

Endangered Species Act - Section 7
Consultation

BIOLOGICAL OPINION

Canby Ferry Shoreside Improvements Project
Mountain Road, Clackamas County

Agency: U.S. Federal Highway Administration

Consultation Conducted By: National Marine Fisheries Service,
Northwest Region

Date Issued: August 17, 2000

OSB Log #: OSB2000-0169

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I. BACKGROUND

On July 12, 2000, the National Marine Fisheries Service (NMFS) received a Biological Assessment (BA) and request from the Federal Highway Administration (FHWA) for Endangered Species Act (ESA) section 7 formal consultation for a proposal to improve the shoreline facilities associated with the Canby Ferry in Clackamas County, Oregon. The ferry operates across the Willamette River, connecting Locust Street to the south and Mountain Road to the north. The FHWA is partially funding the proposed improvements, and is the lead agency for the consultation. The Oregon Department of Transportation (ODOT) will be responsible for administering the funds and the project. Clackamas County operates the ferry and has designed the improvements. This biological opinion (Opinion) is based on the information presented in the biological assessment (BA) and the result of the consultation process.

The FHWA/ODOT/Clackamas County have determined that the Upper Willamette (UW) chinook salmon (*Oncorhynchus tshawytscha*) and UW steelhead (*O. mykiss*) may occur within the project area. The proposed action is within designated critical habitat for these listed species (65 FR 7764).

The Canby Ferry is located approximately 2 miles north of Canby, just downstream from the confluence of the Molalla River. It is located in the section of the Willamette River known as the Newberg Pool. The FHWA/ODOT/Clackamas County are proposing to replace the existing deteriorated concrete ramp and stabilize the bank from erosion due to prop wash at the north ramp, and replace the existing log debris boom and stabilize the existing riprap at the south ramp. The project also includes the construction of a concrete pad adjacent to the powerhouse for a portable diesel engine to provide a backup power source for the ferry.

The effects determination was made using the methods described in *Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996). The FHWA/ODOT/Clackamas County determined that the proposed action was likely to adversely affect UW chinook salmon and UW steelhead.

This Opinion reflects the results of the consultation process. The consultation process involved a site visit on April 26, 2000, and additional communications to obtain additional information and clarify the project description. As appropriate, modifications to the proposal to reduce impacts to the indicated species were discussed and incorporated into the proposed action. This included isolation of the work area or other measures to minimize impacts due to in-water work, and the addition of cone-shaped tops on the tops of pilings to reduce predation by piscivorous birds.

The objective of this Opinion is to determine whether the action to construct improvements along the shoreline at the Canby Ferry is likely to jeopardize the continued existence of the UW chinook salmon or UW steelhead or destroy or adversely modify designated critical habitat.

II. PROPOSED ACTION

The Canby Ferry has been in operation at its present location on the Willamette River since 1914. It carries motorized vehicles, pedestrians, and bicycles. A wider ferryboat was purchased to replace the old ferry in 1997. Because of its width, the new ferry is causing prop wash which erodes away the natural bank on the north ramp and undermines the parking lot rock wall on the south ramp. The existing south ramp was reconstructed in 1994 with new precast and cast-in-place surfacing, new riprap protection, and other minor features. The current project proposes to replace the existing deteriorated concrete ramp and stabilize the bank from erosion due to prop wash at the north ramp, and replace the existing log debris boom and stabilize the existing riprap at the south ramp.

The FHWA/ODOT/Clackamas County propose to remove the existing concrete ramp at the north ramp and replace it with a new precast and cast-in-place concrete ramp. The new ramp will be 30 feet wide to facilitate the new, wider ferryboat, match the width of the reconstructed south ramp, and match the existing paved surface at the north ramp approach. The precast portion will be constructed at the lower end of the ramp, where ramp surface elevations will be below the water level at the time of construction. This eliminates the need to de-water the construction area to cast green concrete below the current water line. The precast panels are slid down steel rails laid along the ground surface at the ramp location. A gravel base placed between the rails will act as the supporting surface for the precast panels. The lower end of the new ramp will extend about 12 feet beyond the end of the existing concrete ramp to provide increased protection against prop wash. Sediment barriers will be used to prevent construction related sediment from being carried beyond the construction area. The cast-in-place portion will be placed above the precast portion to help anchor the precast sections and will extend up to the limits of the existing concrete ramp. The perimeter of the new concrete ramp will be protected with 34 cubic yards of Class 700 riprap. The eroded banks at this ramp will be stabilized using 27 cubic yards of Class 700 riprap.

