

8.0 CONCLUSIONS

The analysis in the preceding sections of this biological opinion forms the basis for conclusions as to whether the proposed action, the ongoing operation of the FCRPS, and BOR projects satisfy the standards of the ESA, Section 7(a)(2). To do so, the Action Agencies must ensure that their proposed action is not likely to jeopardize the continued existence of any listed species or destroy or adversely modify the designated critical habitat of such species. Chapter 4 of this opinion defines the biological requirements and the current status of each of the 12 listed salmonid species. Chapter 5 evaluates the relevance of the environmental baseline to each species' current status. Chapter 6 details the likely effects of the proposed action both on individuals of the species in the action area and also on the listed population as a whole across its range and life-cycle. Chapter 7 considers cumulative effects of relevant non-Federal actions within the action area. Based on this information and analysis, NMFS draws its conclusions about the effects of the FCRPS and BOR projects upon the survival and recovery of the 12 listed salmonid species.

As discussed above in Section 1.3 of this Biological Opinion, NMFS must now determine "whether the species can be expected to survive with an adequate potential for recovery under the effects of the proposed or continuing action, the environmental baseline and any cumulative effects, and considering measures for survival and recovery specific to other life stages." The information available to NMFS for this determination is both quantitative and qualitative. For some species, such as SR spring/summer chinook, the available information is relatively abundant with a substantial amount of quantitative data, based upon empirical observations. For other species, however, such as SR sockeye salmon, the available information is largely qualitative based on the best professional judgement of knowledgeable scientists. Despite an increasing trend toward more quantitative understanding of the critical life signs for these fish, critical uncertainties limit the ability to project future conditions and effects. As a result, there are currently no hard and fast numerical indices available for any of these stocks on which to base a determination about jeopardy or adverse modification of critical habitat, the Section 7(a)(2) standards. Ultimately, for all 12 listed species, these conclusions are qualitative judgements based upon the best quantitative and qualitative information available species-by-species.

8.1 SNAKE RIVER SPRING/SUMMER CHINOOK SALMON

8.1.1 Proposed BPA, Corps, and BOR Action

The biological requirements of this stream-type salmonid, which migrates to the ocean as a yearling and spawns and rears in tributaries upstream of the FCRPS, are not being met, either in the FCRPS action area or at the life-cycle level. As discussed in Section 6.2, individuals of this species are subjected to adverse habitat conditions when passing through the FCRPS that result in their mortality or impaired fitness. Although recent improvements in the operation and configuration of the FCRPS have reduced the overall mortality rates for this species, their current survival through the FCRPS, and as affected by operation of the BOR projects, is not sufficient to insure their survival with an adequate potential for recovery. Instead, the continuation of the proposed action for the long term, taking into account the current prospects for survival and recovery across their range and life-cycle, is likely to reduce appreciably both their likelihood of survival and recovery.

Within the action area, the key effects on this species are summarized in Section 6.2.9 and Table 6.3-12. These effects include juvenile and adult mortality associated with dam and reservoir passage and high dissolved gas levels during involuntary spill. Juvenile and adult mortality occurring in the action area is still substantial. Although development of performance standards to reduce mortality is included generally, the proposed action is not specific enough to ensure that mortality will be adequately reduced in the action area and that elements of critical habitat will be adequately protected.

At the species level, Table 6.3-13 indicates that substantial survival improvements (at least 57%), in addition to those from the proposed action and other measures for survival and recovery specific to other life stages, are required to ensure a high likelihood of survival and a moderate to high likelihood of recovery for this ESU. Some proportion of this additional survival improvement may result from ongoing Federal conservation efforts to improve habitat and hatchery practices, which are described generally in the All-H Paper. However, the sufficiency of these Federal survival and recovery measures to augment survival improvements resulting from the FCRPS proposed action is highly uncertain until there can also be reliable progress on non-Federal survival and recovery measures in other life-stages. Furthermore, NMFS finds that additional survival improvements beyond those likely to result from the proposed action are reasonably available.

Based on all relevant information and analysis considered in this opinion, NMFS concludes that the proposed operation and configuration of the FCRPS and BOR projects is likely to jeopardize the continued existence of the SR spring/summer chinook salmon and to adversely modify its designated critical habitat.

