

Endangered Species Act -Section 7
Consultation

BIOLOGICAL OPINION

Effects of Construction of an Infiltration Gallery Water Intake (Permit ID No. 00-32) on Cow Creek
on Umpqua River Cutthroat Trout and Oregon Coast Coho Salmon

Agency: Army Corps of Engineers, Portland District

Consultation Conducted By: National Marine Fisheries
Service, Northwest Region

Date Issued: April 4, 2000

Refer to: OSB2000-0026

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I. BACKGROUND

In a January 26, 2000 letter, the Portland District Army Corps of Engineers (COE) requested Endangered Species Act (ESA) Section 7 informal consultation with the National Marine Fisheries Service (NMFS) on the proposed issuance of a Clean Water Act Section 404 permit (Permit ID No. 00-32) to allow an instream construction project. The applicant for this permit, the City of Glendale (City) proposes to construct an infiltration gallery-type municipal water intake in Cow Creek, a tributary of the South Umpqua River in Douglas County, Oregon. The new water intake, which would be buried beneath the bed of the creek, would replace an existing screened intake in the creek which has deteriorated and which is thought to have insufficient capacity. The COE has proposed conditions on the permit that would lessen the adverse effects of the proposed actions on aquatic organisms.

In the January 26 letter, the COE determined that the Umpqua River (UR) cutthroat trout (*Oncorhynchus clarki*), listed as endangered under the ESA, and Oregon Coast (OC) coho salmon (*O. kisutch*), listed as threatened under the ESA, may occur within the project area, which has been proposed as critical habitat for these species. The COE also determined that these species may be affected by the proposed projects, but that individuals of the species would not be adversely affected. After review of the information provided by the COE and additional investigation, however, the NMFS concluded that more than a negligible likelihood of adverse effect to individuals of the listed species is likely because substantial in-water work is proposed during a period in which individuals of one or both species is likely to occur at and near the site. Based on this information, the COE agreed to modify its effect determination to “likely to adversely affect” (pers. comm., Dale Haslem, regulatory specialist, COE, 3/9/00).

Cow Creek at the proposed project site is a substantial stream (about 65 feet in width at normal flow volume). The project site is at the edge of the City and has been substantially disturbed by previous activities, although a narrow zone of woody riparian vegetation persists. The hydrologic regime of Cow Creek has been altered by the operation of Galesville Dam (about 25 mile upstream of the City) since 1985. Inflow to Galesville Dam is stored and released into Cow Creek to facilitate consumptive use (especially crop irrigation), flood control, recreation, and to enhance fish habitat. As a consequence, streamflows in Cow Creek during the summer and fall are considerable greater (and, to some extent, cooler) than before the construction of the dam.

The objective of this BO is to determine whether the proposed construction of the infiltration gallery is likely to jeopardize the continued existence of UR cutthroat trout or OC coho salmon, or destroy or adversely modify designated critical habitat for either species.

II. PROPOSED ACTIONS

The proposed action is the COE’s permitting of the construction of the infiltration gallery-type water intake to supply water for domestic and commercial use to the City. Additional construction not requiring COE permitting but associated with the new intake construction includes upgrades to the

potable water treatment plant, new water transmission lines, a new 500,000 gallon steel reservoir, and a new raw water pump station. The intake structure would consist of three 15-foot long, 10-inch in diameter stainless steel cylindrical screens, each connected to an 8-inch pipe that would lead to the pump station, which would be constructed about 50 feet from the shoreline of Cow Creek. The screens and pipes would be laid in a trench that would be excavated about 6 feet into the streambed and a similar amount into the streambank, which is about 15 feet high at the site. The trench would extend into Cow Creek about 20 linear feet and would be about 14 feet in width in the streambed, narrowing to about 10 feet in width in its progression up the streambank. The screens would be enclosed in and secured to a 12 by 18-foot rectangular concrete anchor wall about 4 feet in height and one foot in thickness, which would be poured at the bottom of the streambed portion of the trench. The screens would rest on a bed of placed native gravel and additional gravel would be used to backfill the streambed trench. The streambank trench would be backfilled with relatively large native rock. Excavation and fill for the project below ordinary high water would total about 110 cubic yards. The City estimates that construction within the wetted channel of Cow Creek would be completed within about 3 weeks.

