UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
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Refer to NMFS No:
WCRO-2020-03117

February 23, 2021

Michelle Walker
Chief, Regulatory Division
Dep't of Army, Corps of Engineers
P.O Box 3755
Seattle, Washington 98124-3755

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Weyerhaeuser Company Test Pile Driving, COE # NWS-2020-877 Columbia River, Longview, Washington, HUC 170800030602.

Dear Ms. Walker:

This letter responds to your November 10, 2020, request for initiation of consultation with the National Marine Fisheries Service (NMFS) pursuant to Section 7 of the Endangered Species Act (ESA) for the subject action. Your request qualified for our expedited review and analysis because it met our screening criteria and contained all required information on, and analysis of, your proposed action and its potential effects to listed species and designated critical habitat.

We reviewed the Corps of Engineers' (COE's) 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.

Specifically, we are incorporating by reference the following sections:

Section 1.1	Background and Project Purpose
Section 2	Environmental Baseline
Section 3	Proposed Action
Section 4.2	Aquatic Portion of the Action Area
Section 5	Status/Presence of Federally Listed Species and Designated Critical Habitat in the Action Area
Section 6	Effects of the Proposed Action
Section 7	Cumulative Effects,
Section 8	Effects Determinations; and
Section 10	References

We supplement these sections with additional information and analyses where necessary to articulate the rationale for our jeopardy and adverse modification analyses, and to support our conclusions that the proposed action will not jeopardize or adversely modify designated critical habitats of the NMFS jurisdictional species considered herein.

NMFS relied on the COE's consultation request and related initiation package prepared by the applicant, Weyerhaeuser Company, the Memorandum for the Services submitted by the COE, and an exchange of information occurring electronically between the COE project manager, Danette Guy, and the NMFS consulting staff member, Bonnie Shorin, including clarification of the applicant's Essential Fish Habitat (EFH) analysis of effects, and the COE's effect determination on EFH, and a revision of the Not Likely to Adversely Affect (NLAA) determinations for designated critical habitat to Likely to Adversely Affect (LAA), on December 2, 2020.

The proposed action is described at BA section 3, which describes test piles to be installed, installation methods, minimization measures, and project timing. Two steel 30-inch piles are to be installed. While the estimated time to complete the proposed action is expected to be 3 days which occur over a 1-week period, the in-water work window for the proposed action is October 1 through December 15.

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 (PBFs) essential to the conservation of the species that create the conservation value of that habitat. The BA presented a section the status of the species and critical habitats that occur in the action area section and critical habitats at Section 5, which we adopt in its entirety, and supplement with information in Tables 1 and 2, below. The BA also provided a determination of effects of species on those species and critical habitats, at section 8. We do not agree with all determinations in section 8, and therefore, based on information presented in Table 3 (Attachment 1) we again supplement that section with the information in Tables 1 and 2, below.[1]

Table 1 provides a summary of listing and recovery plan information, status summaries and limiting factors for the species addressed in this opinion. More information can be found in recovery plans and status reviews for these species at https://www.fisheries.noaa.gov/national/endangered-species-conservation/recovery-species-under-endangered-species-act.

Acronyms appearing in the table include DPS (Distinct Population Segment), ESU (Evolutionarily Significant Unit), ICTRT (Interior Columbia Technical Recovery Team), MPG (Multiple Population Grouping), NWFSC (Northwest Fisheries Science Center), TRT (Technical Recovery Team), and VSP (Viable Salmonid Population). NMFS includes in this table one additional species which the BA identified as not likely to be adversely affected, but which NMFS considers likely to be adversely affected, which is Upper Willamette River Chinook salmon.

[1] The BA's effect determination was "not likely to adversely affect" for all critical habitats, however the COE and NMFS agreed on the record that new permanent effects from this project in essential fish habitat and designated critical habitat are adverse despite the limited physical scale of this habitat alteration.

Table 2 summarizes the status of designated critical of these species, briefly presenting the condition and trends of the essential PBFs of that habitat throughout the designated areas. These features are essential to the conservation of the ESA-listed species because they support one or more of the species' life stages (e.g., sites with conditions that support spawning, rearing, migration and foraging).

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

Species	Listing Classification and Date	Recovery Plan Reference	Most Recent Status Review	Status Summary	Limiting Factors
Lower Columbia River Chinook salmon	Threatened 6/28/05	NMFS 2013	NWFSC 2015	This ESU comprises 32 independent populations. Twenty-seven populations are at very high risk, 2 populations are at high risk, one population is at moderate risk, and 2 populations are at very low risk Overall, there was little change since the last status review in the biological status of this ESU, although there are some positive trends. Increases in abundance were noted in about 70% of the fall-run populations and decreases in hatchery contribution were noted for several populations. Relative to baseline VSP levels identified in the recovery plan, there has been an overall improvement in the status of a number of fall-run populations, although most are still far from the recovery plan goals.	• Reduced access to spawning and rearing habitat • Hatchery-related effects • Harvest-related effects on fall Chinook salmon • An altered flow regime and Columbia River plume • Reduced access to off-channel rearing habitat • Reduced productivity resulting from sediment and nutrient-related changes in the estuary • Contaminant
Upper Columbia River spring-run Chinook salmon	Endangered 6/28/05	Upper Columbia Salmon Recovery Board 2007	NWFSC 2015	This ESU comprises four independent populations. Three are at high risk and one is functionally extirpated. Current estimates of natural origin spawner abundance increased relative to the levels observed in the prior review for all three extant populations, and productivities were higher for the Wenatchee and Entiat populations and unchanged for the Methow population. However, abundance and productivity remained well below the viable thresholds called for in the Upper Columbia Recovery Plan for all three populations.	• Effects related to hydropower system in the mainstem Columbia River • Degraded freshwater habitat • Degraded estuarine and nearshore marine habitat • Hatchery-related effects • Persistence of non-native (exotic) fish species • Harvest in Columbia River fisheries
Snake River spring/summer-run Chinook salmon	Threatened 6/28/05	NMFS 2017a	NWFSC 2015	This ESU comprises 28 extant and four extirpated populations. All expect one extant population (Chamberlin Creek) are at high risk. Natural origin abundance has increased over the levels reported in the prior review for most populations in this ESU, although the increases were not substantial enough to change viability ratings. Relatively high ocean survivals in recent years were a major factor in recent abundance patterns. While there have been improvements in abundance and productivity in several	• Degraded freshwater habitat • Effects related to the hydropower system in the mainstem Columbia River, • Altered flows and degraded water quality • Harvest-related effects • Predation

