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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
1201 NE Lloyd Boulevard, Suite 1100
PORTLAND, OR 97232-1274

Refer to NMFS No.:
WCRO-2021-01324

December 21, 2021

William D. Abadie
Chief, Regulatory Branch
U.S. Army Corps of Engineers
P.O. Box 2946
Portland, Oregon 97208-2946

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Fishhawk Lake Fish Passage Improvements, Fishhawk Creek (HUC6 171002020204), Clatsop County, Oregon.

Dear Mr. Abadie:

This letter responds to your June 2, 2021, request for initiation of consultation with the National Marine Fisheries Service (NMFS) pursuant to Section 7 of the Endangered Species Act (ESA) on the effects of the Fishhawk Lake Fish Passage Improvements as described in the previously titled biological assessment (BA). 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 U.S. 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 the following sections of the BA:

- Section 1 and 1.1 for the background and consultation history;
- Section 1.2 for the purpose and need (Section 1.2.2) and description of the action (Section 1.2.3);
- Section 1.3 for the proposed conservation measures;
- Section 2 for the status of climate change (Section 2.1), critical habitat (Section 2.2), and Oregon Coast (OC) coho salmon (*Oncorhynchus kisutch*) (Section 2.3);
- Section 3 for the action area;
- Section 4 for the environmental baseline; and
- Sections 5 and 6 for the effects on critical habitat, OC coho salmon, and cumulative effects

On January 19, 2021, the applicant submitted an assessment to determine if the proposed action would meet the project design criteria of the SLOPES stormwater, transportation, and utilities programmatic biological opinion. After meeting with the Corps, Oregon Department of fish and

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Wildlife (ODFW), Oregon Department of State Lands, and the applicant on January 25, 2021, and reviewing a letter we received from ODFW on February 18, 2021,¹ the NMFS and Corps determined that although the proposed action's activities were consistent with SLOPES project design criteria, there was significant uncertainty regarding the number of coho salmon that would be captured, handled, or stranded during lake drawdown for construction and the subsequent fish salvage operations. Thus, in a May 2021 meeting, NMFS and the Corps determined that the Corps should request formal section 7 ESA consultation. On June 2, 2021, the Corps requested initiation of formal consultation with NMFS and transmitted the requisite BA. NMFS initiated formal consultation on this date.

On September 21, 2021, NMFS met with the applicant and previously mentioned agencies for a consultation and permitting check-in where the applicant requested to use an expedited consultation process for NMFS to issue a biological opinion. NMFS and the Corps agreed to this process, which required that the BA meet NMFS' regulatory and scientific standards for ESA section 7 consultation. Subsequently, NMFS met with Stillwater Sciences (applicant's consultant) to update the BA in several meetings between September 21, and November 16, 2021. The NMFS reviewed the updated draft BA on December 3, 2021 and received a final BA from the Corps on December 13, 2021. This biological opinion is based on the BA and approval of the Fishhawk Lake Fish passage designs by a NMFS fish passage engineer on June 12, 2021.²

The Fishhawk Lake Reserve and Community, Inc. (Corps' applicant) is proposing to construct a new fish ladder and spillway and upgrade drainage infrastructure on the Fishhawk Lake Dam (proposed action) near Birkenfeld, Clatsop County, Oregon. The purpose of the proposed action is to provide sufficient spillway capacity to prevent flooding and dam failure, and fish passage to improve fish passage for numerous fish species including OC coho salmon. Construction will take two years to complete and will consist of work area isolation, fish salvage, drawdown of the lake, construction of a new combined spillway and fish ladder, construction of a bridge over the spillway and fish ladder, improvements to the existing drop drain, slip lining the existing underdrain, removal of wooden weirs from the existing fish ladder, mitigation plantings, and construction site stabilization and restoration. The construction sequencing for each construction season is included in the BA (Stillwater Sciences 2021).

