

PS Chinook salmon

The long-term abundance trend of the PS Chinook salmon ESU is slightly negative, and the South Puget Sound MPG, which includes the Cedar River and North Lake Washington / Sammamish River PS Chinook salmon populations, is considered at high risk of extinction due to low abundance and productivity. Reduced or eliminated accessibility to historically important habitat, combined with degraded conditions in available habitat due to land use activities appear to be the greatest threats to the recovery of PS Chinook salmon. Commercial and recreational fisheries also continue to impact this species.

The PS Chinook salmon that occur in the action area would be fall-run Chinook salmon from the Cedar River and/or the North Lake Washington/Sammamish River populations. Abundance in both populations is relatively low, with a total annual abundances fluctuating between less than 100 and about 2,500 individuals since 1965, and slightly negative average abundance trends.

The project site is located along the Lake Washington Ship Canal, which provides the only route to and from marine waters for adult and juvenile PS Chinook salmon from the affected populations. The environmental baseline within the action area has been degraded by the effects of intense streambank and shoreline development and by maritime activities. The baseline has also been degraded by nearby and upstream industry, urbanization, agriculture, forestry, water diversion, and road building and maintenance.

The timing of project-related work would effectively avoid the presence of juvenile and adult Chinook salmon. However, over the next several decades, out-migrating juveniles that pass close to the project site are likely to be exposed to structure-related reduced water quality and contaminated forage as a result of this action. These stressors, both individually and collectively, are likely to cause a range of effects that would include some combination of altered behaviors, reduced fitness, and mortality in exposed individuals. However, the number of individuals that are likely to be impacted by action-related stressors would be extremely low.

Based on the best available information, the scale of the direct and indirect effects of the proposed action, when considered in combination with the degraded baseline, cumulative effects, and the impacts of climate change, would be too small to cause detectable effects on any of the characteristics of a viable salmon population (abundance, productivity, distribution, or genetic diversity) for the affected PS Chinook salmon populations. Therefore, the proposed action would not appreciably reduce the likelihood of survival and recovery of this listed species.

PS Steelhead

The long-term abundance trends have been predominantly negative or flat across the PS steelhead DPS, especially for natural spawners. Growth rates are currently declining at 3 to 10% annually for all but a few DIPs. The extinction risk for most DIPs is estimated to be moderate to high, and the DPS is currently considered “not viable”. Reduced or eliminated accessibility to historically important habitat, combined with degraded conditions in available habitat due to land use activities appear to be the greatest threats to the recovery of PS steelhead. Fisheries activities also continue to impact this species.

The PS steelhead that occur in the action area would be winter-run fish from the Cedar River and North Lake Washington / Lake Sammamish DPSs. The abundance trends between 1984 and 2016 was strongly negative for both DIPs, and ten or fewer adult natural-spawners are estimated to return to the DPSs annually.

The project site is located along the Lake Washington Ship Canal, which provides the only route to and from marine waters for adult and juvenile PS steelhead from the affected DIPs. The environmental baseline within the action area has been degraded by the effects of intense streambank and shoreline development and by maritime activities. The baseline has also been degraded by nearby and upstream industry, urbanization, agriculture, forestry, water diversion, and road building and maintenance.

Project-related work is expected to cause no more than minor effects in exposed individuals. However, over the next several decades, out-migrating juveniles that pass close to the project site are likely to be exposed to structure-related reduced water quality and contaminated forage as a result of this action. These stressors, both individually and collectively, are likely to cause a range of effects that would include some combination of altered behaviors, reduced fitness, and mortality in exposed individuals. However, the number of individuals that are likely to be impacted by action-related stressors would be extremely low.

Based on the best available information, the scale of the direct and indirect effects of the proposed action, when considered in combination with the degraded baseline, cumulative effects, and the impacts of climate change, would be too small to cause detectable effects on any of the characteristics of a viable salmon population (abundance, productivity, distribution, or genetic diversity) for the affected PS steelhead DIPs. Therefore, the proposed action would not appreciably reduce the likelihood of survival and recovery of this listed species.

2.7.2 Critical Habitat

As described above at Section 2.5, the proposed action is likely to adversely affect designated critical habitat for PS Chinook salmon.

