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-2024-00840

May 13, 2024

Ted Gresh
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905 NE 11th Ave, EC-4
Portland, OR 97232

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the: Piscivorous Fish Status and Trend Monitoring in the Columbia River Upstream of McNary Dam

Dear Mr. Gresh:

This letter responds to your April 05, 2024 request for initiation of consultation with 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.

We reviewed the Bonneville Power Administration's (BPAs) consultation request and related initiation package, which included a Biological Assessment (BPA 2024). Where relevant, we have adopted the information and analysis 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 the following sections of the Biological Assessment (BA): Section 1.1, Background (pp. 1), Section 3 Description of the Project (pp. 3-12), Section 4, Environmental Baseline (pp. 12-13), and Section 5, Effects of the Action (pp.13-18). We have supplemented information related to critical habitat and the proposed action effects to designated critical habitat below. NMFS also reviewed the likely effects of the proposed action on essential fish habitat (EFH), pursuant to section 305(b) of the Magnuson–Stevens Fishery Conservation and Management Act (6 U.S.C. 1855(b)), and concluded that the action would adversely affect the EFH of Pacific coast salmon.

Pre-consultation began in 2022, with discussions about the proposed action, and several drafts of the BA were shared between the action agency and NMFS in 2022 and 2023. NMFS provided numerous comments, and recommended edits and revisions to those draft documents. Additional information pertaining to the study design, references, sampling techniques, and estimated out-migrating and in-migrating salmon and steelhead was supplied by the Washington Department of Fish and Wildlife (WDFW) in 2023 and early 2024. The final BA was submitted on April 04, 2024, and formal consultation was initiated on that date.

Updates to the regulations governing interagency consultation (50 CFR part 402) were effective on May 6, 2024 (89 Fed. Reg. 24268). We are applying the updated regulations to this consultation. The 2024 regulatory changes, like those from 2019, were intended to improve and clarify the consultation process, and, with one exception from 2024 (offsetting reasonable and prudent measures), were not intended to result in changes to the Services' existing practice in implementing section 7(a)(2) of the Act. 89 Fed. Reg. at 24268; 84 Fed. Reg. at 45015. We have considered the prior rules and affirm that the substantive analysis and conclusions articulated in this biological opinion and incidental take statement would not have been any different under the 2019 regulations or pre-2019 regulations.

BIOLOGICAL OPINION

As described in the BA, temporal and spatial predator-prey overlap and consequential predatory impacts on juvenile anadromous salmonids is becoming a major source of their mortality in sections of the Columbia River (Erhardt et al. 2018; McMichael 2018). Currently, 51 percent of the non-native species in the upper Columbia River are piscivores and they all have negative impacts on native salmonids as well as additional impacts on the overarching Columbia River food webs (ISAB 2019; Naiman et al. 2012). The BPA proposes to fund WDFW to determine the abundance, distribution, and consumptive impacts to juvenile salmon of non-native fishes in the mainstem Columbia River from McNary Dam to Priest Rapids Dam (McNary Pool). Under an adaptive management approach, predator population abundance and growth rates will be monitored for 5 years and used to evaluate the effectiveness of current (e.g., deregulating harvest) and future management actions designed to increase juvenile salmon survival through establishing the ability to identify significant changes in predator population status over time and space.

