



United States Department of the Interior
United States Fish and Wildlife Service
United States Department of Commerce
National Marine Fisheries Service



U.S. Fish and Wildlife Service
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December 23, 2021

National Marine Fisheries Service
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Via Electronic Mail

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Mr. Gary Huhta
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Dear Mr. Sturtevant and Mr. Kern:

Subject: Final Determination on New Information supplied by PacifiCorp and Cowlitz Public Utility District on Appropriateness of Passage at Lake Merwin (FERC No. P-935 and P-2071)

Pursuant to section 4.1.9 of the Settlement Agreement for the Lewis River Hydroelectric Projects, the project Licensees are required to construct passage facilities to pass fish into the reservoirs behind Yale and Merwin Dams, unless new information is presented to the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) (collectively, the Services) which leads the Services to determine that one or more fish passage facilities should not be constructed. This provision was incorporated into the licenses issued for the Projects by the Federal Energy Regulatory Commission (Commission). On June 24, 2016, PacifiCorp and Public Utility District No. 1 of Cowlitz County (Cowlitz PUD), hereafter the "Licensees," presented new information to the Services which they stated warranted reconsideration of fish passage.

On October 27, 2021, the Services determined that the available information does not support a determination that fish passage into Yale Lake is inappropriate. By this letter, the Services are informing the Licensees and the Commission that the information supplied, along with additional information previously available to the Services, also does not support a determination that fish passage into Lake Merwin is inappropriate.

Background

On November 30, 2004, the Services, the Licensees, and numerous other parties signed a Settlement Agreement for licensing of the Projects, which reflected the parties' interest in terms for licensing and operation of the Projects such as fish passage, wildlife, recreation, flood control, cultural and economic resource development, and other matters. In light of the broad range of measures included in the Agreement, the parties supported the Licensees' request for 50-year license terms, pursuant to section 1.4.

Among those measures is section 4.1.9 of the Settlement Agreement, which describes how the Services may decide, prior to construction of fish passage facilities for salmonids to access Lake Merwin or Yale Lake, that the construction of such facilities is no longer appropriate based on new information received by the Services. Under this and related provisions of the Settlement Agreement, if the Services determined that passage into one or both reservoirs was inappropriate, the Licensees would conduct habitat restoration activities in lieu of fish passage to benefit salmonids.

On February 4, 2005, NMFS submitted its preliminary fishway prescriptions, along with other terms and conditions, recommendations, and comments. These prescriptions were finalized in February 2006, a biological opinion was prepared based on the prescriptions in August 2007, and the prescriptions were incorporated into the current Project licenses upon issuance by the Commission on June 26, 2008. The license contains the requirement to construct fish passage into Lake Merwin and Yale Lake, and the Commission adopted the Settlement Agreement such that the Project licenses also recognize the potential for a change to requirements under section 4.1.9.

As previously mentioned, the Licensees submitted to the Services what they consider to be new information on June 24, 2016. This information was reviewed by parties included in the Aquatics Coordinating Committee pursuant to the Settlement Agreement. There was not general agreement as to whether the submission constituted "new information" and there was broad disagreement among the parties that the information rendered fish passage at Merwin or Yale "inappropriate." However, pursuant to the Settlement Agreement, this determination was left to the Services to make.

On April 11 and 12, 2019, the Services contacted the Licensees to advise them that they had made a preliminary determination that fish passage into Lake Merwin was no longer appropriate, and that they would prefer to extend the deadline for constructing passage into Yale Lake in order to review the results of habitat restoration activities conducted in lieu of passage into Lake Merwin before making a determination on passage at Yale Lake. In those letters, the Services cautioned that the determinations were "preliminary in nature." Because the preliminary determinations included elements beyond those set forth in section 4.1.9 of the Settlement Agreement as incorporated into the Project licenses, those preliminary determinations could not be finalized without amending the existing fishway prescriptions. Following the filing of preliminary amended prescriptions with the Commission on December 1 and 2, 2020, the Services engaged in further discussions with parties under the trial-type hearing process in the Services' regulations, and continued analyzing effects of the preliminary determination as part of pre-consultation pursuant to section 7 of the Endangered Species Act (ESA). On July 26, 2021, the Services contacted the settlement parties to inform them that as a result of this further consideration, it could no longer support moving forward with the preliminary determinations, and through a letter to the Commission dated July 27, 2021, the Services withdrew their preliminary amended fishway prescriptions.