In order to minimize impacts to aquatic organisms and their habitat, the COE would require and/or the City has proposed to: (1) Conduct activities within the wetted channel of Cow Creek only during the Oregon Department of Fish and Wildlife's (ODFW) in-water work period (July 1 through September 15); (2) construct a cofferdam which would isolate the instream work area from the wetted channel; (3) construct the cofferdam from materials brought from off-site; (4) minimize removal of woody vegetation; and (5) take steps to minimize or eliminate the introduction of sediment, turbidity, and contaminants in Cow Creek.

III. BIOLOGICAL INFORMATION AND CRITICAL HABITAT

Based on migratory timing and discussions with local ODFW biologists, the NMFS expects that adult and juvenile UR cutthroat trout and juvenile OC coho salmon would likely be present in Cow Creek at the proposed construction site during the proposed in-water work period, but that no adult OC coho salmon would be present. The Cow Creek watershed is known to support spawning populations of UR cutthroat trout and OC coho salmon, but spawning areas for both species should be in tributary streams upstream of the subject mainstem reach. Thus, the subject reach of Cow Creek serves as an adult and juvenile migratory corridor for UR cutthroat trout and OC coho salmon as well as a adult rearing area for cutthroat trout and a juvenile rearing area for both species. The proposed action would also occur within designated critical habitat for both species.

Data from the gage located on Cow Creek just downstream of the City (the McCullough Creek gage, operated by Douglas County) shows that flow volume and water temperature in the subject stream reach are substantially more suitable as summer salmonid rearing habitat than most other similar-sized Umpqua River tributaries. For example, mean July, August, and September discharge at the McCullough Creek gage for the years 1997 and 1998 was, respectively, 80.3, 82.4, and 90.5 cubic feet per second (cfs), while the corresponding discharge for Calapooya Creek at the U.S. Geologic

Survey's (USGS) Oakland gage (about 50 miles to the north of the City, with a similar drainage area) was 31.7, 12.7, and 20.0 cfs. Discharge variability on Cow Creek also appears to be much less than on Calapooya Creek, with mean minimum flow during the months of July, August, and September of 1997 and 1998 equal to about 84% of the mean daily flows at the McCullough Creek gage and only 39% at the Oakland gage. Additionally, mean July water temperature at the McCullough Creek gage for the years 1997-99 was 64.5° F, while the corresponding temperatures at the site for August and September was 63.5° F and 59.1 ° F. (pers. comm., Ken Shumway, Douglas County, 2/16/00). These temperatures are substantially lower than the Oregon Department of Environmental Quality (ODEQ) estimates of mean water temperatures for Calapooya Creek (at Oakland) in July, August, and September of 68.6, 74.1, and 72.5° F (pers. comm., Alan Bogner, ODEQ, 11/1/99). The differences in water quantity and quality during the dry season between Cow and Calapooya creeks appear to be caused nearly entirely by the release of stored water from Galesville Dam.

The action area is defined by NMFS' regulations (50 CFR Part 402) as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." The action area includes designated critical habitat affected by the proposed action within Cow Creek. Essential features of the adult and juvenile migratory corridor and rearing habitat for the species are: (1) Substrate, (2) water quality, (3) water quantity, (4) water temperature, (5) water velocity, (6) cover/shelter, (7) food (juvenile only for coho salmon), (8) riparian vegetation, (9) space, and (10) safe passage conditions (50 CFR Part 226). The proposed projects may affect each of the essential features, either through the direct effect of the water intake construction or through the indirect effect of withdrawal of water from Cow Creek.