Species	Listing Classification and Date	Recovery Plan Reference	Most Recent Status Review	Status Summary	Limiting Factors
				populations relative to prior reviews, those changes have not been sufficient to warrant a change in ESU status.	
Upper Willamette River Chinook salmon	Threatened 6/28/05	NMFS 2011	NWFSC 2015	This ESU comprises seven populations. Five populations are at very high risk, one population is at moderate risk (Clackamas River) and one population is at low risk (McKenzie River). Consideration of data collected since the last status review in 2010 indicates the fraction of hatchery origin fish in all populations remains high (even in Clackamas and McKenzie populations). The proportion of natural origin spawners improved in the North and South Santiam basins, but is still well below identified recovery goals. Abundance levels for five of the seven populations remain well below their recovery goals. Of these, the Calapooia River may be functionally extinct and the Molalla River remains critically low. Abundances in the North and South Santiam rivers have risen since the 2010 review, but still range only in the high hundreds of fish. The Clackamas and McKenzie populations have previously been viewed as natural population strongholds, but have both experienced declines in abundance despite having access to much of their historical spawning habitat. Overall, populations appear to be at either moderate or high risk, there has been likely little net change in the VSP score for the ESU since the last review, so the ESU remains at moderate risk.	• Degraded freshwater habitat • Degraded water quality • Increased disease incidence • Altered stream flows • Reduced access to spawning and rearing habitats • Altered food web due to reduced inputs of microdetritus • Predation by native and non-native species, including hatchery fish • Competition related to introduced salmon and steelhead • Altered population traits due to fisheries and bycatch
Snake River fall-run Chinook salmon	Threatened 6/28/05	NMFS 2017b	NWFSC 2015	This ESU has one extant population. Historically, large populations of fall Chinook salmon spawned in the Snake River upstream of the Hells Canyon Dam complex. The extant population is at moderate risk for both diversity and spatial structure and abundance and productivity. The overall viability rating for this population is 'viable.' Overall, the status of Snake River fall Chinook salmon has clearly	• Degraded floodplain connectivity and function • Harvest-related effects • Loss of access to historical habitat above Hells Canyon and other Snake River dams • Impacts from mainstem Columbia River and Snake River hydropower systems • Hatchery-related effects • Degraded estuarine and nearshore habitat.

Species	Listing Classification and Date	Recovery Plan Reference	Most Recent Status Review	Status Summary	Limiting Factors
				improved compared to the time of listing and compared to prior status reviews. The single extant population in the ESU is currently meeting the criteria for a rating of 'viable' developed by the ICTRT, but the ESU as a whole is not meeting the recovery goals described in the recovery plan for the species, which require the single population to be "highly viable with high certainty" and/or will require reintroduction of a viable population above the Hells Canyon Dam complex.	
Columbia River chum salmon	Threatened 6/28/05	NMFS 2013	NWFSC 2015	Overall, the status of most chum salmon populations is unchanged from the baseline VSP scores estimated in the recovery plan. A total of 3 of 17 populations are at or near their recovery viability goals, although under the recovery plan scenario these populations have very low recovery goals of 0. The remaining populations generally require a higher level of viability and most require substantial improvements to reach their viability goals. Even with the improvements observed during the last five years, the majority of populations in this ESU remain at a high or very high risk category and considerable progress remains to be made to achieve the recovery goals.	• Degraded estuarine and nearshore marine habitat • Degraded freshwater habitat • Degraded stream flow as a result of hydropower and water supply operations • Reduced water quality • Current or potential predation • An altered flow regime and Columbia River plume • Reduced access to off-channel rearing habitat in the lower Columbia River • Reduced productivity resulting from sediment and nutrient-related changes in the estuary • Juvenile fish wake strandings • Contaminants
Lower Columbia River coho salmon	Threatened 6/28/05	NMFS 2013	NWFSC 2015	Of the 24 populations that make up this ESU, 21 populations are at very high risk, 1 population is at high risk, and 2 populations are at moderate risk. Recent recovery efforts may have contributed to the observed natural production, but in the absence of longer term data sets it is not possible to parse out these effects. Populations with longer term data sets exhibit stable or slightly positive abundance trends. Some trap and haul programs appear to be operating at or near replacement, although other programs still are far from that threshold and require supplementation with additional	• Degraded estuarine and near-shore marine habitat • Fish passage barriers • Degraded freshwater habitat: Hatchery-related effects • Harvest-related effects • An altered flow regime and Columbia River plume • Reduced access to off-channel rearing habitat in the lower Columbia River

Species	Listing Classification and Date	Recovery Plan Reference	Most Recent Status Review	Status Summary	Limiting Factors
				hatchery-origin spawners .Initiation of or improvement in the downstream juvenile facilities at Cowlitz Falls, Merwin, and North Fork Dam are likely to further improve the status of the associated upstream populations. While these and other recovery efforts have likely improved the status of a number of coho salmon populations, abundances are still at low levels and the majority of the populations remain at moderate or high risk. For the Lower Columbia River region land development and increasing human population pressures will likely continue to degrade habitat, especially in lowland areas. Although populations in this ESU have generally improved, especially in the 2013/14 and 2014/15 return years, recent poor ocean conditions suggest that population declines might occur in the upcoming return years	• Reduced productivity resulting from sediment and nutrient-related changes in the estuary • Juvenile fish wake strandings • Contaminants
Snake River sockeye salmon	Endangered 6/28/05	NMFS 2015	NWFSC 2015	This single population ESU is at very high risk dues to small population size. There is high risk across all four basic risk measures. Although the captive brood program has been successful in providing substantial numbers of hatchery produced fish for use in supplementation efforts, substantial increases in survival rates across all life history stages must occur to re-establish sustainable natural production In terms of natural production, the Snake River Sockeye ESU remains at extremely high risk although there has been substantial progress on the first phase of the proposed recovery approach – developing a hatchery based program to amplify and conserve the stock to facilitate reintroductions.	• Effects related to the hydropower system in the mainstem Columbia River • Reduced water quality and elevated temperatures in the Salmon River • Water quantity • Predation
Upper Columbia River steelhead	Threatened 1/5/06	Upper Columbia Salmon Recovery Board 2007	NWFSC 2015	This DPS comprises four independent populations. Three populations are at high risk of extinction while 1 population is at moderate risk. Upper Columbia River steelhead populations have increased relative to the low levels observed in the 1990s, but natural origin abundance and productivity remain well below	• Adverse effects related to the mainstem Columbia River hydropower system • Impaired tributary fish passage • Degraded floodplain connectivity and function, channel structure and complexity, riparian areas, large woody debris recruitment, stream flow, and water quality

