UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
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VIA ELECTRONIC FILING

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Debbie-Anne A. Reese, Acting Secretary
Federal Energy Regulatory Commission
888 First Street NE
Washington DC, 20426

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson–Stevens Fishery Conservation and Management Act Essential Fish Habitat response for the Goldendale Energy Storage Project (FERC No. P-14861)

Dear Ms. Reese:

This letter responds to the Federal Energy Regulatory Commission's (FERC) April 18, 2024 request for initiation of formal consultation with National Marine Fisheries Service (NMFS) pursuant to Section 7 of the Endangered Species Act (ESA) for the Goldendale Energy Storage Project (FERC No. P-14861). This letter also addresses FERC's request for consultation pursuant to the essential fish habitat (EFH) provisions in Section 305(b) of the Magnuson–Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1855(b)) for this action.

We reviewed FERC's consultation requests and related initiation package, including their final Environmental Impact Statement (EIS), where they determined that the proposed action is not likely to adversely affect (NLAA) the following 11 species and their designated critical habitats:

- Lower Columbia River (LCR) Chinook salmon;
- LCR coho salmon;
- LCR steelhead;
- Columbia River (CR) chum salmon;
- Snake River (SR) fall Chinook salmon;
- SR spring/summer Chinook salmon;
- SR sockeye salmon;
- Snake River Basin (SRB) steelhead;
- Upper Columbia River (UCR) spring Chinook salmon;
- UCR steelhead; and
- Middle Columbia River (MCR) steelhead.

On April 4, 2024, NMFS advised FERC that we did not concur with their NLAA determination for all eleven species. On April 18, 2024, FERC revised their request to include formal

consultation. Although FERC was not specific about which species they were requesting formal for, NMFS interpreted their request to be formal consultation for SR fall Chinook salmon, and a request for concurrence for NLAA for the remaining ten species. Consultation was initiated on April 18, 2024.

This consultation qualified for our expedited review and analysis because it met our screening criteria and contained all required information on, and analysis of, the proposed action and its potential effects to listed species, designated critical habitat, and EFH. Where relevant, we have adopted the information and analyses FERC has 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 final EIS (FERC 2024): Section 2.2 Applicant's Proposal (pages 9-17); Section 2.3 Staff Alternative (pages 17-19); Section 3.1 General Description of the River Basin (pages 20-21); Section 3.3.1 Geology and Soils (pages 22-28); Section 3.3.2 Aquatic Resources (pages 28-37); Section 3.3.3 Fisheries Resources (pages 37-44); Section 3.3.5 Threatened and Endangered Species (pages 67-74); Appendix M; and Appendix B Table 3.3.5-4 (page B-36). What information is being incorporated by reference and where that information is being incorporated is explicitly stated throughout this document.

Consultation History

On June 23, 2020, FFP Project 101, LLC (Applicant) filed an application for a new FERC license to construct and operate the Goldendale Energy Storage Project. Licensing under the Federal Power Act constitutes a federal nexus requiring consultation with NMFS to address potential effects to species and critical habitat listed under the ESA and to EFH under the provisions of the MSA. FERC is the lead action agency for this project and the Applicant is the project proposer. The Klickitat Public Utility District (PUD) is a third-party indirectly involved in this licensing proceeding because they hold an existing water right which will be used by the Applicant to supply the project. Project water will be withdrawn from their intake pool and pump station, which is hydrologically connected to the mainstem Columbia River.

NMFS intervened in this licensing proceeding on February 11, 2021 and provided preliminary comments, recommendations, and license terms and conditions in response to FERC's Notice of Application Ready for Environmental Analysis on May 23, 2022. A primary objective of NMFS' recommendations was to avoid or minimize water withdrawals from the Columbia River during the primary juvenile salmon and steelhead outmigration season (April – August). FERC did not adopt any of NMFS' recommendations into the Staff Alternative in the March 31, 2023 draft EIS, citing excessive and prohibitive costs to the Applicant due to project delays that outweighed the potential negative impacts to ESA-listed salmon and steelhead. FERC simultaneously requested concurrence with their not likely to adversely affect (NLAA) determinations for 11 ESA-listed species and their designated critical habitats and requested consultation under the MSA.

NMFS and FERC staff subsequently met for a public dispute resolution meeting in Goldendale, Washington on May 3, 2023. The Applicant and Klickitat PUD (project water right holder) also participated in this conversation and provided new and/or clarified information that impacted the diversion analyses in FERC's draft EIS. Specifically, conversations regarding ESA impacts at this meeting resulted in (1) a commitment by Klickitat PUD to screen a culvert hydrologically

connecting the Columbia River to the intake pool to NMFS' criteria and (2) recognition that an annual consumptive use constraint on the water right precluded project initial fill in one calendar year, greatly reducing the burden of not withdrawing water during the primary juvenile fish migration season. NMFS subsequently notified FERC that the draft EIS did not have enough finalized information to evaluate their NLAA determinations on June 5, 2023 because it did not incorporate the two new diversion-related commitments discussed above. Klickitat PUD's commitment to screen the culvert was codified in the FERC record on June 6, 2023. The Applicant's clarification of their consumptive water right constraint and commitment to conduct project fill outside the primary migration season was filed in the FERC record on June 6, 2023 and incorporated into FERC's final EIS issued February 8, 2024. FERC again concluded that the proposed action was not likely to adversely affect the 11 ESA-listed species and their designated critical habitat and was not expected to adversely affect EFH in the final EIS. As stated above, on April 4, 2024 NMFS advised FERC that we did not concur with their NLAA determination for at least one species. FERC sent a letter to NMFS on April 18, 2024, requesting formal consultation. NMFS initiated formal consultation for SR fall Chinook salmon on that date, and informal consultation for the remaining ten species.

The first two sections of this document contain a final biological opinion and associated incidental take statement, where we conclude that the proposed action is not likely to jeopardize the continued existence of SR fall Chinook salmon and will not destroy or adversely modify their designated critical habitat. The third section of this document contains our finding of concurrence that the proposed action is not likely to adversely affect LCR Chinook, LCR coho, LCR steelhead, CR chum, SR spring/summer Chinook, SR sockeye, SRB steelhead, UCR spring Chinook, UCR steelhead, and MCR steelhead or their designated critical habitats. Finally, the fourth section of this document addresses our finding of concurrence that there are no adverse effects on EFH as a result of this action.

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.

Proposed Action

FERC proposes to award the Applicant a new 50-year license to construct and operate a closed-loop pump storage project offstream of the Columbia River adjacent to John Day Dam (river mile (RM) 215.6) in Klickitat County, Washington. In this consultation, NMFS contemplates FERC's Staff Alternative – which is the proposed action, inclusive of environmental measures FERC deemed necessary and appropriate to avoid and/or minimize adverse effects to species and habitat – as described on pages 9-19 of the final EIS and incorporated here by reference.

This closed-loop pump storage project will be a two-reservoir system that generates energy by releasing water from an upper reservoir downhill through a series of turbine units to a lower reservoir when energy is in high demand and pumping water from the lower reservoir to the upper reservoir when energy is in excess or in low demand (Figure 1). It will require a one-time initial fill and annual refills to offset evaporative and seepage losses.