8.1.2 NMFS' Issuance of a Section 10 Transportation Permit

After reviewing the current status of SR spring/summer chinook salmon, the environmental baseline for the action area, the effects of the proposed action (particularly Sections 6.2.3 and 6.2.8), and the cumulative effects, it is NMFS' biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of SR spring/summer chinook salmon or to destroy or adversely modify designated critical habitat.

8.2 SNAKE RIVER FALL CHINOOK SALMON

8.2.1 Proposed BPA, Corps, and BOR Action

The biological requirements of this ocean-type salmonid, which migrates to the ocean as a sub-yearling and spawns and rears in the action area, are not being met either in the FCRPS action area or at the life-cycle level. As discussed in Section 6.2, individuals of this species are subjected to adverse habitat conditions when passing through the FCRPS. These conditions result in their mortality or impaired fitness. Although recent improvements in the operation and configuration of the FCRPS have reduced the overall mortality rates for this species, their current survival through the FCRPS, and the effects of operation of the BOR projects, is not sufficient to ensure their survival with an adequate potential for recovery. Instead, the continuation of the proposed action for the long term, taking into account the current prospects for survival and recovery across their range and life-cycle, is likely to appreciably reduce both their likelihood of survival and recovery.

Within the action area, the key effects on this species are summarized in Section 6.2.9 and Table 6.3-12. These effects include juvenile and adult mortality associated with dam and reservoir passage and high dissolved gas levels during involuntary spill. Juvenile and adult mortality occurring in the action area is still substantial. Although development of performance standards to reduce mortality is included generally, the proposed action is not specific enough to ensure that mortality will be adequately reduced in the action area and that elements of critical habitat will be adequately protected.

At the species level, Table 6.3-13 indicates that substantial survival improvements (at least 57%), in addition to those from the proposed action and other measures for survival and recovery specific to other life stages, are required to ensure a high likelihood of survival and a moderate to high likelihood of recovery for this ESU. Some proportion of this additional survival improvement may result from ongoing Federal conservation efforts to improve habitat and hatchery practices, which are described generally in the All-H Paper. However, the sufficiency of these Federal survival and recovery measures to augment survival improvements resulting from the FCRPS proposed action is highly uncertain until there can also be reliable progress on non-Federal survival and recovery measures in other life-stages. Furthermore, NMFS finds that additional survival improvements beyond those likely to result from the proposed action are reasonably available.

Based on all relevant information and analysis considered in this opinion, NMFS concludes that the proposed operation and configuration of the FCRPS and BOR projects is likely to jeopardize the continued existence of the SR fall chinook salmon and to adversely modify its designated critical habitat.

8.2.2 NMFS' Issuance of a Section 10 Transportation Permit

After reviewing the current status of SR fall chinook salmon, the environmental baseline for the action area, the effects of the proposed action (particularly Sections 6.2.3 and 6.2.8) and the cumulative effects, it is NMFS' biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of SR fall chinook salmon or to destroy or adversely modify designated critical habitat.

8.3 UPPER COLUMBIA RIVER SPRING CHINOOK SALMON

8.3.1 Proposed BPA, Corps, and BOR Action

The biological requirements of this stream-type salmonid, which migrates to the ocean as a yearling and spawns and rears in tributaries upstream of the FCRPS, are not being met either in the FCRPS action area or at the life-cycle level. As discussed in Section 6.2, individuals of this species are subjected to adverse habitat conditions when passing through the FCRPS that result in their mortality or impaired fitness. Although recent improvements in the operation and configuration of the FCRPS have reduced the overall mortality rates for this species, their current survival through the FCRPS and the effects of operation of the BOR projects, is not sufficient to ensure their survival with an adequate potential for recovery. Instead, the continuation of the proposed action for the long term, taking into account the current prospects for survival and recovery across their range and life-cycle, is likely to appreciably reduce both their likelihood of survival and recovery.

Within the action area, the key effects on this species are summarized in Section 6.2.9 and Table 6.3-12. These effects include juvenile and adult mortality associated with dam and reservoir passage and high dissolved gas levels during involuntary spill. Juvenile and adult mortality occurring in the action area is still substantial. Although development of performance standards to reduce mortality is included generally, the proposed action is not specific enough to ensure that mortality will be adequately reduced in the action area and that elements of critical habitat will be adequately protected.