The new fish ladder and spillway are designed for passive operation meaning that neither stop logs nor the underdrain will be used to manage lake levels and there will be no need to lower the lake level in the fall. The fish ladder will be a vortex weir pool and chute ladder designed for passing fish between the 5 and 95 percent exceedance flows, an average pool velocity of 1 foot per second, and a drop height of 6 inches for each pool transition. The fish ladder entrance will be outside of the spillway's turbulent zone and provide sufficient attraction flow for upstream fish passage. The new concrete spillway would be on an approximate 7 percent slope. Water flowing over the spillway weir would first drop into a pool area to cushion the fall of fish going over the weir prior to proceeding down the spillway. The upstream portion of the proposed spillway would have a 10-inch diameter return pipe to allow any fish within the labyrinth weir to escape stranding as water levels within the spillway drop during the descending limb of a storm

¹ E-mail with attached letter from Mike Sinnot (ODFW) to Jeff Young (NMFS) discussing concerns with the lake drawdown and fish salvage (February 19, 2021).

² Email from Jeffrey Brown (NMFS) to Jeff Young (NMFS) approving fish passage designs (June 12, 2021).

hydrograph. The spillway would have a cross slope in the bottom to concentrate the lower flows to assist downstream fish passage for outmigrating fish.

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. Sections 2.2 (Critical Habitat Status) and 2.3 (Status of OC coho salmon) of the BA (Stillwater Sciences 2021) describe the status of OC coho salmon and their critical habitat at the ESU and designation-wide levels. Section 2.2 and 2.3 also identified the Nehalem population of OC coho salmon and the specific physical and biological features critical habitat that occur in the action area. Based on our own analysis and data (NWFSC 2015 and NMFS 2016), NMFS concurs that OC coho salmon, specifically the Nehalem population, and their designated critical habitat occur in the action area and may be adversely affected by the proposed action.

Oregon Coast coho salmon were listed as threatened under the ESA on February 11, 2008 (73 FR 7815) and reaffirmed on June 20, 2011 (76 FR 35755). Critical habitat was designated for this species on February 11, 2009 (73 FR 7815).

"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). Section 3 of the BA describes the action area extending from the shoreline of the head of the reservoir upstream of the dam and downstream of the dam along the wetted width of Fishhawk Creek for approximately 0.6 miles, to the confluence of Warner Creek near the Greasy Spoon Road crossing. This area encompasses the area of direct ground and channel disturbance, work area isolation and fish salvage, habitat disturbance due to drawdown of the lake, and downstream dispersion of suspended sediments associated with construction. Reaching agreement on the description of the action area is desirable, but ultimately NMFS is responsible for this biological determination. In this case, NMFS concurs with the description of the action area.

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 used information in Section 4 of the BA to examine the "environmental baseline," of the action area; therefore, Section 4 of the BA is hereby incorporated by reference. Past and present human activities including shoreline development and alteration, lake recreation, and dam operations have degraded habitat in the action area for OC coho salmon. Other activities have

contributed to OC coho salmon habitat degradation in the action area including timber harvest and associated road building. Fishhawk Creek is listed on the Oregon Department of Environmental Quality's 303(d) list for impaired waterbodies for water temperature. These activities have degraded spawning, migration, and rearing habitat in the action area which has adversely affected individual OC coho salmon growth, survival, and fitness and has caused injury and mortality to individual coho salmon in the action area.

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). Because the proposed action will extend the useful life of the Fishhawk Lake Dam in a meaningful way, we also considered the future impact associated with the presence of the dam in the environment separate from consideration of the impacts of construction necessary to replace the dam (see Thom 2018).

Section 5.1 of the BA provides a detailed discussion and comprehensive assessment of the effects of the proposed action, and is adopted here (50 CFR 402.14(h)(3)). NMFS has evaluated this section and after our independent, science-based evaluation determined it meets our regulatory and scientific standards. Consequences of the proposed action include injury during fish salvage, stranding, short-term effects on water quality due to suspended sediments associated with construction, short-term reduced water quantity and forage due to drawdown of the lake, and long-term biological benefits to the population resulting from improvements in fish passage due to the new fish ladder and spillway.