A new debris boom will be constructed at the south ramp to replace the existing debris boom damaged in the 1996 floods. The debris boom will be constructed using two 24-inch poly pipes. The poly pipes are permanently sealed to prevent the floatation material from escaping. The boom will be supported on twin 16-inch piles, including one vertical pile and one battered pile at each location. The length of the boom will be approximately 175 feet long with twelve 12-inch piles spaced at 20 to 40 feet. The end of the boom near the south ramp will be supported by a new 24-inch mooring pile. A second 24-inch mooring pile will be constructed just south of the existing multi-pile mooring dolphin, which will be removed. All pilings will have cone tops to prevent seabird roosting. The rock wall supporting the parking area at the south ramp will be repaired with 14 cubic yards of Class 700 riprap placed in a toe trench at the wall base to prevent the prop wash from undermining the existing wall. A back hoe will sit on the concrete ramp to dig the toe trench. Sandbags will be placed between the river and the toe trench excavation to contain sediment.

A portable diesel engine would be placed next to the existing electrical powerhouse on the south side of the Willamette River, located approximately 200 feet from the 2-year floodplain. The generator is required for emergency use to eliminate the possibility of the ferry getting stranded on the river during

power outages. The generator will be portable to allow its removal to be used at other sites as required. The generator will be placed on a concrete slab with curbs to contain 100% of potential diesel spills.

The Oregon Department of Fish and Wildlife (ODFW) has identified two in-water work periods that could be used by the contractor within the action area. The first is from December 1 to January 31. The second is from June 1 to October 31. It has been assumed by Clackamas County that the contractor will choose the summer in-water work period since the water level will be lower, and the schedule has been built around that assumption. Access to the ferry will be closed during construction so traffic and construction staging will not be required. Based on the "Preliminary Engineers Construction Schedule", the ferry shutdown period will be from June 1, 2001 to August 27, 2001. It is anticipated that the removal of the existing piles and driving the new piles are the only work that could be done during the winter in-water work period.

III. BIOLOGICAL INFORMATION AND CRITICAL HABITAT

The UW steelhead Evolutionarily Significant Unit (ESU) was listed as threatened under the ESA by the NMFS on March 25, 1999 (64 FR 14517). Biological information on UW steelhead may be found in Busby et al. (1995, 1996). Critical habitat was designated for the UW steelhead on February 16, 2000 (65 FR 7764). Critical habitat for UW steelhead includes the Willamette River and its tributaries above Willamette Falls. The adjacent riparian zone is also included in the designation. This zone is defined as the area that provides the following functions: Shade, sediment, nutrient/chemical regulation, streambank stability, and input of large woody debris/organic matter.

The UW chinook salmon ESU was listed as threatened under the ESA by the NMFS on March 24, 1999 (64 FR 14308). Biological information on UW chinook salmon may be found in Myers et al. (1998). Critical habitat was designated for the UW chinook salmon on February 16, 2000 (65 FR 7764). Critical habitat for UW steelhead includes the Clackamas River and the Willamette River and its tributaries above Willamette Falls.

IV. EVALUATING PROPOSED ACTIONS

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). NMFS must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify critical habitat. This analysis involves the: (1) Definition of the biological requirements and current status of the listed species; and (2) evaluation of the relevance of the environmental baseline to the species' current status.

Subsequently, NMFS evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In

making this determination, NMFS must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action; (2) the environmental baseline; and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmonid's life stages that occur beyond the action area. If NMFS finds that the action is likely to jeopardize the listed species, NMFS must identify reasonable and prudent alternatives for the action.

Furthermore, NMFS evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' designated critical habitat. The NMFS must determine whether habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. The NMFS identifies those effects of the action that impair the function of any essential element of critical habitat. The NMFS then considers whether such impairment appreciably diminishes the habitat's value for the species' survival and recovery. If NMFS concludes that the action will destroy or adversely modify critical habitat, it must identify any reasonable and prudent alternatives available.

For the proposed action, NMFS' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NMFS' critical habitat analysis considers the extent to which the proposed action impairs the function of essential biological elements necessary for juvenile and adult migration, and juvenile rearing of the UW steelhead and UW chinook salmon under the existing environmental baseline.