The UR cutthroat trout was listed by the NMFS under the ESA as endangered on August 9, 1996 (61 FR 41514); critical habitat for this species was designated by the NMFS on January 9, 1998 (63 FR 1338). OC coho salmon was listed by the NMFS under the ESA as threatened on August 10, 1998 (63 FR 42587); critical habitat for this species was designated on February 16, 2000 (65 FR 7764). References for further background on listing status, biological information and critical habitat elements can be found in the Federal Register notices listed above and in Johnson *et al.* (1994) and Weitkamp *et al.* (1995).

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 initial steps of (1) defining the biological requirements of the listed species, and (2) evaluating 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 salmon's life stages that occur beyond the action area. If NMFS finds that the action is likely to jeopardize 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' 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 feature 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 adversely modify critical habitat, it must identify any reasonable and prudent measures 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 elements necessary for migration, spawning, and rearing of the listed and proposed species under the existing environmental baseline.

A. Biological Requirements

The first step in the methods NMFS uses for applying the ESA section 7(a)(2) to listed salmon is to define the species' biological requirements that are most relevant to each consultation. 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 the species for ESA protection and also considers new data available that is relevant to the determination.

The relevant biological requirements are those necessary for UR cutthroat trout and OC coho salmon to survive and recover to a naturally reproducing population level at which protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance its capacity to adapt to various environmental conditions, and allow it to become self-sustaining in the natural environment.

For this consultation, the biological requirements are habitat characteristics that function to support successful rearing and migration. The current status of the UR cutthroat trout and OC coho salmon, based upon their risk of extinction, has not significantly improved since the species was listed.

B. Environmental Baseline

The biological requirements of UR cutthroat trout and OC coho salmon are currently not being met under the environmental baseline. Their status is such that there must be a significant improvement in

the environmental conditions they experience over those currently available under the environmental baseline. Any further degradation of these conditions would have a significant impact due to the amount of risk they presently face under the environmental baseline.

The defined action area is the area that is directly and indirectly affected. The direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, 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. For the purposes of this opinion, the action area is defined as Cow Creek from Galesville Dam to its confluence with the South Umpqua River near Riddle, Oregon. Other areas of the Cow Creek watershed are not expected to be directly or indirectly impacted.

V. ANALYSIS OF EFFECTS

A. Effects of Proposed Actions

The NMFS expects that the effects of the direct effects of the proposed project will tend to maintain the habitat elements at the subject site over the long term (greater than one year). In the short term, temporary increases of sediment and turbidity and disturbance of riparian habitat are expected. Indirect effects of the increase in the City's capacity to withdraw water from Cow Creek will occur over both the short and long term, and potentially could include both increases and decreases in flow volume and water temperature in Cow Creek.

Direct Effects

Because the City proposes to isolate its trench excavation, screen and pipe installation, concrete pouring, and trench filling activities within a cofferdam, the principal direct effects of the proposed action would be associated with the construction and removal of the cofferdam. Additional direct effects of construction would include disturbance of riparian vegetation and modification of a short stretch of streambank. The operation of the infiltration gallery is also considered.

Direct injury. Although the exact type of cofferdam that would be constructed has not yet been specified, the City's engineering consultant plans to specify that the structure could not be constructed of materials excavated from the channel of Cow Creek (pers. comm., Andy Szatkowski, Lee Engineering, 3/14/00). This type of construction should minimize the potential for direct injury to individuals of the listed species. However, fish in the vicinity of heavy equipment working in the creek channel could come in contact with various parts of the equipment or with rock or other material that is excavated, moved, or placed, or could become stranded within the cofferdam. Even without direct contact, the shadows, noise, and vibrations produced by such activities would likely disturb nearby fish, although such disturbance would likely not have long-term adverse effects. It is likely that harm to fish during the construction and removal of cofferdams is more than negligibly likely, but would likely be

rare because the disturbance associated with construction activities would likely cause aware and agile salmonids to vacate and/or avoid the area while such disturbance is occurring.

