

**Attachment 1**  
**DFG and CAL FIRE Comments and Recommended Changes**  
**Threatened or Impaired Watershed Rules, 2009**  
**June 18, 2009**

**Comments on Changes to 14 CCR § 895. Abbreviations Applicable Throughout Chapter.**

**Comment 1. Abbreviations**

The Departments support the adoption of the abbreviations “CMZ”, “QMD” and “WTL” as proposed under 14 CCR § 895.

In regard to the adoption of the abbreviation “WTL”, the Board needs to revise several references throughout the proposed text due to typographical errors. The abbreviation is incorrectly represented as “WLT” on page 59, line 17; and in figures 4, 5, 6 and 7 (ref. pp. 32, 40, 48 and 58).

**Comment 2. Abbreviations**

The Departments oppose the adoption of the abbreviation “ACD” (ref. p.2, line 3, Optional Amendment 1). In addition to the comments provided in our earlier letter to the Board, the Departments believe adoption of regulations relying on a measurement of angular canopy density creates another measurement requiring landowners and agencies to purchase equipment and provide training at an additional cost. If this language is adopted, there may be additional fiscal impacts to CAL FIRE (and perhaps other agencies) to purchase the appropriate equipment (≈ \$6,000 - \$7,000) and to provide training to agency representatives and RPFs to ensure consistent application of the measurements throughout the State (≈ \$10,000). The Departments believe that adoption of regulations that rely on a measurement of angular canopy density will not be necessary if the Board adopts adequate canopy retention standards throughout the core and inner zone. Also see Comments 3 and 68 regarding application of angular canopy density in the inner zone of the WLPZ.

**Comments on Changes to 14 CCR § 895.1. Definitions.**

**Comment 3. Angular Canopy Density**

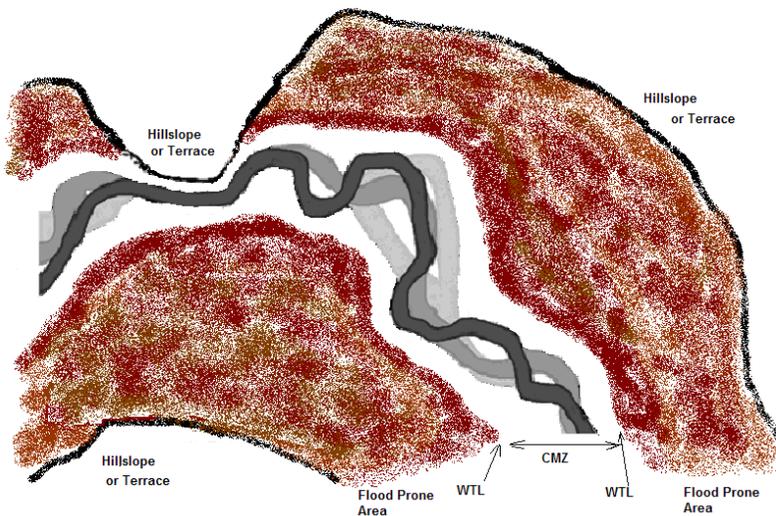
The Departments oppose the adoption of Optional Amendment 2 (ref. p.3, lines 3-12). The Departments do not support the use of angular canopy density as a measure of adequate protection for any riparian function other than stream temperature. Implementation and standardization of angular canopy density as a metric of properly functioning salmonid habitat, although more directly applicable to stream temperature than other metrics, would be problematic and confusing for regulators and foresters. Furthermore, there is no information or data relating angular canopy density to tree density. The Departments have no confidence in angular canopy density as a potential surrogate metric for tree density and thus LWD recruitment. Due to the lack of testing and information, the Departments do not have confidence in the relationship between measurements of only angular canopy density and properly functioning salmonid

habitat. Should further information be developed, the Departments would be interested in evaluating this method (also see Comments 2 and 68 regarding application of angular canopy density in the inner zone of the WLPZ). This definition and abbreviation are only needed if Optional Amendment 7 applying angular canopy density is adopted. If the Board chooses to adopt this definition, changes to the language should be considered for clarity prior to adoption.

