UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
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Refer to NMFS No.:
WCRO-2023-00993

March 15, 2024

Todd N. Tillinger, P.E.
Chief, Regulatory Branch
United States Army Corps of Engineers
4735 East Marginal Way South, BLDG 1202
Seattle, Washington 98134-2388

Re: Programmatic Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for Repair, Replacement, and Maintenance, and Limited New Shoreline Activities on Lake Cushman and Lake Kokanee (Projects Along Cushman and Kokanee Shorelines; PACKS).

Dear Mr. Tillinger:

This letter responds to your June 15, 2023, request for consultation with the National Marine Fisheries Service (NMFS) pursuant to Section 7 of the Endangered Species Act (ESA) for the subject action. Your request qualified for our expedited review and analysis because it met our screening criteria and contained all required information on, and analysis of, your proposed action and its potential effects to listed species and designated critical habitat.

We reviewed The United States Army Corps of Engineers' (Corps) consultation request and related initiation package. Where relevant, we have adopted the information and analyses you have provided and/or referenced but only after our independent, science-based evaluation confirmed they meet our regulatory and scientific standards. We adopt by reference here sections of the *U.S. Army Corps of Engineers Endangered Species Act Programmatic Biological Assessment for Repair, replacement, and Maintenance and Limited New Shoreline Activities on Lake Cushman and Lake Kokanee* (PBA; dated June 9, 2023) as follows:

- Section 2 for the proposed action
- Section 3 for the action area;
- Section 3 for the status of species and critical habitat;
- Section 4 for the environmental baseline; and
- Section 5, 6 and 7 for the effects of the action.

Consultation History

Prior to receiving the Corps' request for consultation, several calls were held between NMFS, the Corps, the United States Fish and Wildlife Service (USFWS), Tacoma Power, and the Skokomish Indian Tribe to discuss the proposed action, species presence and potential exposure pathways, the consultation process and information requirements. Once the request for consultation was received, NMFS reviewed the consultation package and requested additional clarifying information on September 26, 2023.

The Corps provided responses to NMFS questions as well as USFWS on November 7, 2023. A follow up call between NMFS, USFWS, Tacoma Power and the Corps was held on December 8, 2023. A revised programmatic biological assessment (PBA) was provided to NMFS on January 11, 2024. We determined that with the revised PBA, we had all information necessary to complete consultation and formal consultation was initiated on that date. On February 28, 2024 we provided a draft of the Incidental Take Statement to the Corps for review and on March 7 the Corps provided comments. On March 11, 2024, the Corps provided additional detail on past projects completed in lake Cushman, including a summary spreadsheet (20230414-CushmanImpactQuantities).

On July 5, 2022, the U.S. District Court for the Northern District of California issued an order vacating the 2019 regulations that were revised or added to 50 CFR part 402 in 2019 ("2019 Regulations," see 84 FR 44976, August 27, 2019) without making a finding on the merits. On September 21, 2022, the U.S. Court of Appeals for the Ninth Circuit granted a temporary stay of the district court's July 5 order. On November 14, 2022, the Northern District of California issued an order granting the government's request for voluntary remand without vacating the 2019 regulations. The District Court issued a slightly amended order two days later on November 16, 2022. As a result, the 2019 regulations remain in effect, and we are applying the 2019 regulations here. For purposes of this consultation and in an abundance of caution, we considered whether the substantive analysis and conclusions articulated in the biological opinion and incidental take statement would be any different under the pre-2019 regulations. We have determined that our analysis and conclusions would not be any different.

Proposed Action

The proposed action includes common activities in the nearshore and on or adjacent to the shorelines of Lake Cushman and Lake Kokanee in Mason County, Washington, which trigger authorization by the Corps under Section 404 of the Clean Water Act (CWA). All projects included in the proposed action include relevant construction conservation measures (CCMs) for which applicants would have to agree to implement. The proposed action includes the permitting of projects concurrent with the existing Federal Energy Regulatory Commission (FERC) license for the Cushman Dams (2048). We adopt by reference Chapter 2 of the PBA for the description of the proposed action. As described in Chapter 2 of the PBA, covered activities include:

- Category A. Repair, replacement, or in-place maintenance of:
    - Shoreline stabilization measures
    - Boat ramps – community and public
    - Dock – single family, shared, and community
    - Stairways/steps and walkways; paths
    - Temporary use/temporary access

- Category B. New or ancillary structures, including:
    - Dock – shared
    - Mooring buoy; swimming float
    - Lighting

- Category C. Habitat improvement actions

As described in Section 1.4 of the PBA, the overall intent of the PBA, in addition to improving consultation efficiencies, is to accomplish the following ESA Section 7 consultation objectives:

- Avoid and minimize adverse effects on listed species and their designated critical habitats;
- Establish design guidelines for activities, and use and apply these design guidelines to assess the predictability and foreseeable effects of the programmatic action; and
- Ensure that activities authorized or carried out under the PBA, either individually or in total, do not jeopardize the continued existence of species listed under the ESA or adversely modify their designated critical habitat.

To minimize effects of the proposed action, CCMs are included in the proposed action. We adopt by reference sections 2.1 and 2.2 of the PBA for the description of the CCMs included in the proposed action. We adopt by reference the description of activities excluded from the proposed action provided in Section 1.8 of the PBA.

Administrative procedures, including Corps review and approval of projects, formal project notification to the Services (NMFS and United States Fish and Wildlife Service), and review and verification by the Services are described in Section 1.6 of the PBA, and adopted by reference as part of the proposed action. The Corps would provide to NMFS a project notification, including necessary information for review of the proposed project, as described in Section 1.6.3 of the PBA. Following receipt of the materials, NMFS would review the proposed project and provide verification, as applicable, that the project is consistent with the programmatic action and can proceed with a permit decision if all necessary CCMs are met. NMFS would endeavor to provide verification to the Corps within 30 days, or 60 days for projects with minor alteration requests. The Corps must receive an affirmative decision from NMFS before verification is complete. Minor alterations from proposed measures are described in Section 1.6.5 of the PBA. The Corps would submit an annual report to the Services by June 1 of each year.

We examined the status of each species that would be adversely affected by the proposed action to inform the description of the species' "reproduction, numbers, or distribution" as described in 50 CFR 402.02. We also examined the condition of critical habitat throughout the designated area and discuss the function of the physical or biological features essential to the conservation of the species that create the conservation value of that habitat. We adopt by reference Section 3 of the PBA for descriptions of the status of species and critical habitat. We supplement what is described in the BPBA, with the following information about the status of ESA-listed species and critical habitat.