Sediment in Cow Creek and/or from the cofferdam construction will be mobilized (*i.e.*, transformed into turbidity) by the proposed action. At moderate levels, turbidity has the potential to adversely affect primary and secondary productivity, and at high levels, has the potential to injure and kill adult and juvenile fish, and may also interfere with feeding (Spence *et al.* 1996). Although turbidity has some potential to directly adversely affect fish, this usually occurs in situations where no relief from the turbidity is possible. Any juvenile or adult UR cutthroat trout or juvenile OC coho salmon in proximity of the proposed activities should have the opportunity and mobility to avoid (laterally or upstream of) what should be minor and short-term turbidity plumes created by the proposed action.

Finally, the operation of heavy equipment, generators, etc. requires the use of fuel and lubricants which, if spilled into Cow Creek, could injure or kill aquatic organisms. While green concrete would be used in the construction of the infiltration gallery, and can be acutely toxic if not properly cured/neutralized, the cofferdam should prevent introduction of this substance into the wetted channel.

Habitat modification. When completed, the proposed infiltration gallery would be several feet below the stream bottom and the site should be indistinguishable from the existing stream bottom. Similarly, the riparian zone along most of this reach of Cow Creek is well-wooded, so the removal of a few mature trees during the intake construction should not have any substantial effect on shading or the recruitment of large woody material. The small amount of large river rock that would be used to armor the creek bank at the pipeline crossing should not have a substantial effect on either instream or riparian habitat.

In the short term, however, the proposed actions would likely have adverse effects. Specifically, the construction and removal of the cofferdam would likely introduce sediment into Cow Creek. In addition, riparian vegetation, including a few substantial trees, is likely to be removed or disturbed. Sediment has the potential to degrade salmonid spawning habitat and fine redeposited sediments have the potential to adversely affect primary and secondary productivity (Spence *et al.* 1996), and to reduce cover for juvenile salmonids (Bjornn and Reiser 1991). As with turbidity and contaminants, however, the City will be required to minimize sedimentation and disturbance of riparian areas and to mitigate unavoidable impacts by, for example, planting and maintaining replacement trees.

Intake operation. The infiltration gallery screens would be covered with several feet of creek rock, and so would have essentially no opportunity to impinge or entrain salmonid eggs or fry, although hyporheic invertebrates may be entrained in small numbers. The ODEQ would require the City to backflush the intake ever two weeks (pers. comm., Andy Szatkowski, Lee Engineering, 3/14/00), so no acute or substantial mobilization of accumulated sediment from this action should occur.

Indirect effects

The City currently has municipal water rights to Cow Creek and two small tributaries to Cow Creek, Section Creek and Mill Creek. The priority of the Cow Creek water right (for 0.4 cfs) for instream flow is relatively junior, however, and there are both quantity and quality problems with the water from Section and Mill creeks. The City also holds a 0.4 cfs water right to 20 acre-feet of water stored in Galesville Reservoir. At present, the City has the physical ability to withdraw about 193 gallons per minute (gpm or about 0.43 cfs) from Cow Creek, but has a 150 gpm (0.33 cfs) restriction on water treatment volume. The City's water supply comes from Cow Creek during the summer and early fall, because little, if any, water is available from Section and Mill creeks during the dry season. The City's existing Cow Creek instream flow water right is frequently regulated (i.e., suspended) by the Oregon Water Resources Department (WRD) during the summer and early fall when the natural flows (i.e., not augmented by water impounded in Galesville Reservoir) are insufficient to satisfy more senior water right holders. Thus, water withdrawn from Cow Creek during the dry season by the City in excess of its existing 0.4 cfs instream municipal water right (and/or any water withdrawn from Cow Creek if and when its existing water right is regulated by the WRD for senior users) will have been stored in Galesville Reservoir and sold to the City by Douglas County (County), which owns and operates the dam and reservoir.