Species	Listing Classification and Date	Recovery Plan Reference	Most Recent Status Review	Status Summary	Limiting Factors
				viability thresholds for three out of the four populations. The status of the Wenatchee River steelhead population continued to improve based on the additional year's information available for the most recent review. The abundance and productivity viability rating for the Wenatchee River exceeds the minimum threshold for 5% extinction risk. However, the overall DPS status remains unchanged from the prior review, remaining at high risk driven by low abundance and productivity relative to viability objectives and diversity concerns.	• Hatchery-related effects • Predation and competition • Harvest-related effects
Lower Columbia River steelhead	Threatened 1/5/06	NMFS 2013	NWFSC 2015	This DPS comprises 23 historical populations, 17 winter-run populations and six summer-run populations. Nine populations are at very high risk, 7 populations are at high risk, 6 populations are at moderate risk, and 1 population is at low risk. The majority of winter-run steelhead populations in this DPS continue to persist at low abundances. Hatchery interactions remain a concern in select basins, but the overall situation is somewhat improved compared to prior reviews. Summer-run steelhead populations were similarly stable, but at low abundance levels. The decline in the Wind River summer-run population is a source of concern, given that this population has been considered one of the healthiest of the summer-runs; however, the most recent abundance estimates suggest that the decline was a single year aberration. Passage programs in the Cowlitz and Lewis basins have the potential to provide considerable improvements in abundance and spatial structure, but have not produced self-sustaining populations to date. Even with modest improvements in the status of several winter-run DIPs, none of the populations appear to be at fully viable status, and similarly none of the MPGs meet the criteria for viability.	• Degraded estuarine and nearshore marine habitat • Degraded freshwater habitat • Reduced access to spawning and rearing habitat • Avian and marine mammal predation • Hatchery-related effects • An altered flow regime and Columbia River plume • Reduced access to off-channel rearing habitat in the lower Columbia River • Reduced productivity resulting from sediment and nutrient-related changes in the estuary • Juvenile fish wake strandings • Contaminants

Species	Listing Classification and Date	Recovery Plan Reference	Most Recent Status Review	Status Summary	Limiting Factors
Upper Willamette River steelhead	Threatened 1/5/06	NMFS 2011	NWFSC 2015	This DPS has four demographically independent populations. Three populations are at low risk and one population is at moderate risk. Declines in abundance noted in the last status review continued through the period from 2010-2015. While rates of decline appear moderate, the DPS continues to demonstrate the overall low abundance pattern that was of concern during the last status review. The causes of these declines are not well understood, although much accessible habitat is degraded and under continued development pressure. The elimination of winter-run hatchery release in the basin reduces hatchery threats, but non-native summer steelhead hatchery releases are still a concern for species diversity and a source of competition for the DPS. While the collective risk to the persistence of the DPS has not changed significantly in recent years, continued declines and potential negative impacts from climate change may cause increased risk in the near future.	• Degraded freshwater habitat • Degraded water quality • Increased disease incidence • Altered stream flows • Reduced access to spawning and rearing habitats due to impaired passage at dams • Altered food web due to changes in inputs of microdetritus • Predation by native and non-native species, including hatchery fish and pinnipeds • Competition related to introduced salmon and steelhead • Altered population traits due to interbreeding with hatchery origin fish
Middle Columbia River steelhead	Threatened 1/5/06	NMFS 2009b	NWFSC 2015	This DPS comprises 17 extant populations. The DPS does not currently include steelhead that are designated as part of an experimental population above the Pelton Round Butte Hydroelectric Project. Returns to the Yakima River basin and to the Umatilla and Walla Walla Rivers have been higher over the most recent brood cycle, while natural origin returns to the John Day River have decreased. There have been improvements in the viability ratings for some of the component populations, but the DPS is not currently meeting the viability criteria in the MCR steelhead recovery plan. In general, the majority of population level viability ratings remained unchanged from prior reviews for each major population group within the DPS.	• Degraded freshwater habitat • Mainstem Columbia River hydropower-related impacts • Degraded estuarine and nearshore marine habitat • Hatchery-related effects • Harvest-related effects • Effects of predation, competition, and disease
Snake River basin steelhead	Threatened 1/5/06	NMFS 2017a	NWFSC 2015	This DPS comprises 24 populations. Two populations are at high risk, 15 populations are rated as maintained, 3 populations are rated	• Adverse effects related to the mainstem Columbia River hydropower system

Species	Listing Classification and Date	Recovery Plan Reference	Most Recent Status Review	Status Summary	Limiting Factors
				between high risk and maintained, 2 populations are at moderate risk, 1 population is viable, and 1 population is highly viable. Four out of the five MPGs are not meeting the specific objectives in the draft recovery plan based on the updated status information available for this review, and the status of many individual populations remains uncertain A great deal of uncertainty still remains regarding the relative proportion of hatchery fish in natural spawning areas near major hatchery release sites within individual populations.	• Impaired tributary fish passage • Degraded freshwater habitat • Increased water temperature • Harvest-related effects, particularly for B-run steelhead • Predation • Genetic diversity effects from out-of-population hatchery releases

Table 2. Critical habitat, designation date, federal register citation, and status summary for critical habitat considered in this opinion.