At the species level, Table 6.3-13 indicates that substantial survival improvements (at least 57%), in addition to those from the proposed action and other measures for survival and recovery specific to other life stages, are required to ensure a high likelihood of survival and a moderate to high likelihood of recovery for this ESU. Some proportion of this additional survival improvement may result from ongoing Federal conservation efforts to improve habitat and hatchery practices, which are described generally in the All-H Paper. However, the sufficiency of these Federal survival and recovery measures to augment survival improvements resulting from the FCRPS proposed action is highly uncertain until there can also be reliable progress on non-Federal survival and recovery measures in other life-stages. Furthermore, NMFS finds that additional survival improvements beyond those likely to result from the proposed action are reasonably available.

Based on all relevant information and analysis considered in this opinion, NMFS concludes that the proposed operation and configuration of the FCRPS and BOR projects is likely to jeopardize the continued existence of the UCR spring chinook salmon and to adversely modify its designated critical habitat.

8.3.2 NMFS' Issuance of a Section 10 Transportation Permit

Only a small proportion of this population is affected by summer transportation from McNary Dam. After reviewing the current status of UCR spring chinook salmon, the environmental baseline for the action area, the effects of the proposed action (particularly Sections 6.2.3 and 6.2.8), and the cumulative effects, it is NMFS' biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of UCR spring chinook salmon or to destroy or adversely modify designated critical habitat.

8.4 UPPER WILLAMETTE RIVER CHINOOK SALMON

8.4.1 Proposed BPA, Corps, and BOR Action

Salmonids in this ESU spawn and rear in tributaries that enter the Columbia River downstream from all FCRPS projects. The only effects of operation of the FCRPS on this ESU are potential habitat degradation in the estuary and plume. The magnitude of these effects is uncertain and appears to be minor, compared to other factors influencing the status of this species (Table 6.3-12).

After reviewing the current status of UWR chinook salmon, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS' biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of UWR chinook salmon or to destroy or adversely modify designated critical habitat.

8.4.2 NMFS' Issuance of a Section 10 Transportation Permit

UWR chinook salmon are not affected by issuance of this permit.

8.5 LOWER COLUMBIA RIVER CHINOOK SALMON

8.5.1 Proposed BPA, Corps, and BOR Action

As discussed in Section 6.2, this ESU is distributed primarily in spawning and rearing areas below Bonneville Dam. Within the action area, the key effects on this species are summarized in Section 6.2.9 and Table 6.3-12. Effects of the FCRPS include passage mortality of juveniles and adults through one dam and reservoir for a limited number of subbasin populations (Table 6.3-2). For the small portion of the ESU that spawns in the Ives Island area below Bonneville Dam, access to, and quantity and quality of, that spawning habitat can be affected by FCRPS flow regulation.

At the species level, this ESU has multiple populations within the Columbia River basin, most of which are below FCRPS projects. Quantitative evaluations of the effect of the proposed action on this ESU's species-level biological requirements were not possible, but Table 6.3-13 indicates that most populations comprising this ESU are subjected to factors other than the FCRPS and these factors limit their potential for survival and recovery.

After reviewing the current status of LCR chinook salmon, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS' biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of LCR chinook salmon or to destroy or adversely modify designated critical habitat.

8.5.2 NMFS' Issuance of a Section 10 Transportation Permit

LCR chinook salmon are not affected by issuance of this permit.

8.6 SNAKE RIVER STEELHEAD

8.6.1 Proposed BPA, Corps, and BOR Action

The biological requirements of this stream-type salmonid, which migrates to the ocean as a yearling and spawns and rears in tributaries upstream of the FCRPS, are not being met either in the FCRPS action area or at the life-cycle level. As discussed in Section 6.2, individuals of this species are subjected to adverse habitat conditions when passing through the FCRPS that result in their mortality or impaired fitness. Although recent improvements in the operation and configuration of the FCRPS have reduced the overall mortality rates for this species, their current survival through the FCRPS, and the effects of operation of the BOR projects, is not sufficient to ensure their survival with an adequate potential for recovery. Instead, the continuation of the proposed action for the long term, taking into account the current prospects for survival and recovery across their range and life-cycle, is likely to appreciably reduce both their likelihood of survival and recovery.

Within the action area, the key effects on this species are summarized in Section 6.2.9 and Table 6.3-12. These effects include juvenile and adult mortality associated with dam and reservoir passage and high dissolved gas levels during involuntary spill. Juvenile and adult mortality occurring in the action area is still substantial. Although development of performance standards to reduce mortality is included generally, the proposed action is not specific enough to ensure that mortality will be adequately reduced in the action area and that elements of critical habitat will be adequately protected.