Boat electrofishing will be conducted in the McNary pool at 32 sites in 4 strata, 8 sites per strata, to collect predators for stomach content analysis and for mark recapture to determine abundance and growth rate. Site sample selection, stratification, sampling timing, and methods are outlined in the BA in sections 3.2-3.7, and incorporated by reference here. Boat electrofishing will occur for 32 nights: 16 nights for stomach content analysis and aging, and 16 nights for mark recapture. The four strata represent different macrohabitats, including: (1) riverine (high, free flowing Hanford Reach), (2) transition (moderate flow), (3) confluence (low flow, tributaries, and sloughs), and (4) reservoir (slow flow near the dam). The eight sites within each stratum (32 sites total) represent the microhabitat classes present in each stratum. Each site will be 1.0-1.5 km (0.62-0.93 miles) long with length dependent upon predator fish density. Sites with a high density of predators will be shorter than those with low densities. Boat electrofishing sampling will occur at night from late April-early July and cease once water temperatures reach 18^{o} C. Boat electrofishing will occur throughout each sampling site in a variety of habitat types, thought to hold predator fishes. Two sampling events of 8 nights each will occur for 16 total nights of sampling at each of the 32 sites. Stomach contents of predatory fishes will be collected and analyzed, and the age of a subsample of predatory fishes determined. Mark and recapture of predatory fishes will occur beginning in June, at all 32 sites, and take 16 nights to complete. The WDFW will conduct sampling for 5 years. Maps of the specific sampling locations within the larger action area are found in Figures 2-5 in the BA.

Status of Species and Designated Critical Habitat. We examined the status of Upper Columbia River spring-run Chinook salmon (*Oncorhynchus tshawytscha*, endangered), Snake River sockeye salmon (*O. nerka*, endangered), Snake River steelhead (*O. mykiss*, threatened), Middle Columbia River steelhead (threatened), Upper Columbia River steelhead (threatened), Snake River fall-run Chinook salmon (threatened), and Snake River spring/summer-run Chinook salmon (threatened), the 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. NMFS' status of the species summaries for each of the salmon and steelhead species that may be impacted by the proposed action are available on the NOAA Fisheries website at https://www.fisheries.noaa.gov/west- coast/consultations/esa-section-7-consultations-west-coast, and incorporated by reference. NMFS also incorporates by reference the most recent 5-year reviews of each of the species:

- 2022 5-Year Review: Summary & Evaluation of Middle Columbia River Steelhead.
- 2022 5-Year Review: Summary & Evaluation of Snake River Basin Steelhead.
- 2022 5-Year Review: Summary & Evaluation of Upper Columbia River Spring-run Chinook Salmon and Upper Columbia River Steelhead.
- 2022 5-Year Review: Summary & Evaluation of Snake River Fall-Run Chinook Salmon
- 2022 5-Year Review: Summary & Evaluation of Snake River Spring/Summer Chinook Salmon
- 2022 5-Year Review: Summary & Evaluation of Snake River Sockeye Salmon

In their BA, the BPA determined that there would be no effects to critical habitat. In evaluating the condition of designated critical habitat, NMFS examines the condition and trends of the physical and biological features (PBFs) which are essential to the conservation of the ESA-listed species because they support one or more life stages of the species. We determined that the rearing and migration PBFs (Table 1 and 2) occur within the action area and may be adversely affected by the proposed action.

Table 1. Physical and biological features of critical habitat designated for ESA-listed salmon and steelhead species considered in this opinion (except Snake River spring/summer run Chinook salmon, Snake River fall-run Chinook salmon, and Snake River sockeye salmon, and their corresponding species life history events found in the action area).

Physical or Biological Features		**Species Life History Event**
Site Type	**Site Attribute**	
Freshwater Rearing	Floodplain connectivity Forage Natural Cover Water quality Water quantity	Fry/parr/smolt growth and development

Physical or Biological Features		Species Life History Event
Site Type	**Site Attribute**	
Freshwater Migration	Free of artificial obstruction Natural cover Water quality Water quantity	Adult upstream migration and holding Kelt (steelhead) seaward migration Fry/parr/smolt growth, development, and seaward migration

Table 2. Physical and biological features of critical habitat designated for Snake River spring/summer run Chinook salmon, Snake River fall run Chinook salmon, and Snake River sockeye salmon, and corresponding species life history events.