Project licensing will entail the construction of a lined 61-acre upper reservoir located on the Columbia Hills near the headwaters of Swale Creek, a double-lined 63-acre lower reservoir located within the footprint of the West Surface Impoundment (WSI), a disposal site connected to the former Columbia Gorge Aluminum Smelter, an underground powerhouse, substation/switchyard, and water conveyance system, a 500-kV transmission line connected to an existing Bonneville Power Administration (BPA) right-of-way that aerially routes power across the Columbia River, and appurtenant facilities. Waste materials from the WSI will be excavated, removed, and disposed of off-site in coordination with Washington Department of Ecology (WDOE).

An estimated 7,640 acre-feet of water will be needed for initial project reservoir fill and 360 acre-feet of water will be needed each year of operation for annual refill. Initial fill and annual refill will occur September 1 to March 31 at an average withdrawal rate of 21 cubic feet per second (cfs) and a maximum rate of 35.3 cfs. The larger initial fill will occur over roughly seven months spanning two calendar years, with no more than 4,851 acre-feet diverted in any one year. Annual refills are expected to occur over 10 or fewer days in the allotted timeframe each year (page 41, final EIS). Both volumes of water will be purchased from the Klickitat PUD and withdrawn from their existing intake pool, which has a direct hydraulic connection to the mainstem Columbia River. Mainstem water is drawn into the intake pool from the Columbia River just upstream of John Day Dam via seepage across a rock and gravel-filled Burlington Northern Santa Fe (BNSF) railway berm's interstitial spaces of unknown gradation and through at least one 120-foot-long, 42-inch-diameter culvert passing through the berm. Though not under FERC's authority, we expect that the culvert will be screened prior to implementation of this licensing action, as described in an off-license commitment codified in the FERC docket for this licensing action (Klickitat PUD 2023; see '*Cumulative Effects'* section for additional information). This culvert would regularly be wetted under John Day Dam's normal forebay operating range (260-268 feet MSL; USACE 2024). The northwest corner of the intake pool houses a Klickitat PUD-owned pump station, which is encased in an approximately 30-foot deep infiltration gallery consisting of 2,400 cubic yards of clean gravel.

Project construction will take approximately five years to complete; thus, it is anticipated that the FERC license will cover roughly 45 years of operation. Extensive measures and best management practices (BMPs) will be implemented during the construction, maintenance, and operation periods to minimize potential project effects. These are described in detail on pages 13-18 and Appendix M of the final EIS and incorporated into this opinion by reference.

We considered, under the ESA, whether or not the proposed action would cause any other activities and determined that it would not.

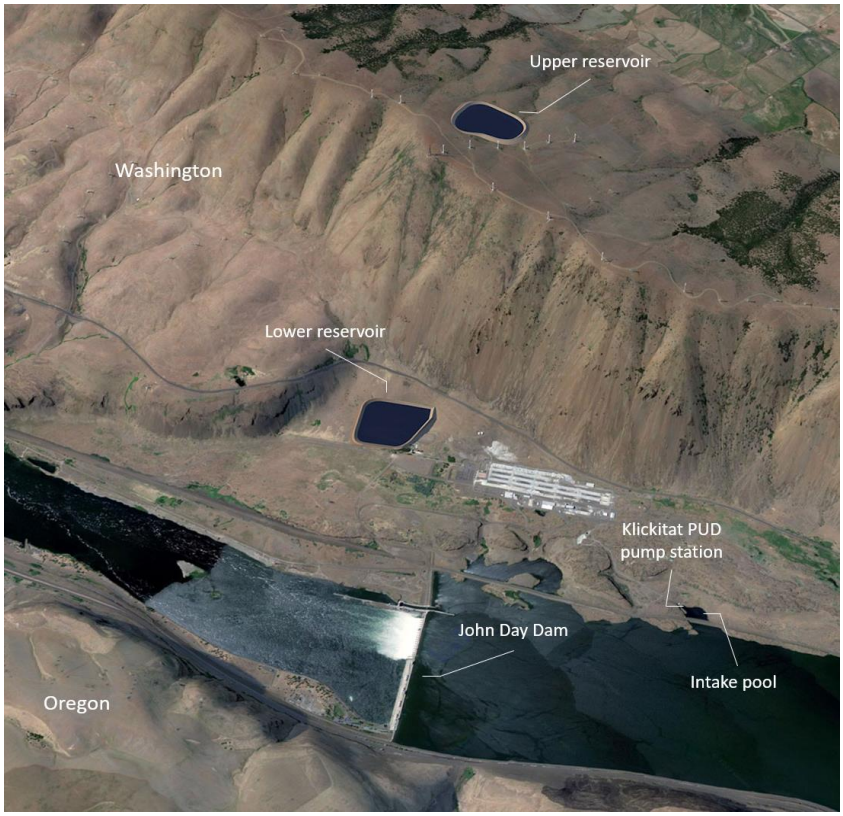

Figure 1: Location of Goldendale Location of Goldendale Energy Storage Project, including existing structures (John Day Dam, Klickitat PUD pump station, intake pool) and to-be constructed project elements (upper and lower reservoirs*;* Source: https://goldendaleenergystorage.com/resources.html, as modified by staff)

BIOLOGICAL OPINION

Status of Species and Designated Critical Habitat

We examined the status of SR fall Chinook salmon, 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. We also examined the condition of critical habitat throughout the designated area and discuss the function of the physical or biological features (PBFs) essential to the conservation of the species that create the conservation value of that habitat. Section 3.3.5.1 (pages 67-68) and Appendix B Table 3.3.5-4 (page B-36) of the final EIS include a brief description of the species and critical habitat in the action area, which we adopt here. We augment this information by incorporating the content contained in NMFS' SR Fall-Run Chinook Salmon Status of the Species (NMFS 2024), which is available on the NOAA Fisheries website at https://www.fisheries.noaa.gov/west-coast/consultations/esa-section-7-consultations-west-coast, NMFS' 2022 5-Year Review: Summary & Evaluation of Snake River Fall-Run Chinook Salmon (NMFS 2022), and the ESA Recovery Plan for Snake River Fall Chinook Salmon (NMFS 2017) by reference into this biological opinion. Together, these

documents contain the best available and most up-to-date information on the status of the species and critical habitat considered in this consultation. Finally, we examined the likely effects on any listed species and critical habitats that your agency made "not likely to adversely affect" determinations for. Our conclusions regarding the effects of the action on those species and critical habitats is provided below under the heading: '*NLAA Determinations'*.

Species

The SR fall Chinook salmon evolutionarily significant unit (ESU) was listed as a threatened species under the ESA on April 22, 1992 (57 FR 14653). The one extant population of this ESU spawns and rears in the mainstem of the Snake River and the lower reaches of its major tributaries and uses the mainstem Snake and Columbia Rivers as a migration corridor. Most SR fall Chinook express a subyearling life history strategy, meaning they migrate at a smaller size and earlier than the majority of other species in the basin. However, an overwintering yearling life history strategy is also supported (NMFS 2017). While the population is currently considered to be viable (i.e., at low risk of extinction), it is not meeting its recovery goals and continues to face threats from tributary and mainstem habitat loss, degradation/modification, disease, predation, harvest, hatcheries, and climate change. NMFS concluded that this species should retain its threatened status in the most recent 5-Year Status Review (NMFS 2022).