Chinook salmon critical habitat

Past and ongoing land and water use practices have degraded salmonid critical habitat throughout the Puget Sound basin. Hydropower and water management activities have reduced or eliminated access to significant portions of historic spawning habitat. Timber harvests, agriculture, industry, urbanization, and shoreline development have adversely altered floodplain and stream morphology in many watersheds, diminished the availability and quality of estuarine and nearshore marine habitats, and reduced water quality across the region. Global climate change is expected to increase in-stream water temperatures and alter stream flows, possibly exacerbating impacts on baseline conditions in freshwater habitats across the region. Rising sea levels are expected to increase coastal erosion and alter the composition of nearshore habitats, which could further reduce the availability and quality of estuarine habitats. Increased ocean acidification may also reduce the quality of estuarine habitats.

In the future, non-federal land and water use practices and climate change are likely to increase. The intensity of those influences on salmonid critical habitat is uncertain, as is the degree to which those impacts may be tempered by adoption of more environmentally acceptable land use practices, by the implementation of non-federal plans that are intended to benefit salmonids, and by efforts to address the effects of climate change.

The PBF for PS Chinook salmon critical habitat in the action area is limited to freshwater migration corridors free of obstruction and excessive predation. The site attributes of that PBF that would be affected by the action are water quality and natural cover. As described above, the project site is located along a heavily impacted waterway, and both of these site attributes currently function at greatly reduced levels as compared to undisturbed freshwater migratory corridors. The long-term presence of the applicant's bulkhead would cause long term effects on the two site attributes identified above.

Based on the best available information, the scale of the proposed action's effects, when considered in combination with the degraded baseline, cumulative effects, and the impacts of climate change, would be too small to cause any detectable long-term negative changes in the quality or functionality of the freshwater migration corridors PBF in the action area. Therefore, this critical habitat will maintain its current level of functionality, and retain its current ability for PBFs to become functionally established, to serve the intended conservation role for PS Chinook salmon.

2.8 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 the NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of PS Chinook salmon and PS steelhead, nor is it likely to destroy or adversely modify designated critical habitat for PS Chinook salmon.

2.9 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 incidental take statement (ITS).

2.9.1 Incidental Take Statement

In the biological opinion, NMFS determined that incidental take is reasonably certain to occur as follows:

Harm of PS Chinook salmon from exposure to:

- contaminated forage,
- structure-related degraded water quality.

Harm of PS steelhead from exposure to:

- contaminated forage,
- structure-related degraded water quality.

The distribution and abundance of the fish that occur within an action area are affected by habitat quality, competition, predation, and the interaction of processes that influence genetic, population, and environmental characteristics. These biotic and environmental processes interact in ways that may be random or directional, and may operate across far broader temporal and spatial scales than are affected by the proposed action. Thus, the distribution and abundance of fish within the action area cannot be attributed entirely to habitat conditions, nor can the NMFS precisely predict the number of fish that are reasonably certain to be injured or killed if their habitat is modified or degraded by the proposed action.

Therefore, the NMFS cannot predict with meaningful accuracy the number of PS Chinook salmon and PS steelhead that are reasonably certain to be injured or killed by exposure to the stressor identified above. Additionally, the NMFS knows of no device or practicable technique that would yield reliable counts of individuals that may experience these impacts. In such circumstances, the NMFS uses the causal link established between the activity and the likely extent and duration of changes in habitat conditions to describe the extent of take as a numerical level of habitat disturbance. The most appropriate surrogates for take are action-related parameters that are directly related to the magnitude of the expected take.

The size and configuration of the applicant's bulkhead repair and of the adjacent parking area are the best available surrogates for the extent of take of juvenile PS Chinook salmon and PS steelhead from exposure to contaminated forage and to structure-related degraded water quality, despite the low density and random distribution of these fish in the action area. This is because both surrogates are positively correlated with the amount of the pollution generating surfaces that would be present at the site. Any increase in the amount of the pollution generating surfaces would increase in the amount of contaminants that enter the canal. As the amount of contaminants increases, the concentration of water-borne contaminants would increase, as would the number of contaminated prey organisms and/or the intensity of their contamination. As either of those measures increase, the number of juvenile PS Chinook salmon and PS steelhead that would be exposed and/or the intensity of the effects of exposure would increase.

In summary, the extent of PS Chinook salmon and PS steelhead take for this action is defined as:

- The size and configuration of the repaired bulkhead as described in the proposed action section of this biological opinion; and
- The size and configuration of the adjacent parking area as described in the proposed action section of this biological opinion.

Exceedance of any of the exposure limits described above would constitute an exceedance of authorized take that would trigger the need to reinitiate consultation.