Physical or Biological Features		Site Type
Site Type	**Site Type**	
Spawning and juvenile rearing areas	Access (sockeye) Cover/shelter Food (juvenile rearing) Riparian vegetation Space (Chinook) Spawning gravel Water quality Water temp (sockeye) Water quantity	Adult spawning Embryo incubation Alevin growth and development Fry emergence from gravel Fry/parr/smolt growth and development
Spawning and juvenile rearing areas	Access (sockeye) Cover/shelter Food (juvenile rearing) Riparian vegetation Space (Chinook) Spawning gravel Water quality Water temp (sockeye) Water quantity	Adult spawning Embryo incubation Alevin growth and development Fry emergence from gravel Fry/parr/smolt growth and development
Adult and juvenile migration corridors	Cover/shelter Food (juvenile) Riparian vegetation Safe passage Space Substrate	Adult sexual maturation Adult upstream migration and holding Kelt (steelhead) seaward migration Fry/parr/smolt growth, development, and seaward migration

Physical or Biological Features		
Site Type	Site Type	Site Type
	Water quality Water quantity Water temperature Water velocity	

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). The action area is the McNary reservoir pool, between McNary and Priest Rapids dams. This is the extent of anticipated impacts to ESA-listed salmon and steelhead from boat electrofishing.

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 impacts to listed species or designated critical habitat from 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).

The action area is an impounded section of the Columbia River. The action area includes altered habitats and flow regimes caused by Columbia River hydrosystem development, that creates more favorable habitat conditions for invasive, non-native species that may compete with or prey upon juvenile salmonids. Within the action area is also the last free-flowing section of the Columbia River, which is part of the Hanford Reach National Monument (HRNM). This area is in a shrub steppe desert ecotype, receiving 5-10 inches of rain annually (https://www.fws.gov/refuge/Hanford_Reach/).

The Columbia River in the action area is designated critical habitat, and supports rearing and migration of all populations of Upper Columbia River (UCR) spring-run Chinook salmon, UCR steelhead, Snake River spring/summer Chinook salmon, Snake River fall Chinook salmon, Snake River Basin steelhead, Snake River sockeye; and the Satus Creek, Toppenish, Naches, and Yakima River Upper Mainstem populations (Yakima River Major Population Group), and Walla Walla and Touchet populations, of Middle Columbia River (MCR) Steelhead. Non-ESA-listed Columbia River Upriver Bright (URB) fall Chinook salmon also spawn in the Hanford Reach and encompass the majority of the URB stock, which contributes significantly to commercial, tribal, and recreational fisheries (McMichael 2018). The action area provides physical and

biological features (PBFs) of critical habitat for rearing and migration, though these persist in a largely degraded condition. The ability of critical habitat in the action area to support recovery of ESA-listed salmon and steelhead covered in this opinion is primarily limited by impacts of hydropower development and operation.

All three UCR spring-run Chinook salmon populations, and SR sockeye salmon, have an overall viability of high risk. The other five species are listed as threatened, and while some populations are viable, most populations within these evolutionary significant units (ESUs) and distinct population units (DPSs) remain at moderate or high risk (Ford 2022). Overall Snake River spring/summer Chinook salmon and UCR steelhead are at moderate-to-high risk; Snake River fall Chinook salmon are viable, but not meeting its recovery goals; and Snake River Basin (SRB) and MCR steelhead are at moderate risk.

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.

Section 5 of the BA includes an assessment of the effects of the proposed action to species, and is adopted here (50 CFR 402.14(h)(3)). Juvenile migration also occurs year-round, with peak downstream migration for juveniles of all seven salmon and steelhead species occurring during proposed sampling (April-early July). When sampling for predators for consumption estimates in late April through early June, sampling will occur during peak outmigration of yearling Chinook salmon, steelhead, and sockeye salmon. Peak outmigration of subyearling Chinook salmon will occur during mark-recapture sampling in June and early July.