Critical habitat

Critical habitat for SR fall Chinook salmon was originally designated on December 28, 1993 (58 FR 68543) and includes the river reaches of the Columbia, Snake, and Salmon Rivers, and all tributaries of the Snake and Salmon Rivers historically accessible. The mainstem Columbia and Snake River migration corridor is among the areas of high conservation value to the species because it connects the single extant population with the ocean allowing it to complete its life-cycle and is used by all migrating juveniles and adults. NMFS describes critical habitat in terms of the essential PBFs of that habitat that support one or more life stages of the species. Proper function of PBFs is necessary for successful life-cycle completion. PBFs for SR fall Chinook salmon's juvenile rearing areas and juvenile and adult migration corridors include: spawning gravel, water quality, water quantity, cover/shelter, food, riparian vegetation, space, substrate, water temperature, water velocity, and safe (unobstructed) passage.

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). A description of the immediate area involved in the action – the project boundary – is provided on pages 10-11 of the final EIS, and incorporated here by reference. In accordance with the ESA, the action area includes all project boundary facilities and areas identified on pages 10-11 of the final EIS, as well as the:

- Intake pool – A 4.15-acre backwater slough created by a 500-foot-long rock and gravel-filled BNSF railway berm running parallel to the Columbia River. Project water will be sourced from the Columbia River and routed through the intake pool.
- Klickitat PUD pump station – The pump located in the northwest corner of the intake pool that will be used to withdraw project water from the intake pool.

- Klickitat PUD water conveyance systems – The water supply vault and water conveyance lines that will distribute the Columbia River sourced water pumped out of the intake pool and into the project reservoirs.

- Adjacent Columbia River – 300 feet into the Columbia River from the Washington shoreline from the easternmost edge of the intake pool to the westernmost edge of the project reservoirs, the extent of anticipated impacts from entrainment/impingement.

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 federal agency activities or existing federal agency facilities that are not within the agency's discretion to modify are part of the environmental baseline (50 CFR 402.02).

The environmental analysis portion of the final EIS (Section 3.0) includes a description of the river basin and a series of '*affected environment*' sections that provide in-depth information regarding the environmental baseline. We incorporate by reference the general description of the river basin (pages 20-21), geology and soils (pages 22-24), aquatic resources (pages 28-31), fisheries resources (pages 37-38), and threatened and endangered species (pages 67-70).

The Columbia River in the action area is designated critical habitat for SR fall Chinook salmon and principally serves as a juvenile and adult migration corridor. Although juveniles could also technically use the action area as rearing habitat, this species' mainstem rearing generally terminates in the lower Snake River well upstream of the action area (NMFS 2017) and it would be atypical for numerous SR fall Chinook to rear near the project. Additionally, Tiffan et al. (2014) found that mainstem riverine reaches provide better rearing habitat than reservoir reaches, like those in the action area. If present, rearing individuals are expected to be extremely low in number and likely large in size given the extent of their downstream movement and ability to accumulate growth prior to arrival in the action area.

The action area provides PBFs of critical habitat for migration and rearing, though these persist in largely degraded condition. Historical and ongoing water and land management practices limit the action area's ability to support recovery of SR fall Chinook salmon including higher quality habitat for migration.

The Columbia River portion of the action area is an impounded section of the mainstem bisected by John Day Dam, with the eastern portion (adjacent to the intake pool) including John Day Dam reservoir and the western (adjacent to most other project facilities) John Day Dam tailrace and the upper end of The Dalles Dam reservoir (Figure 1). Mainstem flow regimes and aquatic habitats in the action area have been highly modified and homogenized by hydropower and water storage projects, extensive mainstem diversions, power generation infrastructure, and shoreline development. Columbia River flow regulation (US and Canadian) and diversions to support agriculture, industry, and municipalities have significantly altered the hydrograph (quantity and timing) in the action area by substantially reducing flows in the spring and summer and increasing flows during the winter months (Figure 2; NMFS 2020).

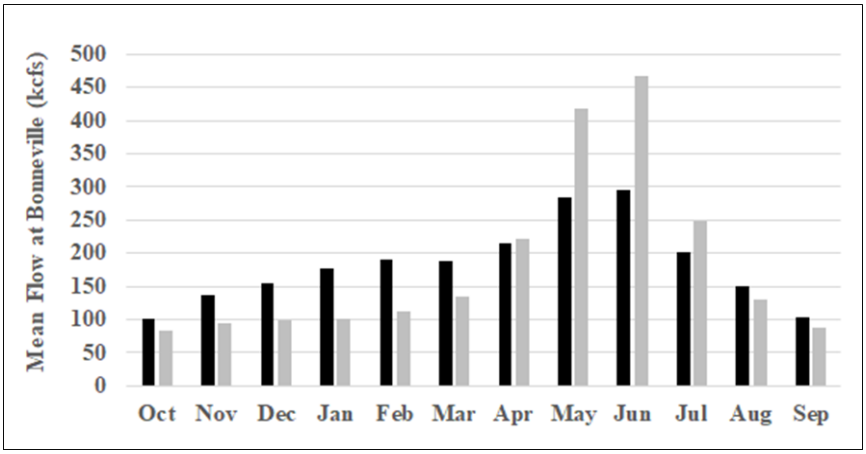

Figure 2: Simulated mean monthly flows for the Columbia River at Bonneville Dam under "current" (black) and "unregulated" or "natural" (gray) conditions (NMFS 2020).

The reservoirs created and maintained by John Day Dam and The Dalles Dam have increased the cross-sectional area of the Columbia River and reduced year-round instantaneous mainstem water velocities. This fundamentally changed the mainstem portion of the action area from a free-flowing river habitat to a series of deep, low velocity pools. The implications of flow regulation and use include, but are not limited to: slowed smolt migration speeds, altered food-webs, the creation of habitat for native and non-native novel species, flooded wetlands, and reduced access to shallow water habitat along the river banks (NMFS 2020).

The amount of and access to nearshore habitat has been further reduced by the physical structures associated with John Day Dam, the aluminum smelter site, and a BNSF railway line track that runs east-west through the riparian zone for the entire length of the action area. Shoreline regions in the action area lack riparian vegetation, have little to no channel complexity, and most of the banks are armored with cobble and/or boulders. The entire mainstem habitat in the action area is considered water quality impaired, with both reservoirs included on the Clean Water Act section 303(d) list. John Dam Day reservoir is listed for water temperature, pesticides, polychlorinated biphenyls in fish tissue, and subject to a Total Maximum Daily Load (TMDL) for dioxins in fish tissue. The Dalles Dam reservoir is similarly listed for water temperature and subject to a TMDL for dioxins in fish tissue and total dissolved gas (WDOE 2022). Mainstem water temperatures are often elevated (greater than 20 °C) in the action area (at John Day Dam) from early July to mid-September. Further, the WSI disposal site is located near the river bank

and is estimated to contain 89,000 cubic yards of alumina, dust, and particulate waste that has been determined not to be hazardous or dangerous.

Habitat in the intake pool portion of the action area is similarly degraded and this water body supports a robust community of piscivorous predators, including walleye, yellow perch, and large and smallmouth bass. It is not suitable rearing habitat for juvenile SR fall Chinook salmon. The mainstem Columbia River is hydrologically connected to this intake pool through interstitial space and at least one culvert. Historical records indicated the potential presence of two culverts, but only one (unscreened) was located following a visual inspection and investigation with an underwater remotely operated vehicle. Klickitat PUD is formally permitted to divert up to 4,851 acre-feet of water from the Columbia River through the intake pool each year for consumptive use. There is uncertainty surrounding the extent to which Klickitat PUDs water right has been exercised since it was transferred to Klickitat PUD from the aluminum smelter site when it closed in 2005. The Applicant suggests that it is currently used to serve the former smelter cleanup site and one agricultural customer, but no additional details are provided (page 11, final EIS). The WDOE notes that the full water right quantity is available to meet the water supply needs of the project (page 69, WDOE 2022). The frequency and magnitude of Klickitat PUD's Columbia River water diversions in the recent past is largely unclear.