The applicant will conduct the necessary work over two construction seasons. The first-year will require work area isolation and fish salvage to implement the work necessary for the downstream portion of the project. For the second-year construction, the applicant will drawdown the lake level to -8 feet below the ordinary water line to conduct the necessary work. The BA did not provide an estimated number of juvenile OC coho salmon injured or killed from the first year work area isolation and fish salvage. An estimate of the number of juvenile OC coho salmon captured and handled during the first-year fish salvage was obtained as follows: $A = n(pct)$, where:

A = number of adult equivalents "killed" each year
n = number of projects likely to occur in a recovery domain each year
p = 31, i.e., number of juveniles to be captured per project, based on Oregon Department of Transportation's (ODOT's) data for site isolation
c = 0.05, i.e., rate of juvenile injury or death caused by electrofishing during capture and release, primarily steelhead and coho salmon. Consistent with observations by Cannon (2008 and 2012) and data reported in McMichael et al. (1998).
t = 0.02, i.e., an estimated average smolt to adult survival ratio, see Smoker et al. (2004) and Scheuerell and Williams (2005). This is very conservative because many juveniles

are likely to be captured as fry or parr, life history stages that have a survival rate to adulthood that is exponentially smaller than for smolts.

NMFS anticipates that 31 individuals would be captured and handled during the first-year work area isolation and fish salvage and that two juvenile OC coho salmon would be killed because of work area isolation and fish salvage during the first year of construction.

The number of individuals stranded or injured during the drawdown of the lake is difficult to estimate because the number of 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. Additionally, it is not possible to provide an accurate estimate of take in the action area associated with drawdown of the lake for construction because there is no way to accurately estimate the number of coho salmon present in the action area that would not result in additional effects on juvenile OC coho salmon individuals. However, the use of BMPs described in Section 1.3 of the BA will minimize the number of individuals affected by the lake drawdown.

“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. Section 5.2 of the BA provides a detailed assessment of ongoing non-Federal actions that contribute to cumulative effects in the action area and is incorporated by reference.

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 section 2.2 of the BA, the critical habitat unit affected by the proposed action is the Upper Nehalem River 5th field watershed (HUC5 1710020202), which contains the PBFs of critical habitat that supports spawning, rearing, and migration of OC coho salmon in the action area. The Critical Habitat Analytic Review Team (CHART) for OC coho salmon assigned ratings of low, medium, or high conservation values to watersheds based on the importance of the population associated with a site to ESU conservation and the contribution of that site to the conservation of the population of OC coho salmon (NOAA Fisheries 2007). The CHART identified the Upper Nehalem River critical habitat unit as having a high conservation value.

Section 2.1 of the BA describes the effects of climate change on OC coho salmon critical habitat. Climate change is likely to adversely affect the overall conservation value of OC coho salmon designated critical habitats. The adverse effects are likely to include, but are not limited to,

depletion of cold-water habitat and other variations in quality and quantity of tributary spawning, rearing, and migration habitats. The magnitude and severity of these effects will vary from year to year. The proposed action's effects would be unlikely to exacerbate the effects of climate change critical habitat because they are short-term and localized to the action area. Additionally, the new fish ladder and spillway will improve fish passage and migration in the action area and the critical habitat unit potentially making the fish passage and the biological benefits thereof, more resilient through climate change-induced environmental changes.

As described in Section 4 of the BA, past and present activities including the operation of the dam and fish ladder, timber harvest, streambank and channel modifications, and lake shoreline development have degraded the environmental baseline. Each of these activities has contributed to a myriad of interrelated factors for the decline in quality and function of critical habitat PBFs essential for the conservation of OC coho salmon. However, the rate of decline in quality and function of critical habitat has been reduced by restoration actions to improve habitat complexity and water quality in the action area and the Upper Nehalem River watershed.

The effects of the continued existence of the dam into the foreseeable future are likely to be similar to those described as environmental baseline conditions for fish passage free of artificial obstruction, management of the water in the reservoir, and sediment transport. The proximity of these effects of sediment transport on critical habitat will be the same, as will distribution, timing, nature, duration, frequency, intensity, and severity of the effects. While the dam is still considered a barrier to fish passage and its existence will never allow unimpeded fish passage, upgrading the fish ladder and spillway will improve upstream and downstream fish passage over the dam. Passive operation of the fish ladder and spillway will also eliminate the need for intentional seasonal fluctuations in lake levels and maintain lake levels and water quantity. Effects of construction associated with the proposed action on critical habitat PBFs including water quality and forage will be relatively short-term and localized due to best management practices intended to isolate the construction areas.