Species	Designation Date and Federal Register Citation	Critical Habitat Status Summary
Lower Columbia River Chinook salmon	9/02/05 70 FR 52630	Critical habitat encompasses 10 subbasins in Oregon and Washington containing 47 occupied watersheds, as well as the lower Columbia River rearing/migration corridor. Most HUC5 watersheds with PCEs for salmon are in fair-to-poor or fair-to-good condition (NMFS 2005). However, most of these watersheds have some, or high potential for improvement. We rated conservation value of HUC5 watersheds as high for 30 watersheds, medium for 13 watersheds, and low for four watersheds.
Upper Columbia River spring-run Chinook salmon	9/02/05 70 FR 52630	Critical habitat encompasses four subbasins in Washington containing 15 occupied watersheds, as well as the Columbia River rearing/migration corridor. Most HUC5 watersheds with PCEs for salmon are in fair-to-poor or fair-to-good condition. However, most of these watersheds have some, or high, potential for improvement. We rated conservation value of HUC5 watersheds as high for 10 watersheds, and medium for five watersheds. Migratory habitat quality in this area has been severely affected by the development and operation of the dams and reservoirs of the Federal Columbia River Power System.
Snake River spring/summer-run Chinook salmon	10/25/99 64 FR 57399	Critical habitat consists of river reaches of the Columbia, Snake, and Salmon rivers, and all tributaries of the Snake and Salmon rivers (except the Clearwater River) presently or historically accessible to this ESU (except reaches above impassable natural falls and Hells Canyon Dam). Habitat quality in tributary streams varies from excellent in wilderness and roadless areas, to poor in areas subject to heavy agricultural and urban development (Wissmar et al. 1994). Reduced summer stream flows, impaired water quality, and reduced habitat complexity are common problems. Migratory habitat quality in this area has been severely affected by the development and operation of the dams and reservoirs of the Federal Columbia River Power System.
Upper Willamette River Chinook salmon	9/02/05 70 FR 52630	Critical habitat encompasses 10 subbasins in Oregon containing 56 occupied watersheds, as well as the lower Willamette/Columbia River rearing/migration corridor. Most HUC5 watersheds with PCEs for salmon are in fair-to-poor or fair-to-good condition. However, most of these watersheds have some, or high, potential for improvement. Watersheds are in good to excellent condition with no potential for improvement only in the upper McKenzie River and its tributaries (NMFS 2005). We rated conservation value of HUC5 watersheds as high for 22 watersheds, medium for 16 watersheds, and low for 18 watersheds.
Snake River fall-run Chinook salmon	10/25/99 64 FR 57399	Critical habitat consists of river reaches of the Columbia, Snake, and Salmon rivers, and all tributaries of the Snake and Salmon rivers presently or historically accessible to this ESU (except reaches above impassable natural falls, and Dworshak and Hells Canyon dams). Habitat quality in tributary streams varies from excellent in wilderness and roadless areas, to poor in areas subject to heavy agricultural and urban development (Wissmar et al. 1994). Reduced summer stream flows, impaired water quality, and reduced habitat complexity are common problems. Migratory habitat quality in this area has been severely affected by the development and operation of the dams and reservoirs of the Federal Columbia River Power System.
Columbia River chum salmon	9/02/05 70 FR 52630	Critical habitat encompasses six subbasins in Oregon and Washington containing 19 occupied watersheds, as well as the lower Columbia River rearing/migration corridor. Most HUC5 watersheds with PCEs for salmon are in fair-to-poor or fair-to-good condition (NMFS 2005). However, most of these watersheds have some or a high potential for improvement. We rated conservation value of HUC5 watersheds as high for 16 watersheds, and medium for three watersheds.

Species	Designation Date and Federal Register Citation	Critical Habitat Status Summary
Lower Columbia River coho salmon	2/24/16 81 FR 9252	Critical habitat encompasses 10 subbasins in Oregon and Washington containing 55 occupied watersheds, as well as the lower Columbia River and estuary rearing/migration corridor. Most HUC5 watersheds with PCEs for salmon are in fair-to-poor or fair-to-good condition (NMFS 2005). However, most of these watersheds have some or a high potential for improvement. We rated conservation value of HUC5 watersheds as high for 34 watersheds, medium for 18 watersheds, and low for three watersheds.
Snake River sockeye salmon	10/25/99 64 FR 57399	Critical habitat consists of river reaches of the Columbia, Snake, and Salmon rivers; Alturas Lake Creek; Valley Creek; and Stanley, Redfish, Yellow Belly, Pettit and Alturas lakes (including their inlet and outlet creeks). Water quality in all five lakes generally is adequate for juvenile sockeye salmon, although zooplankton numbers vary considerably. Some reaches of the Salmon River and tributaries exhibit temporary elevated water temperatures and sediment loads that could restrict sockeye salmon production and survival (NMFS 2015b). Migratory habitat quality in this area has been severely affected by the development and operation of the dams and reservoirs of the Federal Columbia River Power System.
Upper Columbia River steelhead	9/02/05 70 FR 52630	Critical habitat encompasses 10 subbasins in Washington containing 31 occupied watersheds, as well as the Columbia River rearing/migration corridor. Most HUC5 watersheds with PCEs for salmon are in fair-to-poor or fair-to-good condition (NMFS 2005). However, most of these watersheds have some or a high potential for improvement. We rated conservation value of HUC5 watersheds as high for 20 watersheds, medium for eight watersheds, and low for three watersheds.
Lower Columbia River steelhead	9/02/05 70 FR 52630	Critical habitat encompasses nine subbasins in Oregon and Washington containing 41 occupied watersheds, as well as the lower Columbia River rearing/migration corridor. Most HUC5 watersheds with PCEs for salmon are in fair-to-poor or fair-to-good condition (NMFS 2005). However, most of these watersheds have some or a high potential for improvement. We rated conservation value of HUC5 watersheds as high for 28 watersheds, medium for 11 watersheds, and low for two watersheds.
Upper Willamette River steelhead	9/02/05 70 FR 52630	Critical habitat encompasses seven subbasins in Oregon containing 34 occupied watersheds, as well as the lower Willamette/Columbia River rearing/migration corridor. Most HUC5 watersheds with PCEs for salmon are in fair-to-poor or fair-to-good condition (NMFS 2005). However, most of these watersheds have some or a high potential for improvement. Watersheds are in good to excellent condition with no potential for improvement only in the upper McKenzie River and its tributaries (NMFS 2005). We rated conservation value of HUC5 watersheds as high for 25 watersheds, medium for 6 watersheds, and low for 3 watersheds.
Middle Columbia River steelhead	9/02/05 70 FR 52630	Critical habitat encompasses 15 subbasins in Oregon and Washington containing 111 occupied watersheds, as well as the Columbia River rearing/migration corridor. Most HUC5 watersheds with PCEs for salmon are in fair-to-poor or fair-to-good condition (NMFS 2005). However, most of these watersheds have some or a high potential for improvement. We rated conservation value of occupied HUC5 watersheds as high for 80 watersheds, medium for 24 watersheds, and low for 9 watersheds.
Snake River basin steelhead	9/02/05 70 FR 52630	Critical habitat encompasses 25 subbasins in Oregon, Washington, and Idaho. Habitat quality in tributary streams varies from excellent in wilderness and roadless areas, to poor in areas subject to heavy agricultural and urban development (Wissmar et al. 1994). Reduced summer stream flows, impaired water quality, and reduced habitat complexity are common problems. Migratory habitat quality in this area has been severely affected by the development and operation of the dams and reservoirs of the Federal Columbia River Power System.