Status of the Species

The status is determined by the level of extinction risk that the listed species face, based on parameters considered in documents such as recovery plans, status reviews, and listing decisions. This informs the description of the species' likelihood of both survival and recovery. The species status section also helps to inform the description of the species' current "reproduction, numbers, or distribution" as described in 50 CFR 402.02. The opinion also examines the condition of critical habitat throughout the designated area, evaluates the conservation value of the various watersheds and coastal and marine environments that make up the designated area, and discusses the current function of the essential PBFs that help to form that conservation value.

One factor affecting the status of ESA-listed species considered in this opinion, and aquatic habitat at large, is climate change. Climate change is likely to play an increasingly important role in determining the abundance and distribution of ESA-listed species, and the conservation value of designated critical habitats, in the Pacific Northwest. These changes will not be spatially homogeneous across the Pacific Northwest. Major ecological realignments are already occurring in response to climate change (IPCC WGII, 2022). Long-term trends in warming have continued at global, national and regional scales. Global surface temperatures in the last decade (2010s) were estimated to be 1.09 °C higher than the 1850-1900 baseline period, with larger increases over land ~1.6 °C compared to oceans ~0.88 (IPCC WGI, 2021). The vast majority of this warming has been attributed to anthropogenic releases of greenhouse gases (IPCC WGI, 2021). Globally, 2014-2018 were the 5 warmest years on record both on land and in the ocean (2018 was the 4th warmest) (NOAA NCEI 2022). Events such as the 2013-2016 marine heatwave (Jacox et al. 2018) have been attributed directly to anthropogenic warming in the annual special issue of Bulletin of the American Meteorological Society on extreme events (Herring et al. 2018). Global warming and anthropogenic loss of biodiversity represent profound threats to ecosystem functionality (IPCC WGII 2022). These two factors are often examined in isolation, but likely have interacting effects on ecosystem function.

Updated projections of climate change are similar to or greater than previous projections (IPCC WGI, 2021). NMFS is increasingly confident in our projections of changes to freshwater and marine systems because every year brings stronger validation of previous predictions in both physical and biological realms. Retaining and restoring habitat complexity, access to climate refuges (both flow and temperature) and improving growth opportunity in both freshwater and marine environments are strongly advocated in the recent literature (Siegel and Crozier 2020). Climate change is systemic, influencing freshwater, estuarine, and marine conditions. Other systems are also being influenced by changing climatic conditions. Literature reviews on the impacts of climate change on Pacific salmon (Crozier 2015, 2016, 2017, Crozier and Siegel 2018, Siegel and Crozier 2019, 2020) have collected hundreds of papers documenting the major themes relevant for salmon. Here we describe habitat changes relevant to Pacific salmon and steelhead, prior to describing how these changes result in the varied specific mechanisms impacting these species in subsequent sections.

Forests

Climate change will impact forests of the western U.S., which dominate the landscape of many watersheds in the region. Forests are already showing evidence of increased drought severity, forest fire, and insect outbreak (Halofsky et al. 2020). Additionally, climate change will affect tree reproduction, growth, and phenology, which will lead to spatial shifts in vegetation. Halofsky et al. (2018) projected that the largest changes will occur at low- and high-elevation forests, with expansion of low-elevation dry forests and diminishing high-elevation cold forests and subalpine habitats.

Forest fires affect salmon streams by altering sediment load, channel structure, and stream temperature through the removal of canopy. Holden et al. (2018) examined environmental factors contributing to observed increases in the extent of forest fires throughout the western U.S. They found strong correlations between the number of dry-season rainy days and the annual extent of forest fires, as well as a significant decline in the number of dry-season rainy days over the study period (1984-2015). Consequently, predicted decreases in dry-season precipitation, combined with increases in air temperature, will likely contribute to the existing trend toward more extensive and severe forest fires and the continued expansion of fires into higher elevation and wetter forests (Alizedeh 2021).

Agne et al. (2018) reviewed literature on insect outbreaks and other pathogens affecting coastal Douglas-fir forests in the Pacific Northwest and examined how future climate change may influence disturbance ecology. They suggest that Douglas-fir beetle and black stain root disease could become more prevalent with climate change, while other pathogens will be more affected by management practices. Agne et al. (2018) also suggested that due to complex interacting effects of disturbance and disease, climate impacts will differ by region and forest type.

Freshwater Environments

The following is excerpted from Siegel and Crozier (2019), who present a review of recent scientific literature evaluating effects of climate change, describing the projected impacts of climate change on instream flows:

Cooper et al. (2018) examined whether the magnitude of low river flows in the western U.S., which generally occur in September or October, are driven more by summer conditions or the prior winter's precipitation. They found that while low flows were more sensitive to summer evaporative demand than to winter precipitation, interannual variability in winter precipitation was greater. Malek et al. (2018), predicted that summer evapotranspiration is likely to increase in conjunction with declines in snowpack and increased variability in winter precipitation. Their results suggest that low summer flows are likely to become lower, more variable, and less predictable.

The effect of climate change on ground water availability is likely to be uneven. Sridhar et al. (2018) coupled a surface-flow model with a ground-flow model to improve predictions of surface water availability with climate change in the Snake River Basin. Projections using RCP 4.5 and 8.5 emission scenarios suggested an increase in water table heights in downstream areas of the basin and a decrease in upstream areas.

As cited in Siegel and Crozier (2019), Isaak et al. (2018), examined recent trends in stream temperature across the Western U.S. using a large regional dataset. Stream warming trends paralleled changes in air temperature and were pervasive during the low-water warm seasons of 1996-2015 (0.18-0.35°C/decade) and 1976-2015 (0.14-0.27°C/decade). Their results show how continued warming will likely affect the cumulative temperature exposure of migrating sockeye salmon *O. nerka* and the availability of suitable habitat for brown trout *Salmo trutta* and rainbow trout *O. mykiss*. Isaak et al. (2018) concluded that most stream habitats will likely remain suitable for salmonids in the near future, with some becoming too warm. However, in cases where habitat access is currently restricted by dams and other barriers salmon and steelhead will be confined to downstream reaches typically most at risk of rising temperatures unless passage is restored (FitzGerald et al. 2020, Myers et al. 2018).

