

1 **8. FINDING OF EFFECT - SUMMARY**

2 Table 8-1 summarizes the determinations of effects to all of the species and critical habitats
3 addressed in this BA. The impacts to these ESUs and DPSs are detailed in Section 6 of this
4 document.

5 **Table 8-1. Summary of Effect Determinations for Species and Critical Habitat**

ESU/DPS	Determination of Effects to Species	Determination of Effects to Critical Habitat
Lower Columbia River Chinook <i>Oncorhynchus tshawytscha</i>	May Affect, Likely to Adversely Affect	May Affect, Likely to Adversely Affect
Upper Columbia River Spring-Run Chinook <i>Oncorhynchus tshawytscha</i>	May Affect, Likely to Adversely Affect	May Affect, Likely to Adversely Affect
Snake River Fall-Run Chinook <i>Oncorhynchus tshawytscha</i>	May Affect, Likely to Adversely Affect	May Affect, Likely to Adversely Affect
Snake River Spring/Summer-Run Chinook <i>Oncorhynchus tshawytscha</i>	May Affect, Likely to Adversely Affect	May Affect, Likely to Adversely Affect
Upper Willamette River Chinook <i>Oncorhynchus tshawytscha</i>	May Affect, Likely to Adversely Affect	May Affect, Likely to Adversely Affect
Lower Columbia River Steelhead <i>Oncorhynchus mykiss</i>	May Affect, Likely to Adversely Affect	May Affect, Likely to Adversely Affect
Middle Columbia River Steelhead <i>Oncorhynchus mykiss</i>	May Affect, Likely to Adversely Affect	May Affect, Likely to Adversely Affect
Upper Columbia River Steelhead <i>Oncorhynchus mykiss</i>	May Affect, Likely to Adversely Affect	May Affect, Likely to Adversely Affect
Snake River Steelhead <i>Oncorhynchus mykiss</i>	May Affect, Likely to Adversely Affect	May Affect, Likely to Adversely Affect
Upper Willamette River Steelhead <i>Oncorhynchus mykiss</i>	May Affect, Likely to Adversely Affect	May Affect, Likely to Adversely Affect
Snake River Sockeye <i>Oncorhynchus nerka</i>	May Affect, Likely to Adversely Affect	May Affect, Likely to Adversely Affect
Lower Columbia River Coho <i>Oncorhynchus kisutch</i>	May Affect, Likely to Adversely Affect	N/A
Columbia River Chum <i>Oncorhynchus keta</i>	May Affect, Likely to Adversely Affect	May Affect, Likely to Adversely Affect
Columbia River DPS, conterminous US Bull trout <i>Salvelinus confluentus</i>	May Affect, Not Likely to Adversely Affect	Will Not Destroy or Adversely Modify, May Affect, Not Likely to Adversely Affect

ESU/DPS	Determination of Effects to Species	Determination of Effects to Critical Habitat
Eastern DPS Northern (Steller) Sea Lion <i>Eumetopias jubatus</i>	May Affect, Likely to Adversely Affect	N/A
Southern DPS Green Sturgeon <i>Acipenser medirostris</i>	May Affect, Not Likely to Adversely Affect	N/A
Southern Resident Population Killer Whale <i>Orcinus orca</i>	May Affect, Not Likely to Adversely Affect	N/A
Southern DPS Eulachon <i>Thaleichthys pacificus</i>	May Affect, Likely to Adversely Affect	N/A

1

2 **8.1 SPECIES**

3 **8.1.1 Salmon and Steelhead**

4 The project **may affect**, and is **likely to adversely affect**, LCR Chinook, UCR spring-run
5 Chinook, SR fall-run Chinook, SR spring/summer-run Chinook, LCR steelhead, MCR steelhead,
6 UCR steelhead, SR steelhead, SR sockeye, LCR coho, and CR chum.

