, mitigation of damages to, and enhancement of fish and wildlife. The process established by Anchorage Municipal Light and Power, Chugach Electric Association, and Matanuska Electric Association, owners of the Eklutna Project (collectively, the “Owners”), has been consistent with the intent of the 1991 Agreement provisions and inclusive of significant stakeholders who are not parties. Our recommendations include an incremental approach to mitigation to address project related impacts on in-river flow, habitat, and fish passage.

The 1991 Agreement was established based on the Federal divestiture of the Eklutna and Snettisham Hydropower Projects. Sale of the Alaskan hydropower projects managed under the Alaska Power Administration was proposed in 1986. The proposal sought to end the Federal power program in Alaska that operated the Eklutna and Snettisham Hydropower Projects. In the development of legislation to authorize the sale in 1989, concerns were raised about post-sale management of fish and wildlife resources. Specifically, the review process identified loss of a sockeye salmon run that once spawned in Eklutna Lake².

¹ Alaska Power Administration. 1992. Divestiture Summary Report: Sale of Eklutna and Snettisham Hydroelectric Projects, U.S. Department of Energy. April 1992. Page 10, Informal Consultation with NMFS, [Brad] Smith, December 4-6, 1991.

² Idib.



This loss of sockeye in the Eklutna Lake and the interests of State and Federal resource agencies to mitigate project-related effects to fish and wildlife led to the 1991 Agreement between the “Purchasers” (now the Owners), the State of Alaska, and the Departments of Interior and Commerce for the protection, mitigation, and enhancement of fish and wildlife resources affected by Eklutna and Snettisham Hydroelectric Projects.

The 1991 Agreement outlines a process of consultation, studies, and public involvement for the development of a Fish and Wildlife Program. The Fish and Wildlife Program development requires oversight and final approval by the Governor of Alaska. The Fish and Wildlife Program must be implemented by the Owners at their expense³. Federal and State resource agencies concluded that the measures outlined in the 1991 Agreement would provide a process similar to the Federal Energy Regulatory Commission (FERC) licensing process under the Federal Power Act. The parties suggested that the proposed arrangements of the 1991 Agreement would function “*at least as well as Federal regulation for the intended purpose of mitigation and enhancement of affected fish and wildlife resources*”, and therefore, sufficient to restore and maintain habitat^{4,5}. Therefore, the Federal licensing process under the Federal Power Act, as administered by the FERC, was deemed not needed⁶. This agreed-upon exemption from the Federal Power Act requirement to obtain a FERC license was thought to save the purchasers - and their customers - hundreds of thousands of dollars in annual fees⁷.

Since the 1991 Agreement was signed, many changes have occurred that influence the potential scope of mitigation and restoration efforts on the Eklutna River and Eklutna Lake. The State regulatory authority for actions impacting anadromous fish habitat changed from the jurisdiction of the Alaska Department of Natural Resources (ADNR) to the Alaska Department of Fish and Game (ADF&G) in 2008. Surveys of the Eklutna River completed to update ADF&G’s Anadromous Waters Catalog between 1997 and 2023 indicated the presence of all 5 species of Pacific salmon. We recently completed a Government-to-Government consultation with the Native Village of Eklutna (NVE) regarding this hydroelectric project. Assessments completed by the NVE documented the presence of four resident fish species along with Pacific salmon.

³ 1991 Agreement. *See also* Alaska Power Administration. 1992. Environmental Assessment: Submittal of a Legislative Proposal to Congress for the sales of the Eklutna and the Snettisham Projects. March 1992. (DOE/BA--0614). Contained within the Divestiture Summary Report: Sale of Eklutna and Snettisham Hydroelectric Projects, Alaska Power Administration, U.S. Department of Energy, April 1992.

⁴ idib

⁵ The 1991 Agreement cannot function “*at least as well*” as federal regulation because it does not include fish passage provisions provided under Section 18 of the Federal Power Act, whereby the FERC “*shall require the construction, maintenance, and operation by a licensee at its own expenses of such... fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce, as appropriate.*” 16 U.S.C. § 811. Absent this statutory authority, Federal resource agency parties to the Agreement cannot mandate fish passage measures necessary to mitigate direct project related impacts.

⁶ Alaska Power Administration. 1992.

⁷ House Report 104-187. Alaska Power Administration Sale Act. July 1995.

Between 2000 and 2022, the NVE Tribal Council published multiple resolutions expressing their interest to restore the salmon runs that historically returned to the Eklutna River, with a particular emphasis on restoring the sockeye salmon run. Traditional Ecological Knowledge provided by NVE indicates that the Eklutna River sockeye run was extirpated following the construction of the lower dam in 1929. With the removal of the lower dam in 2018, NVE has resolved to work towards restoring the passage of sockeye to Eklutna Lake. NVE strongly desires to be recognized as a party to the 1991 Agreement. To date, NVE has not been recognized as a party to the agreement but included in the study plan and review of findings processes ahead of the public review.