"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). As described in Section 4.2 of the BA, the action area is identified by the furthest reaching of the physical effects, in this case sound pressure waves disturbing the aquatic habitat, generated during pile driving, and vessel sound, an area approximately 2,800 feet upstream and 2,800 feet downstream from the test pier installation site on the Columbia River, and extending across the channel to the Oregon side of the river. We adopt that section here.

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). As described in Section 2.2 of the BA, the baseline is a tidally influenced riverine environment that has been and continues to be degraded by numerous anthropogenic influences including shoreline modification that were made to develop the dock and adjacent industrial area decreasing the extent of shallow water habitat critical for juvenile salmonids and their prey. Other degraded features of habitat water quality, riparian cover, in-water structures (impaired safety of passage), ambient noise, and bank conditions. We adopt that section here.

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

The biological assessment provides a detailed discussion and comprehensive assessment of the effects of the proposed action in Section 6 of the initiation package, 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. The BA describes the effects of the proposed action as:

- Underwater sound, from both vibratory and impact pile driving, attenuated by employing a bubble curtain;
- Vessel traffic and use during construction; and
- Diminishment of critical habitat quality through the placement of the two test piles.

The effects described above were evaluated for their consequences on PBFs of designated critical habitat and on listed species that occur in the action area. For example, effects of vessel traffic and use included an evaluation of vessel noise on fish avoidance behavior and

displacement from preferred habitats; shade cast by barges and its relationship to increased predation risk; and modified benthic conditions from spud barge footings; water quality diminishment from sediment suspended during pile driving; wake stranding of juvenile salmonids from the action's vessel traffic (and determined it was not likely in the action area). The BA also presents the potential for behavioral effects among listed fish from vibratory pile driving (behavioral response), and for injury or death among exposed listed fish from impact pile driving. The duration of the impact pile driving is expected to be over 3, non-consecutive days, within a 1 week period. The vibratory driving, shade, vessel noise, vessel traffic, and disturbed benthic communities, and their associated effects on species (such as behavioral response and displacement), and effects on features of critical habitat (such as benthic prey communities and turbid water quality) will be both small in area and brief in duration. We adopt that content on effects without revision.

Some individual fish from each of the 13 species described in Table 1 are likely to be exposed to the effects of the proposed action, but only sound from pile driving is likely to be at a scale, intensity, or duration that will cause significant adverse response. *Based on the location of the proposed action, individuals from all populations of some species are likely to be exposed to effects of the action, while in other species, only individuals from some populations are likely to be exposed* (see below for specific populations and species). The proposed impact pile driving is expected to be for 8 hours, over 3 days which occur over a 1-week period, at some time between October 1 and December 15. This time range occurs when overall species presence is generally at its lowest, however some species still are present in relatively high abundance for some life stages in portions of that work window. Accordingly, we conduct our analysis as if the project occurs in October, when many species are present, or present with relative abundance, and therefore, potentially exposed to project effects.

While the BA provided several tables showing species presence relative to the work window, we note that it is based on data from 2003. We rely on a more recent table produced by NMFS in 2013, which is available as attachment 1 to this document. We identified probable population-specific presence and their status by reviewing the most recent status of those populations by (NMFS 2016). For the species likely to experience the greatest level of exposure due to abundance or vulnerability at exposure, we present the importance of those populations to recovery needs, by reviewing NMFS 2013 and NMFS 2017.

Exposure to construction effects of the proposed action is likely among the following species, populations, and lifestages:

Upper Willamette River

- *Chinook* –juvenile rearing and juvenile migration from all populations
- *Steelhead* – juvenile migration from all populations

Lower Columbia River populations with natal origins upstream of the action area are those most likely to be exposed to the effects of the proposed action. These are:

- *Chinook* – relatively abundant adult migration and holding, relatively abundant juvenile rearing, relatively abundant migrating juveniles from Upper Cowlitz, Lower Cowlitz, Coweeman, Cispus, Tilton, Toutle, Kalama, Lewis, Washougal, Sandy, White Salmon,

Salmon, Clackamas, Scappoose, Hood, Upper Gorge Tributaries, and Lower Gorge Tributaries
- *Chum* – peak occurrence of adult migrating and holding from Clatskanie, Clackamas, Scappoose, Cowlitz, Kalama, Lewis, Salmon Washougal, Sandy, Clackamas, Lower Gorge Tributaries and Upper Gorge Tributaries.
- *Coho* – peak occurrence of adult migrating and holding; relatively abundant juvenile rearing from Scappoose, Clackamas, Lower Cowlitz, Tilton, Upper Cowlitz, Salmon,Washougal, Sandy, Clackamas, Cispus, Toutle, Coweeman, Kalama, Lewis (North and East Forks), Coweeman, Gorge Tributaries, Upper Gorge Tributaries, and Hood River.
- *Steelhead* – relatively abundant juvenile rearing; juvenile migrating from all populations.

Mid-Columbia River
- *Steelhead* – juvenile migrating from all populations.

Upper Columbia River
- *Chinook* – relatively abundant juvenile migration from all populations.
- *Steelhead* – juvenile migrating from all populations

Snake River
- *Spring/Summer Chinook* –juvenile migration from all populations
- *Fall Chinook* – relatively abundant juvenile rearing and juvenile migration from all populations[2]
- *Steelhead* –juvenile migration from all populations
- *Sockeye* –juvenile migration from all populations

Despite exposure to construction effects, not all exposed individuals will experience adverse response to all effects. Most effects of construction will be temporary and will not impact more than one cohort of either returning adults or juveniles rearing or outmigrating of any of the affected populations. The exposure to all construction effects, except impact pile driving noise, is expected to create insignificant response among any exposed fish, because the duration and/or intensity of exposure are insufficient to cause injury, and any behavioral responses are brief, lasting only a few hours at most.