7 The project **may affect** these ESUs/DPSs based on the following:

- 8 • There are numerous documented detections of individuals from these ESUs/DPSs in the
9 action area.
- 10 • Suitable migration and juvenile rearing habitat occurs within all of the action area
11 water bodies for the salmon and steelhead ESUs/DPSs listed above.
- 12 • Suitable spawning habitat for CR chum occurs in upriver portions of the action area
13 in the Columbia River.
- 14 • Suitable spawning habitat for LCR Chinook and LCR coho occurs in the Hood River
15 at the proposed mitigation site.
- 16 • The project will generate noise above ambient levels in the Columbia River and North
17 Portland Harbor.
- 18 • The project will temporarily and permanently alter water quality and quantity in the
19 action area water bodies.
- 20 • The project will conduct in-water and over-water construction activities in the Columbia
21 River, North Portland Harbor, Hood River, and Lewis River that may result in behavioral
22 harassment, injury or mortality.
- 23 • The project will place numerous in-water and over-water structures in the Columbia
24 River and North Portland Harbor, making both permanent and temporary alterations to
25 in-stream habitat, including physical loss, shading, and hydraulic shadowing.
- 26 • The project will remove riparian vegetation and revegetate disturbed riparian areas
27 alongside the Columbia River and North Portland Harbor.

- 1 • Land use changes may result in added PGIS, in-water work, and loss of in-stream habitat
2 features.
- 3 • Spawning and rearing habitat will be increased for LCR Chinook, LCR coho, and LCR
4 steelhead at the Hood and Lewis River mitigation sites. Spawning and rearing habitat
5 may be increased for CR chum at the Lewis River mitigation sites.
- 6 • Foraging, rearing, migrating, and holding habitat will be improved with additional
7 allochthonous material, cover, and shade for adult and juvenile LCR Chinook, LCR coho,
8 and LCR steelhead provided by riparian, side-channel, and wetland restoration at the
9 Hood River mitigation site.
- 10 • Rearing habitat will be improved with additional allochthonous material, cover, and
11 shade for migrating adult and juvenile LCR Chinook, CR chum, LCR coho, and Lower
12 CR steelhead provided by riparian and side-channel restoration at the Lewis River
13 mitigation site. Foraging, migrating, and holding habitat will be improved for the
14 preceding reasons for all adult and juveniles of the ESUs/DPSs at the Lewis River
15 mitigation site.
- 16 • Side channel and wetland restoration at the Hood River mitigation site will provide
17 high-flow refuge, improved hydrologic function for in-river flows, and potentially
18 improved water quality through wetland restoration for adult and juvenile LCR Chinook,
19 LCR coho, and LCR steelhead. This represents a benefit for these fish.
- 20 • Side channel restoration at the Lewis River mitigation site will provide high-flow refuge,
21 improved hydrologic function for in-river flows, and potentially improved water quality
22 (cool-water refugia from warmer Columbia River flows) for adult and juveniles of all
23 ESUs/DPSs, but especially for juvenile LCR Chinook, LCR coho, and LCR steelhead.

24 The project is **likely to adversely affect** these ESUs/DPSs based on the following:

- 25 • Noise levels may exceed thresholds for behavioral disturbance and onset of injury. This
26 may potentially delay migration, damage tissues, produce TTS (fatigue of hair cells in the
27 inner ear) or PTS (permanent hearing loss), cause mortality, and increase the potential for
28 predation in the Columbia River and North Portland Harbor.
- 29 • The project may temporarily increase turbidity above baseline levels during in-water
30 construction in the Columbia River and North Portland Harbor, potentially resulting in
31 injury or behavioral harassment.
- 32 • The project may temporarily increase turbidity above baseline levels during in-water
33 construction in the Hood and Lewis Rivers as side channels are connected to the
34 mainstem lower Hood River and the Columbia River, respectively, and while restoration
35 plantings are being established potentially resulting in injury or behavioral harassment.
- 36 • In the Columbia River, North Portland Harbor, and Columbia Slough, increased PGIS
37 may result in increased exposure to contamination during events exceeding the design
38 storm. Exposure during these events may cause injury or behavioral disturbance to fish,
39 but is likely to be lower than the preproject exposure.

- 1 • In Burnt Bridge Creek, increased PGIS may result in increased exposure to
2 contamination and altered flow regime during all storm events. Exposure during these
3 events may cause injury or behavioral disturbance to LCR coho and steelhead, but is
4 likely to be lower than preproject exposure.
- 5 • Direct handling of fish during salvage poses the risk of injury or mortality in the
6 Columbia, Hood, and Lewis River mitigation sites.
- 7 • Fish may become entrained in cofferdams in the Columbia River, where they will likely
8 experience mortality.
- 9 • In the Columbia River and North Portland Harbor, temporary physical loss of habitat,
10 increased in-water shade, and changes in hydraulic shadowing could temporarily increase
11 exposure of migrating juveniles to predation and delayed migration.
- 12 • In the Columbia River and North Portland Harbor, permanent physical loss of habitat,
13 increased in-water shade, and changes in hydraulic shadowing may result in increased
14 exposure of migrating juveniles to predation and delayed migration.