A pervasive factor influencing the decision making process for fisheries and habitat is climate change. The *Fourth National Climate Assessment for Alaska*⁸ indicates, among other findings, that the state has been warming twice as fast as the global average since the middle of the 20th century and that average annual precipitation increases are projected for all areas of the state. A recent climate change downscaling model for a proposed high latitude hydropower project⁹ indicates a trend of significantly warmer temperatures in summer (1.0-1.7 °C) and winter (2-3 °C) for 2040-2060. Precipitation trends identified in this model indicate slightly higher precipitation in summer (5-15%) and winter (10-15%). The modeled and observed climate related trends demonstrate implications for the Eklutna Hydropower Project operations and mitigation efforts of the Fish and Wildlife Program, specifically related to water control. Warming trends and increased precipitation will influence the impoundment level throughout the year, potentially leveling the flow duration curve, and will likely increase the potential for uncontrolled spill at the existing dam. Our recommendations take this future trend into consideration to build resilience for the habitat, fisheries, and infrastructure.

Our enclosed recommended mitigation measures address the direct project related impacts associated with water flow in the river, as well as the effects on anadromous fish associated with historical dam construction in the watershed. Our recommendations are based on information derived from the 1991 Agreement planning process, which included two years of studies and a review of alternatives proposed by parties and other stakeholders. This planning process was well organized, inclusive, and informative. Our recommendations also reflect the results of our consultation with the NVE, and we note that the restoration of fish and wildlife to the Eklutna River and Lake is the guiding interest of the NVE in support of their cultural way of life and for providing subsistence harvest for their people.

⁸ USGCRP, 2018: *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II*. U.S. Global Change Research Program, Washington, DC, USA, 1515 pp. doi: 10.7930/NCA4.2018.

⁹ The Nuyakuk Hydropower Project on the Nuyakuk River is located approximately 330 miles southwest of the Eklutna Lake. The downscaling model encompassed an area surrounding the Wood-Tikchik State Park.

The 1991 Agreement includes an equal consideration clause stating, “*In order to ensure that Eklutna [is] best adapted for power generation and other beneficial public uses, the Governor shall give equal consideration to the purposes of efficient and economical power production, energy conservation, the protection, mitigation of damage to, and enhancement of fish and wildlife (including related spawning grounds and habitat), the protection of recreation opportunities, municipal water supplies, the preservation of other aspects of environmental quality, other beneficial public uses, and requirements of state law.*” We considered this equal consideration provision in the development of our recommendations. Lastly, we reviewed supporting documents associated with the 1991 Agreement, including the Divestiture Summary Report, the 1992 Environmental Assessment, and 1995 House Report.

The 1991 Agreement states the parties entered into the agreement “*...regarding protection, mitigation of damages to, and enhancement of fish and wildlife (including related spawning grounds and habitat) affected by hydroelectric development of the Eklutna and Snettisham Projects.*” This statement generally addresses the impetus for the 1991 Agreement; however, this statement leaves the goals and objectives of the Fish and Wildlife Program open to interpretation. The NVE provided a resolution¹⁰ stating their interests for a continuous flow of water in the river below Eklutna Lake sufficient to support thriving salmon populations; intermittent habitat maintenance and recreation flows; salmon passage into Eklutna Lake; and moderation of Eklutna Lake level variability at levels sufficient to facilitate sockeye spawning. We support those goals as a means to outline objectives of the Fish and Wildlife Program plan to mitigate project related impacts on public trust resources.

The staged implementation approach outlined in our recommendations is based on the Owners’ ability to immediately introduce water to the river through existing infrastructure and the time needed to take more substantial action in support of the above stated objectives. The 1991 Agreement stipulates that the Owners will begin the process to develop the Fish and Wildlife Program no later than 25 years after the Transaction Date (1997); begin implementing all provisions no later than 30 years after the Transaction Date; and complete all provisions no later than 35 years after the Transaction Date. This establishes a 5-year window to complete the Fish and Wildlife Program should implementation begin at the 30-year mark¹¹. This provision is overly restrictive when considering the potential for large-scale infrastructure modification needed to mitigate all project-related effects. This brief time frame to implement Fish and Wildlife Program measures is further restrictive given the provision that the 1991 Agreement shall “*...remain in full force and effect so long as that project remains in operation.*” For comparison, the 5-year implementation window is inconsistent with the typical implementation of mitigation measures at federally licensed hydropower projects.

¹⁰ Native Village of Eklutna Tribal Government Resolution 2022-04, Addendum to Resolution 2019-11. May 14, 2022.