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.

FERC proposes to license the Applicant to construct and operate a new offstream closed-loop pump storage project. Project water will be diverted from the Columbia River and routed through an intake pool. One-time initial fill and annual refill will be temporally constrained to the September 1 through March 31 timeframe. Section 3.0 of the final EIS (specifically, sections 3.3.1, 3.3.2, 3.3.3, and 3.3.5) includes a detailed assessment of the effects of the proposed action, which we incorporate by reference into this opinion (50 CFR 402.14(h)(3)). NMFS performed an independent, science-based evaluation of the effect's analyses presented in Section 3.0 of the final EIS and determined that the additional information provided below is needed to complete our comprehensive analyses.

Effects to species

Presence and exposure

Project construction will occur year-round for up to 5 years. Project filling will occur annually from September through March for 45 years. Based on passive integrated transponder (PIT) tag detections of wild and hatchery fish at John Day Dam (juveniles) and The Dalles Dam (adults) and the life history of SR fall Chinook salmon, we expect juveniles and adults to migrate through the action area from March to November and June to November, respectively. The vast majority of juvenile SR fall Chinook salmon will be present in the action area from April to July, with

only small numbers present from early August (likely subyearling migrants) to late March (likely yearling and early subyearling migrants). While rearing juveniles could possibly be present year-round within the action area, they will be extremely low in number. The greatest number of adults will be present in the action area from August to October and small numbers will likely be present in November, June, and July.

Both life stages would have the potential to be exposed to project construction effects year-round for up to 5-years. Additionally, juveniles and adults migrating or rearing in the action area September to March would be exposed to the diversion related effects of entrainment/impingement, water quantity, water quality, and safe passage. Diversion-related impacts are expected to be greater during initial fill – which will occur over roughly 7 months spanning two calendar years – compared to the smaller volume annual refills.

Entrainment and impingement

Entrainment occurs when a fish passes through a diversion point and becomes stuck in the water system. If the fish is unable to return to the mainstem either at the diversion or at some other point of connection in the water system, then that fish will die. Entrainment typically occurs when a diversion in occupied habitat is not appropriately screened. If improperly designed, screened diversion structures could also injure or even kill ESA-listed fish through impingement. Impingement occurs when a fish is not able to avoid contact with a screen surface, trash rack, or debris accumulated at the intake. This happens when the water velocity at the screen exceeds the swimming capability of the fish. Such contact may cause bruising, descaling, and other injuries. Direct mortality can also occur if impingement is prolonged, repeated, or occurs at high velocities. To minimize the potential for adverse effects to ESA-listed fish, NMFS developed design criteria and guidelines for fish screens and bypass facilities (NMFS 2023).

There is an annual localized risk of entrainment/impingement from September through March because juvenile SR fall Chinook salmon will be present in the action area when project water will be diverted from the Columbia River. Water from the Columbia River enters the intake pool as it is drawn down via seepage through the railway berm and through at least one identified culvert. Based on an off-license commitment filed to the FERC record, our analysis assumes that the identified culvert will be screened to NMFS' criteria prior to project implementation (see *'Cumulative Effects'*). This third-party action effectively precludes entrainment at this location, though impingement on the screen is still possible. Our analysis also excludes the second unconfirmed and unlocated culvert as a possible intake pool entry point because it was not detected during intensive visual inspection and we assume it does not exist or is buried. Therefore, any juvenile SR fall Chinook salmon present in the immediate vicinity (300 feet) of the intake pool from September through March will have the potential to be entrained through the railway berm or impinged on the culvert screen for the duration of project operation (45 years). We do not expect individuals farther than 300 feet from the intake pool entry points to interact with the railway berm or screen and thus be entrained or impinged at the maximum mainstem diversion rate of 35.3 cfs.

The vast majority of juvenile SR fall Chinook salmon quickly migrate through the action area in spring and summer (April – July), well outside the allotted project diversion timeframe

(September – March). We expect only small numbers of migrating and possibly very small numbers of rearing SR fall Chinook salmon juveniles to be present during project initial fill and annual refill diversion operations. A larger proportion of the annual cohort will migrate through the action area during one-time initial fill – which will occur over roughly seven months spanning two calendar years – compared to the smaller volume annual refills that will take less than 10 days to complete (page 41, final EIS). Most juveniles in the action area will be subyearlings, though a very small number of overwintered yearlings could be present in the late winter diversion months. Subyearlings will be particularly susceptible to entrainment and impingement because of their smaller size at migration and their more transitory rearing strategy.

Juvenile SR fall Chinook salmon may enter or be drawn into the intake pool through the rock and gravel-filled berm's interstitial spaces of unknown gradation. NMFS anticipates that only individuals exhibiting the small-bodied subyearling life-history strategy could become entrained through this pathway, as overwintered yearlings are likely too large to pass through interstitial spaces. Only small numbers of subyearling SR fall Chinook salmon are expected to be present in the action area during initial fill and annual refill operations (September – March) and attraction flow through the berm will likely be minimal because the maximum withdrawal rate (35.3 cfs) is small compared to total Columbia River flow. However, if a subyearling were to become entrained in the intake pool there is a high probability of mortality because the relatively small intake pool supports a robust community of aggressive piscivorous predators. Successful egress out of the pool through the berm is unlikely. Therefore, we expect a few subyearling SR fall Chinook salmon to be entrained through the berm and killed during initial fill and annual refill over the life of the license (45 years).

Impingement could occur on the culvert screen if the water velocity at the screen exceeds the swimming capabilities of juvenile SR fall Chinook salmon. We expect that juvenile SR fall Chinook salmon will be able to avoid contact with the screen's surface under most conditions, as it will adhere to NMFS' screening criteria which is protective of fry-sized fish (NMFS 2023). Screen sweeping velocities are expected to be appropriate and attraction flow low under these criteria and due to the fact that a relatively small proportion of total Columbia River flow will be diverted (maximum 35.3 cfs). However, the likelihood of impingement will increase if debris accumulates on the screen and/or trash rack overtime and the intake is not regularly cleaned and maintained. The extent of planned third-party screen cleaning and maintenance is unknown, but NMFS' criteria are designed to minimize screen cleaning and maintenance requirements and some degree of cleaning and maintenance will be necessary to retain the culvert's functionality and Klickitat PUD's ability to exercise their water right. While larger bodied yearlings can tolerate some level of debris accumulation because of their increased size and swimming capabilities, the susceptibility of small-bodied and relatively poor swimming subyearlings increases with even small amounts of debris accumulation. So, although the small numbers of subyearling SR fall Chinook salmon present in the action area during initial fill and annual refill operations (September – March) will be largely protected against impingement for the reasons described above, subyearling impingement may occur if any level of debris accumulates at the culvert. Therefore, we expect the injury and/or death of a few subyearling SR fall Chinook salmon by impingement on the culvert screen while water is being diverted from the Columbia River during initial fill and annual refill throughout the life of the license (45 years).