The maximum pumping capacity that would be provided by the City's proposed potable water system upgrade is 350 gpm (about 0.78 cfs). This is about 157 gpm (0.35 cfs) more than the City can currently pump from Cow Creek, and about 200 gpm (0.45 cfs) more than the City can currently treat. Because an upgrade to the City's water treatment capacity (as opposed to the City's water pumping capacity) does not require a COE permit and would have independent utility whether the intake and pumping station are upgraded or not, the NMFS will consider the Federally-enabled increase in the City's Cow Creek withdrawal capacity to be 157 gpm. With the proposed pumping and treatment upgrade, then, the City would be able to fully utilize all of their existing 180 gpm (0.4 cfs) Cow Creek instream water right (unless regulated for seniority), plus an additional 170 gpm (0.38 cfs) of stored water from Galesville Reservoir.

As noted above, Galesville Dam has influenced water volume and temperature in Cow Creek since 1985. The County sells water stored in the reservoir impounded by the dam to irrigators and municipalities downstream. The diversion points for these consumptive users are located on Cow Creek, the South Umpqua River, and the mainstem Umpqua River. The stored water released from Galesville Dam provides elements of fish habitat (water quality, quantity, suitable temperature, etc.) while flowing in-stream to its diversion point, even though it is eventually withdrawn from Cow Creek, etc. Because water sold to consumptive users is stored in the reservoir during the wet season and released from the dam during the summer and early fall, these releases provide substantially higher flow levels during an otherwise low-flow period. For example, the mean August discharge measured at the USGS' Riddle gage (near the mouth of Cow Creek) was 37 cfs from 1955 to 1985, while the mean August discharge at the same gage was about 88 cfs from 1986 through 1998. The water released from the dam is also relatively cool during the summer and early fall, favorably influencing water temperature for many miles downstream.

In addition to releases of water for irrigation and municipalities, the County also has an agreement with the ODFW to release 4,000 acre-feet from Galesville Dam annually to improve and protect salmonid habitat (especially fall chinook salmon spawning habitat and summer juvenile salmonid rearing habitat) in Cow Creek (pers. comm., Dave Loomis, ODFW, 3/9/00). The County and ODFW negotiate the daily volume and timing of the fish flows each year. In addition, the county releases water from Galesville Dam each fall and winter to meet flood control rule curves. To the extent that releases for consumptive uses and for flood control coincide with the negotiated fish flow volume and timing, the county does not debit the ODFW's 4,000 acre-foot "account." Except for a small additional volume to compensate for leakage and evaporation prior to use, the County does not release stored water during the irrigation season beyond that sold or dedicated for fish, even though a substantial portion of the impounded water will likely be drafted from the reservoir later in the year to meet flood control rule curves. This is because additional instream water would be used by irrigators or municipalities without compensation to the County, a situation the County seeks to avoid because it would like to increase its water sales (much of the stored water in the reservoir currently remains unsold each year). As a consequence, any water purchased from the County by the City during the irrigation season (when municipal demand is also heaviest) would be water that would otherwise not be released from Galesville Dam during the summer or early fall.

Assuming that the construction of the proposed water withdrawal, storage, and distribution facilities and the purchase of stored water would allow or encourage additional City withdrawals from Cow Creek, it follows that City wastewater discharge volume would also increase. The City's engineering contractor (pers. comm., Michael Dees, Lee Engineering Inc., 3/14/00) estimates that about 80% of the City's potable water during the summer and early fall would eventually be routed through the wastewater treatment facilities (the remainder would be used for lawn and garden watering and fire suppression). Because the incremental increase in the City's withdrawal capacity from Cow Creek is about 157 gpm (0.35 cfs, see above) this would mean that up to about 126 gpm (80% of 157 gpm, or about 0.28 cfs) of wastewater attributable to the Federal permit action would be discharged to Cow Creek. This water would likely be somewhat warmer than the water withdrawn from the creek; in an comparable situation on Calapooya Creek, the ODEQ has estimated a 3.6° F increase in temperature resulting from routing through the potable and wastewater systems in Oakland, Oregon (pers. comm., Alan Bogner, ODEQ, 11/1/99).