A. Biological Requirements

The first step the NMFS uses when applying the ESA section 7(a)(2) to listed steelhead is to define the species' biological requirements that are most relevant to each consultation. The NMFS also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NMFS starts with the determinations made in its decision to list UW steelhead and UW chinook salmon for ESA protection and also considers new data available that is relevant to the determination.

The relevant biological requirements are those necessary for UW steelhead and UW chinook salmon to survive and recover to naturally-reproducing population levels at which protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful adult and juvenile migration, and juvenile rearing. The current status of UW steelhead and UW chinook salmon, based upon their risk of extinction, has not significantly improved since the species was listed.

B. Environmental Baseline

The current range-wide status of the identified ESUs may be found in Busby et al. (1995, 1996) and Myers et al. (1998). The proposed action will occur within the range of UW steelhead and UW chinook salmon. The defined action area is the area that is directly and indirectly affected by the proposed action. The direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, stream hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect effects may occur throughout the watershed, where actions described in this Opinion lead to additional activities, or affect ecological functions, contributing to stream degradation. As such, the action area for the proposed activities include the immediate portions of the watershed containing the project and those areas upstream and downstream that may reasonably be affected, temporarily or in the long term. For the purposes of this Opinion, the action area is defined as the streambed and riparian habitat of the Willamette River. The action area extends 500 feet upstream and downstream of the ferry ramps. Other areas of the Willamette River watershed are not expected to be directly or indirectly impacted.

The action area is within the middle Willamette River watershed. The predominant land uses are rural residential and agriculture. The valley floor has a gentle, north-facing slope, and consequently, the Willamette River in this area is a sluggish river with many meanders. Extensive channelization of the river in the last 100 years has reduced the historic pattern of meandering, braided channels with numerous sloughs and backwater areas and a broad floodplain to essentially a single channel. Riparian vegetation is usually limited to a single row of trees along the river corridor.

Urban and rural development has also affected the quality of the Willamette River water. The Willamette River within the project reach is on Oregon Department of Environmental Quality's (ODEQ) list of water quality limited segments (Clean Water Act §303(d)) for temperature, toxics (mercury), biological criteria (fish skeletal deformities) and bacteria (fecal coliform).

The project vicinity is a migration corridor for adult and juvenile salmonids. In addition, large wood and overhanging vegetation upstream and downstream of the ferry landings provide juvenile rearing habitat for chinook salmon. It is unlikely that juvenile salmonids would utilize the riprap surrounding the ferry landing due to the constant disturbance from ferry prop wash. In addition, summer stream temperatures can exceed the threshold for salmonids, which may limit use of the project area for rearing during the summer. There is no steelhead rearing habitat or spawning habitat in the action area.

Based on the best available information on the current status of UW steelhead and UW chinook salmon range-wide; the population status, trends, and genetics; and the poor environmental baseline conditions within the action area (as described in the BA), NMFS concludes that the biological requirements of the identified ESU within the action area are not currently being met. Numbers of UW steelhead and UW chinook salmon are substantially below historic numbers. Long-term trends are decreasing. Recent droughts and a change in ocean productivity have probably reduced run sizes, and are probably contributing to the decline in numbers. Degraded freshwater habitat conditions have also contributed to the decline. Use of the NMFS Matrix of Pathways and Indicators (NMFS 1996) identified the

following habitat indicators as either at risk or not properly functioning within the action area: summer water temperatures, turbidity/sediment, chemical contamination/nutrients, substrate, large woody debris, off-channel habitat, refugia, streambank condition, floodplain connectivity, peak/base flows, disturbance history, drainage network increase, road density and location, and riparian reserves. Actions that do not maintain or restore properly functioning aquatic habitat conditions have the potential to jeopardize the continued existence of MCR steelhead.

V. ANALYSIS OF EFFECTS

A. Effects of Proposed Action

The effects analysis in this Opinion was completed using a method for evaluating current aquatic conditions, the environmental baseline, and predicting effects of actions on them. This process is described in the document, *Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996). The effects of proposed actions are expressed in terms of the expected effect (restore, maintain, or degrade) on aquatic habitat factors in the project area.