Adults are not expected to be affected because they are generally unlikely to be attracted to the intake pool and they have reduced susceptibility to entrainment and impingement given their size, mobility, and propensity to occupy non-shoreline habitats which reduces their risk of direct exposure to the diversion.

Sedimentation (turbidity), pollutants, and stormwater runoff

The project has the potential to impact mainstem water quality year-round as a result of off-channel land-disturbing construction and/or maintenance activities that will increase the likelihood of mobilization and transport of suspended sediments (turbidity), pollutants (e.g., oil and grease, hydraulic fluid, metals), and stormwater runoff into adjacent surface water bodies. Construction will last 5-years and may impact up to five cohorts of SR fall Chinook salmon. Maintenance will occur as needed throughout the life of the project (45 years). However, we do not expect measurable quantities of these materials to enter the mainstem for the reasons described in Section 3.3.1.2 and Appendix M of the final EIS, which we incorporate into this opinion by reference. These include, but are not limited to, a lack of in-water work and the implementation of extensive control measures and BMPs designed in coordination with WDOE and conditions under the project's state water quality certification. Therefore, we expect that it is highly unlikely that the proposed action will cause any SR fall Chinook salmon to be adversely affected by exposure to suspended sediments (turbidity), pollutants, or stormwater runoff throughout the life of the license (50 years).

Effects to critical habitat

Water quantity PBF

Licensing the project will result in a small, intermittent reduction of Columbia River water quantity in the action area from September through March annually for 45 years due to project diversions. The action will withdraw 7,640 acre-feet of mainstem water over seven months (spanning two calendar years; maximum of 4,851 acre-feet in any one year) to initially fill the reservoirs and an additional 360 acre-feet over 10 or fewer days each subsequent year of operation for refill. Both diversions will be temporally constrained to the autumn and winter months (September – March) and will occur at an average rate of 21 cfs and a maximum rate of 35.3 cfs. Impacts to mainstem flow immediately outside the diversion will be roughly equal to the amount of water being diverted for project consumptive use. A mainstem flow reduction of this magnitude will have a small impact because flows during this period (September – March) are high, averaging roughly 145,000 cfs under baseline conditions (Figure 2). This is largely due to hydrosystem operations that support power generation and reliability by artificially elevating autumn and winter flows relative to the pre-hydrosystem hydrograph. The timeframe allotted for major project diversions and the magnitude of the diversion greatly minimizes impacts to water quantity in the Columbia River portion of the action area. Overall, implementation of the proposed action will have a small (maximum 35.3 cfs) and intermittent (seven months for one-time initial fill; 10 or fewer days for annual refills) impact on the functioning of the water quantity PBF of SR fall Chinook salmon critical habitat from September through March for the duration of project operation (45 years).

Water quality PBF

It is highly unlikely that the water quality PBF of SR fall Chinook salmon critical habitat will be degraded by project-based sediments, pollutants, and/or stormwater runoff production throughout the life of the 50-year license (5 years of construction, 45 years of maintenance and operation) for the same reasons discussed under '*Sedimentation (turbidity), pollutants, and stormwater runoff*' above.

Operational Columbia River water diversions (initial fill and annual refills) also have the potential to affect critical habitat water temperatures annually by reducing mainstem flow volume from September through March for the duration of project operation (45 years). Columbia River water temperatures are likely to be elevated (greater than 20 °C) for a portion of the allotted project fill timeframe (month of September; see '*Environmental Baseline*'). The project diversion is surface oriented and expected to siphon off the warmest reservoir water rather than the cool, deep water. The action's small (maximum 35 cfs) and intermittent (September – March) diminution of flow is not expected to exacerbate mainstem water temperature issues to any appreciable degree. Therefore, we do not expect the water quality PBF of SR fall Chinook critical habitat to be degraded by mainstem temperature effects as a result of the license.

Safe (unobstructed) passage PBF

The placement of instream structures and alterations in mainstem flow have the potential to impede safe salmonid passage in migration corridors. The action does not involve the placement of new structures in the Columbia River, but this project will result in a maximum base flow reduction of 35.3 cfs. However, because Columbia River flows from September through March average approximately 145,000 cfs, removal of 35.3 cfs will not measurably impact the depth of the mainstem Columbia River fish migration habitat or impede upstream and downstream migration. We do expect safe passage to be affected by impingement and entrainment as described above. Fish that are impinged or entrained are not migrating successfully through the action area. We expect adverse impacts to this PBF at the scale of 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). 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.

Construction and operation of the project will be contingent upon water sourced from the Columbia River and supplied by the Klickitat PUD. Water will be routed through an intake pool, which is hydrologically connected to the Columbia River via seepage across a BNSF railway berm and at least one culvert. This culvert has most likely been operating as an unscreened diversion since the construction of the berm. Klickitat PUD has issued a written commitment to work with BNSF to screen the identified culvert to NMFS' criteria (NMFS 2023). Because this third-party commitment was codified to the FERC record on June 6, 2023 (Klickitat PUD 2023;

pages 27 and 71, final EIS), NMFS considers this future private action reasonably certain to occur prior to project implementation. This action will have a positive effect on ESA-listed fish by reducing entrainment.

FERC did not identify any cumulative effects relevant to ESA-listed salmon or steelhead in its final EIS (Section 3.2, final EIS). Further, NMFS is not aware of any future non-Federal activities within the action area that could adversely affect SR fall Chinook salmon or their critical habitat. Therefore, NMFS assumes that future State and private actions and land uses will continue within the action area at roughly their current rate.

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

Adults and juveniles from the one extant population of SR fall Chinook salmon use the action area as a migration corridor. NMFS recently reaffirmed that this species must continue to be protected by retaining its threatened status under the ESA. Though currently considered at low risk of extinction (i.e., viable), this species is failing to sufficiently meet its recovery goals (NMFS 2022).

The proposed action does not include in-water work but does include measures and BMPs that that are sufficient to protect fish occupying mainstem habitat from the effects of construction and/or maintenance-related activities throughout the life of the license. Material deposition in the Columbia River is highly unlikely to occur and lethal or sublethal effects are not anticipated. However, the proposed action is expected to result in the injury and/or death of a few juvenile SR fall Chinook salmon per year from entrainment in the intake pool or impingement on the culvert screen.

Water to support the project will be withdrawn from an intake pool at an average rate of 21 cfs and a maximum rate of 35.3 cfs. Because the intake pool is hydrologically connected to the mainstem, Columbia River waters will backfill it upon drawdown. This will increase flow through the interstitial spaces of the rock and gravel-filled railway berm and one screened culvert which will cause a localized, but annually recurring, risk of juvenile subyearling SR fall Chinook salmon entrainment and impingement. Entrainment is expected to be lethal given the robust community of piscivorous predators inhabiting the relatively small intake pool, and the low likelihood of fish swimming back through the berm to the Columbia River. Impingement may cause injury or direct mortality during prolonged, repeated, or high velocity exposure; we expect a few subyearling Chinook salmon to be killed by impingement each year.