¹¹ The Owners are currently on track to begin implementation ahead of schedule, allowing for a longer window to complete the Program; however, that may only add 1-2 years.

As is common with federally licensed hydropower projects, the process to complete mitigation measures can be lengthy, particularly for substantial or intensive infrastructure actions. It is common for provisions of settlement agreements or FERC license requirements to take 10 to 15 years to complete. Permitting, design, and construction alone can span many years beyond a 5-year window. Furthermore, typical mitigation measures required as FERC license articles and within settlement agreements consider adaptive management. Implementation of mitigation measures often requires modification based on studies. Generally, that process can take 3 to 5 years or more depending on the complexity.

As resource managers, we recognize the balance between the need to mitigate habitat and fisheries impacts, build climate related resilience, allow time for fish runs to recover, and allow for the time necessary to implement those measures. In the spirit of emulating the FERC licensing process, a staged implementation with adaptive management should be given due consideration.

We appreciate the extensive work and coordination that went into the planning process. Please contact Sean McDermott (sean.mcdermott@noaa.gov) if you have any questions.

Sincerely,



Jonathan M. Kurland
Regional Administrator

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Enclosure: National Marine Fisheries Service recommended mitigation measures for the Eklutna Hydropower Project Fish and Wildlife Program under the 1991 Fish and Wildlife Agreement

Enclosure

National Marine Fisheries Service recommendations for the Eklutna Hydropower Project Fish and Wildlife Program under the 1991 Fish and Wildlife Agreement

September 11, 2023

The recommended measures outlined below are intended to inform the development of a Fish and Wildlife Program (Fish and Wildlife Program) pursuant to the *1991 Fish and Wildlife Agreement for Snettisham and Eklutna Projects* (1991 Agreement). The overarching goal of these recommended measures is to support functioning, resilient, and sustainable salmon habitat in the Eklutna River and Lake. The objectives of these recommended measures include:

- Restore wild sockeye salmon runs by implementing safe and effective fish passage at the outlet dam.
- Reestablish the Eklutna River hydrology through year-round instream flows that provides in-river and side channel habitat connectivity, fish passage through natural barriers, and provide functional overwintering habitat.
- Reestablish channel maintenance flows that maintain bedform diversity and sediment continuity and modify barriers created from natural rockfalls.
- Restore and enhance instream, off-channel, and lake habitat for fish and wildlife to be in balance with watershed hydrology and sediment loads so that there is channel complexity, floodplain and wetland connectivity, and riparian function.
- Improve water quality at the lake by implementing measures to stabilize banks.
- Enhance spawning and rearing habitat based on functional deficits.
- Modify stream crossing structures that promote stream functionality.
- Facilitate adaptive management and monitoring to maximize the benefits of the implemented mitigation measures.

These objectives support the goals outlined in the Native Village of Eklutna's Tribal Government Resolution 2022-04¹². The measures are divided into actions that can occur within the implementation window established within the 1991 Agreement and long-term actions that will require additional time to implement and complete. To support maximum benefit of the measures, we recommend an adaptive management approach that includes on-going coordination with the parties and NVE, development of studies evaluating implemented measures, and a process of adopting modifications to those measures.

1. Immediate Action

Immediate actions can be implemented and completed within the five-year period as provided in the 1991 Agreement. These recommendations should be implemented in conjunction with an adaptive management strategy that allows for adjusting the flow regime based on new information and monitoring results.

¹² Native Village of Eklutna Tribal Government Resolution 2022-04, Addendum to Resolution 2019-11. May 14, 2022.

a. Seasonal Flow

Current Project operations prevent the discharge of water from Eklutna Lake into the Eklutna River, drying the upper river reach and reducing the habitat functions and values throughout the river. Therefore, water should be returned to the river in two stages. First, the maximum feasible flow should be discharged annually into the Eklutna River from the existing Anchorage Water and Wastewater Utility (AWWU) portal located below the existing dam. This flow should be provided for the entirety of the year. Seasonal flows from the AWWU portal should continue until a fixed-wheel gate can be installed at the existing dam. The new gate should provide greater water control and improve the ability to mitigate flow related impacts. Second, after the new gate is installed and operational, the seasonal flows should be to provide through the AWWU portal and the new gate, increasing the combined riverine discharge to:

- 160 cubic feet per second (cfs) from June through October; and
- 75 cfs from November through May.