Impact pile driving however, despite the use of a bubble curtain, could injure or kill juveniles from any of the listed populations above. Adult fish are typically not susceptible to the barotrauma that juveniles experience, because of their larger size, therefore we believe that CR chum, which are likely to be exposed as adults, will not be adversely affected. Juvenile steelhead from Mid-Columbia, Upper Columbia, and Snake River species are expected to be larger as outmigrants when they reach the action area, based on their typical 1-2 year freshwater rearing behaviors, and thus they are also less susceptible to injury from pile driving sound, however despite their larger size, if they are present in the approximate 500 foot diameter area where sound levels are highest during pile driving, they can also be severely injured. Based on relative

[2] The Snake River fall Chinook ESU is comprised of a single extant natural-origin population (Lower Snake River) and one extirpated population (Middle Snake River).

abundance/presence (see Attachment 1/Table 3), we expect exposure and possible injury from impact driving would occur at greater numbers among seven of the listed species considered in this opinion:

1. Lower Columbia Chinook juveniles,
2. Upper Columbia Chinook juveniles,
3. Snake River Fall Chinook juveniles,
4. Lower Columbia steelhead juveniles,
5. Lower Columbia coho juveniles,
6. Upper Willamette River steelhead juveniles, and
7. Upper Willamette River Chinook juveniles.

However, because the duration of impact driving is expected to be a maximum of approximately 8 hours, spread across 3 days within a single week, rearing juveniles would have the greater exposure (all 8 hours of impact pile driving) than migrants, as any one group of migrating juveniles are likely to have transited through the action area before the impact driving resumes (limiting exposure to a maximum of 2 hours). Rearing is expected only among the above identified populations of five species:

1. Lower Columbia River Chinook,
2. Snake River Fall Chinook,
3. Lower Columbia coho,
4. Lower Columbia Steelhead, and
5. Upper Willamette River Chinook.

Finally, injury and mortality from impact driving is more likely at close proximity to the piles, where percussive sound level is most intense, roughly a 245-foot radius from the pile (or roughly 500-foot diameter, see BA pages 43-44). Because baseline habitat conditions in this area are currently degraded by several manmade conditions and uses, we expect that the number of rearing juveniles from any of the identified populations described above will be low in number, limiting the potential for injury and mortality to even lower numbers. Vulnerable populations identified as high priority for recovery that could be affected by injury or mortality from impact driving are:

- *Lower Columbia River Chinook* – Upper Cowlitz, , Coweeman, Cispus, Toutle, Lewis, Washougal, Sandy, Scappoose, Hood, Upper Gorge Tributaries, and Lower Gorge Tributaries,
- *Snake River Fall Chinook*–Lower Snake,
- *Lower Columbia River Coho* – Lower Cowlitz, Upper Cowlitz, Salmon, Sandy, Clackamas, Cispus, Toutle, Coweeman, Lewis (East Fork), Coweeman, Gorge Tributaries, Upper Gorge Tributaries, and Hood River,
- *Lower Columbia River Steelhead* – Kalama, Lewis (East Fork), Washougal, Wind, Hood, Upper Cowlitz, Cispus, Toutle (North and South Forks), Coweeman, Kalama, Salmon, Clackamas, Sandy, Lower Gorge Tributaries, and Upper Gorge Tributaries, and
- *Upper Willamette River Chinook* – Clackamas and McKenzie.

Even if all rearing juvenile fish within that radius were killed directly from the sound pressure, or consumed as prey of other larger species taking advantage of the injury caused by the sound, we expect the numbers present/killed to be low enough that no one population's abundance is significantly reduced, and that the viability parameters for productivity, spatial structure, and diversity will be unaffected.

Many individuals from all cohorts from the populations listed above could be briefly exposed to this small habitat alteration for the foreseeable future, as predation by piscivorous fish relying on the velocity shadow of the piles is likely to occur over the lifetime of the piles. At most, a few juveniles from each species could die each year as a result of the predation indirectly caused by the proposed action. This predation could occur among any of the populations that migrate or rear in the action area, but is most likely to occur among the smallest rearing or migrating fish. Because annual loss of individuals, likely, is expected to occur at higher levels among the smallest rearing or migrating fish, we expect that predation will occur very infrequently among Mid-Columbia steelhead, Upper Columbia species, and Snake River species. Conversely, Lower Columbia River species, and Upper Willamette River Chinook are more susceptible, and chum salmon from the listed populations are typically the smallest and could experience more frequent predation than other Lower Columbia species/populations. Chum salmon juvenile migration is very rapid, and they do not rear in the action area, so despite their relative risk based on size, the period of exposure to increased predation remains brief. Regardless of species or population, the incidence of predation over time at the two piles is unlikely to be sufficient to diminish any of the four viability parameters in an appreciable way.

Regarding critical habitat, the PBFs thereof, and the conservation role of the designated area, the BA indicates that all effects of installation of the two test piles, both construction and permanent placement of the piles in aquatic habitat, are so brief or of such limited footprint that critical habitat is not likely to be adversely affected. We agree that the effects are of a character that the changes in water quality, substrate, benthic prey, predation/passage effects from installation are of very short duration and will not alter the PBFs in a significant manner. The exception to the temporal limit is the installation of the two piles, which permanently create a very small loss of habitat quality, but which become an additional, incremental but chronic, site for predation/passage risk for all future cohorts of all of the populations mentioned on pages 10 and 11 of this document. Installation of the piles will also eliminate a small amount of benthic habitat which supports forage for migrating and rearing juvenile salmonids. Though the increment of diminishment to critical habitat is quite small physically, given the duration of the diminishment, and the aggregating nature of individual small detriments over time, we consider the effect of the presence of the two piles to be adverse to rearing and migration PBFs of the designated critical habitat in the action area.