15 The project **may affect** UWR Chinook and UWR steelhead based on:

- 16 • Suitable migration and rearing habitat occurs near the western extent of the action area in
17 the Columbia River and may be subjected to temporary noise above ambient levels.

18 The project is **likely to adversely affect** UWR Chinook and steelhead based on:

- 19 • Noise levels may exceed thresholds for behavioral disturbance. This may potentially
20 delay migration and hinder rearing in the Columbia River.

21 **8.1.2 Bull Trout**

22 The project **may affect** bull trout based on:

- 23 • Marginally suitable migration habitat is present in the action area in the Columbia River
24 and North Portland Harbor. Bull trout have the potential to occur in the Columbia River
25 and North Portland Harbor portions of action area, but detections are very few, limited to
26 less than 20 individuals in the entire lower Columbia River over a period of
27 approximately 60 years. This indicates that presence in the action area is extremely
28 limited. Presence is likely limited to the months of September through June.
- 29 • Suitable migration habitat is present in the action area at the lower Hood River and Lewis
30 River mitigation sites. Extremely limited numbers of individuals are documented at these
31 sites.
- 32 • The project will generate noise above ambient levels in the Columbia River and North
33 Portland Harbor.
- 34 • The project will temporarily and permanently alter water quality in the Columbia River
35 and North Portland Harbor.
- 36 • The project may temporarily increase turbidity above baseline levels during in-water
37 construction in the Hood and Lewis Rivers as side channels are connected to the
38 mainstem lower Hood River and the Columbia River, respectively, and while restorations
39 plantings are being established.

- 1 • Direct handling of fish during salvage poses the risk of injury or mortality in the
2 Columbia, Hood, and Lewis Rivers.
- 3 • The project will conduct in-water and over-water construction activities in the Columbia
4 River and North Portland Harbor that may result in behavioral harassment, injury or
5 mortality.
- 6 • The project will place numerous in-water and over-water structures in the Columbia
7 River and North Portland Harbor, making both permanent and temporary alterations to
8 in-stream habitat, including physical loss, shading, and hydraulic shadowing.
- 9 • The project will remove riparian vegetation and revegetate disturbed riparian areas
10 alongside the Columbia River and North Portland Harbor.
- 11 • Land use changes may result in added PGIS, in-water work, and loss of in-stream habitat
12 features.
- 13 • Foraging, rearing, migrating, and holding habitat will be improved with additional
14 allochthonous material, cover, and shade by provided by riparian, side-channel, and
15 wetland restoration at the Hood River mitigation site, and potentially in the future, at the
16 Lewis River site if adfluvial bull trout are present in the Lewis River in future years.
- 17 • Side channel and wetland restoration at the Hood River mitigation site will provide
18 high-flow refuge, improved hydrologic function for in-river flows, and potentially
19 improved water quality through wetland restoration.
- 20 • Side channel restoration at the Lewis River mitigation site will provide high-flow refuge,
21 improved hydrologic function for in-river flows, and potentially improved water quality
22 (cool-water refugia from warmer Columbia River flows).

23 The project is **not likely to adversely affect** bull trout based on the following:

- 24 • Due to the extremely limited numbers of individuals present in the action area, risk of
25 exposure to all of these effects is discountable.

26 8.1.3 Green Sturgeon

27 The project **may affect** green sturgeon based on:

- 28 • Suitable habitat for adults occurs within the action area in the Columbia River, North
29 Portland Harbor, and Lewis River. However, detections in the action area are rare, and
30 presence is expected to be extremely limited.
- 31 • The project will generate noise above ambient levels in the Columbia River and North
32 Portland Harbor.
- 33 • The project will temporarily and permanently alter water quality in the Columbia River
34 and North Portland Harbor.
- 35 • The project may temporarily increase turbidity above baseline levels during in-water
36 construction in the Lewis River as side channels are connected to the mainstem lower
37 Columbia River and while restorations plantings are being established.
- 38 • Direct handling of fish during salvage poses the risk of injury or mortality in the
39 Columbia and Lewis Rivers.