Only a small proportion of the overall SR fall Chinook salmon population will be exposed to the entrainment/impingement effect under the September 1 through March 31 project water diversion timeframe and only subyearlings within 300 feet of the intake pool entry points are expected to be at risk. It is reasonably certain that the risk of injury or lethal take of subyearling SR fall Chinook from the action will be fairly low given the (1) temporal constraints on project-based Columbia River water withdrawals, (2) the small number of subyearlings expected to be in the vicinity of the berm and intake pool during diversion operations, (3) the screening of the identified culvert to NMFS' criteria, and (4) the expected low attraction and sufficient sweeping flows associated with the small magnitude diversion relative to total Columbia River flow. Therefore, we expect a few subyearling SR fall Chinook salmon to be killed by entrainment and a few subyearling SR fall Chinook salmon to be injured and/or killed by impingement during water diversion (September – March) annually for 45 years.

NMFS has determined that the loss of a few juvenile SR fall Chinook salmon as a result of the proposed action is not substantial enough to appreciably alter the abundance, productivity, spatial structure, or diversity at the population level and will not appreciably reduce the likelihood that the population will maintain its current status. Since there is only one population of SR fall Chinook, we therefore expect the current status of SR fall Chinook salmon to be maintained. It is NMFS' opinion that when the effects of the action and cumulative effects are added to the environmental baseline, and reviewed under the context of the status of the species, the effects of action will not reduce reproduction, numbers, or distribution that would reasonably be expected, directly or indirectly, to appreciably reduce the likelihood of both survival and recovery of SR fall Chinook salmon.

Critical habitat

The mainstem Columbia River migration corridor is a critically important portion of SR fall Chinook salmon critical habitat, as juveniles and adults from the one extant population rely on its proper functioning for life-cycle completion. Conditions in the mainstem have been heavily degraded by substantial consumptive water use and the construction and operation of federal hydropower dams and water storage projects. Past and current land use and water management activities have adversely affected water quantity, water quality, and safe passage parameters. Climate change has simultaneously impacted the functionality of the system by altering flow regimes. As a result, the important watershed processes and functions that once created healthy ecosystems for fall Chinook salmon production have been weakened. Although substantial efforts have been, and continue to be, implemented to address impaired mainstem PBFs many effects will continue into the foreseeable future.

The proposed action – construction and operation of an off channel closed-loop pump storage project – will have a small, intermittent effect to the water quantity PBF of critical habitat at the scale of the action area. Water quantity in the mainstem migration corridor will be reduced by an average of 21 cfs (maximum of 35.3 cfs) from September through March for the first seven months of project operation (initial fill; 7,640 acre-feet) then for 10 or fewer days each subsequent year of the license (annual refills; 360 acre-feet annually). In addition, there will be a small reduction in the safe passage PBF at the scale of the action area. Adding these effects of the action to the environmental baseline and the cumulative effects, it is NMFS' opinion that the proposed action will have little overall impact on the seasonal hydrograph and is not likely to

appreciably diminish the conservation value of SR fall Chinook salmon 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 SR fall Chinook salmon 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 Incidental Take Statement (ITS).

Amount or Extent of Take

In the biological opinion, NMFS determined that incidental take of juvenile SR fall Chinook salmon is reasonably certain to occur from entrainment and impingement.

NMFS expects that injury and/or death of a few juveniles will likely occur from entrainment through the railway berm into the intake pool and impingement on the culvert screen when water is being diverted from the Columbia River for project initial fill and annual refill. Flow from the Columbia River to the intake pool will increase when project water is being diverted out of the intake pool. With this directional flow, individuals in the Columbia River adjacent to the intake pool may enter or be drawn into the intake pool via the rock and gravel-filled railway berm's interstitial spaces or impinged on the screen from increased velocity, if not maintained. Quantification of take associated with impingement and entrainment is not possible because abundance estimates of SR fall Chinook salmon within the immediate project area are not available, the number of fish present at any time is highly variable, the range of responses that individual fish will have, and we anticipate substantial difficulties in the ability to observe and accurately document project-induced injuries and mortalities. Fish killed or fish that are injured to the degree that they are rendered morbid-bound are expected to either be swept downstream

and unable to be directly attributed to the project or rapidly consumed by the known community of aggressive piscivorous predators in the intake pool.

When take cannot be adequately quantified, NMFS describes the extent of take and defines the limits of anticipated take through the use of surrogate measures. The pertinent surrogate for this action is described by the total quantity and rate of water diverted for project initial fill and annual refills and the timing that this water is withdrawn. Specifically, the take exempted by this ITS will be exceeded if:

(1) initial fill or any annual refill operations occur outside of the permitted September 1 to March 31 time period,
(2) water diverted for initial fill or any annual refill is greater than 7,640 acre-feet and 360 acre-feet, respectively, or
(3) initial fill or any annual refill diverts water at a rate greater than 35.3 cfs, the rate allowed under the Klickitat PUD water right.

These surrogates for take are appropriate because they are clear, measurable limits that can be monitored for exceedance; they are causally linked to the take pathways because the risk of injury and/or death is related to the amount of water flowing from the Columbia River to the intake pool; and because they represent an observable metric of the extent of take, which if exceeded, would trigger consultation.

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 SR fall Chinook salmon or destruction or adverse modification of their critical habitat.

Reasonable and Prudent Measures

"Reasonable and prudent measures" refer to those actions the Director considers necessary or appropriate to minimize the impact of the incidental take on the species (50 CFR 402.02). NMFS believes that full application of the 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 implementation of the proposed action.

FERC and the Applicant shall:

1. Design and carryout a monitoring and reporting program to confirm that the project is implemented as proposed, the terms and conditions of this ITS are effective in avoiding and minimizing incidental take from permitted activities, and the amount and extent of take is not exceeded.

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. FERC 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. The following terms and conditions implement reasonable and prudent measure 1:

a. Track and monitor the timing and quantity of project water diversion on a daily basis to ensure that the conservation measures are meeting the objective of minimizing take.

b. Submit a one-time initial fill completion report and an annual refill report to NMFS by June 1 each year. The reports shall include, at a minimum, the following:

   i. Total volume (acre-feet) of water withdrawn during each fill period
   ii. Rate of diversion in cfs
   iii. Start and end dates of each fill period
   iv. Reference to NMFS' consultation number WCRO-2024-00249

c. All reports should be sent to: ritchie.graves@noaa.gov

d. If the amount or extent of take is exceeded, stop project activities (fill or annual refill) and notify NMFS immediately.

Reinitiation of Consultation

Under 50 CFR 402.16(a): "Reinitiation of consultation is required and shall be requested by the federal agency where discretionary federal 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 ITS 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."

"NOT LIKELY TO ADVERSELY AFFECT" DETERMINATIONS

We reviewed FERC's consultation request document and related materials, including the request for a written concurrence that the proposed Goldendale Energy Storage Project (FERC No. P-14861) is NLAA the following ESA-listed species and/or their designated critical habitats:

- LCR Chinook salmon (threatened; 64 FR 14308)
- LCR coho salmon (threatened; 70 FR 37159)
- LCR steelhead (threatened; 63 FR 13347)

- CR chum salmon (threatened; 64 FR 14508)
- SR spring/summer Chinook salmon (threatened; 57 FR 14653)
- SR sockeye salmon (endangered; 56 FR 58619)
- SRB steelhead (threatened; 62 FR 43937)
- UCR spring Chinook salmon (endangered; 64 FR 14308)
- UCR steelhead (threatened; 71 FR 833)
- MCR steelhead (threatened; 64 FR 14517)

The rationale for FERC's conclusions is described in the body of their geology and soils, aquatic resources, fisheries resources, and threatened and endangered species '*environmental effects sections'* (pages 25-28, 31-37, 38-44,70-74, final EIS), which we incorporate by reference. After our independent, science-based evaluation, we determined that the additional information provided below is needed to complete our analysis.