Streams with intact riparian corridors and that lie in mountainous terrain are likely to be more resilient to changes in air temperature. These areas may provide refuge from climate change for a number of species, including Pacific salmon. Krosby et al. (2018), identified potential stream refugia throughout the Pacific Northwest based on a suite of features thought to reflect the ability of streams to serve as such refuges. Analyzed features include large temperature gradients, high canopy cover, large relative stream width, low exposure to solar radiation, and low levels of human modification. They created an index of refuge potential for all streams in the region, with mountain area streams scoring highest. Flat lowland areas, which commonly contain migration corridors, were generally scored lowest, and thus were prioritized for conservation and restoration. However, forest fires can increase stream temperatures dramatically in short time-spans by removing riparian cover (Koontz et al. 2018), and streams that lose their snowpack with climate change may see the largest increases in stream temperature due to the removal of temperature buffering (Yan et al. 2021). These processes may threaten some habitats that are currently considered refugia.

Marine and Estuarine Environments

Along with warming stream temperatures and concerns about sufficient groundwater to recharge streams, a recent study projects nearly complete loss of existing tidal wetlands along the U.S. West Coast, due to sea level rise (Thorne et al. 2018). California and Oregon showed the greatest threat to tidal wetlands (100%), while 68% of Washington tidal wetlands are expected to be submerged. Coastal development and steep topography prevent horizontal migration of most wetlands, causing the net contraction of this crucial habitat.

Rising ocean temperatures, stratification, ocean acidity, hypoxia, algal toxins, and other oceanographic processes will alter the composition and abundance of a vast array of oceanic species. In particular, there will be dramatic changes in both predators and prey of Pacific salmon, salmon life history traits and relative abundance. Siegel and Crozier (2019) observe that changes in marine temperature are likely to have a number of physiological consequences on fishes themselves. For example, in a study of small planktivorous fish, Gliwicz et al. (2018) found that higher ambient temperatures increased the distance at which fish reacted to prey. Numerous fish species (including many tuna and sharks) demonstrate regional endothermy, which in many cases augments eyesight by warming the retinas. However, Gliwicz et al. (2018) suggest that ambient temperatures can have a similar effect on fish that do not demonstrate this trait. Climate change is likely to reduce the availability of biologically essential omega-3 fatty acids produced by phytoplankton in marine ecosystems. Loss of these lipids may induce cascading trophic effects, with distinct impacts on different species depending on compensatory mechanisms (Gourtay et al. 2018). Reproduction rates of many marine fish species are also likely to be altered with temperature (Veilleux et al. 2018). The ecological consequences of these effects and their interactions add complexity to predictions of climate change impacts in marine ecosystems.

Perhaps the most dramatic change in physical ocean conditions will occur through ocean acidification and deoxygenation. It is unclear how sensitive salmon and steelhead might be to the direct effects of ocean acidification because of their tolerance of a wide pH range in freshwater (although see Ou et al. 2015 and Williams et al. 2019), however, impacts of ocean acidification and hypoxia on sensitive species (e.g., plankton, crabs, rockfish, groundfish) will likely affect salmon indirectly through their interactions as predators and prey. Similarly, increasing frequency and duration of harmful algal blooms may affect salmon directly, depending on the toxin (e.g., saxitoxin vs domoic acid), but will also affect their predators (seabirds and mammals). The full effects of these ecosystem dynamics are not known but will be complex. Within the historical range of climate variability, less suitable conditions for salmonids (e.g., warmer temperatures, lower streamflows) have been associated with detectable declines in many of these listed units, highlighting how sensitive they are to climate drivers (Ford 2022, Lindley et al. 2009, Williams et al. 2016, Ward et al. 2015). In some cases, the combined and potentially additive effects of poorer climate conditions for fish and intense anthropogenic impacts caused the population declines that led to these population groups being listed under the ESA (Crozier et al. 2019).

Climate change effects on salmon and steelhead

In freshwater, year-round increases in stream temperature and changes in flow will affect physiological, behavioral, and demographic processes in salmon, and change the species with which they interact. For example, as stream temperatures increase, many native salmonids face increased competition with more warm-water tolerant invasive species. Changing freshwater temperatures are likely to affect incubation and emergence timing for eggs, and in locations where the greatest warming occurs may affect egg survival, although several factors impact intergravel temperature and oxygen (e.g., groundwater influence) as well as sensitivity of eggs to thermal stress (Crozier et al. 2021). Changes in temperature and flow regimes may alter the amount of habitat and food available for juvenile rearing, and this in turn could lead to a restriction in the distribution of juveniles, further decreasing productivity through density dependence. For migrating adults, predicted changes in freshwater flows and temperatures will likely increase exposure to stressful temperatures for many salmon and steelhead populations, and alter migration travel times and increase thermal stress accumulation for ESUs or DPSs with early-returning (i.e. spring- and summer-run) phenotypes associated with longer freshwater holding times (Crozier et al. 2020, FitzGerald et al. 2020). Rising river temperatures increase the energetic cost of migration and the risk of *en route* or pre-spawning mortality of adults with long freshwater migrations, although populations of some ESA-listed salmon and steelhead may be able to make use of cool-water refuges and run-timing plasticity to reduce thermal exposure (Keefer et al. 2018, Barnett et al. 2020).

Marine survival of salmonids is affected by a complex array of factors including prey abundance, predator interactions, the physical condition of salmon within the marine environment, and carryover effects from the freshwater experience (Holsman et al. 2012, Burke et al. 2013). It is generally accepted that salmon marine survival is size-dependent, and thus larger and faster growing fish are more likely to survive (Gosselin et al. 2021). Furthermore, early arrival timing in the marine environment is generally considered advantageous for populations migrating through the Columbia River. However, the optimal day of arrival varies across years, depending on the seasonal development of productivity in the California Current, which affects prey available to salmon and the risk of predation (Chasco et al. 2021). Siegel and Crozier (2019) point out the concern that for some salmon populations, climate change may drive mismatches between juvenile arrival timing and prey availability in the marine environment. However, phenological diversity can contribute to metapopulation-level resilience by reducing the risk of a complete mismatch. Carr-Harris et al. (2018), explored phenological diversity of marine migration timing in relation to zooplankton prey for sockeye salmon *O. nerka* from the Skeena River of Canada. They found that sockeye migrated over a period of more than 50 days, and populations from higher elevation and further inland streams arrived in the estuary later, with different populations encountering distinct prey fields. Carr-Harris et al. (2018) recommended that managers maintain and augment such life-history diversity.