"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. The BA at part 7 briefly describes non-federal cumulative effects that are likely to occur in the action area. We adopt that section here, and include the following additional information. Along with the BA's description of ongoing and increasing

uses in the Columbia River (navigation, shoreline degradation, climate change, land based degradation, and concurrent restoration actions) we note that water quality degradation via non-point sources/stormwater runoff from upland sources throughout the entire Columbia River drainage are likely to increase as human population grows over time in both Washington and Oregon, and that increasing pollutant load will be seen in the action area over time. The long term implication is that habitat conditions in the action area are likely to experience incremental but chronic diminishments from cumulative non-federal effects.

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 designated critical habitats, 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.

The status of all the listed species that are likely to be exposed to effects of the proposed action is threatened, except for Upper Columbia River Spring Chinook salmon, and Snake River Sockeye, which are endangered. Many of the component populations from these species that are likely to be exposed are performing poorly (viability parameters are low). The poor performance is largely due to limiting habitat factors, i.e., less available habitat than historic levels, and the remaining habitat has many degraded features. These are prevalent throughout the habitat range, even where designated critical habitat has high conservation value, because that value is largely due to the essential conservation role that the area serves (e.g., spawning, rearing, or migration). Just as habitat is degraded across much of the designated area, it is quite degraded in the action area by anthropogenic modifications.

In this context we add the effects of the proposed action, both on species, and on critical habitat, and consider cumulative effects, to determine whether or not the action will jeopardize listed species or adversely modify designated critical habitat.

Relative to species, when we consider the response of exposed species to construction effects, only impact pile driving is likely to injure or kill individual fish from the listed populations, and this is most likely to occur among rearing juveniles. Because habitat conditions are poor in the action area, we do not expect high numbers of rearing fish from any population to be present for extended periods, and even fewer to be located specifically within the radius where sound levels are high enough to injure or kill small fishes. For this reason, we do not expect any injury or mortality to at a level that the reduced cohort abundance will be appreciable for that cohort of those population's productivity, spatial structure, or diversity. Similarly, the increment of additional predation that is likely to occur as an indirect consequence of the structure, though chronic and likely to affect many individuals over the projected lifetime that the piles remain in place, is again constrained by the fact that juvenile rearing is not likely to be in large numbers, and migrating fish typically pass by the area without lingering, so that numbers consumed are unlikely to be high, or to influence any particular species uniquely. Again, taken together, the

short and long term reductions in population abundance are unlikely to appreciably alter the remaining viability parameters, regardless of which population we evaluate.

Similarly, most of the effects on critical habitat are adverse but brief enough that the PBFs quickly regain their baseline level of function for the conservation role they are designated (rearing or migration). The exception is the chronic increment of predation risk and loss of forage, which is adverse, and is a slight further degradation of the migration and rearing value of the habitat. When we project that increment over time, we cannot discern, even when cumulative effects are considered, that the conservation role of the critical habitat is so significantly modified that it would preclude rearing entirely, and juvenile migration is expected to occur in the action area with our without this project. Accordingly, we do not consider the action's effects sufficient to reach the adverse modification or destruction threshold for critical habitat.

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

1. Lower Columbia Chinook
2. Upper Columbia Chinook,
3. Snake River Spring/Summer Chinook,
4. Snake River Fall Chinook
5. Upper Willamette River Chinook
6. Lower Columbia steelhead,
7. Mid Columbia River steelhead
8. Upper Columbia River
9. Snake River Steelhead
10. Upper Willamette River steelhead
11. Lower Columbia River coho
12. Columbia River chum
13. Snake River sockeye

or destroy or adversely modify their designated critical habitats.

INCIDENTAL TAKE STATEMENT

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

that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this ITS.

Amount or Extent of Take

In the biological opinion, NMFS determined that incidental take is reasonably certain to occur as *following* the form of injury or death occurring from in-water sound pressure waves during impact pile driving, and from harm associated with the installation of the two piles in rearing and migration habitat for the foreseeable future. Take caused by either mechanism cannot be predicted or easily documented by observation for a variety of reasons, including uncertainty in abundance of fish present at any given time, the variability of presence over time, the delay in some responses (death), and the unobservable nature of some harm, such as consumption by piscivores.

In these circumstances, we rely on an "extent of take" which is an observable measure causally linked to the form of take, and which can be monitored for compliance and as a re-initiation trigger. For this consultation, take in the form of injury or death from impact pile driving is the duration of the impact hammering, which is 8 hours, broken across a three day period, to occur within a single week, occurring between October 1 and December 15 of the year in which the construction occurs.

The take in the form of harm associated with installation of new piles in rearing and migration habitat is limited to two 30-inch steel piles. More or larger piles would increase the area for predatory species to rely on these structures for advantage in targeting juvenile rearing and migrating salmonids for consumption.

Effect of the Take

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

Reasonable and Prudent Measures

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

The COE or the applicant shall apply the following reasonable and prudent measures to ensure that take is minimized.

1. Identify a work period within the construction window to further minimize the presence of species.
2. Make a visual observation of fish presence prior to commencing pile driving to ascertain that fish abundance is low.

3. Monitor 500 feet downstream of the piles during pile driving to document if fish kills occur.

Terms and Conditions

The terms and conditions described below are non-discretionary, and the Corps of Engineers or any applicant must comply with them in order to implement the RPMs (50 CFR 402.14). The Corps of Engineers 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. Rely on table 3 at attachment 1 to identify a subset within the construction window that shows less likelihood of fish presence, (e.g., delay start of in-water work to late October or early November, when fish presence may be declining)
    b. Provide that information to the applicant as a project modification or permit condition to reduce the likelihood of take.
2. The following terms and conditions implement reasonable and prudent measure 2:
    a. Weyerhaeuser, or its contractor, shall engage a biologist trained and/or experienced in fisheries science to make visual observations from the shoreline and the dock to determine presence and general abundance of any juvenile fish from the dock or shoreline prior to initiating impact test pile driving. Observations will be made and documented with field notes and photographs before and after the bubble curtain is engaged.
    b. If the biologist observes that fish seen from vantage points from the dock or shoreline are present in relatively high numbers, the biologist will immediately notify the contractor and Weyerhaeuser, to implement up to a one-day delay in pile driving.
3. The following terms and conditions implement reasonable and prudent measure 3:
    a. Any member of the construction crew or a qualified biologist should observe, either from land with field glasses, or from a vessel in the water, roughly 500 feet downstream of the pile during impact driving to watch for injured or killed juvenile fish.
    b. If dead and/or injured fish are observed, a visual estimate of the number(s) will be made and recorded, and efforts will be made to secure a sample of these fish to be analyzed to determine the species thereof.
    c. A report based on this observation and monitoring should be provided to:

        projectreports.wcr@noaa.gov

        and should be labeled with the NMFS tracking number WCRO-2020-03117 with attention to Bonnie Shorin, Washington Coast Lower Columbia Branch.