In-water activities are proposed to demolish the current ramp on the north side of the river and construct a new ramp on the north side, place riprap adjacent to the north ramp, repair the rock wall at the south ramp, and remove the current debris boom and construct a new boom. The in-water work may directly impact juvenile salmonids rearing in the action area, and will temporarily increase turbidity in the river during these activities. Long-term impacts are expected from the permanent loss of instream and riparian habitat. These impacts to UW chinook salmon and UW steelhead are discussed below.

Turbidity

It is anticipated that turbidity in the Willamette River will increase during the in-water work. It is expected to be short term. A floating silt fence will be placed along the north ramp and adjacent unstable bank to minimize sediment movement to the active channel. Sandbags or a floating silt fence will be used for the repair of the south ramp riprap wall. There may be a short-term increase in sedimentation associated with the removal of the existing piles, placement of the new piles, and removal of the erosion control measures. The contractor will break or cut the piles to minimize sedimentation. The increased turbidity will displace fish rearing in the action area, and may impede the movement of fish that may be moving through the reach.

Riparian Fill

A total of 74 cubic yards of fill is required to construct the ramp and 34 cubic yards for the riprap wall. Old fill material will be excavated from these areas. Consequently, there will be no net increase of fill within the two-year floodplain. Over the long term, no impact to fish or habitat is expected. However, increased turbidity is likely over the short term.

The increase in the ramp size to reduce prop scour will result in the permanent loss of 924 square feet of shallow water habitat. The value of this area for juvenile rearing is low because the constant activity of the ferry limits the value of the habitat.

Vegetation Removal

A total of 38 square yards of vegetation (grass) will be removed to repair the unstable bank at the north ramp. To compensate for this loss, 57 square yards of riparian habitat will be planted with native plants within the riparian area of the project site. Plants to be used include snowberry, red twig dogwood, western red cedar, and willows. This will result in a net improvement to riparian function.

Hazardous Materials

Equipment will be working in the two-year floodplain to remove the existing ramp and place the precast portion of the new ramp. A hazardous material containment boom will be placed prior to the beginning of the operation to minimize potential spills from entering the active channel. No toxicant (including petroleum products) will be stored within 164 ft of the two-year floodplain. Areas for fuel storage, refueling and servicing of construction equipment and vehicles will be located at least 164 ft from the two-year floodplain. Refueling, except for the crane, will occur at the top of the access road to the ferry. These measures will minimize the risk of a toxic spill of fuel into the river or riparian area.

Riprap Placement

The use of riprap to stabilize the bank at the north ramp would change the natural bank and reduce the quality of the habitat for the rearing of juvenile salmonids by reducing the complexity of the habitat, availability of allochthonous inputs, and quality of feeding habitat. Large wood with root wads attached and a willow brush layer will be incorporated into the riprap, thus increasing the quality of the habitat and reducing the potential for negative impacts.

In-Water Construction

The repair of the south ramp riprap wall is expected to occur in the dry and may need to be dewatered. The back hoe would sit on the concrete ramp to dig the toe trench and would not enter the water. Sandbags will be placed between the river and the toe trench excavation to contain sediments. If the containment area has the potential to trap fish, an ODFW biologist will be on site to remove fish.

A barge will be used to remove and replace the piles associated with the debris boom at the south ramp. The barge will be located in six to ten feet of water. The barge would be located at the site for approximately ten days. Spring chinook peak migration over Willamette Falls occurs in mid-May and again in the fall. To minimize impacts to migrating salmon, the barge will be on site starting July 1 after the migration peak. Although the barge will be at the project site after the peak migration, in-water activities may displace some individuals. Juveniles rearing in the project reach may also be displaced during pile removal and driving activities.

For the proposed action, the NMFS expects that short term impacts will result in a temporary increase in sediment production and turbidity, and disturbance of riparian and instream habitat is expected. Fish may be killed or temporarily displaced during the in-water work. However, the NMFS expects that

the effects of the proposed project will tend to maintain each of the habitat elements over the long term, greater than one year. The potential net effect from the proposed action, including proposed plantings, is expected to be the maintenance of functional steelhead and chinook salmon habitat conditions.