Synchrony between terrestrial and marine environmental conditions (e.g., coastal upwelling, precipitation and river discharge) has increased in spatial scale causing the highest levels of synchrony in the last 250 years (Black et al. 2018). A more synchronized climate combined with simplified habitats and reduced genetic diversity may be leading to more synchrony in the productivity of populations across the range of salmon (Braun et al. 2016). For example, salmon productivity (recruits/spawner) has also become more synchronized across Chinook populations from Oregon to the Yukon (Dorner et al. 2018, Kilduff et al. 2014). In addition, Chinook salmon have become smaller and younger at maturation across their range (Ohlberger 2018). Other Pacific salmon species (Stachura el al. 2014) and Atlantic salmon (Olmos et al. 2020) also have demonstrated synchrony in productivity across a broad latitudinal range.

At the individual scale, climate impacts on salmon in one life stage generally affect body size or timing in the next life stage and negative impacts can accumulate across multiple life stages (Healey 2011; Wainwright and Weitkamp 2013, Gosselin et al. 2021). Changes in winter precipitation will likely affect incubation and/or rearing stages of most populations. Changes in the intensity of cool season precipitation, snow accumulation, and runoff could influence migration cues for fall, winter and spring adult migrants, such as coho and steelhead. Egg survival rates may suffer from more intense flooding that scours or buries redds. Changes in hydrological regime, such as a shift from mostly snow to more rain, could drive changes in life history, potentially threatening diversity within an ESU (Beechie et al. 2006). Changes in summer temperature and flow will affect both juvenile and adult stages in some populations, especially those with yearling life histories and summer migration patterns (Crozier and Zabel 2006; Crozier et al. 2010, Crozier et al. 2019).

At the population level, the ability of organisms to genetically adapt to climate change depends on how much genetic variation currently exists within salmon populations, as well as how selection on multiple traits interact, and whether those traits are linked genetically. While genetic diversity may help populations respond to climate change, the remaining genetic diversity of many populations is highly reduced compared to historic levels. For example, Johnson et al. (2018), compared genetic variation in Chinook salmon from the Columbia River Basin between contemporary and ancient samples. A total of 84 samples determined to be Chinook salmon were collected from vertebrae found in ancient middens and compared to 379 contemporary samples. Results suggest a decline in genetic diversity, as demonstrated by a loss of mitochondrial haplotypes as well as reductions in haplotype and nucleotide diversity. Genetic losses in this comparison appeared larger for Chinook from the mid-Columbia than those from the Snake River Basin. In addition to other stressors, modified habitats and flow regimes may create unnatural selection pressures that reduce the diversity of functional behaviors (Sturrock et al. 2020). Managing to conserve and augment existing genetic diversity may be increasingly important with more extreme environmental change (Anderson et al. 2015), though the low levels of remaining diversity present challenges to this effort (Freshwater 2019). Salmon historically maintained relatively consistent returns across variation in annual weather through the portfolio effect (Schindler et al. 2015), in which different populations are sensitive to different climate drivers. Applying this concept to climate change, Anderson et al (2015) emphasized the additional need for populations with different physiological tolerances. Loss of the portfolio increases volatility in fisheries, as well as ecological systems, as demonstrated for Fraser River and Sacramento River stock complexes (Freshwater et al. 2019, Munsch et al. 2022).

Table 1, below provides a summary of listing and recovery plan information, status summaries and limiting factors for the species addressed in this opinion. More information can be found in recovery plans and status reviews for these species. Acronyms appearing in the table include DPS (Distinct Population Segment), ESU (Evolutionarily Significant Unit), ICTRT (Interior Columbia Technical Recovery Team), MPG (Multiple Population Grouping), NWFSC (Northwest Fisheries Science Center), TRT (Technical Recovery Team), and VSP (Viable Salmonid Population).

Table 1 Listing classification and date, recovery plan reference, most recent status review, status summary, and limiting factors for each species considered in this opinion.

Species	Listing Classification and Date	Recovery Plan Reference	Most Recent Status Review	Status Summary	Limiting Factors
Puget Sound steelhead	Threatened 5/11/07	NMFS 2019	NMFS 2017; Ford 2022	This DPS comprises 32 populations. Viability of has improved somewhat since the PSTRT concluded that the DPS was at very low viability, as were all three of its constituent MPGs, and many of its 32 DIPs (Hard et al. 2015). Increases in spawner abundance were observed in a number of populations over the last five years within the Central & South Puget Sound and the Hood Canal & Strait of Juan de Fuca MPGs, primarily among smaller populations. There were also declines for summer- and winter-run populations in the Snohomish River basin. In fact, all summer-run steelhead populations in the Northern Cascades MPG are likely at a very high demographic risk.	• Continued destruction and modification of habitat • Widespread declines in adult abundance despite significant reductions in harvest • Threats to diversity posed by use of two hatchery steelhead stocks • Declining diversity in the DPS, including the uncertain but weak status of summer-run fish • A reduction in spatial structure • Reduced habitat quality • Urbanization • Dikes, hardening of banks with riprap, and channelization
Puget Sound Chinook salmon	Threatened 6/28/05 (70 FR 37159)	Shared Strategy for Puget Sound 2007 NMFS 2006	NMFS 2016; Ford 2022	This ESU comprises 22 populations distributed over five geographic areas. All Puget Sound Chinook salmon populations continue to remain well below the TRT planning ranges for recovery escapement levels. Most populations also remain consistently below the spawner–recruit levels identified by the TRT as necessary for recovery. Across the ESU, most populations have increased somewhat in abundance since the last status review in 2016, but have small negative trends over the past 15 years. Productivity remains low in most populations. Overall, the Puget Sound Chinook salmon ESU remains at "moderate" risk of extinction.	• Degraded floodplain and in-river channel structure • Degraded estuarine conditions and loss of estuarine habitat • Degraded riparian areas and loss of in-river large woody debris • Excessive fine-grained sediment in spawning gravel • Degraded water quality and temperature • Degraded nearshore conditions • Impaired passage for migrating fish • Severely altered flow regime

Status of the Critical Habitat

This section describes the status of designated critical habitat affected by the proposed action by examining the condition and trends of the essential physical and biological features of that habitat throughout the designated areas. These features are essential to the conservation of the ESA-listed species because they support one or more of the species' life stages (e.g., sites with conditions that support spawning, rearing, migration and foraging).