In these communications, the Services pledged to complete their deliberations with respect to any new information regarding the fishway prescriptions for passage into Lake Merwin, in order to clarify the Licensees' responsibilities with respect to constructing fish passage under the 2008 licenses. As discussed in detail below, our conclusion is that fish passage at Lake Merwin (downstream passage at Merwin Dam and upstream passage at Yale Dam as described in the license) remains appropriate and the Services have now completed any potential consideration pursuant to section 4.1.9 of the Settlement with regards to Lake Merwin.

Discussion

Section 4.1.9 of the Settlement Agreement provides that the Services will review new information relevant to anadromous fish introduction and may make a determination that based on the new information, passage for anadromous fish into Lake Merwin or Yale Lake is inappropriate. It is not clear on the face of the provision what "inappropriate" means, but the Services view it as in line with the standard in section 18 of the Federal Power Act which authorizes the Services to exercise their discretion to prescribe fishways "as appropriate," 16 U.S.C. § 811. The Services previously determined that fish passage into Lake Merwin and Yale Lake was "appropriate" at the time they issued fishway prescriptions to be included in the 2008 Project licenses. Under section 4.1.9 of the Settlement Agreement, the Services would look to see if new information or circumstances has subsequently rendered passage "inappropriate."

Regarding passage into Lake Merwin, the Services' review of the new information supplied by the Licensees supports a finding that fish passage as required by the project licenses has not been rendered "inappropriate." The case for constructing passage for salmonids into Lake Merwin from 2006 is not altered by the new information. It is in fact strengthened as we consider emerging science since 2006 regarding climate change impacts and the continued decline of anadromous fish species listed as threatened under the ESA, which further weigh in favor of fish passage.

Original Prescriptions and 2007 Biological Opinion

In the 2006 fishway prescriptions, the Services noted that passage was blocked in 1929, when construction of Merwin Dam began, dramatically reducing fish access to habitat by steelhead, coho, spring and fall Chinook salmon, chum, and sturgeon, and resulting in mainstem habitat impacts downstream of Merwin Dam as well. They identified the primary factor for decline in Lewis River fish populations as the blockage of passage. The prescriptions describe the reintroduction goals, along with the sequence of reintroduction measures, passage construction, monitoring, and adjustments to meet the reintroduction goals to fully utilize available habitat, and production capability. Of these, we highlight and summarize the salient Services' prescriptions for the Merwin Project:

Article 1: Prescription for Anadromous Fish Reintroduction Outcome Goals. Regarding the stocks of Chinook salmon, steelhead, and coho that are being transported under the Settlement Agreement, the Licensee must implement the relevant Protection, Mitigation, and Enhancement (PM&E) Measures that are the Licensee's obligation in the Settlement Agreement, and the Licensee, together with the licensees for the Yale, Swift No. 1, and Swift No. 2 projects, must implement the relevant PM&E measures that are shared obligations of the licensees in the Settlement Agreement to achieve the Reintroduction Outcome Goal as described in the Settlement Agreement. The "Reintroduction Outcome Goal" is to achieve genetically viable, self-sustaining, naturally reproducing, harvestable populations above Merwin Dam greater than minimum viable populations.

Article 3: Prescription for Permits and Time for Construction. Upon approval of passage facility designs by the Commission, the Licensee must diligently and expeditiously acquire all required Permits. The time by which each passage facility must be placed in operation is set forth in the Settlement Agreement.

Article 4: Prescription for Performance Standards for Fish Passage. The Licensee must provide for the safe, timely, and effective passage of salmonids being transported past the Project as described in the Settlement Agreement.