B. Effects on Critical Habitat

NMFS designates critical habitat based on physical and biological features that are essential to the listed species. Essential features for designated critical habitat include substrate, water quality, water quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage. Critical habitat for UW steelhead and UW chinook salmon consists of all waterways below naturally impassable barriers including the project area. The adjacent riparian zone is also included in the designation. This zone is defined as the area that provides the following functions: Shade, sediment, nutrient/ chemical regulation, streambank stability, input of large woody debris/organic matter, and others.

The proposed actions will affect critical habitat. In the short term, a temporary increase of sediments and turbidity, and disturbance of riparian and in-stream habitat is expected. In the long term, a net loss of habitat will occur where the riprap and ramp extension are placed. However, riparian habitat in the basin will be maintained through the proposed plantings, and the value of the lost instream habitat is low because it is currently subject to prop wash from the ferry. Consequently, NMFS does not expect that the net effect of this action will diminish the long-term value of the habitat for survival of UW chinook salmon or UW steelhead.

C. Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." The action area is defined as the streambed and riparian habitat of Willamette River, extending 500 feet upstream and 500 feet downstream of the ferry landing. A wide variety of actions occur within upstream in the watershed of the action that may affect the action area. NMFS is not aware of any significant change in non-Federal activities that are reasonably certain to occur within the action area. NMFS assumes that future private and State actions will continue at similar intensities as in recent years. Future FHWA/ODOT transportation projects are planned in the Willamette River watershed. Each of these projects will be reviewed through separate section 7 consultations and are not considered cumulative effects.

VI. CONCLUSION

NMFS has determined, based on the available information, that the proposed action is expected to maintain properly functioning stream habitat conditions within the action area over the long term. As such, the proposed action covered in this Opinion is not likely to jeopardize the continued existence of UW chinook salmon and UW steelhead. NMFS used the best available scientific and commercial data

to apply its jeopardy analysis, when analyzing the effects of the proposed action on the biological requirements of the species relative to the environmental baseline, together with cumulative effects. NMFS applied its evaluation methodology (NMFS 1996) to the proposed action and found that it would cause minor, short-term adverse degradation of anadromous salmonid habitat due to sediment impacts, in-water construction, and habitat loss through the placement of riprap. These effects will be mitigated over the long-term through the implementation of proposed project habitat conservation measures.

VII. REINITIATION OF CONSULTATION

Consultation must be reinitiated if: The amount or extent of taking specified in the Incidental Take Statement is exceeded, or is expected to be exceeded; new information reveals effects of the action may affect listed species in a way not previously considered; the action is modified in a way that causes an effect on listed species that was not previously considered; or, a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16). To reinitiate consultation, FHWA should contact the Habitat Conservation Division (Oregon Branch Office) of NMFS.

VIII. REFERENCES

Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the data used in developing this Opinion.

Busby, P., S. Grabowski, R. Iwamoto, C. Mahnken, G. Matthews, M. Schiewe, T. Wainwright, R. Waples, J. Williams, C. Wingert, and R. Reisenbichler. 1995. Review of the status of steelhead (*Oncorhynchus mykiss*) from Washington, Idaho, Oregon, and California under the U.S. Endangered Species Act. 102 p. plus 3 appendices.

Busby, P., T. Wainwright, G.J. Bryant, L.J. Lierheimer, R.S. Waples, and I.V. Lagomarsino. 1995. Status review of west coast steelhead from Washington, Idaho, Oregon, and California

DEQ 1996. 303d List of Water Quality Limited Streams, as Required Under the Clean Water Act. Oregon Department of Environmental Quality (DEQ), Portland, Or. 1996. (www.deq.state.or.us/wq/303dlist/303dpage.htm).

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DSL 1996. Essential Indigenous Salmonid Habitat, Designated Areas, (OAR 141-102-030). Oregon Division of State Lands. Portland, Or. 1996.

Myers, J.M., R.G. Kope, G.J. Bryant, D. Teel, L.J. Lierheimer, T.C. Wainwright, W.S. Grant, F.W. Waknitz, K. Neely, S.T. Lindley, and R.S. Waples. 1998. Status review of chinook salmon from Washington, Idaho, Oregon, and California. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-35, 443 p.

NMFS 1996. Making Endangered Species Act determinations of effect for individual and grouped actions at the watershed scale. Habitat Conservation Program, Portland, Oregon.

ODFW 1996. Database -- Salmonid Distribution and Habitat Utilization, Arc/Info GIS coverages. Portland, Or. 1996. (rainbow.dfw.state.or.us/ftp/).