Although these take surrogates could be construed as partially coextensive with the proposed action, they nevertheless function as effective reinitiation triggers. If the size and configuration of the structure exceeds the proposal, it could still meaningfully trigger reinitiation because the Corps has authority to conduct compliance inspections and to take actions to address non-compliance, including post-construction (33 CFR 326.4).

2.9.2 Effect of the Take

In the biological opinion, the 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.

2.9.3 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 shall require the applicant to:

1. Ensure the implementation of monitoring and reporting to confirm that the take exemption for the proposed action is not exceeded.

2.9.4 Terms and Conditions

The terms and conditions described below are non-discretionary. The COE or any applicant must comply with them in order to implement the RPMs (50 CFR 402.14). The COE 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. The COE shall require the applicant to develop and implement plans to collect and report details about the take of listed fish. That plan shall:
 - i. Require the contractor to maintain and submit records to verify that all take indicators are monitored and reported. Minimally, the records should include:

1. Documentation of the timing and duration of in-water work to ensure that it is accomplished between October 1 and April 15;
 2. Descriptions of all in-water work, pile installation;
 3. Documentation of the type, size, and number of piles installed;
 4. Documentation of the method of pile installation; and
 5. Documentation of the final dimensions of the repaired bulkhead to confirm that it does not exceed the dimensions and/or characteristics described in this opinion.
- ii. Require the applicant to establish procedures for the submission of the construction records and other materials to the appropriate COE office; and
 - iii. Require the COE to submit an electronic post-construction report to the NMFS within six months of project completion. Send the report to: projectreports.wcr@noaa.gov. Be sure to include Attn: WCRO-2019-04045 in the subject line.

2.10 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).

1. To minimize adverse effects on water quality, the COE should encourage the applicant to develop a long-term plan that includes:
 - a. Replacement and/or full encapsulation of all creosote-treated timber; and
 - b. Installation of a filtration treatment system for the stormwater that is discharged from the parking area.

2.11 Reinitiation of Consultation

This concludes formal consultation for the U.S. Army Corps of Engineers' authorization of the Stimson Marina Bulkhead repair project, King County, Washington.

As 50 CFR 402.16 states, reinitiation of consultation is required and shall be requested by the Federal agency or by the Service where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) The amount or extent of incidental taking specified in the ITS is exceeded, (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, (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 the biological opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action.

3. MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT ESSENTIAL FISH HABITAT RESPONSE

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

This analysis is based, in part, on the EFH assessment provided by the COE and descriptions of EFH contained in the fishery management plan for Pacific Coast salmon developed by the Pacific Fishery Management Council and approved by the Secretary of Commerce (PFMC 2014).

3.1 Essential Fish Habitat Affected By the Project

The project site is located in Seattle, along the northern shore of the Lake Washington Ship Canal (Figure 1). The waters and substrate of the Lake Washington Ship Canal are designated as freshwater EFH for various life-history stages of Pacific Coast Salmon, which within the Lake Washington watershed include Chinook and coho salmon. Freshwater EFH for Pacific salmon is identified and described in Appendix A to the Pacific Coast salmon fishery management plan, and consists of four major components: (1) spawning and incubation; (2) juvenile rearing; (3) juvenile migration corridors; and (4) adult migration corridors and holding habitat.

As part of Pacific Coast Salmon EFH, five Habitat Areas of Particular Concern (HAPCs) have been defined: 1) complex channels and floodplain habitats; 2) thermal refugia; 3) spawning habitat; 4) estuaries; and 5) marine and estuarine submerged aquatic vegetation. The action area provides no known HAPC habitat features.

3.2 Adverse Effects on Essential Fish Habitat

The ESA portion of this document (Sections 1 and 2) describes the proposed action and its adverse effects on ESA-listed species and critical habitat, and is relevant to the effects on EFH for Pacific Coast Salmon. Based on the analysis of effects presented in Section 2.5 the proposed action will cause minor short- and long-term adverse effects on EFH for Pacific Coast Salmon as summarized below.