Article 5: Prescription for Species to be Transported. For purposes of all fish passage provisions contained herein, the Licensee must only provide for the transport of spring Chinook, winter steelhead, coho, bull trout, and sea-run cutthroat. Notwithstanding the preceding sentence, the Licensee, after Consultation with the ACC¹ (including at least the Services), and if directed by the Services, must also provide for the transport of fall Chinook or summer steelhead that enter the passage facilities.

These provisions were incorporated into the proposed action reviewed in the Services' 2007 biological opinions.

Those biological reviews of that proposed action found that construction of passage and reintroduction of species in a phased approach would not jeopardize survival or recovery of the affected species listed as threatened under the ESA, nor adversely modify their designated critical habitat. In the biological opinion, NMFS further concluded that the proposed measures would benefit salmon and steelhead by "allowing these species to access more habitat, and to increase adult productivity, within-population diversity, and spatial structure (elements of population viability). Spatial structure (distribution throughout the area) is important because it aids a population's ability to withstand localized environmental perturbations, including anticipated impacts to freshwater habitat of climate change. Also, the wider geographic distribution of reintroduced anadromous fish will provide the opportunity for genetic diversity and fitness to improve these stocks." The opinion observed that tributaries to and waters of Lake Merwin considered together could provide as much as 29 miles of habitat.

Regarding the potential effects of reintroducing salmon to Lake Merwin on bull trout, in the USFWS 2006 biological opinion, USFWS determined that bull trout would not be jeopardized by the reintroduction of coho, steelhead, or Chinook salmon. The USFWS further concluded that bull trout, Chinook and coho salmon, and steelhead have co-existed and evolved sympatrically in the Lewis River and throughout most of the bull trout range. As described in the USFWS's biological opinion, the reintroduction of salmon and steelhead will increase fish production and the available prey base for adult and sub-adult bull trout in the Lewis River basin. The reintroduction effort will also indirectly increase the bull trout prey base by restoring marine-derived nutrients (MDNs) into the ecosystem. The USFWS carefully considered whether reintroduction would also create some level of interspecific competition between juvenile salmon, steelhead, and bull trout for food and space; competition for spawning sites; or the potential for juvenile bull trout predation by salmon and steelhead. The USFWS does not anticipate that interspecific competition or predation would result in a decline in the local populations of bull trout. Overall, the anadromous fish reintroduction program will likely be beneficial by providing MDNs and increasing the forage base for bull trout. As described in the license, monitoring will be implemented to determine impacts on bull trout, if any, from the anadromous salmon reintroduction program.

¹ Aquatic Coordination Committee

NMFS' Interim Regional Recovery Plan (LCFRB and NMFS 2006) for salmonids described creating access to this habitat as “one of the most substantial salmon recovery measures that can be implemented in the Lower Columbia region. This is especially true since Lewis River spring Chinook salmon and steelhead are considered core populations.” While passage to Swift Reservoir has partly achieved reintroduction goals, it has not completed them.

New Information Presented and 2019 Preliminary Determinations

The new information presented by the Licensees addressed the suitability of passage for salmon and steelhead between the dams. It included eight studies on the habitat values within Yale Lake and Lake Merwin and their tributaries, including prey availability for introduced salmonids, and the levels of piscivory which could occur on introduced salmonids. This was accompanied by a proposal for carrying out multiple habitat restoration projects upstream of Swift Reservoir, in which \$20 million² would be spent on improving juvenile rearing habitat in stream reaches identified using Environmental Diagnostic Treatment (EDT) modeling, and which the model predicted would provide gains in fish abundance comparable to that which would be achieved with passage. While the existence of an alternative plan does not factor into any finding of appropriateness, the Services understand that the In Lieu Fund included in the settlement agreement would be activated in the event of an “inappropriateness” determination, and reviewed the new information accordingly. In doing so, the Services found flaws in the EDT model inputs, and working together with the Licensees' staff and EDT modelers, revised the inputs, which produced more modest projections in achievable abundance³ for the three salmonid species from the in-lieu restoration. Relying on the revised EDT estimates, the Services' 2019 preliminary determination letters indicated roughly 6 miles of tributary habitat was likely to be made available by providing passage for salmonids into Lake Merwin.