IX. INCIDENTAL TAKE STATEMENT

Sections 4 (d) and 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

A. Amount or Extent of the Take

The NMFS anticipates that the action covered by this Opinion has more than a negligible likelihood of resulting in incidental take of UW chinook salmon and UW steelhead because of detrimental effects from increased sediment levels (non-lethal), the placement of riprap which is considered a significant habitat modification that may impair behavior patterns (non-lethal), and in-water work associated with placement of the north ramp and pile driving (lethal and non-lethal). Effects of actions such as these are largely unquantifiable in the short term, and are not expected to be measurable as long-term effects on steelhead or chinook salmon habitat or population levels. Therefore, even though NMFS expects some low level of incidental take to occur due to the actions covered by this Opinion, the best scientific and commercial data available are not sufficient to enable NMFS to estimate a specific amount of incidental take to the species itself. In instances such as these, the NMFS designates the expected level of take

as "unquantifiable." Based on the information in the biological assessment, NMFS anticipates that an unquantifiable amount of incidental take could occur as a result of the actions covered by this Opinion. The extent of the take is limited to the area of project disturbance, extending 500 feet downstream and 500 feet upstream of the ramps for the Canby Ferry in the Willamette River.

B. Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize take of the above species.

1. To minimize the amount and extent of incidental take from construction activities at the Canby Ferry, measures shall be taken to limit the duration and extent of in-water work, and to time such work when the impacts to UW chinook salmon and UW steelhead are minimized.
2. To minimize the amount and extent of incidental take from construction activities in or near the creek, effective erosion and pollution control measures shall be developed and implemented throughout the area of disturbance. The measures shall minimize the movement of soils and sediment both into and within the river, and will stabilize bare soil over both the short term and long term.
3. To minimize the amount and extent of take from loss of instream habitat and to minimize impacts to critical habitat, measures shall be taken to minimize impacts to riparian and instream habitat, or where impacts are unavoidable, to replace or restore lost riparian and instream function.
4. To ensure effectiveness of implementation of the reasonable and prudent measures, erosion control measures shall be monitored and evaluated both during and following construction and meet criteria as described below in the terms and conditions.

C. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, FHWA/ODOT/Clackamas County must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. Implementation of the terms and conditions within this Opinion will further reduce the risk of impacts to fish and the project reach of the Willamette River. These terms and conditions are non-discretionary.

1. In-water work:
 - a. Passage shall be provided for both adult and juvenile forms of all salmonid species throughout the construction period. The FHWA/ODOT designs will ensure passage of fishes as per ORS 498.268 and ORS 509.605 (Oregon's fish passage guidance).
 - b. All work within the active channel of the Willamette River will be completed within ODFW's summer in-water work period (June 1 to October 31). NMFS prefers that

all in-water work be completed during the summer in-water work period. Consequently, NMFS requests that the ODOT/Clackamas County coordinate with NMFS prior to any in-water activities during the winter in-water work period (December 1 to January 31). Furthermore, any extensions of the in-water work period will first be approved by, and coordinated with, NMFS.

- c. If water is present in the stream during the in-water work, all work shall be done within a cofferdam (made out of sandbags, sheet pilings, inflatable bags, etc.), or similar structure, to minimize the potential for sediment entrainment. If no water is present, erosion control measures will be implemented that ensure no excess sediment is left on the stream bed or riparian area.
- d. The repair of the south ramp riprap wall is should occur in the dry and may need to be dewatered. The back hoe would sit on the concrete ramp to dig the toe trench and would not enter the water. Sandbags will be placed between the river and the toe trench excavation to contain sediments. If the containment area has the potential to trap fish, an ODFW biologist will be on site to remove fish.
- e. Alteration or disturbance of stream banks and existing riparian vegetation will be minimized. Where bank work is necessary, bank protection material (riprap and/ or plantings) shall be placed to maintain normal waterway configuration.
- f. In areas with riprap installation, large riprap (e.g. class 700 minimum) shall be used preferentially within the 2-year floodplain of systems. Placement of riprap will be performed during the low water period, and will be done "in the dry" as much as possible.
- g. The track hoe used to excavate the toe trench at the south rock wall will be operated from the concrete ramp and will not enter the river.
- h. No waste fill materials shall be placed within the riparian zone of any stream or wetland
- i. If water is removed from the Willamette River, the hose will be screened according to NMFS' screening criteria to prevent fish entrapment.