The life history and status of each species and the status of their critical habitat is described in NMFS' status of the species summaries, which are incorporated here by reference and available at: https://www.fisheries.noaa.gov/west-coast/consultations/esa-section-7-consultations-west-coast.

The proposed action is described in detail above in the biological opinion section of this document. FERC proposes to license the Applicant to construct and operate a new offstream closed-loop pump storage project. Project water will be diverted from the Columbia River and routed through an intake pool during the September through March timeframe. The degree to which the project may affect each species is dependent on their rearing patterns, migration timing, and thus their presence in the action area. This determines the extent to which they are exposed to the effects of the proposed action.

LCR Chinook salmon, LCR coho salmon, LCR steelhead, and CR chum salmon occur downstream of the action area (roughly RM 215.6), with their inland distributions and critical habitats generally terminating near or below the confluence of the mainstem Columbia River and the White Salmon/Hood Rivers (roughly RM 169). Thus they will not be exposed to any effects of the action and thus all potential effects to these four species are discountable.

Adults and juveniles of SR spring/summer Chinook salmon, SR sockeye salmon, SRB steelhead, UCR spring Chinook salmon, UCR steelhead and MCR steelhead have the potential to be exposed to construction and/or operation effects (Table 1) and thus the following analysis pertains to these six species. Both life stages have the potential to be exposed to project construction effects year-round for up to 5-years. Adults and juveniles present in the action area from September through March could also be exposed to diversion-related effects of entrainment/impingement and impacts to the water quantity, water quality, and safe passage PBFs of critical habitat.

Table 1: Average passage timing (2014 - 2023) of wild and hatchery PIT-tagged juvenile (green) and adult (blue) salmon and steelhead at John Day Dam and the Dalles Dam[1], respectively. Light shading (x) indicates the full range of detections, while dark shading (xx) denotes the middle 90 percent of detections.

	Species	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
John Day Dam													
	Snake River fall Chinook			x	xx	xx	xx	xx	x	x	x	x	
	Snake River spring/summer Chinook				xx	xx	x	x	x				
	Snake River sockeye					xx	xx						
Juvenile	Snake River Basin steelhead				xx	xx	xx	x					
	Upper Columbia River spring Chinook				x	xx	x	x	x				
	Upper Columbia River steelhead				x	xx	xx	x	x				
	Middle Columbia River steelhead			x	xx	xx	x						
The Dalles Dam													
	Snake River fall Chinook						x	x	xx	xx	xx	x	
	Snake River spring/summer Chinook				x	xx	xx	xx	x	x			
	Snake River sockeye						xx	xx					
Adult	Snake River Basin steelhead		x	x	x	x	x	xx	xx	xx	xx	x	
	Upper Columbia River spring Chinook				x	xx	xx	xx	x				
	Upper Columbia River steelhead					x	x	xx	xx	xx	x		
	Middle Columbia River steelhead			x	x	x	x	xx	xx	xx	xx	x	

[1]Adult passage timing is provided for the Dalles Dam because it is the nearest location to the Project where species specific 10-year historical run timing data are available. Data source: https://www.cbr.washington.edu/dart/query/esu_hrt

Effects to species

Presence and exposure

Adults and juveniles of these six species migrate through the Columbia River portion of the action area annually. Juveniles principally use lakes (SR sockeye) or tributaries (all other species) as rearing habitat, but they could also theoretically rear in the mainstem action area. The likelihood of this is low for Snake and Upper Columbia River species that spawn and rear hundreds of miles upstream of the action area. It is more probable that rearing MCR steelhead will be present in the action area given the project's proximity to their typical spawning and rearing grounds in the John Day River basin. We expect that only relatively large smolts of all six species will be in the action area during the water withdrawal time period (September – March). The 10-year (2014 – 2023) average size-at-tag of the juvenile cohorts of these species detected at John Day Dam from September through March is 170.6 mm and there is frequently hundreds of days between tag and detection adjacent to the project during which these individuals would accumulate additional growth as they actively feed while moving downstream. In conclusion, MCR steelhead are most likely to be exposed to the effects of the action, although that likelihood is low. Further any fish exposed to the effects of the action is likely of a larger size because of the abundant travel time (and feeding opportunities) to arrive at the action area.

Entrainment and impingement

There is a recurring (September – March annually), but minor, localized risk of entrainment/impingement because low numbers of large SR spring/summer Chinook, SR sockeye, SRB steelhead, UCR spring Chinook, UCR steelhead, and MCR steelhead may be present in the action area when project water is being diverted from the Columbia River. Flows from the Columbia River into the intake pool will increase during periods of time that water is being diverted for project initial fill and annual refills (September – March). Our analysis

assumes that the identified culvert will be screened to NMFS' criteria prior to project implementation, given Klickitat PUD's off-license commitment (see '*Cumulative Effects'*) and that the potential second culvert is buried or nonexistent and not a potential entrainment entry route. Any juvenile present in the immediate vicinity of the intake pool will have the potential to be entrained through the railway berm or impinged on the culvert screen. Unlike subyearling SR fall Chinook, the SR spring/summer Chinook, SR sockeye, SRB steelhead, UCR spring Chinook, UCR steelhead, and MCR steelhead smolts expected to be in the action area during project-based diversions are likely too large (well over 100 mm) to enter the intake pool via interstitial spaces. Therefore, we do not expect entrainment of juvenile SR spring/summer Chinook, SR sockeye, SRB steelhead, UCR spring Chinook, UCR steelhead, or MCR steelhead. Their susceptibility to impingement is similarly reduced due to their larger size and assumed stronger swimming capabilities as well as the fact that the culvert will be designed to NMFS' fry-sized criteria and some degree of cleaning and maintenance is anticipated. Adults are not expected to be affected by entrainment/impingement because they aren't expected to be present (SR sockeye, UCR spring Chinook; Table 1) and/or they would not be susceptible because their size and swimming capabilities are likely more than sufficient to overcome the physical forces associated with the maximum 35.3 cfs diversion rate. Overall project-based entrainment and impingement risk to SR spring/summer Chinook, SR sockeye, SRB steelhead, UCR spring Chinook, UCR steelhead, and MCR steelhead is insignificant because: (1) numbers of juveniles in the vicinity of the project are expected to be relatively low during initial fill and annual refill operations; (2) we anticipate a size-based lack of access points to the intake pool; and (3) impingement risk is substantially reduced and thus unlikely because they will be able to swim away from the screens.

Sedimentation (turbidity), pollutants, and stormwater runoff

The project has the potential to impact mainstem water quality year-round as a result of off-channel land-disturbing construction and/or maintenance activities that will increase the likelihood of mobilization and transport of suspended sediments (turbidity), pollutants (e.g., oil and grease, hydraulic fluid, metals), and stormwater runoff into adjacent surface water bodies. Construction will last 5-years and may impact up to five cohorts of SR spring/summer Chinook, SR sockeye, SRB steelhead, UCR spring Chinook, UCR steelhead, and MCR steelhead. Maintenance will occur as needed throughout the life of the project (45 years). However, we do not expect measurable quantities of these materials to enter the mainstem for the reasons described in Section 3.3.1.2 and Appendix M of the final EIS, which we incorporate into this opinion by reference. These include, but are not limited to, a lack of in-water work and the implementation of extensive control measures and BMPs designed in coordination with WDOE and conditions under the project's state water quality certification. Therefore, we expect that it is highly unlikely (discountable) that the proposed action will cause any SR spring/summer Chinook, SR sockeye, SRB steelhead, UCR spring Chinook, UCR steelhead, or MCR steelhead to be exposed to suspended sediments (turbidity), pollutants, or stormwater runoff throughout the life of the license.