For most salmon and steelhead, NMFS's critical habitat analytical review teams (CHARTs) ranked watersheds within designated critical habitat at the scale of the fifth-field hydrologic unit code (HUC5) in terms of the conservation value they provide to each ESA-listed species that they support (NOAA 2005). The conservation rankings were high, medium, or low. To determine the conservation value of each watershed to species viability, the CHARTs evaluated the quantity and quality of habitat features, the relationship of the area compared to other areas within the species' range, and the significance to the species of the population occupying that area. Even if a location had poor habitat quality, it could be ranked with a high conservation value if it were essential due to factors such as limited availability, a unique contribution of the population it served, or is serving another important role.

Critical habitat for PS Chinook salmon was designated on September 2, 2005 (70 FR 52630) and includes 1,683 miles of streams, 41 square mile of lakes, and 2,182 miles of nearshore marine habitat in Puget Sounds. The Puget Sound Chinook salmon ESU has 61 freshwater and 19 marine areas within its range. Of the freshwater watersheds, 41 are rated high conservation value, 12 low conservation value, and eight received a medium rating. Of the marine areas, all 19 are ranked with high conservation value. Within the action are, PS Chinook salmon critical habitat is designated in Lake Cushman. Critical habitat is not designated for PS steelhead in the action area.

Action Area

"Action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). We adopt by reference Section 3.1.2 of the PBA for the description of the action area (described as the "aquatic portion of the action area" in the PBA). This includes the full extent of the Lake Kokanee and Lake Cushman reservoirs, including areas below the 742-foot contour around the perimeter of Lake Cushman (4 feet above the full pool elevation of 738 feet Cushman Datum) and the 482-foot contour around Lake Kokanee (4 feet above the full pool elevation of 478 feet). Projects within the proposed action, as described under the PBA will take place on lands below OHWM and below the 742-foot contour around Lake Cushman and below the 482-foot contour around Lake Kokanee.

Environmental Baseline

The "environmental baseline" refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultations, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline (50 CFR 402.02). We adopt by reference Section 3.2 of the PBA for the description of the environmental baseline.

As described in the PBA, individuals of a landlocked Lake Cushman population of PS Chinook salmon (upstream of Dam Number 1) migrate and rear in the action area, spawning upstream of the lake in the North Fork Skokomish River. The landlocked population is part of the PS Chinook salmon evolutionarily significant unit (ESU) but is not considered a viable independent population that would significantly contribute to recovery (Ruckelshaus et al. 2006). With upstream and downstream passage provided at the Cushman dams in the future, as well as hatchery supplementation (FERC 2009; NMFS 2010) we expect migratory PS Chinook salmon in addition to the landlocked fish currently in Lake Cushman, as well as PS steelhead, to migrate and rear in the action area. Although PS steelhead are not currently found in the action area, it is reasonably certain they will be in the future, given the specificity of the plans for their reintroduction.

As described in the PBA, the environmental baseline within the North Fork Skokomish River Watershed, including the action area, is degraded by a host of anthropogenic changes. Within the action area, numerous public and private residential structures, such as shoreline armoring (e.g. bulkheads), piers, ramps and floats have modified natural habitat conditions, and degraded nearshore habitat quality and function.

Tacoma Power's Cushman Dam Number 1 and Number 2, and associated structures, have modified habitat conditions and inhibit fish migrations. Dam operations and regulation of the hydrology of Lake Cushman and Lake Kokanee reservoirs, and the North Fork Skokomish River has also greatly modified fish habitat. Because of Cushman Dam Number 1, water levels in the lake can fluctuate up to 21 meters (69 feet), and periodically inundate up to 12 hectares (30 acres) of land surrounding the inlet to the reservoir (Lake Cushman). Additionally, as a result of fluctuating water levels exposing much of the shoreline during winter months, there is little to no aquatic vegetation in the nearshore, and the lakebed of the nearshore is steep and severely scoured. These conditions limit the productivity of the Lake Cushman nearshore.

Effects of the Action

Under the ESA, "effects of the action" are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see 50 CFR 402.17). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b).

The PBA provides a detailed discussion and comprehensive assessment of the effects of the proposed action in Section 5, and provides effects determination in Section 6. These sections are adopted by reference here (50 CFR 402.14(h)(3)). NMFS has evaluated these sections and after our independent, science-based evaluation determined it meets our regulatory and scientific standards.

As described in the PBA, PS Chinook salmon and PS steelhead, and PS Chinook salmon critical habitat would be affected by the proposed action. Although conservation measures included in the proposed action would minimize effects, we anticipate long-term nearshore lake habitat loss and degradation, including critical habitat for rearing and migration of PS Chinook salmon. This habitat degradation would be likely to result in reduced forage, migration delays and increased risk of predation for both species. These effects would not cause any meaningful reduction in viability for the population of PS Chinook salmon in the action area nor would they cause any appreciable loss of conservation value of the affected critical habitat. Although PS steelhead are not currently found in the action area, the adverse effects of the proposed action would not cause any meaningful reduction in viability of any population that might become established in the action area.

Cumulative Effects

“Cumulative effects” are those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02 and 402.17(a)). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA. We adopt by reference Section 5.5 of the PBA for the description of cumulative effects, and supplement it with the following.

Some continuing non-federal activities are reasonably certain to contribute to climate effects within the action area. However, it is difficult if not impossible to distinguish between the action area’s future environmental conditions caused by global climate change that are properly part of the environmental baseline *vs.* cumulative effects. Therefore, while relevant future climate-related environmental conditions in the action area are described in the environmental baseline description in this biological opinion, we reiterate some effects of climate change here.

Anticipated climate effects on abundance and distribution of PS Chinook salmon and PS steelhead include a wide variety of climate impacts. Within the action area, rising temperatures during late spring and summer may impact Chinook salmon and steelhead juveniles. Increasing shifts in water chemistry and water temperatures are also expected with climate change, though the degree of these changes is difficult to predict. These shifting conditions are likely to modify prey communities and food web interactions over time.

Integration and Synthesis

The Integration and Synthesis section is the final step in our assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action to the environmental baseline and the cumulative effects, taking into account the status of the species and critical habitat, to formulate the agency's biological opinion as to whether the proposed action is likely to: (1) Reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) appreciably diminish the value of designated or proposed critical habitat as a whole for the conservation of the species.