To summarize, issuance of the proposed COE permit would allow the City to withdraw up to 0.35 cfs more water from Cow Creek than it currently has the physical ability to withdraw. All of this additional water would be stored in Galesville Reservoir and purchased from the County. The County would not otherwise release the water that would be purchased by the City during the summer or early fall. Thus, as a likely consequence of the issuance of the proposed permit, the volume of water in the Cow Creek reach from the dam to the City would increase during the dry season, as would the volume of water in Cow Creek downstream of the City. The increase in dry season flow volume below the City would be less than the increase above the City because not all of the water withdrawn by the City would be discharged back to the creek as treated wastewater. Summer and early fall water temperature may also slightly decrease in Cow Creek both above and below the City as an indirect effect of the

proposed COE permit.

Because the existing withdrawal capacity from Cow Creek by the City is nearly identical to its instream water right, any increase in the volume withdrawn from the creek would be matched by a comparable volume released from the reservoir. The relatively low temperature of the water that would be released from Galesville Dam for use by the City during the summer (typically about 55° F; pers. comm., Ken Shumway, Douglas County, 3/17/00) would contribute proportionally to the relatively low creek temperature at the City. As a consequence, any increase in the volume of cool stored water that would be enabled by the proposed COE permit would be greater than any Federally-enabled increase in relatively warm wastewater effluent (because the County would release slightly more than requested by the City and because some of the water withdrawn from the creek would not enter the wastewater treatment system). In addition, the thermal characteristics of each unit of water released from Galesville Dam likely has a substantially greater effect on the temperature of Cow Creek than does a unit discharged as City effluent (i.e., the stored water would have more “cold” than the effluent would have “hot” relative to proportional volumes). Regarding water quality variables other than temperature, because the City is the only municipality on Cow Creek until just above its mouth and the “low flow” volume of Cow Creek is substantial, and assuming that the City is in compliance with Oregon Department of Environmental Quality regulations, there would likely be little, if any adverse water quality impact on Cow Creek due to the incremental increase in the volume of treated wastewater effluent that may result from the Federal action.

B. Effects of Interrelated and Interdependent Actions

Interrelated and interdependent actions are those that would not occur but for the proposed action. The City has applied for a permit from the COE to construct the subject infiltration gallery. Because of this, the NMFS considers the potential effects on Cow Creek flow associated with the operation of the improved potable water system to be interrelated and interdependent actions to the construction of the infiltration gallery. The effects of these interrelated and interdependent actions have been analyzed above.

In addition to obvious effects, it may be argued that a subtle and indirect effect of the proposed infiltration gallery and associated potable water system improvements would be the facilitation of further development and population density in the City, and that such development has the potential to adversely affect the listed anadromous fish species in ways not analyzed in this document. The NMFS believes, however, that the principal impact of increased development and population density in the City on the listed species associated with the proposed potable water system improvements would be the withdrawal from and discharge of water into Cow Creek, which have already been addressed. In addition, the possible relationship between the proposed actions and increased development in the City is speculative because many economic and social factors will likely determine future development. Thus, aside from those actions already analyzed, the proposed action would not result in actions that would not otherwise occur.

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." For the purposes of this analysis, the general action area is the Cow Creek watershed. Other activities within the watershed have the potential to impact fish and habitat within the action area. Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being (or have been) reviewed through separate section 7 consultation processes. NMFS is not aware of any significant change in non-Federal activities that are reasonably certain to occur. NMFS assumes that future private and State actions will be similar to past actions and continue at similar intensities as in recent years.

D. Effects on Critical Habitat

The 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 has been designated for both UR cutthroat trout and OC coho salmon. For the proposed action, NMFS expects that the effects will tend to maintain physical and biological features within current baseline conditions over the long term. There should be no change in Cow Creek substrate conditions, while riparian and streambank conditions should recover quickly. Increased releases out of Galesville Dam should slightly improve habitat conditions in the Cow Creek reach between the dam and the City, while the flow-related conditions in Cow Creek below the City should not be significantly affected by the proposed action.