Biological Evaluation of the Proposed Changes in Passage and Reliance on Habitat Restoration

In the Services' biological review, we considered the effects of multiple elements associated with the new proposed action to forego passage at Lake Merwin and delay the passage determination at Yale Lake for 10 years. Within this review was the quality and suitability of the habitat in Lake Merwin and its tributaries, which now informs our determination on the appropriateness of passage.

Habitat Suitability: The Services reviewed the 2016 new information (Al-Chokhachy et al. 2015) and the subsequent U.S. Geological Survey (USGS) report supplied by the Licensees (Al-Chokhachy et al. 2018). These studies examined several potential conditions, which would limit the suitability of habitat in Lake Merwin and Yale Lake for salmonid recolonization, ultimately concluding that none of the factors would pose a barrier to successfully restoring salmonid access.

Tributary Habitat: The USGS study identified the quantity of tributary habitat and found that approximately 6 miles of tributary habitat are available for recolonization in Lake Merwin. While this extent of accessible habitat is several miles less than estimated in NMFS's 2007

² The In Lieu Fund provisions of the Settlement Agreement call for the Licensees to provide \$20 million for habitat in each event that passage is found “inappropriate,” for a potential total contribution of \$40 million if both Yale and Merwin passage were not constructed.

³ Upon review of EDT analyses submitted by PacifiCorp in the New Information report, NMFS found discrepancies with respect to stream miles, spawning locations and juvenile survival parameters inputted into the analysis. NMFS and PacifiCorp, fixed these errors, and reran the EDT analysis. (NMFS Preliminary Decision Letter, April 11, 2019).

biological opinion (due to blockages which may or may not be resolvable), the quality of the habitat is considered good in the six miles that remain available by providing passage. Within the 2016 information, Al-Chokhachy et al. (2015) evaluated temperature, dissolved oxygen, sediment, and riparian conditions. Some thermal constraints during summer months were noted, they found little evidence of fine sediment in tributaries to either reservoir, and moderate-to-high riparian degradation was found in lower Speelyai Creek, a tributary to Lake Merwin. When taken together, data concerning habitat quality was interpreted as not limiting: “these data suggest habitat conditions, aside from some thermal constraints during the summer months and riparian degradation in some tributaries, do not appear to be limiting salmonid populations.” The final report by Al-Chokhachy et al. (2018) stated that “empirical habitat data suggest little evidence that habitat quality will limit salmon and steelhead introductions.”

To further evaluate potential productivity of the habitat, both the 2016 and 2018 reports relied on 2014 field testing of coho spawning potential in tributaries above Merwin by introducing spawners and monitoring juvenile production. Coho were considered a proxy for other salmonids’ potential success. The “results suggest coho salmon adults will be capable of finding and accessing a range of habitats in tributaries to Lake Merwin...” While the study observed low densities of juvenile coho salmon in tributary surveys in Lake Merwin (Al-Chokhachy et al. 2018), it also states that the low densities “do not necessarily indicate that habitat is limiting juvenile production,” because the “relatively small amount of habitat may also influence habitat use and emigration patterns for juvenile salmon, as juveniles more proximate to large water bodies can exhibit earlier emigration.” In other words, the limited amount of tributary habitat may cause juvenile salmonids to seek rearing habitat instead within the reservoir.

Reservoir Habitat: As juvenile salmonids may rear in, as well as migrate through, the reservoir habitat, the report also assessed reservoir conditions. Extended use of reservoir environments for rearing is common in anadromous juveniles (Hegg and others, 2013; Bourret and others, 2014) and can result in pronounced growth (as cited in Al-Chokhachy et al. 2018). Lake Merwin itself is 14.5 miles long with a surface area of approximately 4,000 acres.