2. Erosion and Pollution Control

An Erosion Control Plan (ECP) and Pollution Control Plan (PCP) will be prepared and will be implemented by the contractor. The ECP will outline how and to what specifications various erosion control devices will be installed to meet water quality standards, and will provide a specific inspection protocol and time response. Erosion control measures shall be sufficient to ensure compliance with applicable water quality standards and this Opinion. The ECP and the PCP shall be maintained on site and shall be available for review upon request.

- a. Effective erosion control measures shall be in-place at all times during the contract. Construction within the riparian zone will not begin until all temporary erosion controls (e.g., straw bales, silt fences) are in-place, downslope of project activities within the riparian area. Erosion control structures will be maintained until all disturbed areas are permanently stabilized.
- b. All temporarily-exposed areas will be seeded and mulched. Erosion control seeding and mulching, and placement of erosion control blankets and mats (if applicable) will be completed on all areas of bare soil within 7 days of exposure within 150 feet of waterways, wetlands or other sensitive areas, and in all areas during the wet season (after October 1). All other areas will be stabilized within 14 days of exposure. Efforts will be made to cover exposed areas as soon as possible after exposure.
- c. All erosion control devices will be inspected during construction to ensure that they are working adequately. Erosion control devices will be inspected daily during the rainy season, weekly during the dry season, monthly on inactive sites. Work crews will be mobilized to make immediate repairs to the erosion controls, or to install erosion controls during working and off-hours. Should a control measure not function effectively, the control measure will be immediately repaired or replaced. Additional erosion controls will be installed as necessary.
- d. If soil erosion and sediment resulting from construction activities is not effectively controlled, the engineer will limit the amount of disturbed area to that which can be adequately controlled.
- e. Sediment will be removed from sediment controls once it has reached 1/3 of the exposed height of the control. Whenever straw bales are used, they will be staked and dug into the ground 12 cm. Catch basins shall be maintained so that no more than 15 cm of sediment depth accumulates within traps or sumps.
- f. Where feasible, sediment-laden water created by construction activity shall be filtered before it leaves the right-of-way or enters an aquatic resource area. Silt fences or other detention methods will be installed as close as possible to culvert outlets to reduce the amount of sediment entering aquatic systems.
- g. A supply of erosion control materials (e.g., straw bales and clean straw mulch) will be kept on hand to cover small sites that may become bare and to respond to sediment emergencies.
- h. All equipment that is used for in-stream work will be cleaned prior to entering the two-year floodplain. External oil and grease will be removed, along with dirt and mud. Untreated wash and rinse water will not be discharged into streams and rivers without adequate treatment.

- i. On cut slopes steeper than 1:2, a tackified seed mulch will be used so that the seed does not wash away before germination and rooting occurs. In steep locations, a hydro-mulch will be applied at 1.5 times the normal rate.
- j. Material removed during excavation shall only be placed in locations where it cannot enter sensitive aquatic habitat. Conservation of topsoil (removal, storage and reuse) will be employed.
- k. Measures will be taken to prevent construction debris from falling into any aquatic habitat. Any material that falls into a stream during construction operations will be removed in a manner that has a minimum impact on the streambed and water quality.
- l. Project actions will follow all provisions of the Clean Water Act (40 CFR Subchapter D) and DEQ's provisions for maintenance of water quality standards not to be exceeded within the Willamette River (OAR Chapter 340, Division 41). Toxic substances shall not be introduced above natural background levels in waters of the state in amounts which may be harmful to aquatic life. Any turbidity caused by this project shall not exceed DEQ water quality standards.
- m. The contractor will develop an adequate, site-specific Spill Prevention and Countermeasure or Pollution Control Plan (PCP), and is responsible for containment and removal of any toxicants released. The contractor will be monitored by the ODOT Engineer to ensure compliance with this PCP. The PCP shall include the following:
 - i. A site plan and narrative describing the methods of erosion/sediment control to be used to prevent erosion and sediment for contractor's operations related to disposal sites, borrow pit operations, haul roads, equipment storage sites, fueling operations and staging areas.
 - ii. Methods for confining and removing and disposing of excess concrete, cement and other mortars. Also identify measures for equipment washout facilities.
 - iii. A spill containment and control plan that includes: notification procedures; specific containment and clean up measures which will be available on site; proposed methods for disposal of spilled materials; and employee training for spill containment.
 - iv. Measures to be used to reduce and recycle hazardous and non-hazardous waste generated from the project, including the following: the types of materials, estimated quantity, storage methods, and disposal methods.