VI. CONCLUSION

The NMFS has determined, based on the available information, that the proposed action is expected to maintain or slightly improve conditions for the listed species within the action area. Consequently, the proposed actions covered in this BO are not likely to jeopardize the continued existence of UR cutthroat trout or OC coho salmon or adversely modify designated critical habitat for either species. 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 used the best available scientific and commercial data to apply its jeopardy analysis. NMFS believes that the proposed action would cause minor, short-term degradation of anadromous salmonid habitat due to in-channel cofferdamming and construction and modification of riparian habitat. The existence and operation of the infiltration gallery should not affect individuals of the listed species, while increased stored water releases (which may occur because of the increased capacity of the potable water system) is likely to slightly improve salmonid habitat between Galesville Dam and the City, and should not reduce or adversely affect salmonid habitat downstream of the City. Although direct mortality from this project could occur during the in-water work, it is not expected and the level of mortality would be minimal and would not result in

jeopardy.

VII. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species, to minimize or avoid adverse modification of critical habitat, or to develop additional information. NMFS does not believe that conservation recommendations are necessary for this proposed action.

VIII. REINITIATION OF CONSULTATION

Consultation must be reinitiated if: (1) The amount or extent of taking specified in the Incidental Take Statement is exceeded or is expected to be exceeded; (2) new information reveals effects of the actions may affect listed species in a way not previously considered; (3) the actions are modified in a way that causes an effect on listed species that was not previously considered; or (4) a new species is listed or critical habitat is designated that may be affected by the actions (50 CFR 402.16). To re-initiate consultation, the COE must contact the NMFS Habitat Conservation Division, Oregon Branch Office.

IX. REFERENCES

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X. 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 biological opinion has more than a negligible likelihood of resulting in incidental take of UR cutthroat trout or OC coho salmon because of detrimental effects from increased sediment levels (non-lethal) and the potential for direct incidental take during in-water work (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 habitat or population levels. Therefore, even though NMFS expects that some low level incidental take may occur due to the actions covered by this biological 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 provided by the COE, NMFS anticipates that an unquantifiable amount of incidental take could occur as a result of the actions covered by this biological opinion. The extent of the take is expected to be limited to the action area.

B. Reasonable and Prudent Measures

The NMFS believes that the following reasonable and prudent measures are necessary and appropriate to avoid or minimize take of UR cutthroat trout and OC coho salmon.

1. To minimize the amount and extent of incidental take from water intake construction activities, measures shall be taken to: Limit the duration of in-water work and time for such work to

occur when listed fish are few or absent and implement effective pollution control measures to minimize the movement of sediment and contaminants both into and within the stream channel.

2. To minimize the amount and extent of take from loss of habitat and to minimize impacts to critical habitat, measures shall be taken to minimize impacts to instream and riparian habitat, or where impacts are unavoidable, to replace lost riparian and instream habitat function.

C. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the COE must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

- 1a. All work below the ordinary high water line will be completed within ODFW's in-water work period. Any extensions of the in-water work period will first be approved by and coordinated with ODFW and NMFS.
- 1b. All terms and conditions of the COE's permit, including those relating to sedimentation, turbidity, and introduction of contaminants, shall be followed.
- 1c. Any stranding, injury, or mortality to salmonids observed by the City or its contractors as a result of construction or operation of the WW system shall be reported to the NMFS' Roseburg Field Office within 7 days. In addition, the City shall freeze or preserve (in 70% isopropyl alcohol) the carcasses of any salmonids discovered during construction or operation of the WW system to allow species identification by the Roseburg Field Office. Close-up photos of salmonid carcasses that permit species identification may be substituted for the frozen or preserved carcasses.
- 2a. Woody riparian vegetation at the project site shall be replaced to the maximum extent horticulturally possible and maintained for at least 5 years.