At the species level, Table 6.3-13 indicates that substantial survival improvements (at least 57%), in addition to those from the proposed action and other measures for survival and recovery specific to other life stages, are required to ensure a high likelihood of survival and a moderate to high likelihood of recovery for this ESU. Some proportion of this additional survival improvement may result from ongoing Federal conservation efforts to improve habitat and hatchery practices, which are described generally in the All-H Paper. However, the sufficiency of these Federal survival and recovery measures to augment survival improvements resulting from the FCRPS proposed action is highly uncertain until there can also be reliable progress on non-Federal survival and recovery measures in other life-stages. Furthermore, NMFS finds that additional survival improvements beyond those likely to result from the proposed action are reasonably available.

Based on all relevant information and analysis considered in this opinion, NMFS concludes that the proposed operation and configuration of the FCRPS and BOR projects is likely to jeopardize the continued existence of the SR steelhead and to adversely modify its designated critical habitat.

8.6.2 NMFS' Issuance of a Section 10 Transportation Permit

After reviewing the current status of SR steelhead, the environmental baseline for the action area, the effects of the proposed action (particularly Sections 6.2.3 and 6.2.8), and the cumulative effects, it is NMFS' biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of SR steelhead or to destroy or adversely modify designated critical habitat.

8.7 UPPER COLUMBIA RIVER STEELHEAD

8.7.1 Proposed BPA, Corps, and BOR Action

The biological requirements of this stream-type salmonid, which migrates to the ocean as a yearling and spawns and rears in tributaries upstream of the FCRPS, are not being met either in the FCRPS action area or at the life-cycle level. As discussed in Section 6.2, individuals of this species are subjected to adverse habitat conditions when passing through the FCRPS that result in their mortality or impaired fitness. Although recent improvements in the operation and configuration of the FCRPS have reduced the overall mortality rates for this species, their current survival through the FCRPS, and the effects of operation of the BOR projects, is not sufficient to ensure their survival with an adequate potential for recovery. Instead, the continuation of the proposed action for the long term, taking into account the current prospects for survival and recovery across their range and life-cycle, is likely to appreciably reduce both their likelihood of survival and recovery.

Within the action area, the key effects on this species are summarized in Section 6.2.9 and Table 6.3-12. These effects include juvenile and adult mortality associated with dam and reservoir passage and high dissolved gas levels during involuntary spill. Juvenile and adult mortality occurring in the action area is still substantial. Although development of performance standards to reduce mortality is included generally, the proposed action is not specific enough to ensure that mortality will be adequately reduced in the action area and that elements of critical habitat will be adequately protected.

At the species level, Table 6.3-13 indicates that substantial survival improvements (at least 57%), in addition to those from the proposed action and other measures for survival and recovery specific to other life stages, are required to ensure a high likelihood of survival and a moderate to high likelihood of recovery for this ESU. Some proportion of this additional survival improvement may result from ongoing Federal conservation efforts to improve habitat and hatchery practices, which are described generally in the All-H Paper. However, the sufficiency of these Federal survival and recovery measures to augment survival improvements resulting from the FCRPS proposed action is highly uncertain until there can also be reliable progress on non-Federal survival and recovery measures in other life-stages. Furthermore, NMFS finds that additional survival improvements beyond those likely to result from the proposed action are reasonably available.

Based on all relevant information and analysis considered in this opinion, NMFS concludes that the proposed operation and configuration of the FCRPS and BOR projects is likely to jeopardize the continued existence of the UCR steelhead and to adversely modify its designated critical habitat.

8.7.2 NMFS' Issuance of a Section 10 Transportation Permit

Only a small proportion of this population is affected by summer transportation from McNary Dam. After reviewing the current status of UCR steelhead, the environmental baseline for the action area, the effects of the proposed action (particularly Sections 6.2.3 and 6.2.8), and the cumulative effects, it is NMFS' biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of UCR steelhead or to destroy or adversely modify designated critical habitat.

8.8 MIDDLE COLUMBIA RIVER STEELHEAD

8.8.1 Proposed BPA, Corps, and BOR Action

The biological requirements of this stream-type salmonid, which migrates to the ocean as a yearling and spawns and rears in tributaries upstream of the FCRPS, are not being met either in the FCRPS action area or at the life-cycle level. As discussed in Section 6.2, individuals of this species are subjected to adverse habitat conditions when passing through the FCRPS that result in their mortality or impaired fitness. Although recent improvements in the operation and configuration of the FCRPS have reduced the overall mortality rates for this species, their current survival through the FCRPS, and the effects of operation of the BOR projects, is not sufficient to ensure their survival with an adequate potential for recovery. Instead, the continuation of the proposed action for the long term, taking into account the current prospects for survival and recovery across their range and life-cycle, is likely to appreciably reduce both their likelihood of survival and recovery.