Cumulative effects will result from non-federal and state actions in and near the action area that include lake recreation, shoreline modification, timber harvest, and road building that will slowly continue to degrade critical habitat in the action area and the Upper Nehalem River watershed. As these actions continue, non-federal and state entities will conduct restorative actions that improve habitat complexity and natural processes that will contribute to reducing the downward trend in habitat degradation.

The effects of the proposed action, when added to the environmental baseline, cumulative effects, and status of OC coho salmon critical habitat, will not appreciably reduce the quality and function of critical habitat in the action area or the Upper Nehalem River watershed. Therefore, the proposed action will not impair the ability of this critical habitat to play its intended role of supporting the Nehalem population of OC coho salmon or the OC coho salmon ESU.

The proposed action would affect the Nehalem River population of OC coho salmon. The Nehalem population plays an important role in the persistence and sustainability in the North Coast Stratum of OC coho salmon and, subsequently, the ESU as a whole. The effects on the

Nehalem River population of OC coho salmon from the proposed action would be the integrated responses of individuals to the predicted environmental changes. Instantaneous measures of population characteristics, such as population size, growth rate, spatial structure, and diversity, are the sums of individual characteristics within a particular area, while measures of population change, such as a population growth rate, are measured as the productivity of individuals over the entire life cycle (McElhany et al. 2000). A persistent change in the environmental conditions affecting a population, for better or worse, can lead to changes in each of these population characteristics.

Section 2.1 of the BA describes the effects of climate change on OC coho salmon. Climate change is likely to have adverse effects on OC coho salmon, though it may have beneficial effects in some circumstances. The adverse effects are likely to include, but are not limited to, depletion of cold-water habitat and other variations in quality and quantity of tributary spawning, rearing and migration habitats.

As described in Section 4, past and present activities including the operation of the dam and fish ladder, timber harvest, streambank and channel modifications, and lake shoreline development have degraded the environmental baseline. The response of OC coho salmon exposed to the environmental baseline is likely observed in reduced growth, survival, and fitness of individuals. Factors limiting the Nehalem River population of OC coho salmon in the action area and the Nehalem River basin include habitat complexity and water quality.

Adverse effects on juvenile OC coho salmon individuals will occur during the first year of work area isolation and fish salvage and the second year lake drawdown to facilitate construction of the new fish ladder and spillway. Individual juvenile coho salmon will experience injury or mortality due to stranding and capture and handling during the drawdown and work area isolation and fish salvage. It is very difficult to estimate the number of individuals that will be captured, injured, or killed because there is no way to accurately estimate the number of coho salmon present in the action area that would not result in additional effects on juvenile OC coho salmon individuals. However, this number will be minimized by the conservation measures and will not be meaningful for the Nehalem population because the rate of the drawdown will be slow at 1 inch of depth per hour and work will occur during the preferred in-water work window when the least number of individuals would be present. All other effects from suspended sediments, reduced forage, fish passage improvements would be short-term and localized to the action area or beneficial and would not elicit an adverse response to individual OC coho salmon.

Cumulative effects will result from non-federal and state actions in and near the action area that include lake recreation, shoreline modification, timber harvest, and road building that will slowly continue to degrade critical habitat in the action area and the Upper Nehalem River watershed. As these actions continue, non-federal and state entities will conduct restorative actions that improve habitat complexity and natural processes that will contribute to reducing the downward trend in habitat degradation.

When we add the effects of the proposed action to the populations' status, environmental baseline, cumulative effects, and climate change, we find the proposed action would not appreciably reduce the likelihood of the survival or recovery of OC coho salmon at the

population scale. Based on our conclusion that the populations' survival and recovery will not be impeded because of the proposed action, the proposed action will not appreciably reduce the likelihood of the survival or recovery of the OC coho salmon ESU.