1. Water quality: – The proposed action would cause minor short- and long-term adverse effects on this attribute. The action would cause no changes in water temperature and salinity, but construction would mobilize small amounts of contaminated bottom sediments. Additionally, retention of the applicant’s creosote-treated timber bulkhead and untreated stormwater from the associated parking area would maintain long-standing sources of PAHs and vehicle-related contaminants to the canal. Detectable effects would be limited to the area within about 300 feet around the bulkhead.
2. Water quantity, depth, and velocity: – No changes expected.
3. Riparian-stream-marine energy exchanges: – The proposed action would cause minor long-term adverse effects on this attribute. Extending the life of the applicant’s bulkhead would maintain long-standing conditions that greatly limit the growth of riparian vegetation and submerged aquatic vegetation (SAV) at the project site. It would also continue to eliminate natural runoff and sediment transport, wave energy attenuation, hyporheic flows, and large woody debris recruitment and retention.
4. Channel gradient and stability: – The proposed action would cause minor long-term adverse effects on this attribute. Extending the life of the applicant’s bulkhead would maintain long-standing conditions that prevent natural channel forming processes. The bulkhead would perpetuate an unnatural vertical bank with bankside water depths in excess of 10 feet instead allowing the formation of a gently sloped bank with shoreline water depths measures in inches that would be present under natural conditions.
5. Prey availability: – The proposed action would cause long-term minor adverse effects on this attribute. The bulkhead would maintain artificially deep bank-side water depths that limits SAV growth and reduces the density and diversity of the planktonic organisms such as amphipods, copepods, and larvae of many benthic species that are important prey resources for juvenile salmonids. The contaminants from the bulkhead and parking area are also likely to contaminate some of the available prey resources.
6. Cover and habitat complexity: – The proposed action would cause long-term minor adverse effects on this attribute. As described above at 3, 4, and 5, the continued presence of the bulkhead and parking area would continue to limit the growth of riparian vegetation and SAV that provide over- and in-water cover for juvenile salmonids, and the bulkhead would perpetuate simplified habitat conditions at the site that consist of an unnatural vertical bank and relatively flat mud bottom.
7. Water quantity: – No changes expected.
8. Space: – No changes expected.
9. Habitat connectivity from headwaters to the ocean: – No changes expected.

10. Groundwater-stream interactions: – The proposed action would cause minor long-term adverse effects on this attribute. Extending the life of the applicant’s bulkhead would maintain long-standing conditions that greatly limit or eliminate hyporheic flows to the canal.
11. Connectivity with terrestrial ecosystems: – No changes expected.
12. Substrate composition: – No changes expected.

3.3 Essential Fish Habitat Conservation Recommendations

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

1. To minimize adverse effects on water quality, the COE should encourage the applicant to develop a long-term plan that includes:
 - a. Replacement and/or full encapsulation of all creosote-treated timber; and
 - b. Installation of a filtration treatment system for the stormwater that is discharged from the parking area.

Full implementation of this EFH conservation recommendation would protect, by avoiding or minimizing adverse effects on water quality described in section 3.2, above, for Pacific Coast salmon.

The NMFS knows of no practical measures that are available to address the action’s impacts on riparian-stream-marine energy exchanges, channel gradient and stability, prey availability, cover and habitat complexity, habitat connectivity from headwaters to the ocean.

3.4 Statutory Response Requirement

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

In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, we ask that in your statutory reply to the EFH

portion of this consultation, you clearly identify the number of conservation recommendations accepted.

3.5 Supplemental Consultation

The COE must reinitiate EFH consultation with the NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH Conservation Recommendations (50 CFR 600.920(1)).

4. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

The Data Quality Act (DQA) specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section of the opinion addresses these DQA components, documents compliance with the DQA, and certifies that this opinion has undergone pre-dissemination review.

Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended user of this opinion is the COE. Other interested users could include Stimson Marina, WDFW, the governments and citizens of King County and the City of Seattle, and Native American tribes. Individual copies of this opinion were provided to the COE. The document will be available within two weeks at the NOAA Library Institutional Repository [<https://repository.library.noaa.gov/welcome>]. The format and naming adheres to conventional standards for style.

Integrity

This consultation was completed on a computer system managed by NMFS in accordance with relevant information technology security policies and standards set out in Appendix III, 'Security of Automated Information Resources,' Office of Management and Budget Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

Objectivity

Information Product Category: Natural Resource Plan

Standards: This consultation and supporting documents are clear, concise, complete, and unbiased; and were developed using commonly accepted scientific research methods. They adhere to published standards including the NMFS ESA Consultation Handbook, ESA regulations, 50 CFR 402.01 et seq., and the MSA implementing regulations regarding EFH, 50 CFR 600.

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the References section. The analyses in this opinion and EFH consultation contain more background on information sources and quality.

Referencing: All supporting materials, information, data and analyses are properly referenced, consistent with standard scientific referencing style.

Review Process: This consultation was drafted by NMFS staff with training in ESA and MSA implementation, and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

5. REFERENCES

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