Species: Both PS Chinook salmon and PS steelhead are threatened species under the ESA. This status is based on low abundance relative to historic numbers, with reduced productivity, spatial structure, and diversity. This depressed condition is a function of many factors, including reductions in the amount or quality of habitat throughout their range, and overharvest in previous years. Baseline conditions in the action area which were described earlier in this document reflect habitat degradation typical of developed tributary watersheds in the Puget Sound region, with the additional habitat modification associated with the Cushman dams.

To this status, we add the species' response to project effects. Most of the effects of the proposed action are spatially very constrained (i.e. bank modification, overwater structures) with limited effects on listed species.

PS Chinook salmon are currently listed as threatened with generally negative recent trends in status. Widespread negative trends in natural-origin spawner abundance across the ESU have been observed since 1980. Productivity remains low in most populations, and hatchery-origin spawners are present in high fractions in most populations outside of the Skagit watershed. Although most populations have increased somewhat in abundance since the last status review in 2016, they still have small negative trends over the past 15 years, with productivity remaining low in most populations (Ford 2022). All PS Chinook salmon populations continue to remain well below the TRT planning ranges for recovery escapement levels, and that most populations remain consistently below the spawner-recruit levels identified by the TRT as necessary for recovery.

The most recently completed 5-year review (NMFS 2017) for Pacific salmon and steelhead noted some signs of modest improvement in PS steelhead productivity since the previous review in 2011, at least for some populations, especially in the Hood Canal and SJDF MPG. However, several populations were still showing dismal productivity. The 2022 biological viability assessment (Ford 2022) identified a slight improvement in the viability of the PS steelhead DPS since the PS steelhead technical review team concluded that the DPS was at very low viability in 2015, as were all three of its constituent MPGs, and many of its 32 DIPs (Hard et al. 2015). Ford (2022) reported observed increases in spawner abundance in a number of populations over the last five years, which were disproportionately found within the South and Central PS, SJDF and Hood Canal MPGs, and primarily among smaller populations. The viability assessment concluded that recovery efforts in conjunction with improved ocean and climatic conditions have resulted in an increasing viability trend for the PS steelhead DPS, although the extinction risk remains moderate (Ford 2022).

When we evaluate the cumulative effects in the action area on these species, we anticipate additional stress added to existing stressors in the baseline in both fresh and marine environments from anthropogenic changes in habitat and increasingly modified conditions related to climate change (e.g. warmer temperatures, and more variable volume and velocities in freshwater, changing temperature, pH, and salinity in marine waters). All of these are likely to exert negative pressure on population abundance and productivity. In this context we add the effects of the proposed action. Even considered over multiple years, with highly variable ocean conditions and climate change stressors, only a small number of fish relative to the affected ESU/DPS would be killed or injured by the effects that result from the proposed action, so that the reductions in abundance would not rise to create effects on productivity, diversity and spatial structure at discernible levels. Therefore, the proposed action is unlikely to alter the current or future trends for PS Chinook salmon or PS steelhead population viability even when cumulative effects and baseline conditions are added to the effects of the proposed action.

In other words, we expect that the total effects of the action on individual fish identified in this opinion would be indiscernible at the population level because, although these species are currently well below historic levels, they are distributed widely enough and are presently at high enough abundance levels that the loss of individual fish resulting from the action would not alter their spatial structure, productivity, or diversity. Therefore, when considered in light of species status and existing risk, baseline effects, and cumulative effects, the proposed action (and those caused by it) itself does not increase risk to the affected populations to a level that would reduce appreciably the likelihood for survival or recovery of PS Chinook salmon or PS steelhead.

Critical Habitat: Within the action area, critical habitat is designated for PS Chinook salmon. Throughout the designated critical habitat areas of PS Chinook salmon, multiple features of habitat are degraded, but despite such degradation, many accessible areas remain ranked with high conservation value because of the important life history role it plays.

PS Chinook salmon limiting factors (impaired or insufficient PBFs) include; loss of freshwater and nearshore habitat, riparian areas and large woody debris, fine sediment in spawning gravel, water quality, fish passage and estuary conditions. Current state and local regulations do not prevent much of the development that degrades the quality of critical habitat. There is no indication these regulations are reasonably certain to change in the foreseeable future.

Given the rate of expected population growth in the Puget Sound region, cumulative effects are expected to result in mostly negative impacts on critical habitat quality for PS Chinook salmon and PS steelhead. While habitat restoration and advances in best management practices for activities that affect critical habitat could lead to some improvement of PBFs, adverse impacts created by the intense demand for future development is likely to outpace any improvements.

Based on the best available information, the scale of the proposed action’s effects, when considered in combination with the degraded baseline, cumulative effects, and the effects of climate change, habitat degradation would reduce the potential for the habitat in the action area to support recovery, but the proposed project effects themselves would be too small to attribute to that reduction. Despite adverse effects to features of critical habitat, the conservation value of the critical habitat for PS Chinook salmon is largely retained. Therefore, the overall effect of the project on critical habitat, while adverse and chronic, cannot be considered to be of sufficient intensity to reduce the conservation potential of critical habitat in the action area.

Conclusion

After reviewing and analyzing the current status of the listed species and critical habitat, the environmental baseline within the action area, the effects of the proposed action, the effects of other activities caused by the proposed action, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of PS Chinook salmon or PS steelhead, nor destroy or adversely modify designated PS Chinook salmon critical habitat.

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined by regulation to include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). "Incidental take" is defined by regulation as takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant (50 CFR 402.02). Section 7(b)(4) and section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this ITS.

Amount or Extent of Take

In the biological opinion, NMFS determined that incidental take is reasonably certain to occur as harm of adult and juvenile PS Chinook salmon from exposure to long-term degraded habitat conditions in Lake Cushman as follows:

- Habitat loss and displacement by structural footprints;
- Increased predation and delayed migration resulting from shading by overwater structures;
- Reduced forage and cover as a result of degraded riparian habitat conditions; and
- Increase predation resulting from reduced shallow water habitat caused by shoreline stabilization structures.

PS steelhead would experience the same effects once they are reintroduced to the action area.