Within the action area, the key effects on this species are summarized in Section 6.2.9 and Table 6.3-12. These effects include juvenile and adult mortality associated with dam and reservoir passage and high dissolved gas levels during involuntary spill. Juvenile and adult mortality occurring in the action area is still substantial. Although development of performance standards to reduce mortality is included generally, the proposed action is not specific enough to ensure that mortality will be adequately reduced in the action area and that elements of critical habitat will be adequately protected.

A quantitative analysis of the species-level effects of the proposed action was not possible for this ESU. However, based on inference from UCR steelhead (Section 6.3.13), it appears that substantial survival improvements (at least 57%), in addition to those from the proposed action and other measures for survival and recovery specific to other life stages, are required to ensure a high likelihood of survival and a moderate to high likelihood of recovery for this ESU. This assessment is based on similarity of effects of the action on UCR and MCR steelhead and the current status of MCR steelhead, which is at greater risk of extinction than UCR steelhead for the largest population for which risk can be assessed. Like UCR steelhead, some proportion of this additional survival improvement may result from ongoing Federal conservation efforts to improve habitat and hatchery practices, which are described generally in the All-H Paper. However, the sufficiency of these Federal survival and recovery measures to augment survival improvements resulting from the FCRPS proposed action is highly uncertain until there can also be reliable progress on non-Federal survival and recovery measures in other life-stages. Furthermore, NMFS finds that additional survival improvements beyond those likely to result from the proposed action are reasonably available.

Based on all relevant information and analysis considered in this opinion, NMFS concludes that the proposed operation and configuration of the FCRPS and BOR projects is likely to jeopardize

the continued existence of the MCR steelhead and to adversely modify its designated critical habitat.

8.8.2 NMFS' Issuance of a Section 10 Transportation Permit

Only a small proportion of this population is affected by summer transportation from McNary Dam. After reviewing the current status of MCR steelhead, the environmental baseline for the action area, the effects of the proposed action (particularly Sections 6.2.3 and 6.2.8) and the cumulative effects, it is NMFS' biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of MCR steelhead or to destroy or adversely modify designated critical habitat.

8.9 UPPER WILLAMETTE RIVER STEELHEAD

8.9.1 Proposed BPA, Corps, and BOR Action

This ESU spawns and rears in tributaries that enter the Columbia River downstream from all FCRPS projects. The only effects of operation of the FCRPS on this ESU are potential habitat degradation in the estuary and plume. The magnitude of these effects is uncertain and appears to be minor, compared to other factors influencing the status of this species (Table 6.3-12).

After reviewing the current status of UWR steelhead, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS' biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of UWR steelhead or to destroy or adversely modify designated critical habitat.

8.9.2 NMFS' Issuance of a Section 10 Transportation Permit

UWR chinook salmon are not affected by issuance of this permit.

8.10 LOWER COLUMBIA RIVER STEELHEAD

8.10.1 Proposed BPA, Corps, and BOR Action

As discussed in Section 6.2, this ESU is distributed primarily in spawning and rearing areas below Bonneville Dam. Within the action area, the key effects on this species are summarized in Section 6.2.9 and Table 6.3-12. Effects of the FCRPS include passage mortality of juveniles and adults through one dam and reservoir for a limited number of subbasin populations (Table 6.3-2).

At the species level, this ESU has multiple populations within the Columbia River basin, most of which are below FCRPS projects. Quantitative evaluations of the effect of the proposed action on this ESU's species-level biological requirements were not possible, but Table 6.3-13 indicates that most populations comprising this ESU are subjected to factors other than the FCRPS that limit their potential for survival and recovery.

After reviewing the current status of LCR steelhead, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS' biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of LCR steelhead or to destroy or adversely modify designated critical habitat.

8.10.2 NMFS' Issuance of a Section 10 Transportation Permit

LCR steelhead are not affected by issuance of this permit.