- 1 • The project will conduct in-water and over-water construction activities in the Columbia
2 River and North Portland Harbor that may result in behavioral harassment, injury or
3 mortality.
- 4 • The project will place numerous in-water and over-water structures in the Columbia
5 River and North Portland Harbor, resulting in both permanent and temporary physical
6 loss of habitat.
- 7 • Land use changes may result in added PGIS, in-water work, and loss of in-stream habitat
8 features.

9 The project is **not likely to adversely affect** green sturgeon based on:

- 10 • Due to the extremely limited numbers of individuals present in the action area, risk of
11 exposure is discountable.

12 **8.1.4 Steller Sea Lion**

13 The project **may affect** the northern (Steller) sea lion based on:

- 14 • Steller sea lions are known to transit through the action area in the Columbia River and
15 North Portland Harbor. They will likely be exposed to temporary noise above ambient
16 levels.

17 The project is **likely to adversely affect** the Steller sea lion based on:

- 18 • Noise levels will likely be above disturbance thresholds and may cause behavioral
19 harassment to Steller sea lions transiting in the Columbia River and North Portland
20 Harbor.
- 21 • Noise levels will likely be above injury thresholds, but effects will be limited to
22 temporary harassment to Steller sea lions transiting in the Columbia River and North
23 Portland Harbor. The project will avoid injury by monitoring Steller sea lion presence
24 and curtailing pile driving when Steller sea lions approach the potential injury zone.

25 **8.1.5 Killer Whale**

26 The project **may affect** the Southern Resident DPS of killer whale based on:

- 27 • The project will have adverse effects on the Chinook prey base of the Southern Resident
28 DPS.

29 The project is **not likely to adversely affect** the killer whale based on:

- 30 • The project will adversely impact a small percentage of the Columbia River Chinook
31 salmon population. This represents a negligible proportion of the entire Chinook
32 population occurring in the marine portion of the action area. Therefore, the resulting
33 impact to the Chinook prey base and killer whale is insignificant.

34 Additional information on Southern Resident DPS killer whale is located in Appendix H of this
35 document.

1 **8.1.6 Eulachon**

2 The project **may affect** eulachon based on:

- 3 • Suitable habitat and documented detections occur in the action area in the Columbia
4 River, North Portland Harbor, and lower Lewis River.
- 5 • The project will generate noise above ambient levels in the Columbia River and North
6 Portland Harbor.
- 7 • The project may temporarily increase turbidity above baseline levels during in-water
8 construction in the Lewis River as side channels are connected to the mainstem lower
9 Columbia River and while restoration plantings are being established.
- 10 • Direct handling of fish during salvage poses the risk of injury or mortality in the
11 Columbia River.
- 12 • The project will temporarily and permanently alter water quality in the Columbia River
13 and North Portland Harbor.
- 14 • The project will conduct in-water and over-water construction activities in the Columbia
15 River and North Portland Harbor that may result in behavioral harassment, injury or
16 mortality.
- 17 • The project will place numerous in-water and over-water structures in the Columbia
18 River and North Portland Harbor, making both permanent and temporary alterations to
19 in-stream habitat, including physical loss, shading, and hydraulic shadowing.
- 20 • The project will remove riparian vegetation and revegetate disturbed riparian areas
21 alongside the Columbia River and North Portland Harbor.
- 22 • Land use changes may result in added PGIS, in-water work, and loss of in-stream habitat
23 features.
- 24 • Side-channel restoration at the Lewis River mitigation site will provide high-flow refuge,
25 improved hydrologic function for in-river flows, and potentially improved water quality
26 (cool-water refugia from warmer Columbia River flows).

27 The project is **likely to adversely affect** eulachon based on:

- 28 • Noise levels may exceed thresholds for behavioral disturbance and onset of injury. This
29 may potentially delay migration, damage tissues, produce TTS or PTS, and increase the
30 potential for predation in the Columbia River and North Portland Harbor.
- 31 • The project may temporarily increase turbidity above baseline levels during in-water
32 construction in the Columbia River and North Portland Harbor, potentially resulting in
33 injury or behavioral harassment.
- 34 • In the Columbia River and North Portland Harbor, increased PGIS may result in
35 increased exposure to contamination during events exceeding the design storm. Exposure
36 during these events may cause injury or behavioral disturbance, but is likely to be lower
37 than preproject exposure.
- 38 • Direct handling of fish during salvage poses the risk of injury or mortality in the
39 Columbia River.