**Comment 4. Channel Migration Zone**

The Departments support adoption of a definition for channel migration zone (CMZ) and recommend replacing the proposed definition and Figure 1 with the modified definition and Figure 1 below in order to clarify and correct the relationship of the 80-year design life to the CMZ delineation. The replacement Figure 1 eliminates confusing dashed lines at the edge of the channel margins to better represent the zone within which channels may migrate.

Channel Migration Zone means the area where the main channel of a watercourse can reasonably be expected to shift position on its floodplain laterally through avulsion or lateral erosion during the period of time required to grow forest trees from the surrounding area to a mature size, except as modified by a permanent levee or dike. The result may be the loss of beneficial functions of the riparian zone or riparian habitat (see Figure 1).



The Departments believe relating the 80-year design life to the CMZ delineation makes the definition useful and clarifies the intent of the definition for use in delineating the CMZ. The recommended revision allows the definition to be applied in a predictive manner to encompass changes in the river landscape over time. The definition should recognize that the presence of a channel migration zone helps to assure that natural fluvial processes of erosion and deposition are accommodated over time and that riparian responses to such natural disturbance are part of the desired ecological diversity and health of the river landscape.

**Comment 5. Channel Zone**

The Departments support the amended definition for channel zone. Although some scientific disciplines consider the floodplain part of the channel zone, the Departments recognize that the Board has split these two geomorphic features apart into three protection zones defined as the channel zone, channel migration zone, and flood prone area. The Departments believe these zones, if defined as suggested by the Departments, combined with the watercourse and flood prone area protective measures, will provide the appropriate level of habitat protection and restoration necessary for the protection and recovery of listed salmonids.

**Comment 6. Confined Channel**

The Departments support the proposed definition for a confined channel.

**Comment 7. Flood flow**

The Departments support the proposed definition because it is consistent with the literature on the topic. The Departments recommend the following revision to clearly indicate the role local experience has in modifying the estimate of flood flows.

Flood flow means that magnitude of peak flow that would, on the average, be equaled or exceeded once every specified period of years (e.g., once every 10 year, 50 years, 100 years). This flow shall be estimated by flood flow measurement records and ~~relationships~~ by empirical relationships between precipitation, watershed characteristics, and runoff, and may be modified by direct channel cross-section measurements informed by ~~and~~ local experience.

The Departments believe that local experience, while important in informing decisions based on site-specific conditions, should not be directly relied upon for objective, supportable flood flow estimates. Such reliance reduces the credibility and defensibility of the estimate. However, local experience can enhance direct channel cross-section measurements.

**Comment 8. Flood Prone Area**

The Departments support the new definition for flood prone area, with some modifications. The Departments support the group of field indicators specified to determine the flood prone area and recommends adding another indicator for deposits of fine-grained sediment “on the bark of hardwoods and conifers”. Additionally, this definition uses three terms, fluvial, hydric, and thalweg riffle crest, that are not defined. We recommend including definitions for these three terms in 14 CCR § 895.1 and have provided language for the Board to consider under Comments 9, 10 and 20 in order to make the terms clear. Also, a sentence is added to clarify field delineation of a channel migration zone and a flood prone area, as these features often have similar physical characteristics. Precedence for delineating a channel migration zone is given over the delineation of a flood prone area. This precedence results in providing more conservative riparian function protection measures, as the channel migration zone prescriptive standards generally exclude timber operations.

