

7.0 CONCLUSION

The analysis in the proceeding sections of these Service opinions form the basis for conclusions as to whether the proposed action, the Columbia River Channel Improvements Project, satisfies the standards of section 7(a)(2) of the Act. To do so, the Corps must ensure that their proposed action is not likely to jeopardize the continued existence of any listed species. Service species addressed in these Service opinions do not have designated critical habitat. Section 2 of this Opinion describes the constituent components of the proposed action. Section 3 describes the rangewide status of coastal cutthroat trout and bull trout, and Section 4 discusses the lower Columbia River, estuary, and river mouth environmental baseline, including the Service's knowledge of coastal cutthroat trout and bull trout habitat needs and use in the Project area. Additional information on bald eagle and Columbian white-tailed deer is provided in Section 4. Section 5 details the likely effects of the proposed action, including interrelated and/or interdependent Project actions, both on individuals of the listed and proposed species in the action area, as well as their habitats. Section 6 considers the cumulative effects of relevant non-federal actions reasonably certain to occur in the action area. On the basis of this information and analysis, the Service draws its conclusions about the effects of the Project on the survival and recovery of the listed and proposed Service species.

7.1 Coastal Cutthroat Trout and Bull Trout

7.1.1 Effects Analysis

Based on the effects analyses (section 5.0) of these Service Opinions, we believe that the most predictable impacts from the proposed action to coastal cutthroat trout and bull trout and their habitats in the lower Columbia River, estuary, and river mouth are short-term, physical changes during the construction and subsequent maintenance periods of the Project. Impacts to key physical processes have the potential for affecting habitat-forming processes. However, the impacts to those key physical processes will be of limited and short-term nature during the Project construction and maintenance periods. This conclusion was verified during the SEI panel process, as well as during BRT discussions of the numerical modeling conducted by WES and OHSU/OGI. Therefore, Project construction and maintenance impacts to key habitat types (i.e., tidal marsh and swamp, shallow water and flats, and water column) should be limited as well.

Section 5.3.1 (Direct Effects) indicated Project construction and maintenance would have limited potential to take coastal cutthroat trout and bull trout via dredging entrainment and blasting activities. Our indirect effects analysis also found that short-term, physical changes to any of the habitat-forming process indicators (Section 5.3.2) during the Project's construction and

maintenance periods were unlikely to have more than a limited adverse effect on any of the conceptual ecosystem model's indicators. Based on minor predicted changes to key physical habitat-forming processes discussed above, short-term Project effects to habitat complexity, connectivity, and conveyance, feeding habitat opportunity, refugia, and habitat-specific food availability are likely to be limited.

Contaminants (Section 5.3.2.11) is another indicator that can affect more than one habitat type. The contaminants analysis indicates that juvenile salmonids are being exposed to toxicants in their food supply in the lower Columbia River, estuary, and river mouth. However, while the source of those toxicants is not clear, based on our effects analysis, the potential of the Project to exacerbate this situation is minimal, given the characteristics of the material being dredged and disposed of during the construction period. To be as protective as possible, Monitoring Action 5, identified in Table 7-3 of aquatic species BA (pages 7-9), addresses the potential for release of contaminants and will help to identify and minimize the potential to resuspend contaminants during Project activities.

Based on the limited short-term direct and indirect Project effects on the important indicators of the ecosystem conceptual model, the Service believes population numbers of coastal cutthroat trout and bull trout will not be appreciably reduced. The Service also believes that the Project, other than during short-duration and limited locations of salmonid avoidance of dredging and disposal operations, will not appreciably reduce the distribution of coastal cutthroat trout and bull trout. As no coastal cutthroat trout or bull trout spawning habitat occurs in or adjacent to the Project, the Project will not cause loss of spawning habitat. Overall, the Service believes the short-term direct and indirect effects of the Project will not appreciably reduce any of the coastal cutthroat trout and bull trout DPS' population numbers, distribution within each DPS, or reproductive success. Therefore, the Service believes that the Project will not appreciably reduce the likelihood of survival and recovery of coastal cutthroat trout or bull trout.

7.1.2 Monitoring Program and Adaptive Management Process

Because of the low level of uncertainty surrounding the long-term biological response of listed salmonids to predicted physical changes, the best available scientific information does not allow the Service to predict with certainty how the limited physical changes would affect coastal cutthroat trout and bull trout and their habitats over the life span of the Project. Section 5.6 of these Service opinions discusses long-term uncertainty and risk, and reviews the need for reducing long-term uncertainty and risk via a precautionary approach to the protection of ecosystem elements (i.e., key indicators within each pathway of importance to salmonids). In order to address those risks and uncertainties associated with the potential for adverse effects to

coastal cutthroat trout and bull trout over the life span of the Project, and to ensure that Project effects are not significant, the Service agrees with the Corps' proposed Monitoring Program and Adaptive Management Process. The need for a Monitoring Program and Adaptive Management Process was a major finding identified in the Sustainable Ecosystems Institute Channel Improvement Questionnaire. The Service therefore believes that the implementation of the monitoring and adaptive management programs will ensure that long-term Project effects are addressed, and that these long-term effects will not appreciably reduce the likelihood of coastal cutthroat trout and bull trout survival and recovery.