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 OC coho salmon or destroy or adversely modify its 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). "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 from capture, handling, and stranding due to work area isolation and fish salvage and drawdown of the lake for construction. The NMFS estimated that 31 individual OC coho salmon would be pursued, captured, and handled and that two of these individuals would be killed during work area isolation and fish salvage during the first year of construction.

It is not possible to provide an accurate estimate of take in the action area associated with drawdown of the lake for construction because there is no way to accurately estimate the number of coho salmon present in the lake that would not result in additional effects and/or take on juvenile OC coho salmon individuals. Additionally, the distribution and abundance of 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. In such circumstances where NMFS cannot provide an amount of take that would be caused by the proposed action, NMFS uses habitat indicators to describe the extent of take.

The indicators for the extent of take from drawdown of the lake are the distance (-8 feet) the applicant lowers the lake level for construction of the upstream portion of the fish ladder and spillway and the rate of the drawdown (1-inch per hour). The distance of the drawdown is proportional to the effects of the drawdown because the amount of water column habitat

available to juvenile OC coho salmon will uniformly decrease across the lake as the drawdown occurs. The rate of drawdown is also proportional to the effects of the drawdown because a drawdown rate exceeding 1 inch per hour would proportionally increase the take of OC coho salmon during the drawdown. These are valid indicators of take because they are measurable and can be easily monitored during project implementation. Exceeding either of these indicators will trigger the reinitiation provisions of this opinion.

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 OC coho salmon, or destruction or adverse modification of their 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 ensure that the applicant will:

1. Minimize incidental take resulting from work area isolation during construction.
2. Minimize incidental take resulting from fish salvage.
3. Minimize incidental take resulting from drawdown of Fishhawk Lake.
4. Complete monitoring and reporting to confirm that the take exemption for the proposed action is not exceeded, and that the terms and conditions in this incidental take statement are effective in minimizing take.

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. The following terms and conditions implement reasonable and prudent measure 1:
 - a. Isolate and dewater the shortest linear extent of work area practicable.
 - b. Whenever a pump is used to dewater the isolation area, use a fish screen that meets NMFS’s fish screen criteria (NMFS 2011)
 - c. Monitor below the construction site to prevent stranding of OC coho salmon.
 - d. When construction is complete, re-water the construction site slowly to prevent loss of surface flow downstream, and to prevent a sudden increase in stream turbidity.

2. The following terms and conditions implement reasonable and prudent measure 2:
 - a. If practicable, allow listed fish species to migrate out of the work area or remove fish before dewatering; otherwise remove fish from an exclusion area as it is slowly dewatered with methods such as hand or dip-nets, seining, or trapping with minnow traps (or gee-minnow traps).
 - b. Fish capture will be supervised by a qualified fisheries biologist, with experience in work area isolation and competent to ensure the safe handling of all fish.
 - c. Conduct fish capture activities during periods of the day with the coolest air and water temperatures possible, normally early in the morning to minimize stress and injury of species present.
 - d. Monitor the nets frequently enough to ensure they stay secured to the banks and free of organic accumulation.
 - e. Electrofishing will be used during the coolest time of day, only after other means of fish capture are determined to be not feasible or ineffective.
 - i. Do not electrofish when the water appears turbid, e.g., when objects are not visible at depth of 12 inches.
 - ii. Do not intentionally contact fish with the anode.
 - iii. Follow NMFS (2000) electrofishing guidelines, including use of only direct current (DC) or pulsed direct current within the following ranges:
 - iv. If conductivity is less than 100 microsecond (μs), use 900 to 1100 volts.
 - v. If conductivity is between 100 and 300 μs , use 500 to 800 volts.
 - vi. If conductivity greater than 300 μs , use less than 400 volts.
 - vii. Begin electrofishing with a minimum pulse width and recommended voltage, then gradually increase to the point where fish are immobilized.
 - viii. Immediately discontinue electrofishing if fish are killed or injured, i.e., dark bands visible on the body, spinal deformations, significant de-scaling, torpid or inability to maintain upright attitude after sufficient recovery time. Recheck machine settings, water temperature and conductivity, and adjust or postpone procedures as necessary to reduce injuries.
 - f. If buckets are used to transport fish:
 - i. Minimize the time fish are in a transport bucket.
 - ii. Keep buckets in shaded areas or, if no shade is available, covered by a canopy.
 - iii. Limit the number of fish within a bucket; fish will be of relatively comparable size to minimize predation.
 - iv. Use aerators or replace the water in the buckets at least every 15 minutes with cold clear water.
 - v. Release fish in an area upstream with adequate cover and flow refuge; downstream is acceptable provided the release site is below the influence of construction.
 - vi. Be careful to avoid mortality counting errors.
 - g. Monitor and record fish presence, handling, and injury during all phases of fish capture and submit a fish salvage report with the project completion report.
3. The following terms and conditions implement reasonable and prudent measure 3:
 - a. The lake drawdown rate shall not exceed 1 inch per hour.