Peak adult upstream migration for UCR spring-run Chinook salmon and Snake River (SR) spring/summer Chinook salmon will overlap with predator diet sampling and mark-recapture sampling. Peak adult sockeye migration will also overlap with mark-recapture sampling will also occur during sampling. Sampling will be completed before adult migration of Snake River fall-chinook salmon and all three species of steelhead through the action area. Therefore, NMFS expects large numbers of juveniles from all seven species, and a large number of adult UCR spring-run Chinook salmon, SR spring/summer Chinook salmon, and SR sockeye will be present in the action area during sampling. However, adult salmon are expected to occupy deeper water in the river and not be distributed near the shoreline where electrofishing will be conducted. The only potential adverse sampling effects to ESA-listed salmon and steelhead identified by BPA is that some unintentional captures of salmonids may occur, resulting in delayed mortality.

As stated above, the BPA determined that the proposed action would not affect critical habitat.

NMFS has evaluated the effects section of the BA, and after our independent, science-based evaluation, determined that the additional information provided below is needed to complete our analysis.

Effects to Species - The BPA proposes to implement the survey via boat-based electrofishing of non-native salmonid predators in the McNary reservoir during late spring and summer 2024 through 2028. This sampling will be used to determine the overall composition of predators and, through analysis, to predict the overall impact to the out-migrating populations of juvenile salmon and steelhead in this reach of the Columbia River. This work has not been conducted within this portion of the Columbia River and, as a result, there are significant uncertainties about: the efficacy of capturing non-native predators, predicting their overall population sizes and impact on out-migrating salmon and steelhead juvenile survival, and on the interception rates of ESA-listed species by predators. While the Northern Pikeminnow Management Program is similar in nature to the proposed work, and occurs in the Oregon portion of the McNary pool sporadically, it does not include sampling in the State of Washington jurisdictional waters and has significant departures in sampling techniques and design from the work proposed by the BPA. However, it is the only current monitoring program that sheds any light on the possible impact of this proposed sampling on ESA-listed salmon and steelhead in this part of the Columbia River basin.

While the sampling is intended to target non-native predatory fishes of salmon and steelhead, unintended interception of ESA-listed species can and is likely to occur. Electrofishing is a process by which an electrical current is passed through water containing fish in order to stun them, which makes them easy to capture. It can cause a suite of effects ranging from disturbing the fish to killing them. The percentage of fish that are unintentionally killed by electrofishing varies widely depending on the equipment used, the settings on the equipment, and the expertise of the technician (Sharber and Carothers 1988, Dalbey et al. 1996). Research indicates that using continuous direct current (DC) or low-frequency (30 Hz) pulsed DC waveforms produce lower spinal injury rates, particularly for salmonids (Sharber et al. 1994).

Most studies on the effects of electrofishing on fish have been conducted on adult fish greater than 300 mm in length (Dalbey et al. 1996). Electrofishing can have severe effects on adult salmonids. Adult salmonids can be injured or killed due to spinal injuries that can result from forced muscle contractions. Sharber and Carothers (1988) reported that electrofishing killed 50 percent of the adult rainbow trout in their study. Spinal injury rates are substantially lower for juvenile fish than for adults. Smaller fish are subjected to a lower voltage gradient than larger fish (Sharber and Carothers 1988) and may, therefore, be subject to lower injury rates (e.g., Hollender and Carline 1994, Dalbey et al. 1996). McMichael et al. (2018) reported a 5.1 percent injury rate for juvenile MCR steelhead captured by electrofishing in the Yakima River subbasin.

When using appropriate electrofishing protocols and equipment settings, shocked fish normally revive quickly. Studies on the long-term effects of electrofishing indicate that even with spinal injuries, salmonids can survive long-term; however, severely injured fish may have stunted growth (Dalbey et al. 1996). Permit conditions for NMFS authorized electrofishing require that all researchers follow NMFS' electrofishing guidelines (NMFS 2000).