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).

The COE should regularly assist applicants in identifying in-water construction timing that further minimizes likely exposure of ESA listed fishes. For example November is later in the outmigration window, and therefore may have fewer outmigrating Upper Columbia Chinook than October, and November is beyond the migration window for several species that have outmigration in October.

The COE should incorporate offsetting mitigation as conditions for all in-water permits authorized under its Section 404 authority, to protect and restore the biological integrity of the nation's waters.

Reinitiation of Consultation

Re-initiation of consultation is required and shall be requested by the COE 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.

ESSENTIAL FISH HABITAT

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.

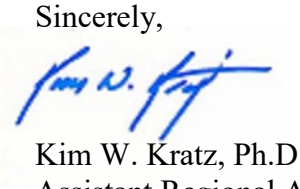
The action will adversely affect EFH for Chinook and coho salmon. Short term adverse effects will include diminished water quality, substrate, prey, migratory and rearing habitat value during construction, and long term effects are the reduction in freshwater rearing habitat because the new piles create artificial structure that benefits piscivores.

We have no conservation recommendations that would reduce these adverse effects.

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 Washington Coast Lower Columbia Branch office in Lacey, Washington.

Please direct questions regarding this letter to Bonnie Shorin in the Washington Coast Lower Columbia Branch, at bonnie.shorin@noaa.gov, or by telephone at (360) 995 2750.

Sincerely,



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

cc: Danette Guy

REFERENCES

Incorporated from BA, Section 10, and

NMFS. 2013. ESA Recovery Plan for Lower Columbia River Coho Salmon, Lower Columbia River Chinook Salmon, Columbia River Chum Salmon, and Lower Columbia River Steelhead.

NMFS. 2016. 2016 5-Year Review: Summary and Evaluation of Lower Columbia River Chinook Salmon, Columbia River Chum Salmon, Lower Columbia River Coho Salmon, and Lower Columbia River Steelhead.

NMFS. 2017. Recovery Plan for Snake River Fall Chinook Salmon.

ATTACHMENT 1
Species Presence Table

Table 3. Presence of ESA-listed fish species in the Lower Columbia River by life stage, NMFS' Northwest Fisheries Science Center, and NMFS' Protected Resources Division. Work Window depicted by orange highlight.

		=present								= relatively abundant								= peak occurrence							
Species	**Life Stage**	**Jan**		**Feb**		**Mar**		**Apr**		**May**		**Jun**		**Jul**		**Aug**		**Sep**		**Oct**		**Nov**		**Dec**	
Eulachon																									
Southern	Adult migr. & holding[1, 2]																								
DPS	Adult spawning[2]																								
	Egg incubation[3]																								
	Larvae emigration																								
Sturgeon: Green																									
Southern	Juvenile rearing[2]																								
Salmon: Chinook																									
Lower	Adult migr. & holding																								
Columbia	Adult spawning																								
	Eggs & pre-emergence																								
	Juvenile rearing																								
	Juvenile emigration																								
Upper	Adult migr. & holding																								
Columbia	Adult spawning																								
	Eggs & pre-emergence																								
	Juvenile rearing																								
	Juvenile emigration																								
Upper	Adult migr. & holding																								
Willamette	Adult spawning																								
	Eggs & pre-emergence																								
	Juvenile rearing																								
	Juvenile emigration																								
Snake River -	Adult migr. & holding																								
	Adult spawning																								
	Eggs & pre-emergence																								
	Juvenile rearing																								
	Juvenile emigration																								
Snake River -	Adult migr. & holding																								
Fall	Adult spawning																								
	Eggs & pre-emergence																								
	Juvenile rearing																								

		=present	= relatively abundant	= peak occurrence

Species	Life Stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Juvenile emigration												
Salmon: Chum													
Columbia	Adult migr. & holding												
River	Adult spawning												
	Eggs & pre-emergence												
	Juvenile rearing												
	Juvenile emigration[4]												
Salmon: Coho													
Lower	Adult migr. & holding												
Columbia	Adult spawning												
	Eggs & pre-emergence												
	Juvenile rearing												
	Juvenile emigration												
Salmon: Sockeye													
Snake River	Adult migr. & holding												
	Adult spawning												
	Eggs & pre-emergence												
	Juvenile rearing												
	Juvenile emigration												
Steelhead													
Lower	Adult migr. & holding												
Columbia	Adult spawning												
	Eggs & pre-emergence												
	Juvenile rearing												
	Juvenile emigration												
Middle	Adult migr. & holding												
Columbia	Adult spawning												
	Eggs & pre-emergence												
	Juvenile rearing												
	Juvenile emigration												
Upper	Adult migr. & holding												
Columbia	Adult spawning												
	Eggs & pre-emergence												
	Juvenile rearing												
	Juvenile emigration												
Upper	Adult migr. & holding												
Willamette	Adult spawning												
	Eggs & pre-emergence												
	Juvenile rearing												
	Juvenile emigration												

			=present			= relatively abundant			= peak occurrence															
Species	**Life Stage**	**Jan**		**Feb**		**Mar**		**Apr**		**May**		**Jun**		**Jul**		**Aug**		**Sep**		**Oct**		**Nov**		**Dec**	
Snake River	Adult migr. & holding																								
	Adult spawning																								
	Eggs & pre-emergence																								
	Juvenile rearing																								
	Juvenile emigration																								

[1] Eulachon Status Review Update, 20 January 2010. Available at: http://www.nwr.noaa.gov/Other-Marine-Species/upload/eulachon-review-update.pdf

[2] Personal communication. Conversation between WDFW (Brad James, Olaf Langness, and Steve West), ODFW (Tom Rien), and NMFS (Rob Markle, Bridgette Lohrman) regarding green sturgeon and eulachon presence in the Columbia River. June 23, 2009.

[3] Eulachon egg incubation estimated relative to spawning timing and 20 to 40 day incubation period.

[4] Carter et al. 2009 (Seasonal juvenile salmonid presence and migratory behavior in the lower Columbia River).