Flood Prone Area means an area contiguous to a watercourse channel zone that is periodically flooded by overbank flow. Indicators of flood prone areas may include diverse fluvial landforms, such as overflow side channels or oxbow lakes, hydric vegetation, and deposits of fine-grained sediment between duff layers or on the bark of hardwoods and conifers. The outer boundary of the flood prone area may be determined by field indicators such as the location where valley slope begins (i.e., where there is a substantial percent change in slope, including terraces, the toes of the alluvial fan, etc.), a distinct change in soil/plant characteristics, and the absence of silt lines on trees and residual evidence of floatable debris caught in brush or trees. Along laterally stable watercourses lacking a channel migration zone ~~Where~~ the outer boundary of the flood prone area cannot be clearly determined using the field indicators above, it shall be determined based on the area inundated by a 20-year recurrence interval flood flow event, or the elevation equivalent to twice the distance between a thalweg riffle crest and the depth of the channel at bankfull stage. When both a channel migration zone and flood prone area are present, the boundaries established by the channel migration zone supersedes the establishment of a flood prone area.

Although scientific literature and disciplines generally considers the active channel and floodplain geomorphic features as a single unit hydrologically, the Departments recognize that the Board has split these features into three definitions: channel zone, channel migration zone, and flood prone area. These three definitions combined with the watercourse and flood prone area protective measures, result in the kinds of habitat protection and restoration the Departments believe are necessary for protection and recovery of listed salmonids.

The Departments' own experts and internal literature review of salmonid habitat needs agree with the Initial Statement of Reasons (ISOR) (Board of Forestry 2009) that flood prone areas, contain habitat critical for salmonid survival. Also see Comment 50 regarding salmonid habitat in the flood prone areas.

**Additional Definition**

**Comment 9. Fluvial**

The Departments recommend adding the following new definition for fluvial to clarify terms used in the definition of "Flood Prone Area) in 14 CCR § 895.1.

Fluvial means the processes associated with rivers and streams and the deposits and landforms created by them.

**Additional Definition**

**Comment 10. Hydric**

The Departments recommend adding the following new definition for hydric to clarify terms used in the definition of "Flood Prone Area" in 14 CCR § 895.1.

Hydric means a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper portions of the soil profile.

**Additional Definition**

**Comment 11. Hydrologic Disconnection**

The Departments recommend that the definition for "Hydrologic Disconnection," currently applicable only in watersheds with coho salmon, be applied to all areas of the State. The Departments are proposing a revision to 14 CCR § 916.9 [936.9, 956.9], subsection (k)(2) and those revisions include use of the term "Hydrologic Disconnection" regarding year-round road use limitations. It is necessary to clearly define this term for application throughout the State in order to ensure consistent application of road and landing use to prevent transportation of sediment into a fish bearing watercourse. Also see Comment 108.

**Comment 12. Lake Transition Line**

The Departments support the changes proposed for the definition of “Watercourse and Lake Transition Line”; separating the definition of “Lake Transition Line” from the definition of “Watercourse Transition Line,” and concur with the rationale stated in the ISOR (Board of Forestry 2009) for separating this definition from the former “Watercourse and Lake Transition Line” definition for clarity. The Departments recommend an additional minor change to the definition of “Lake Transition Line” that will make this definition consistent with the definition of the term “Riparian”, which is already defined by the Board. The Departments recommend changing the word “riparian” to “mesic” on page 6, line 5.

Lake Transition Line means that line closest to the lake where riparian mesic vegetation is permanently established.

**Additional Definition**

**Comment 13. Pre-existing Large Wood**

The Departments recommend adding the following new definition for pre-existing large wood to clarify the Class III down-wood retention standard proposed in 14 CCR § 916.9 [936.9, 956.9], subsection (h)(2). This definition is in common usage and is contained in DFG’s California Salmonid Stream Habitat Restoration Manual, 3<sup>rd</sup> edition (Flosi 1998).

Pre-existing Large Wood means, for Class III watercourses in watersheds with listed anadromous salmonids:

(a) a log or tree segment that is (i) at least 12 inches or greater in diameter outside bark when measured at the small end, (ii) at least six feet in length, (iii) in contact with the ground, and (iv) present prior to timber operations.

(b) a root wad that is (i) at least 12 inches or greater in diameter outside bark when measured at the base of the trunk, (ii) in contact with the ground, and (iii) present prior to timber operations.