The ESUs, DPSs and populations referenced above will be affected by the proposed action due to the sampling methodology used, timing of the study, location of transects, and the habitat types sampled. The effects of sampling will be over the period of 16 total visits to eight sampling locations in any given year and limited to shallower water habitat that the non-native predatory

fish occupy. Interception rate estimates were made by WDFW based on the total number of downstream migrating juvenile and upstream migrating salmon and steelhead during the time period of the study, and distribution throughout the action area based on best professional opinion that represents anticipated presence by species, population, and age class within each sampling area and by sampling date. Anticipated interception rates were calculated for juvenile fish organized by management unit, and rolled-up to ESA-listed population or major population group (MPG), for both the spring/early summer and late sampling periods. These estimates were based upon assumptions of evenly distributed schools of downstream and upstream migrants. The timing and duration of sampling activity, as outlined in the study plan, combined with NMFS guidelines for electro-shocking and the total distance in each transect were also utilized to determine the potential proportion of the population for both salmon and steelhead ESUs and DPSs that could be affected. WDFW utilized information from U.S. v. OR fisheries management and Upper Columbia Public Utility District hatchery releases and escapement estimates. No single DPS nor ESU will be encountered disproportionately in the cumulative sampling effort due to the sampling design, timing, and anticipated distribution of fish.

It is estimated that the majority of salmon and steelhead intercepted will not be listed under the ESA and would comprise approximately 73 percent of the fish intercepted during the spring sampling events (17,698 individuals) and 97 percent of the fish intercepted during the summer sampling event (101,534 individuals). Interception of sub-yearling Snake River Fall Chinook origin fish is only expected during the later sampling period.

We expect the total number of individual juvenile fish that could potentially be injured and die from the electrofishing, if accidentally intercepted, is less than 1 percent based on the species likely to be present during the sampling events at each location throughout the survey period.

During the spring sampling events, most adult fish will not be found in the shallower water habitats where the electrofishing will occur and many are expected to have already migrated upstream of the action area. During the summer sampling period, we expect that 95 percent or more of the ESA-listed adult fish will have migrated out of the action area. Therefore, we do not expect more than six adult salmon or steelhead to be intercepted. We expect one adult salmon or steelhead to be killed.

Effects to Critical Habitat. The sampling will be conducted in the water column from a boat, which may affect the *safe passage/free of artificial obstruction* attributes of the migration PBFs of designated critical habitat in the immediate area surrounding the boat for the short duration while electrofishing occurs. Migration could be impacted through a startle response followed by avoidance of the area surrounding the boat sampling platform during sampling. Therefore, we expect a temporary, intermittent, and localized negative effect to safe passage/free of artificial obstruction attributes of the migration PBFs. There will be no impact to the other PBFs of designated critical habitat.

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). 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. As stated in section 5.5 of the BA, NMFS expects adverse cumulative effects to increase based on current land management practices, population growth trends, and climate change models.

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.

As described in the BA section 1.1, temporal and spatial predator-prey overlap and consequential predatory impacts on juvenile anadromous salmonids is becoming a major source of their mortality in sections of the Columbia River (Erhardt et al. 2018; McMichael 2018). Adults and juveniles from all populations of UCR spring-run Chinook salmon, UCR steelhead, SR spring/summer Chinook salmon, SR fall Chinook salmon, SR Basin steelhead, SR sockeye; and the Satus Creek, Toppenish, Naches, and Yakima River Upper Mainstem populations (Yakima River MPG), and Walla Walla and Touchet populations, of MCR Steelhead use the action area as a migration corridor. NMFS recently reaffirmed the status of these ESA-listed species: UCR spring-run Chinook salmon and SR sockeye salmon as endangered; and SR Basin steelhead, Middle and Upper Columbia River steelhead, SR fall-run Chinook salmon, and SR spring/summer-run Chinook salmon as threatened. Adult and juvenile salmon and steelhead from each of these species use the Columbia River in the action area for holding, rearing and migration.