The NMFS cannot predict with meaningful accuracy the number of PS Chinook salmon or PS steelhead that are reasonably certain to be injured or killed annually by exposure to degraded habitat conditions and increased predation. The distribution and abundance of the fish that occur within an action area are affected by habitat quality, competition, predation, and the interaction of processes that influence genetic, population, and environmental characteristics. These biotic and environmental processes interact in ways that may be random or directional, and may operate across far broader temporal and spatial scales than are affected by the proposed action.

Thus, the distribution and abundance of fish within the action area cannot be attributed entirely to habitat conditions, nor can the NMFS precisely predict the number of fish that are reasonably certain to be injured or killed if their habitat is modified or degraded by the proposed action. Additionally, the NMFS knows of no device or practicable technique that would yield reliable counts of individuals that may experience these impacts.

In such circumstances, the NMFS uses the causal link established between the activity and the likely extent and duration of changes in habitat conditions to describe the extent of take as a numerical level of habitat disturbance. The most appropriate surrogates for take are action-related parameters that are directly related to the magnitude of the expected take. In this case, the surrogate for take in the form of harm from long-term habitat degradation effects caused by the proposed action is related to the particular type of habitat effect. The take surrogate for take for each habitat effect is defined as follows:

Habitat loss and displacement

Habitat loss is expected as a result of the structural footprints of piles, boat ramps, shoreline stabilization structures, and stairs located within aquatic habitat (below full pool elevation of Lake Cushman; 738 feet). The physical size (square feet) of the in- or over-water structure is the best available surrogate for the extent of take from habitat loss and displacement. Based on projects completed in recent years in Lake Cushman, as provided by the Corps on March 11, 2024 (in spreadsheet titled 20230414-CushmanImpactQuantities), the overwater surface area of structures constructed (new), repaired (or reinforced), or replaced in 2017 was 1,782 square feet, and 1579.5 square feet in 2018. We anticipate the total size (surface area) of in-water and over-water structures repaired, replaced or constructed in Lake Cushman to be no more than 2,000 square feet annually. The size (square feet) of these structures correlates with the amount habitat lost or displaced, with effects increasing or decreasing depending directly on the structures size.

Shading effects

Harm from increased predation and migration delays are expected as a result of overwater structures, including docks, floats, and mooring buoys. The physical size (square feet) of an in- or over-water structure is the best available surrogate for the extent of take from exposure to the structure itself and also the accompanying impacts caused by vessels accommodated by the structure. This is because the likelihood of avoidance and the distance required to swim around the structure (migration delay) would both increase as the size of a structure and the intensity of its shadow increase, which would increase the number of juveniles that enter deeper water where forage efficiency would be reduced and vulnerability to predators would be increased. As described above, we anticipate the total surface area of in-water and over-water structures repaired, replaced or constructed in Lake Cushman to be no more than 2,000 square feet annually. The surface area of in-water and over-water structures directly determines the amount of shaded area and associated effects of increased predation and migration delay resulting from the proposed action. The extent of these impacts would increase and decrease depending on the size of structures.

<u>Degraded riparian habitat conditions</u>

Harm from reduced forage and increased predation from reduced cover are expected as a result of degraded riparian habitat conditions as a result of the placement of structures (e.g. stairways, paths, docks, shoreline stabilization measures, boat ramps) along the shoreline and immediately landward (i.e. riparian areas). The size of structures within the riparian areas of Lake Cushman is the best surrogate for the extent of take from impacts of degraded riparian habitat on cover and forage availability. The structural footprints of shoreline armoring directly reduce riparian habitat and are also associated with other structures (e.g. stairs and pathways within or landward of bulkheads) that degrade riparian habitat conditions. Based on projects completed in recent years in Lake Cushman, as provided by the Corps on March 11, 2024 (in spreadsheet titled 20230414-CushmanImpactQuantities), the overwater surface area of structures constructed (new), repaired (or reinforced), or replaced in 2017 was 483 square feet, and 459 square feet in 2018. We anticipate the total length of shoreline stabilization structures repaired, replaced or constructed in Lake Cushman to be no more than 1,000 linear feet annually. The length of shoreline stabilization is proportional to reduced or degraded riparian habitat caused by the proposed action. The extent of these impacts would increase and decrease depending on the length of shoreline stabilization structures.

<u>Reduced shallow water habitat</u>

Harm from increased predation is expected as a result of reduced shallow water habitat caused by the repair, replacement or construction (new) of shoreline stabilization structures. The length of shoreline armoring or other stabilization structures is the best surrogate for the extent of take from increased predation risk resulting from decreased shallow water habitat waterward of shoreline stabilization structures. As described above, we anticipate the total length of shoreline stabilization structures repaired, replaced or constructed in Lake Cushman to be no more than 1,000 linear feet annually. The length of shoreline stabilization structures along the shoreline of Lake Cushman determines the amount of reduced shallow-water habitat caused by the proposed action. The extent of this impact would increase and decrease depending on the length of structures along the shoreline.

The surrogate measures of incidental take identified in this section can be reasonably and reliably measured and monitored by applicants. Additionally, these surrogates can be tracked by the Corps in real time and the Corps will know when the surrogates are exceeded or being approached.

Effect of the Take

In the biological opinion, NMFS determined that the amount or extent of anticipated take, coupled with other effects of the proposed action, is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

Reasonable and Prudent Measures

"Reasonable and prudent measures" are measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02).

The Corps shall:

1. Minimize incidental take by ensuring that all applicable design criteria, general construction measures, and other requirements of the proposed action for all projects carried out under this programmatic action.
2. Ensure completion of a monitoring and reporting program.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the Federal action agency must comply (or must ensure that any applicant complies) with the following terms and conditions. The Corps or any applicant has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this ITS (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

1. To implement reasonable and prudent measure 1:
    a. The Corps shall send project notifications with all required information (as described in Section 1.6 of the PBA; Administrative Procedures) to the NMFS inbox for this programmatic (PACKS-WA.wcr@noaa.gov).
    b. Applicants shall report any noncompliance with applicable design criteria, general construction measures, or other requirements of the PBA (beyond minor alterations approved by NMFS during project review; see Section 1.6.4 of the PBA) to NMFS (PACKS-WA.wcr@noaa.gov) and the Corps, within 30 days of project completion.
    c. The Corps shall include compliance with the proposed action and this incidental take statement as a condition of the Corps permit for projects authorized under this programmatic.