- 1 • Fish may become entrained in cofferdams in the Columbia River, where they will likely
2 experience mortality.
- 3 • In the Columbia River and North Portland Harbor, temporary physical loss of habitat,
4 increased in-water shade, and changes in hydraulic shadowing could temporarily increase
5 exposure of migrating larvae to predation and could alter primary and benthic
6 productivity.
- 7 • In the Columbia River and North Portland Harbor, permanent physical loss of habitat,
8 increased in-water shade, and changes in hydraulic shadowing may result in increased
9 exposure of migrating larvae to predation and may alter primary and benthic productivity.

10 **8.2 CRITICAL HABITAT**

11 **8.2.1 Designated Critical Habitat for Listed Salmon and Steelhead**

12 The project **may affect** designated critical habitat for LCR Chinook, UCR spring-run Chinook,
13 SR fall-run Chinook, SR spring/summer-run Chinook, UWR Chinook, LCR steelhead, MCR
14 steelhead, UCR steelhead, SR steelhead, UWR steelhead, SR sockeye, and CR chum based on:

- 15 • Designated critical habitat occurs within the action area in the Columbia River, North
16 Portland Harbor, and Columbia Slough for all runs listed above.
- 17 • Designated critical habitat occurs within the action area in the Hood River for LCR
18 Chinook and LCR steelhead.
- 19 • Designated critical habitat occurs within the action area in the Lewis River for LCR
20 Chinook, CR chum, and LCR steelhead.
- 21 • For the 2005 critical habitat designation (LCR Chinook, UCR spring-run Chinook, UWR
22 Chinook, LCR steelhead, MCR steelhead, UCR steelhead, SR steelhead, UWR steelhead,
23 and CR chum), PCEs occurring in the action area include:
 - 24 • Freshwater spawning sites in the Columbia River (for CR chum only), the Lewis
25 River (LCR Chinook and LCR steelhead), and the Hood River (LCR Chinook and
26 LCR steelhead),
 - 27 • Freshwater rearing areas (for LCR Chinook, UCR spring-run Chinook, UWR
28 Chinook, LCR steelhead, and CR chum),
 - 29 • Freshwater migration corridors (for all runs).
- 30 • For the 1993 critical habitat designation (SR spring/summer-run Chinook, SR sockeye,
31 and SR fall-run Chinook), PCEs occurring in the action area include:
 - 32 • Juvenile migration corridors (for all runs)
 - 33 • Adult migration corridors (for all runs).
- 34 • The project will generate noise above ambient levels in the Columbia River and North
35 Portland Harbor.
- 36 • The project will temporarily and permanently alter water quality in the Columbia River,
37 North Portland Harbor, and Columbia Slough.