- b. The depth of the drawdown of the lake level shall not exceed -8 feet.
 - c. During the lake drawdown, monitor the lake, shorelines, and lake bottom for fish mortalities, stranded fish, and evidence of fish predation (foraging birds or other animals, partially consumed fish carcasses). If possible, take practical measures to minimize mortalities and occurrence of stranding and reduce fish predation.
4. The following terms and conditions implement reasonable and prudent measure 4:
- a. Provide a project completion report with the following information within 60 days of completing all construction:
 - i. Evidence of compliance with NMFS fish screening criteria for any pump used during construction.
 - ii. The number of fish captured or handled during fish salvage grouped by species, including the number of observed mortalities of each species.
 - iii. Record of the times that the drawdown rate exceeded 1 inch per hour.
 - iv. Record of the times that the depth of the drawdown level exceeded -8 feet.
 - v. Provide a summary of monitoring during the lake drawdown. Record any observations of fish mortality, stranding, or predation during drawdown of the lake and describe any measures taken to minimize mortality, stranding, or predation.

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).

Work with the FLRC to identify and implement actions at Fishhawk Lake that restore historical and/or unimpeded fish passage, riparian function, aquatic habitat in the lake, and natural stream flow and processes in the action area.

Please notify NMFS if the Corps carries out this recommendation so that we will be kept informed of actions that are intended to improve the conservation of OC coho salmon 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.

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. In this case, the entire action area is designated as EFH for Pacific salmon (PFMC 2014). Section 7 and 8 of the BA discuss effects of the proposed action on EFH. NMFS concluded that the proposed action would adversely affect EFH as follows:

1. Short-term reduction in water quality because of short-term increases in suspended sediment associated with construction;
2. Short-term reduction in forage species abundance due to dewatering for work area isolation, fish salvage, and drawdown of the lake for construction;
3. Short-term reduction of water quantity and juvenile salmonid rearing habitat due to drawdown of the lake; and
4. Long-term maintenance of degraded fish passage, migration, and water quantity due to the prolonged presence of the dam. However, upstream and downstream fish passage over the dam will be improved because of the upgraded fish ladder and spillway. Water quantity will also be improved because the upgraded fish ladder and spillway will eliminate the need to drawdown the lake prior to storm events for water storage.

NMFS recommends that the Corps carry out the following conservation recommendations to avoid, mitigate, or offset the impact of the proposed action on EFH:

1. Carry our terms and conditions to implement reasonable and prudent measures 1, 3(a – b), and 4(a)(iii – iv) from the ESA portion of this document.
2. Work with the FLRC to identify and implement actions at Fishhawk Lake that restore historical and/or unimpeded fish passage, riparian function, aquatic habitat in the lake, and natural stream flow and processes in the action area.

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/>. A complete record of this consultation is on file at the Oregon Coast Branch in Roseburg, Oregon.

Please contact Jeff Young, fish biologist in the Oregon Coast Branch at 541.315.1571 or jeff.young@noaa.gov if you have any questions concerning this consultation, or if you require additional information.

Sincerely,

A handwritten signature in blue ink, appearing to read "Kim W. Kratz".

Kim W. Kratz, Ph.D
Assistant Regional Administrator
Oregon Washington Coastal Office

cc: Trey Fraley, Corps
Kim Gould, Stillwater Sciences
Dana Kurtz, Anderson Perry

REFERENCES

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