Based on the species life stages and the activities described in the submitted BA, the proposed action is expected to result in harm, harassment, injury, or death of a small number of juvenile salmon and steelhead from each species considered in this opinion intercepted during electrofishing, as a result of being caught in the energized electrical field. No ESA-listed fish will be captured or handled directly by the sampling crews. As such, through the development of this biological opinion, NMFS has considered these risks and negative impacts in the light of the 2020 five-year status reviews (https://www.fisheries.noaa.gov/west- coast/consultations/esa-section-7-consultations-west-coast), recovery plans, and 2020 CRS Biological Opinion (https://www.fisheries.noaa.gov/resource/document/biological-opinion-operation-and-maintenance-fourteen-multiple-use-dam-and).

NMFS has determined that no single ESU or DPS will be disproportionately impacted through the sampling resulting in the annual loss of a small number of juvenile fish from all populations of UCR spring-run Chinook salmon, UCR steelhead, SR spring/summer Chinook salmon, SR fall Chinook salmon, SR Basin steelhead, SR sockeye; and the Satus Creek, Toppenish, Naches, and Yakima River Upper Mainstem populations (Yakima River MPG), and Walla Walla and Touchet populations, of MCR Steelhead and the annual interception/loss of six adult salmon and steelhead divided equally among all (UCR spring-run Chinook salmon, SR spring/summer Chinook salmon, and SR sockeye is not substantial enough to appreciably alter the abundance, productivity, spatial structure, or diversity of any these populations.

We determined that the proposed action will cause a minor, temporary negative effect to safe passage/free of artificial obstruction attributes of the migration PBFs of designated critical habitat at the immediate location of the boat when it is electrofishing. No other PBFs will be affected by the proposed action.

It is NMFS' opinion that when the effects of the action and cumulative effects are added to the environmental baseline, and in light of the status of the species, the effects of the action will not cause reductions in reproduction, numbers, or distribution that would reasonably be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of UCR spring-run Chinook salmon, UCR steelhead, SR spring/summer Chinook salmon, SR fall Chinook salmon, SR Basin steelhead, SR sockeye, and MCR steelhead or destroy or adversely modify their designated critical habitat.

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 the salmon and steelhead considered in this opinion, or destroy or adversely modify their designated critical habitat, or destroy or adversely modify their designated 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). "Harass" is further defined by guidance as to "create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering." "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 follows:

<u>Incidental Take from Annual Late Spring/Early Summer Electrofishing</u>
During the late spring/early summer sampling of predatory fish, it is anticipated that the boat-based sampling will result in interception and electrofishing deployment that will result in incidental take of juveniles that, will range from 1 to 1,853 individual salmon and steelhead, depending on the population with a total of 6,565 ESA-listed yearling salmon and steelhead from the UCR spring Chinook salmon ESU, Upper Columbia River (UCR) steelhead DPS, MCR steelhead DPS, SR spring/summer-run Chinook salmon ESU, SR steelhead DPS,

SR sockeye ESU, and SR fall-run Chinook salmon ESU. Of these 6,565 fish, we expect mortality of 657 juveniles. We also anticipate five adults will be intercepted with one mortality from the electrofishing sampling.

Take will be exceeded if more than 6,565 salmon and steelhead are intercepted while sampling and one adult salmon or steelhead is killed.

Incidental Take from Annual Late Summer Mark and Recapture Sampling
During the late summer mark and recapture sampling period, NMFSs anticipates that interception and incidental take of juveniles will range from 13 to 2,701 individuals with a total of 2,714 ESA-listed sub-yearling salmon and steelhead. NMFS also estimates that one adult will be intercepted during the electrofishing sampling.

Take will be exceeded if more than 2,714 juvenile salmon and steelhead and one adult are intercepted while sampling. Take will be exceeded if more than zero adult salmon or steelhead is killed.

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 jeopardize the existence of UCR spring Chinook salmon, UCR steelhead, MCR steelhead, SR spring/summer-run Chinook salmon, SR Basin steelhead, SR sockeye salmon, and SR fall-run Chinook salmon, or destruction or adverse modification of their critical habitat.