- v. The person identified as the Erosion and Pollutant Control Manager (EPCM) shall also be responsible for the management of the contractor's PCP.
 - n. Areas for fuel storage, refueling and servicing of construction equipment and vehicles will be located at least 164 feet away from the 2-year floodplain of any waterbody. Overnight storage of wheeled vehicles must occur at least 164 feet away from the 2-year floodplain of any waterbody. Overnight storage of non-wheeled vehicles (e.g. crane, pile driver) is allowed within the 2-year floodplain during the in-water work window; however, to minimize the risk of fuel reaching the water, refueling of these vehicles must not occur after 1 pm (so the vehicles do not have full tanks overnight).
 - o. Hazmat booms will be installed in all aquatic systems where:
 - i. Significant in-water work will occur, or where significant work occurs within the 5-year floodplain of the system, or where sediment/toxicant spills are possible.
 - ii. The aquatic system can support a boom setup (i.e. the creek is large enough, low-moderate gradient).
 - p. Hazmat booms will be maintained on-site in locations where there is potential for a toxic spill into aquatic systems. "Diapering" of vehicles to catch any toxicants (oils, greases, brake fluid) will be mandated when the vehicles have any potential to contribute toxic materials into aquatic systems.
 - q. No surface application of nitrogen fertilizer will be used within 50 feet of any aquatic resource.
 - r. The cast-in-place portion of the ramp will have "green" concrete (concrete that has cured for less than 24 hours). To eliminate the potential for water that has been in contact with the "green" concrete from entering the river the following items should be implemented. The pouring of the concrete should be timed so that no rain has been forecasted within 24 hours. The concrete can be cured by using wet burlap with plastic sheeting placed over it to retain moisture. An absorbent material can be placed to catch minor runoff that may occur. No toxicants, including "green" concrete, will be allowed to enter any flowing body of water. No water that has been in contact with green concrete will enter the active channel of the Willamette River.
3. Riparian Habitat Measures
- a. As designed, large wood with attached root wads will be incorporated into the riprap wall at the north ramp.

- b. Boundaries of the vegetation clearing limits will be flagged prior to any project work. Ground will not be disturbed beyond the flagged boundary. In addition, the Engineer will identify and mark trees to be saved. Orange plastic mesh fencing will be placed around critical root zones of marked trees or tree groups.
- c. Alteration of native vegetation will be minimized. Where possible, native vegetation will be clipped by hand so that roots are left intact. This will reduce erosion while still allowing room to work. No protection will be made of invasive exotic species (e.g. Himalayan blackberry), although no chemical treatment of invasive species will be used.
- d. Riparian understory and overstory vegetation removed will have a replacement rate of 1.5:1, at a minimum. At a minimum, the plantings proposed in the BA must be completed by the autumn following project completion.
- e. All riparian replant areas will be monitored to insure that finished grade slopes and elevation will perform the appropriate role for which they were designed and plantings are performing correctly and have an adequate success rate (80% after three years).

4. Monitoring

- a. Erosion control measures as described above in 2(d) shall be monitored. Erosion control and pollution control measures will be monitored daily to ensure adequate water quality. The contractor will provide the ODOT Project Manager a digital picture of the work site on a daily basis during the in-water work. These will be available to NMFS upon request.
- b. All significant riparian replant areas will be monitored to insure the following:
 - i. Finished grade slopes and elevations will perform the appropriate role for which they were designed.
 - ii. Plantings are performing correctly and have an adequate success rate (success rate necessary depends on the planting density but the goal is to have a functional riparian vegetation community).
- c. Failed plantings and structures will be replaced, if replacement would potentially succeed. If not, plantings at other appropriate locations will be done.
- d. A plant establishment period (3 year minimum) shall be required for all riparian mitigation plantings.
- e. By December 31 of the year following construction, FHWA/ODOT shall submit to NMFS (Oregon Branch) a monitoring report with the results of the monitoring required in terms and conditions (4(a) to 4(c) above).