While the 2016 new information found conflicting data about residence time and migration within the reservoirs (which relied primarily on data from Swift Lake), these conflicts were attributed to poor collector performance. Residency periods were not evaluated in Lake Merwin, but piscine predation in Lake Merwin was assessed. Al-Chokhachy et al. (2018) evaluated the abundance, diet, growth, and temporal-spatial distribution of northern pikeminnow, kokanee salmon, and tiger muskellunge to gauge how northern pikeminnow might affect populations of reintroduced anadromous salmonids. They characterized the temporal-spatial dimensions of the thermal environment, food supply, and the distribution, size, age, and diet of key predators and prey, and mapped the overall trophic structure of the food web through stable isotope analysis for 2013–2014. They then used the data to inform bioenergetics simulations to estimate the seasonal and size-specific consumption rates and predation impact of northern pikeminnow on reintroduced anadromous salmonids under different scenarios (rearing in versus migrating through the reservoir, by subyearling and yearling fish) and alternative prey fish species.

The study concluded that northern pikeminnow are a substantial predation threat to anadromous smolts in Lake Merwin (yearly consumption by a population of 1,000 large northern pikeminnow would be approximately 16,000–40,000 age-0 spring Chinook salmon rearing in the reservoir). However, the predation studies suggest the overall northern pikeminnow predation on salmonids was considerably reduced due to predation on smaller northern pikeminnow by larger

conspecifics and tiger muskellunge. Additional measures for reduction of the pikeminnow population in Lake Merwin have not been evaluated to date but may be available.

Viability Benefits of Passage

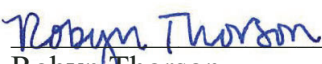
Providing passage automatically addresses viability concerns observed by Northwest Fisheries Science Center (2021), that the dams' obstruction of habitat access is the largest limiting factor in achieving population spatial structure for Lower Columbia River (LCR) coho, LCR Chinook salmon, and LCR steelhead. Reintroduction to blocked historical habitat is well documented to result in quickly colonized areas with prompt spawning and productivity gains. Meanwhile, perceived gains with instream habitat restoration may be attributable to abundance being associated with attraction rather than actual productivity gains, and gains appear to peak after about 2 years and wane subsequently. Gains in juvenile survival associated with the instream restoration work above Swift, if realized, may be undermined by the poor performance of the collectors, and further, are less likely to provide an array of habitats that insulate juvenile fish from climate change or other habitat perturbations. For these reasons, we consider reintroduction to Lake Merwin and its tributaries to more reliably meet productivity and abundance Viable Salmonid Population (VSP) parameters than in lieu habitat, and that Lake Merwin passage provides spatial structure and diversity gains in VSP parameters that the in lieu restoration would not.

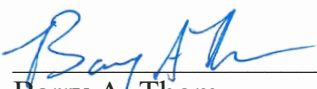
Conclusion and Deadline

When all habitat information and VSP factors of passage at Lake Merwin are considered, we do not find the new information provided by the Licensees indicates that passage is inappropriate. Stated another way, the Services find that upstream and downstream passage at Lake Merwin (downstream passage at Merwin Dam and upstream passage at Yale Dam) as required in the current license remains appropriate. This passage will reliably provide access to up to six additional miles of habitat suitable for spawning and as many as 20 miles of rearing habitat. This restored habitat access augments abundance, productivity, and spatial structure, which affords diversity within the population structure, and provides additional resiliency against climate change-induced habitat perturbations.

Passage into Lake Merwin is required by the provisions in sections 4.6 and 4.7 of the Settlement Agreement, as incorporated into the licenses for the Merwin and Yale Projects. Both provisions have a deadline for completing construction by June 26, 2025.

Sincerely,


 Robyn Thorson
 Regional Director,
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 Pacific Islands Regions,
 U.S. Fish and Wildlife Service


 Barry A. Thom
 Regional Administrator,
 West Coast Region,
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