- 1 • The project will temporarily alter water quality in the Lewis and Hood Rivers.
- 2 • The project will place numerous in-water and over-water structures in the Columbia
3 River and North Portland Harbor, making both permanent and temporary alterations to
4 in-stream habitat, including physical loss, shading, and hydraulic shadowing.
- 5 • The project will remove riparian vegetation and revegetate disturbed riparian areas
6 alongside the Columbia River and North Portland Harbor.
- 7 • Land use changes may result in added PGIS, in-water work, and loss of in-stream habitat
8 features, potentially altering the migration and rearing PCEs.
- 9 • The 21 acres of restored side-channel habitat at the Hood River mitigation site will
10 provide additional spawning habitat and larval development. Reconnection of the main
11 channel Hood River with the wetland and side-channel area will restore a more natural
12 hydrograph and may prevent high-flow events from scouring redds.
- 13 • The 18.5 acres of restored side-channel habitat at the Lewis River mitigation site will
14 provide spawning habitat for LCR Chinook, LCR steelhead, and potentially CR chum.
15 Reconnection of the side-channel areas will restore a more natural hydrograph and may
16 prevent high-flow events from scouring redds.
- 17 • Reconnection of Hood River floodplain habitat with the 21 acres of side channel and
18 associated wetland area will increase rearing area for juveniles, high flow refuge,
19 potentially improving base flows and attenuating peak flow, and likely improved water
20 quality and quantity from flow attenuation and wetland reconnection. Riparian and
21 wetland plantings and addition of large woody debris will provide allochthonous inputs
22 into the channel, cover, and shade which will improve rearing habitat by increasing
23 forage and natural cover.
- 24 • Reconnection of the Lewis and Columbia Rivers to floodplain habitat in the side channels
25 at the Lewis River mitigation site will increase rearing area for rearing LCR, CR chum,
26 and LCR steelhead juveniles. High flow refuge, potential improvements to base flows
27 and attenuation of peak flows, and likely improvements to water quality and quantity
28 from flow attenuation with the additional side channel acreage will occur for lower river
29 ESUs and DPS, but will also occur for all other ESUs and DPSs as well. In addition,
30 riparian plantings and addition of large woody debris will provide allochthonous inputs
31 into the channel, cover, and shade which will improve rearing habitat by increasing
32 forage and natural cover for all LCR Chinook, CR chum, and LCR steelhead.
- 33 • Reconnection of Hood River floodplain habitat with the 21 acres of side channel and
34 associated wetland area will increase migrating area for adults and juveniles, as well as
35 provide a high flow refuge during migration, potentially improve base flows and
36 attenuating peak flow, and likely improve water quality and quantity from flow
37 attenuation and wetland reconnection. Restoration of the riparian and wetland area
38 through reconnection with the river, plantings, and addition of large woody debris will
39 provide allochthonous inputs into the channel, cover, and shade which will improve
40 migration habitat by increasing forage and natural cover, and overall habitat complexity.
- 41 • Reconnection of the 18.5 acres of side channels along the Lewis River will increase
42 migrating area for adults and juvenile LCR Chinook and LCR steelhead in the Lewis
43 River, as well as provide high flow refuge during migration, potentially improve base

1 flows and attenuate peak flows, and likely improve water quality and quantity from flow
2 attenuation and the additional acreage of the side channels for lower river ESUs and DPS,
3 but will also occur for all other ESUs and DPSs as well. Restoration of the riparian and
4 wetland area through reconnection with the river, plantings, and addition of large woody
5 debris will provide allochthonous inputs into the channel, cover, and shade which will
6 improve migration habitat by increasing forage and natural cover, and overall habitat
7 complexity.

8 The project is **likely to adversely affect** these critical habitat units based on:

- 9 • Noise levels may exceed thresholds for behavioral disturbance and injury to fish. This
10 may temporarily degrade the migration PCEs for all ESUs/DPSs and the rearing PCE for
11 LCR Chinook, UCR spring-run Chinook, LCR steelhead, and CR chum.
- 12 • Noise levels may degrade the spawning PCE for CR chum, but this PCE will likely still
13 be functional during periods of elevated underwater noise.
- 14 • The project may temporarily increase turbidity above baseline levels during in-water
15 construction in the Columbia River and North Portland Harbor, potentially degrading
16 discrete portions of the migration and rearing PCEs for a period of no more than 12 hours
17 per day during operations that disturb sediment.
- 18 • The project may temporarily increase turbidity above baseline levels during in-water
19 construction in the Hood and Lewis Rivers, potentially degrading discrete portions of the
20 migration and rearing PCEs for short durations 100 feet upstream and 300 feet
21 downstream of where new side channels are reconnected to the main river channels.
- 22 • In the Columbia River, North Portland Harbor, and Columbia Slough, increased PGIS
23 may degrade water quality during events that exceed the design storm. This may degrade
24 the migration and rearing PCEs, but discharge of pollutants will likely be lower than
25 preproject conditions.
- 26 • In the Columbia River and North Portland Harbor, temporary physical loss of habitat,
27 increase in in-water shade, and changes in hydraulic shadowing could temporarily
28 increase predation pressure and could alter primary and benthic productivity. This may
29 temporarily degrade the migration and rearing PCEs.
- 30 • In the Columbia River and North Portland Harbor, permanent physical loss of habitat,
31 increase in in-water shade, and changes in hydraulic shadowing may result in increased
32 exposure of migrating juveniles to predation and may alter primary and benthic
33 productivity. This may permanently degrade the migration and rearing PCEs.