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

The BPA shall:

- RPM #1 – Minimize impacts to ESA-listed salmon and steelhead.
- RPM #2 – Minimize likelihood of encountering ESA-listed salmon and steelhead adults and juveniles.
- RPM #3 – Minimize the likelihood of electrofishing ESA-listed salmon and steelhead.
- RPM #4 – If ESA-listed salmon and steelhead are electro-fished, minimize the potential for harmful impacts from the sampling and report unintended electrofishing of salmon and steelhead to NMFS following sampling event.
- RPM #5 – Provide frequent reports early in the study period and summary reports each year to NMFS.

Track, monitor, and report on the proposed action to ensure that the project is implemented as proposed, and the amount and extent of take is not exceeded.

NMFS believes that full application of conservation measures included as part of the proposed action, together with the use of the RPMs and terms and conditions described below, are necessary and appropriate to minimize the likelihood of incidental take of listed species due to completion of the proposed action.

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 BPA 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. The following terms and conditions implement RPM 1: While BPA has identified the use of NOAA Guidelines, the sampling crew will follow this relevent subset of the NOAA Fisheries Electrofishing Guidelines found below:

   A. The permit holder must ensure that listed species are taken only at the levels, by the means, in the areas and for the purposes stated in the permit application, and according to the terms and conditions in the permit.
   B. The permit holder must not intentionally kill or cause to be killed any listed species unless the permit specifically allows intentional lethal take.
   C. The permit holder must stop handling listed juvenile fish if the water temperature exceeds 70 degrees Fahrenheit (o F) at the capture site. Under these conditions, listed fish may only be visually identified and counted. In addition, electrofishing is not permitted if water temperature exceeds 64^{o} F.
   D. If the permit holder unintentionally captures any listed adult fish while sampling for juveniles, the adult fish must be released without further handling and such take must be reported.
   E. The permit holder must obtain approval from NMFS before changing sampling locations or research protocols.
   F. The permit holder must notify NMFS as soon as possible but no later than two days after any authorized level of take is exceeded or if such an event is likely. The permit holder must submit a written report detailing why the authorized take level was exceeded or is likely to be exceeded.
   G. The permit holder is responsible for any biological samples collected from listed species as long as they are used for research purposes. The permit holder may not transfer biological samples to anyone not listed in the application without prior written approval from NMFS.
   H. The person(s) actually doing the research must carry a copy of this permit while conducting the authorized activities.
   I. The permit holder must allow any NMFS employee or representative to accompany field personnel while they conduct the research activities.
   J. The permit holder must allow any NMFS employee or representative to inspect any records or facilities related to the permit activities.
   K. The permit holder may not transfer or assign this permit to any other person as defined in section 3(12) of the ESA. This permit ceases to be in effect if transferred or assigned to any other person without NMFS' authorization.
   L. NMFS may amend the provisions of this permit after giving the permit holder reasonable notice of the amendment.
   M. The permit holder must obtain all other federal, state, and local permits/authorizations needed for the research activities.

N. If the permit holder violates any permit condition, they will be subject to any and all penalties provided by the ESA. NMFS may revoke this permit if the authorized activities are not conducted in compliance with the permit and the requirements of the ESA or if NMFS determines that its ESA section 10(d) findings are no longer valid. "Permit holder" means the permit holder or any employee, contractor, or agent of the permit holder. Also, NMFS may include conditions specific to the proposed research in the individual permits.

2. The following terms and conditions implement RPM 2: Sampling shall occur in shallow water habitats and targeted toward non-native salmon and steelhead predators.

3. The following terms and conditions implement RPM 3: If salmon and/or steelhead are detected during an electrofishing event, the boat will cease electrofishing and maneuver upstream 30 meters before resuming sampling. If salmon and/or steelhead are encountered a second time, the boat will move 100 meters upstream to avoid any schooling fish and repeat RPM #2.