8.11 COLUMBIA RIVER CHUM SALMON

8.11.1 Proposed BPA, Corps, and BOR Action

The biological requirements of this salmonid, which migrates to the ocean as a sub-yearling, and spawns and rears in tributaries upstream of the FCRPS and in the mainstem Columbia River, are not being met either in the FCRPS action area or at the life-cycle level. As discussed in Section 6.2, individuals of this species are subjected to adverse spawning and initial rearing habitat conditions below Bonneville Dam that result in their mortality or impaired fitness. The continuation of the proposed action for the long term, taking into account the current prospects for survival and recovery across their range and life-cycle, is likely to appreciably reduce both their likelihood of survival and recovery.

Within the action area, the key effects on this species are summarized in Section 6.2.9 and Table 6.3-12. This includes an adverse effect of flow management on access to Hamilton Creek, Spring creek, and the Ives Island spawning areas. Quantity and quality of habitat at the Ives Island spawning area is also adversely affected by FCRPS flow management. Unlike the situation with LCR chinook, there are few spawning areas for this ESU so FCRPS effects on spawning have a significant impact on the entire ESU. Some additional improvement in the status of this ESU may result from ongoing Federal conservation efforts to improve habitat and hatchery practices, which are described generally in the All-H Paper. However, the sufficiency of these Federal survival and recovery measures to augment survival improvements resulting from the FCRPS proposed action is highly uncertain until there can also be reliable progress on non-Federal survival and recovery measures in other life-stages. Furthermore, NMFS finds that additional survival improvements beyond those likely to result from the proposed action are reasonably available.

Based on all relevant information and analysis considered in this opinion, NMFS concludes that the proposed operation and configuration of the FCRPS and BOR projects is likely to jeopardize the continued existence of the CR chum salmon and to adversely modify its designated critical habitat.

8.11.2 NMFS' Issuance of a Section 10 Transportation Permit

LCR steelhead are not affected by issuance of this permit.

8.12 SNAKE RIVER SOCKEYE SALMON

8.12.1 Proposed BPA, Corps, and BOR Action

The biological requirements of this stream-type salmonid, which migrates to the ocean as a yearling and spawns and rears in lakes upstream of the FCRPS, are not being met either in the FCRPS action area or at the life-cycle level. As discussed in Section 6.2, individuals of this species are subjected to adverse habitat conditions when passing through the FCRPS that result in their mortality or impaired fitness. Although recent improvements in the operation and configuration of the FCRPS have reduced the overall mortality rates for this species, their current survival through the FCRPS, and the effects of operation of the BOR projects, is not sufficient to ensure their survival with an adequate potential for recovery. Instead, the continuation of the proposed action for the long term, taking into account the current prospects for survival and recovery across their range and life-cycle, is likely to appreciably reduce both their likelihood of survival and recovery.

Within the action area, the key effects on this species are summarized in Section 6.2.9 and Table 6.3-12. These effects include juvenile and adult mortality associated with dam and reservoir passage and high dissolved gas levels during involuntary spill. Juvenile and adult mortality occurring in the action area is still substantial. Although development of performance standards to reduce mortality is included generally, the proposed action is not specific enough to ensure that mortality will be adequately reduced in the action area and that elements of critical habitat will be adequately protected.

Because the abundance of this ESU is so low, a quantitative assessment of species-level effects is not possible. However, risk to this ESU is extremely high currently and is likely to remain so if the proposed action continues into the future. The captive breeding program provides short-term protection from extinction, but is not sufficient to avoid extinction into the future. Some additional improvement in species status may result from ongoing Federal conservation efforts to improve habitat and hatchery practices, which are described generally in the All-H Paper. However, the sufficiency of these Federal survival and recovery measures to augment survival improvements resulting from the FCRPS proposed action is highly uncertain until there can also be reliable progress on non-Federal survival and recovery measures in other life-stages. Furthermore, NMFS finds that additional survival improvements beyond those likely to result from the proposed action are reasonably available.

Based on all relevant information and analysis considered in this opinion, NMFS concludes that the proposed operation and configuration of the FCRPS and BOR projects is likely to jeopardize the continued existence of the SR sockeye salmon and to adversely modify its designated critical habitat.

8.12.2 NMFS' Issuance of a Section 10 Transportation Permit

After reviewing the current status of SR sockeye salmon, the environmental baseline for the action area, the effects of the proposed action (particularly Sections 6.2.3 and 6.2.8) and the cumulative effects, it is NMFS' biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of SR sockeye or to destroy or adversely modify designated critical habitat.