34 **8.2.2 Designated and Proposed Critical Habitat for Bull Trout**

35 Proposed critical habitat for bull trout occurs within the action area in the Columbia River,
36 North Portland Harbor, Hood River, and Lewis River. The project will have the following
37 effects on the PCEs that occur within the action area:

- 38 • The project will generate noise above ambient levels in the Columbia River and North
39 Portland Harbor. This may degrade the migratory habitat PCE.
- 40 • The project will temporarily and permanently alter the water quality PCE in the
41 Columbia River and North Portland Harbor.

- 1 • The project will place numerous in-water and over-water structures in the Columbia
2 River and North Portland Harbor, making both permanent and temporary alterations to
3 in-stream habitat, including physical loss of substrate and increased in-water shading.
4 This may potentially affect the complex aquatic habitat and food base PCEs.
- 5 • The project will remove riparian vegetation and revegetate disturbed riparian areas
6 alongside the Columbia River and North Portland Harbor. This may potentially affect the
7 temperature and complex aquatic habitat PCEs.
- 8 • Land use changes may result in added PGIS, in-water work, and loss of in-stream habitat
9 features. This may potentially affect the migratory habitat and water quality/quantity
10 PCEs.

11 Although the project will have effects to the PCEs, impacts **will not destroy or adversely**
12 **modify** proposed critical habitat for bull trout based on:

- 13 • Noise above ambient levels will be temporary, limited to the duration of in-water pile
14 driving.
- 15 • Temporary impacts to water quality will be limited to no more than periods of about 12
16 hours per day during operations that disturb sediment. Permanent impacts to water
17 quality will be largely beneficial due to the high level of stormwater treatment.
- 18 • Physical loss of substrate is extremely small relative to the remaining substrate available.
- 19 • Increase in underwater shading will have only negligible and temporary effects on
20 primary productivity and the food web.
- 21 • Temporary shading may have a beneficial effect on water temperature. Permanent
22 shading is likely to have only negligible effects on water temperature.
- 23 • Removal of riparian vegetation will have only slight and temporary effects to water
24 temperature.

25 If proposed critical habitat for bull trout is designated before the completion of the project, a
26 provisional effect determination of **may affect, not likely to adversely affect** is warranted.

27 Designated critical habitat for bull trout occurs in the Hood and Lewis Rivers. The effect
28 determination of **may affect, not likely to adversely affect** also applies for to this designated
29 critical habitat

30 The project **may affect** critical habitat for bull trout based on:

- 31 • The project will generate noise above ambient levels in the Columbia River and North
32 Portland Harbor. This may degrade the migratory habitat PCE.
- 33 • The project will temporarily and permanently alter the water quality PCE in the
34 Columbia River and North Portland Harbor.
- 35 • The project will place numerous in-water and over-water structures in the Columbia
36 River and North Portland Harbor, making both permanent and temporary alterations to
37 in-stream habitat, including physical loss of substrate and shading. This may potentially
38 affect the complex aquatic habitats and food base PCEs.