2. To implement reasonable and prudent measure 2:
    a. The Corps shall provide NMFS (PACKS-WA.wcr@noaa.gov) annually by June 1 (as proposed in Section 1.6.7 of the PBA) a report that includes the following information:
        i. Total surface areas (square feet) of all over- and in-water structures constructed (new), replaced or repaired covered by this programmatic.
        ii. Total length (linear feet) of all shoreline armoring constructed (new), replaced or repaired covered by this programmatic.
        iii. Reductions to over- and in-water structures, shoreline armoring and other structures covered by this programmatic.

b. A meeting of the Corps, USFWS and NMFS will be held annually (as proposed in Section 1.6.8 in the PBA) after submission of the annual report to review and discuss the following:
    i. Total project implementations under this programmatic.
    ii. Consistency with the requirements of the programmatic.
    iii. Potential revisions to the programmatic to improve program efficiencies and conservation outcomes.

Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02). We have the following conservation recommendations:

1. Habitat Enhancement: The Corps should encourage permittees to include nearshore habitat enhancement and restoration activities in their projects, beyond those required by the PBA that:
    a. Improve the quality of riparian habitat to increase cover and forage for juvenile and adult salmonids, such as planting native vegetation along the Lake Cushman shorelines and
    b. Remove old in-water structures such as docks, piles and shoreline armoring that are no longer in use to increase habitat quantity and quality in the lake nearshore.

Please notify NMFS if the Corps carries out these recommendations so that we will be kept informed of actions that are intended to improve the conservation of listed species or their designated critical habitats.

Reinitiation of Consultation

Reinitiation of consultation is required and shall be requested by the Corps or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) the amount or extent of incidental taking specified in the ITS is exceeded, (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this biological opinion; or if (4) a new species is listed or critical habitat designated that may be affected by the identified action.

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT ESSENTIAL FISH HABITAT RESPONSE

NMFS also reviewed the proposed action for potential effects on essential fish habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), including conservation measures and any determination you made regarding the potential effects of the action. This review was conducted pursuant to section 305(b) of the MSA, implementing regulations at 50 CFR 600.920, and agency guidance for use of the ESA consultation process to complete EFH consultation. We adopt by reference Section 7 of the PBA, and provide the following summary of effects.

The proposed action may adversely affect EFH for Pacific Coast salmon, which are present in the action area. Effects would be commensurate with those described above for PS Chinook salmon, and include, as a result of the construction, repair and replacement of structures, long-term degraded riparian habitat quality (i.e. reduced forage and cover), overwater shading, reduced shallow water habitat in the nearshore, and habitat loss and displacement.

Essential Fish Habitat Affected by the Proposed Action

The feature of EFH of Pacific Coast salmon, Pacific Coast groundfish and coastal pelagic species affected by the proposed action would include diminishments in water quality, as described above in this Opinion. We anticipate degraded water quality associated contaminants in stormwater discharge.

Essential Fish Habitat Conservation Recommendations

NMFS determined that the following conservation recommendations are necessary to avoid, minimize, mitigate, or otherwise offset the impact of the proposed action on EFH.

1. Ensure that all applicable design criteria, general construction measures, and other requirements of the proposed action for all projects carried out under this programmatic action.
    a. The Corps shall send project notifications with all required information (as described in Section 1.6 of the PBA; Administrative Procedures) to the NMFS inbox for this programmatic (PACKS-WA.wcr@noaa.gov).
    b. Applicants shall report any noncompliance with applicable design criteria, general construction measures, or other requirements of the PBA (beyond minor alterations approved by NMFS during project review; see Section 1.6.4 of the PBA) to NMFS (PACKS-WA.wcr@noaa.gov) and the Corps, within 30 days of project completion.
    c. The Corps shall include compliance with the proposed action and this incidental take statement as a condition of the Corps permit for projects authorized under this programmatic.

2. Ensure completion of a monitoring and reporting program.
    a. The Corps shall provide NMFS (PACKS-WA.wcr@noaa.gov) annually by June 1 (as proposed in Section 1.6.7 of the PBA) a report that includes the following information:
        iv. Total surface areas (square feet) of all over- and in-water structures constructed (new), replaced or repaired covered by this programmatic.
        v. Total length (linear feet) of all shoreline armoring constructed (new), replaced or repaired covered by this programmatic.
        vi. Reductions to over- and in-water structures, shoreline armoring and other structures covered by this programmatic.
    b. A meeting of the Corps, USFWS and NMFS will be held annually (as proposed in Section 1.6.8 in the PBA) after submission of the annual report to review and discuss the following:
        vii. Total project implementations under this programmatic.
        viii. Consistency with the requirements of the programmatic.
        ix. Potential revisions to the programmatic to improve program efficiencies and conservation outcomes.

Fully implementing these EFH conservation recommendations would protect, by avoiding or minimizing the adverse effects described previously, designated EFH for Pacific Coast salmon. As required by section 305(b)(4)(B) of the MSA, the Corps must provide a detailed response in writing to NMFS within 30 days after receiving a Conservation Recommendation. Such a response must be provided at least 10 days prior to final approval of the actions if the response is inconsistent with any of NMFS' EFH Conservation Recommendations unless NMFS and the federal agency have agreed to use alternative time frames for the federal agency response. The response must include a description of measures proposed by the agency for avoiding, minimizing, mitigating, or otherwise offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the Conservation Recommendations, the federal agency must explain its reasons for not following the recommendations, including the scientific justification for any disagreements with NMFS over the anticipated effects of the actions and the measures needed to avoid, minimize, mitigate, or offset such effects (50 CFR 600.920(k)(1)).

In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, we ask that in your statutory reply to the EFH portion of this consultation, you clearly identify the number of conservation recommendations accepted. Send to: projectreports.wcr@noaa.gov).

The Corps must reinitiate EFH consultation with NMFS if the proposed actions are substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH Conservation Recommendations (50 CFR 600.920(l)).

This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public

Law 106-554). The biological opinion will be available through NOAA Institutional Repository [https://repository.library.noaa.gov/welcome]. A complete record of this consultation is on file at the Lacey, Washington office.

Please contact Dr. Jeff Vanderpham (jeff.vanderpham@noaa.gov) at the Lacey, Washington office if you have any questions concerning this consultation, or if you require additional information

Sincerely,

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Assistant Regional Administrator
Oregon Washington Coastal Office

cc: Kristin Mahen, ESA Coordinator, U.S. Army Corps of Engineers

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