4. The following terms and conditions implement RPM 4: In the event of the actions under RPM#3 being necessary, the BPA contracted sampling crew will contact NMFS and report the 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) describe the details of the event, identify the species encountered, provide the size/age class estimates, and quantify the number of salmon and steelhead encountered within 24 hours, or as soon as feasible, following the event.

5. The following terms and conditions implement RPM 5: In the first year (2024) of the study, the BPA will ensure their contractor will provide an early season check-in, within the first 28 days, following initiation of sampling with NMFS to describe how the project is progressing, sampling success, take and any other relevant details given the experimental nature of the work. In the first and second years of the study (2024 and 2025), the BPA will ensure their contractor provides a mid-season check-in, approximately May 15th, following initiation of sampling with NMFS to describe how the project is progressing, sampling success, take, and any other relevant details given the experimental nature of the work. For all sampling years, the BPA will ensure their contractor provides a final report on November 1st of the sampling year summarizing the field sampling season's: total sampling effort sampling rates and success; take of ESA species by species, number, size and age class; species, number, size and age class of non-native predators detected; adjustments recommended for the next year and a summary of the non-native species population estimate; habitats used; and potential/estimated predatory impact on and projected significance to ESA-listed salmon and steelhead. The BPA will ensure that their contractor will publish, present, and share information and data with interested and relevant parties.

NMFS will use the annual reports to monitor the actual number of listed fish taken annually in the scientific research activities and will adjust permitted take levels if they are deemed to be excessive or if cumulative take levels rise to the point where they are detrimental to the listed species.

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).

No Conservation Recommendations are proposed.

Reinitiation of Consultation - Under 50 CFR 402.16(a): "Reinitiation of consultation is required and shall be requested by the federal agency or by the Service where discretionary federal agency involvement or control over the action has been retained or is authorized by law and: (1) If the amount or extent of taking specified in the incidental take statement is exceeded; (2) If new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) If 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 the biological opinion or written concurrence; or (4) If a new species is listed or critical habitat designated that may be affected by the identified action."

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) (16 U.S.C. 1855(b)). This review was 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. NMFS concluded that the action would adversely affect EFH of Pacific coast salmon. Therefore, we have included the results of that review in this document. EFH Conservation Recommendations are not provided.

Magnuson-Stevens Fishery Conservation and Management Act

Section 305(b) of the MSA directs federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. Under the MSA, this consultation is intended to promote the conservation of EFH as necessary to support sustainable fisheries and the managed species' contribution to a healthy ecosystem. For the purposes of the MSA, EFH means "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity", and includes the associated physical, chemical, and biological properties that are used by fish (50 CFR 600.10). Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects may result from actions occurring within EFH or outside of it and may include direct, indirect, site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) of the MSA also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH. Such recommendations may include measures to avoid, minimize, mitigate, or otherwise offset the adverse effects of the action on EFH (50 CFR 600.905(b)).

EFH Affected by the Proposed Action

The proposed project occurs within EFH for Chinook salmon within the Pacific Coast salmon Fishery Management Plan (PFMC 2014).

Adverse Effects on EFH

NMFS determined the proposed action would adversely affect EFH for Pacific coast salmon as follows:

- temporary, intermittent, and localized negative effect to migration habitat from boat-based electrofishing

NMFS determined that measures included in the BA are sufficient to avoid, minimize, mitigate, or otherwise offset the impact of the proposed action on EFH. Therefore, NMFS has no additional EFH conservation recommendations to provide at this time. This concludes the EFH consultation.

Supplemental Consultation

The BPA must reinitiate EFH consultation with NMFS if the proposed action is 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 NOAA Fisheries 1201 NE Lloyd Blvd. Portland, OR 97201.

Please direct questions regarding this letter to Greg Sieglitz, West Coast Region, Portland, at greg.sieglitz@noaa.gov

Sincerely,

Nancy L Munn

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cc: Ted Gresh, BPA
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