Effects to critical habitat

The Columbia River portion of the action area is designated critical habitat for all six species. For MCR steelhead, critical habitat is also designated for the Klickitat River which discharges into the Columbia River roughly 35 miles downstream of the project and the lowest reaches of

Swale Creek, which flows into the Klickitat River. These are the receiving waters of the two ephemeral streams located near the upper reservoir. The PBFs of these habitats that have the potential to be affected by this licensing action are water quantity, water quality, and safe (unobstructed) passage.

Water quantity PBF

NMFS expects that the effects to the water quantity PBF of all species' mainstem critical habitat will be small, intermittent (September – March), and therefore insignificant. Implementation of the action will result in a one-time reduction in Columbia River flow volume of 7,460 acre-feet across the first seven months of project operation (spanning two calendar years; maximum of 4,851 acre-feet in any one year) and an annual reduction of 360 acre-feet over 10 or fewer days each subsequent year. Both reductions will occur at an average rate of 21 cfs and a maximum of 35.3 cfs. Operational diversions will be temporally constrained such that the consumptive use of mainstem water will only occur between September 1 and March 31. This seasonal restriction will concentrate project-based Columbia River volume reductions to months when basin-wide flow management activities artificially elevate instream flows compared to the historical (pre-hydrosystem) hydrograph (Figure 2). Under baseline conditions, autumn and winter Columbia River flows average roughly 145,000 cfs and the project will cause up to a 35.3 cfs reduction in this condition. Because an exceedingly small proportion of mainstem flow will be diverted, implementation of the proposed action will have insignificant effects on the function of the water quantity PBF of mainstem critical habitat.

Action effects to the water quantity PBF of MCR steelhead's tributary critical habitat will be very small for the duration of upper reservoir persistence. The upper project reservoir will be constructed near the headwaters of Swale Creek, will fill in two ephemeral streams, and will capture some increment of the precipitation that would normally drain into Swale Creek and subsequently into the Klickitat River then the Columbia River. FERC estimates that the project would capture approximately 86 acre-feet of rainfall each year that would otherwise flow into Swale Creek. Because Swale Creek is ephemeral just upstream of its confluence with the Klickitat River (WDOE 2022) and receives more than 100,000 acre-feet of total annual rainfall, the amount of water captured in the reservoirs would have minimal impacts to Swale Creek flow (less than 0.1 percent reduction) and thus downstream Klickitat River and Columbia River flows (page 32, final EIS). Thus, implementation of the proposed action would have insignificant effects on the water quantity PBF of MCR steelhead's tributary critical habitat.

Water quality PBF

Action effects to critical habitat water quality were evaluated for the construction, maintenance, and operation periods. Land-disturbing construction and maintenance actions may affect water quality in the mainstem (all species) and near the confluence of Swale Creek and the Klickitat River (MCR steelhead) year-round for the 5-year construction period then intermittently throughout the life of the 45-year license. It is highly unlikely (discountable) that the water quality PBF of all species' mainstem critical habitat will be degraded by project-based sediments, pollutants, and/or stormwater runoff production throughout the life of the 50-year

license for the same reasons discussed under '*Sedimentation (turbidity), pollutants, and stormwater runoff*' above.

MCR steelhead's tributary critical habitat terminates well downstream of the small ephemeral portions of Swale Creek near the project site where sediments, pollutants, and/or stormwater runoff may be incidentally deposited during rare construction and/or maintenance events. The upper reaches of Swale Creek will be largely protected against material deposition by the same extensive measures and BMPs discussed under '*Sedimentation (turbidity), pollutants, and stormwater runoff*' above. Swale Creek flow is intermittent and the upper and lower portions of Swale Creek are only hydrologically connected for a portion of the year (winter and spring; NMFS 2009). Any materials incidentally deposited in the uppermost reaches of Swale Creek are not expected to enter critical habitat in the lowest reaches of Swale Creek and the Klickitat River in measurable quantities. Further, the project is designed as a closed-loop system and no operational discharges are anticipated. Therefore, is highly unlikely (discountable) that the water quality PBF of all MCR steelhead's tributary critical habitat will be degraded by project-based sediments, pollutants, and/or stormwater runoff production throughout the life of the 50-year license.

Operational Columbia River water diversions (initial fill and annual refills) also have the potential to affect critical habitat water temperatures annually by reducing mainstem flow volume from September through March for the duration of project operation (45 years). The majority of the project withdrawal season is characterized by cool autumn and winter temperatures, with the exception of the month of September, when the mainstem Columbia River regularly experiences water temperatures in excess of 20 °C. The project diversion is surface oriented and expected to siphon off the warmest reservoir water rather than the cool, deep water. The action's small (maximum 35 cfs) and intermittent (September – March) diminution of flow is not expected to exacerbate mainstem water temperature issues to any appreciable degree. Therefore, we do not expect the water quality PBF of critical habitat to be degraded by mainstem temperature effects as a result of the license.

Safe (unobstructed) passage PBF

The placement of instream structures and alterations in mainstem flow have the potential to impede safe salmonid passage in migration corridors. The action does not involve the placement of new structures in the Columbia River, but this project will result in a maximum base flow reduction of 35.3 cfs. However, because Columbia River flows from September through March average approximately 145,000 cfs, removal of 35.3 cfs will not measurably impact the depth of the mainstem Columbia River fish migration habitat or impede upstream and downstream migration. Additionally, it is unlikely (discountable) that the culvert and screen will impede safe passage. Therefore, we expect the effects of the proposed action to the safe passage PBF to be discountable.

In conclusion, based on this analysis, NMFS concurs with FERC that the proposed action is not likely to adversely affect LCR Chinook salmon, LCR coho salmon, LCR steelhead, and CR chum salmon and their critical habitat because all the effects of the action are discountable. We also concur that the proposed action is not likely to adversely affect SR spring/summer Chinook,

SR sockeye, SRB steelhead, UCR spring Chinook, UCR steelhead, and MCR steelhead and their critical habitat because all the effects of the action are either discountable or insignificant.

ESSENTIAL FISH HABITAT RESPONSE

Thank you for your request for essential fish habitat (EFH) consultation. NMFS reviewed the proposed action for potential effects on EFH pursuant to Section 305(b) of the Magnuson–Stevens Fishery Conservation and Management Act (MSA), implementing regulations at 50 CFR 600.920, and agency guidance for use of the ESA consultation process to complete EFH consultation. However, we have concluded that there are no adverse effects on EFH. Therefore, we are hereby concluding EFH consultation.

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 NMFS' Portland, Oregon office.

Please direct questions regarding this letter to Kelsey Swieca, Fish Biologist with the Interior Columbia Basin Office at 503-872-2793 or by electronic mail at kelsey.swieca@noaa.gov.

Sincerely,

Nancy L Munn

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