This schedule for year-round instream flow regime provides spawning and rearing habitat, connectivity to off-channel habitat, and allows fish passage around instream barriers. Unknown variables remain, such as how the channel geometry will change with the new flow regime, how current and future obstructions from rock fall will affect fish passage, which measures for downstream fish passage will be most effective, and how flows will influence anchor ice formation in the channel. The above listed flow regime should be implemented in conjunction with an adaptive management strategy that allows for adjusting the flow based on new information and monitoring results.

b. Channel Maintenance Flow

A channel maintenance flow to support habitat diversity and complexity in the Eklutna River should consist of a discharge of 700 cfs released at the dam and may include inflow from the AWWU portal. This channel maintenance flow should occur in 3 of every 10 years to emulate natural events from rainfall and glacial release observed on other Alaskan rivers. The hydrograph of the channel maintenance flow should be shaped such that it is extended at the peak and has a longer tail. A longer (possibly 7 day) initial peak flow should be considered to facilitate an initial channel ‘reset’. This mitigation measure should be implemented in conjunction with an adaptive management strategy that allows for adjusting the flow regime based on monitoring results.

c. Adaptive Management Planning

Consistent with Federal license requirements for many hydropower projects, we recommend the incorporation of an adaptive management approach to implementing the mitigation measures. The river has not experienced a consistent flow of water since the Federal project was completed, or the presence of salmon, in nearly 100 years. While the completed studies and modeling efforts were informative for this process, we fully expect the river to change in unpredicted ways. The goal of an adaptive management program is to maximize the effectiveness of the mitigation measures by identifying desired outcomes; facilitate a proactive response to changes in the river once implementation of the Fish and Wildlife Program begins; design and review monitoring studies to determine if the selected mechanisms are effective; and adjusting the Fish and Wildlife Program based on study results. Continuation of the existing technical working group could be the basis for this recommendation.

d. Additional Mitigation and Enhancement Measures

We support implementation of additional mitigation and enhancement measures to offset project related impacts, including:

- Partial lakeside trail repairs to protect habitat quality and recreational use;
- Improvements to or replacement of the Anchorage Water and Wastewater Utility bridge(s), as appropriate, to support effective habitat improvements and infrastructure resilience under the new flow regime; and
- Habitat restoration in response to the future in-river flow regimes.

2. Long-term Actions

Long-term actions will require implementation and completion outside the implementation period provided in the 1991 Agreement. These recommendations should be implemented in conjunction with an adaptive management strategy that allows for consultation with the parties and the Native Village of Eklutna.

a. Replacement Dam

We recommend replacing the existing dam with a new structure at the existing site. The new structure should include a water control gate that can regulate flow and manage high-inflow events. The new dam should also incorporate upstream and downstream fish passage facilities. This measure addresses the historical loss of anadromous fish spawning and rearing habitat associated with water resources development while maintaining year-round power generation. The capital expenditure estimates for this measure are substantial and the time for implementation will be lengthy. Therefore, we support a Fish and Wildlife Program that includes time and opportunities for gathering public and financial support with the option.

b. Upstream Fish Passage

An upstream fishway should be installed to address the historical loss of anadromous fish spawning and rearing habitat associated with water resources development. The fish ladder could be designed to include a nature-like fishway entrance, to the extent practicable, leading to a technical fishway with variable elevation exits. The fish ladder could incorporate design features to facilitate year-round instream flows and also minimize the loss of year-round power generation.

c. Downstream Fish Passage

A downstream fish passage facility should be installed to attract, capture, and pass outmigrating fish. This facility should include a combination of gate operations to create attraction flows and collection facilities. Alternatively, downstream fish passage could be provided via spill events and during continuous water release through the fish ladder or the new gate, as appropriate, if sufficient attraction flows can be induced.

The final design should minimize loss of hydropower generation, minimize water level fluctuation to provide consistent spawning habitat for the resident kokanee salmon (non-anadromous sockeye salmon), as well as lake-spawning anadromous salmon once fish passage to the lake is restored, and consider the potential effects of ice on operations.

d. Fishway Design Review

Continuing the collaborative approach used to date, and consistent with typical Federal license requirements, the Owners should provide fishway design plans to the resource agencies for review. We recommend a review process that encompasses the conceptual design and iterative design stages. Once the fishway is constructed, final as-built drawings that accurately reflect the project as constructed should be made available.

e. Seasonal Migration Windows

Fishways should be operational during the migration windows for each life stage of Pacific salmon identified using the facilities. The timing of Pacific salmon migration varies across Alaska's regions. Site specific migration data are lacking for the Eklutna River. As mitigation measures are implemented and Pacific salmon return to the river, data should be collected on the timing of migration. These data will inform the operation of fishway facilities.

f. Fish Passage Performance Metrics

The degree to which the fish passage facilities are considered safe, timely and effective should be evaluated based on performance criteria. Fishways (upstream and downstream) must operate in a way that supports a sustainable run. Performance standards typically address survival of adult and juvenile salmon past a project within a specified timeframe. In the event that monitoring results indicate that fishways at the project do not meet the performance criteria, operational and structural modifications should be implemented as part of an adaptive management strategy.