The Monitoring Program and Adaptive Management Process will be used to evaluate potential effects of the proposed action during the construction and maintenance phases of the Project. Monitoring and adaptive management will assist the Service with verification that the Project's long term adverse effects to coastal cutthroat trout and bull trout and their habitats are limited. Based on the results of the Monitoring Plan and review of the Adaptive Management Process, adjustments may be made to the construction and maintenance activities of the Project. As an additional result of annual monitoring program review, the adaptive management team may decide that mitigation or restoration actions will be necessary to address adverse impacts.

The monitoring program elements and the framework for the adaptive management process, as currently proposed in the aquatic species BA, address the main concerns identified in section 5 (Effects of Action), and will ensure the Project-related environmental impacts to the lower Columbia River, estuary, and river mouth are minimized. The Service also believes that the Monitoring Program and the Adaptive Management Process provides the Corps with the opportunity to integrate elements of the Project into a broader set of research objectives and restoration activities in the Columbia River Basin (i.e., estuary action items in the All-H paper and NMFS' FCRPS Hydropower Opinion).

7.1.3 Ecosystem Research Actions

The Corps has proposed a number of Ecosystem Research Actions (Table 8-1 of the aquatic species BA) under Section 7(a)(1) of the Act. The proposed ecosystem research actions support currently on-going research actions in the lower Columbia River. They also begin to address longer term environmental issues of the river's ecosystem, such as contaminants, and will provide a venue, via the proposed ETM workshop, to better understand and propose meaningful management actions to conserve the ETM. The data and information resulting from the ecosystem research actions can also be brought forward into the Adaptive Management Process to inform and guide future management decisions associated with the Project. For these reasons,

the Service believes that the proposed ecosystem research actions are a beneficial aspect of the Project.

7.1.4 Ecosystem Restoration Features

The Corps has proposed a number of ecosystem restoration features (see Table 8-2 of the aquatic species BA) in furtherance of Section 7(a)(1) of the Act. During BRT discussions, and discussions among the Corps, the Ports, the Service, and NMFS management, participants identified the need to address any proposed restoration features in the context of habitat type, function, and value, and linking those values to listed species.

The ecosystem restoration features will provide benefits to the habitat types identified in the Conceptual Model (see Chapter 5 of the aquatic species BA). When implemented in coordination with the Service and other organizations conducting habitat conservation/restoration activities, these features should complement those activities currently occurring in the lower Columbia River and estuary. For these reasons, the Service believes that the proposed ecosystem restoration features should benefit coastal cutthroat trout and bull trout and their habitats. As with the Monitoring Plan, the Adaptive Management Process, and the ecosystem research actions, the ecosystem restoration features also provide the Corps the opportunity to integrate elements of the Project into a broader set of research objectives and restoration activities in the Columbia River Basin (i.e., estuary action items in the All-H paper and NMFS' FCRPS Hydropower Opinion).

7.1.5 Coastal Cutthroat Trout and Bull Trout Conclusion

The Project's blasting and entrainment effects may directly kill or injure a limited number of coastal cutthroat trout and bull trout, and the Project's indirect effects to lower Columbia River, estuary, and river mouth ecosystem indicators may cause limited harm and harassment to coastal cutthroat trout and bull trout. Over the long-term, these effects will be monitored and addressed via a monitoring and adaptive management process. Therefore, after reviewing the current status of coastal cutthroat trout and bull trout, the environmental baseline for the action area, the effects of the proposed action, and cumulative effects, it is the Service's biological and conference opinions that the proposed Columbia River Channel Improvements Project will not jeopardize the continued existence of threatened Columbia River DPS of bull trout or the proposed Southwestern Washington/Columbia River DPS of coastal cutthroat trout. No critical habitat has been designated for these species, therefore, none will be affected.

7.2 Bald Eagle and Columbian White-tailed Deer Conclusion

The terrestrial species Opinion determined that the Project would not jeopardize the continued existence of bald eagles or Columbian white-tailed deer (analysis is presented on page 20 of the terrestrial species Opinion). Additional ecosystem restoration actions, reviewed within these Service opinions, were determined to cause limited, short term harm to nesting and foraging bald eagles that exist near restoration project locations. After reviewing the current status of bald eagles and Columbian white-tailed deer, the environmental baseline for the action area, the effects of the proposed action (presented in both the terrestrial species Opinion and in these Service opinions), and cumulative effects, it is the Service's biological opinion that the proposed Columbia River Channel Improvements Project will not jeopardize the continued existence of threatened bald eagle or endangered Columbian white-tailed deer. No critical habitat has been designated for these species, therefore, none will be affected.