- 1 • The project will remove riparian vegetation and revegetate disturbed riparian areas
2 alongside the Columbia River and North Portland Harbor. This may potentially affect the
3 temperature and complex aquatic habitats PCEs.
- 4 • Land use changes may result in added PGIS, in-water work, and loss of in-stream habitat
5 features. This may potentially affect the migratory habitat and water quality/quantity
6 PCEs.
- 7 • Springs, seeps, groundwater sources PCE: The proposed Hood River mitigation will
8 reconnect a 21-acre wetland and isolated river side channel with the mainstem Hood
9 River. The reconnection of the wetland to the main channel is expected to improve
10 subsurface water connectivity, contribute to water quality improvements through
11 reconnection of wetland water quality functions and contribute to thermal refugia from
12 the increase in subsurface flow connections. The proposed Lewis River mitigation will
13 reconnect 18.5 acres of side channels with the Lewis and Columbia Rivers. The
14 reconnection of the side channels is expected to improve subsurface water connectivity
15 and contribute to thermal refugia.
- 16 • Food base PCE: The proposed mitigation at the Lewis and Hood River mitigation sites
17 will allow contribution of allochthonous input from side channel and wetland
18 productivity, which contribute to stream productivity. Benefits to salmonids spawning,
19 rearing, and migration habitat will benefit the bull trout prey base. These benefits include:
20 side channel improvements for habitat complexity, including placement of large woody
21 debris, increased shading, off-channel refugia, hydrology benefits (likely increases in
22 base flows and reductions in peak flows), and the increase in spawning and rearing
23 habitat for salmon and steelhead.
- 24 • Complex aquatic habitats: The proposed Hood River mitigation will reconnect one mile
25 of side channel and a 21-acre wetland with the mainstem Hood River. Channel enhancing
26 restoration, such as the addition of large woody debris, will add complexity resulting in
27 channel-forming processes creating a variety of depths, gradients, velocities, and
28 structures. The proposed Lewis River mitigation will reconnect 21,100 linear feet of side
29 channels with the Lewis and Columbia Rivers. Channel enhancing restoration, such as
30 the addition of large woody debris, will add complexity resulting in channel-forming
31 processes creating a variety of depths, gradients, velocities, and structures.
- 32 • Temperature PCE: At the Hood River mitigation site, reconnection to the historic wetland
33 will help maintain base flows, which benefit stream summer temperatures. Riparian
34 restoration plantings will shade the mainstem and off-channel areas, which will help
35 maintain in-stream temperatures. At the Lewis River mitigation site, reconnection of the
36 historic channels will allow access to thermal refugia in the cooler Lewis River waters for
37 fish in the Columbia River during high summer temperatures. Riparian restoration
38 plantings will shade the off-channel areas, which will help maintain in-stream
39 temperatures.
- 40 • Natural hydrograph PCE: At the Hood River mitigation site, reconnection of one mile of
41 side channel and connection of the main river channel to the wetland will result in a more
42 natural hydrograph as the main stem river will be more connected to the floodplain.
43 Reconnection to the wetland area may enhance base flows and alleviate channel incision

1 caused from high flows. At the Lewis River mitigation site, reconnection of the side
2 channels will result in a more natural hydrograph because the mainstem Lewis and
3 Columbia Rivers will be more connected to their floodplain. Reconnection of the side
4 channels may enhance base flows and alleviate channel incision caused from high flows.

- 5 • Water quantity/quality PCE: At the Hood River mitigation site, wetlands provide
6 retention of peak flows, replenish base flows and provide function to filter sediment and
7 toxicants from entering waterways. The side channel proposed as part of the project will
8 offer refuge from high flows, and provide greater connectivity so that water quantity
9 during high flows is attenuated with the extra volume provided by the side channel. At
10 the Lewis River mitigation site, the side channels will offer refuge from high flows, and
11 provide greater connectivity so that water quantity during high flows is attenuated with
12 the extra volume provided by the side channel.

13 The project is **not likely to adversely affect** critical habitat for bull trout based on:

- 14 • Elevated noise will be limited in duration to 40 minutes per in-water work day and is not
15 likely to occur when bull trout are present. Therefore, elevated noise does not represent
16 significant degradation to the migratory PCE.
- 17 • Effects to other PCEs will be either extremely slight or beneficial. Thus, these effects will
18 not measurably degrade the PCEs and will therefore be insignificant.

19 **8.3 CONCLUSION**

20 Due to these findings of effect, FHWA and FTA are requesting initiation of **formal consultation**
21 and an **incidental take statement** in accordance with Section 7 of the ESA for the following
22 listed species: LCR Chinook, UCR spring-run Chinook, SR fall-run Chinook, SR
23 spring/summer-run Chinook, UWR Chinook, LCR steelhead, MCR steelhead, UCR steelhead,
24 SR steelhead, UWR steelhead, SR sockeye, LCR coho, and CR chum. **Formal consultation** is
25 also requested for the Eastern DPS of Steller sea lion and eulachon.

26 Additionally, FHWA and FTA are requesting **formal consultation** for the following designated
27 critical habitats: LCR Chinook, UCR spring-run Chinook, SR fall-run Chinook, SR
28 spring/summer-run Chinook, UWR Chinook, LCR steelhead, MCR steelhead, UCR steelhead,
29 SR steelhead, UWR steelhead, SR sockeye, and CR chum.

30 **Informal consultation** is requested for the Southern DPS of green sturgeon, the Columbia River
31 DPS of bull trout, and the Southern Resident DPS of killer whale.

32 FHWA and FTA also request **formal conferencing** for proposed critical habitat for bull trout.
33