**Comment 14. Properly Functioning Salmonid Habitat**

The Departments support the proposed definition and recommends replacing the word “lifecycle” on page 6, line 10 with “life-history”. Life-history is the accepted terminology in biology disciplines for referring to the reproductive cycle of any organism. Life-history stages of salmonids can and do show considerable temporal and spatial variability under specific geomorphic conditions (Bjornn and Reiser 1991; Hicks et al. 1991). The definition acknowledges that the conditions for salmonids would also vary based on specific geomorphic conditions and spatial and temporal variability.

**Comment 15. Riparian Associated Species**

The Departments support the proposed definition with some minor changes for clarity and consistency. The Departments recommend replacing the language “at least one critical life stage” with “any life-history stage” on page 6, line 15.17 All life-history stages are considered to be critical for species to complete their reproductive cycles and persist, so no one stage is more critical than another. This change clarifies the language and understanding of the definition, reduces confusion about whether a life-history stage is critical or not, or whether or not a particular life-history stage should be considered under the definition.

Riparian-Associated Species means those plant, invertebrate, amphibian, reptile, fish, or terrestrial wildlife species that require utilization of the riparian zones areas during any life history stage at least one critical life stage.

**Comment 16. Saturated soil conditions**

The Departments support the amended language and recommends a revision to recognize the difference between native surfaced roads or landings and roads or landings that are surfaced with rock or gravel, for example. Additionally, minor changes have been suggested for clarity as presented in the text below.

~~Saturated soil conditions means that site conditions are sufficiently wet that timber operations displace soils in yarding or mechanical site preparation areas or displace road and landing surface materials in amounts sufficient to cause a turbidity increase in drainage facilities that discharge into Class I, II, III, or IV waters, or in downstream Class I, II, III, or IV waters that is visible or would violate applicable water quality requirements.~~

~~In yarding and site preparation areas, this condition may be evidenced by:~~  
a) ~~reduced traction by equipment as indicated by spinning or churning of wheels or tracks in excess of~~  
~~normal performance, b) inadequate traction without blading wet soil, c)~~  
~~soil displacement in amounts that cause visible increase in turbidity of the downstream waters in a receiving Class I,~~

~~II, III, or IV waters, or in amounts sufficient to cause a turbidity increase in drainage facilities that discharge into Class I, II, III, or IV waters, or d) creation of ruts greater than would be normal following a light rainfall. On logging roads and landing surfaces, this condition may be evidenced by a) reduced traction by equipment as indicated by spinning or churning of wheels or tracks in excess of normal performance, b) inadequate traction without blading wet soil, c) soil displacement in amounts that cause visible increase in turbidity of the downstream waters in receiving Class I, II, III, or IV waters, or in amounts sufficient to cause a turbidity increase in drainage facilities that discharge into Class I, II, III, or IV waters, d) pumping of road surface materials by traffic, or e) creation of ruts greater than would be created by traffic following normal road watering, which transports surface material to a drainage facility that discharges directly into a watercourse. The Soils or road and landing surfaces that are hard frozen are excluded from this definition. all soil and/or surface material pore spaces are filled with water to such an extent that ~~and~~ runoff is likely to occur. Indicators of saturated soil conditions may include, but are not limited to: (1) areas of ponded water, (2) pumping of fines from the soil or road surfacing material during timber operations, (3) loss of bearing strength resulting in the deflection of soil or road surfaces under a load, such as the creation of wheel ruts, (4) spinning or churning of wheels or tracks that produces a wet slurry, or (5) inadequate traction without blading wet soil or surfacing materials.~~

**Comment 17. Stable operating surface**

The Departments support the proposed definition and oppose Optional Amendment 3.

The Departments believe the Optional Amendment 3 reference to “large ponds” in the road is both unlikely to occur and difficult to enforce. What is important are performance criteria and prevention measures, either in the definition or in the relevant rule subsections, that promote hydrologic disconnection from watercourses.

**Comment 18. Stream Order**

The Departments support this definition. It is consistent with the literature on the topic and supports other regulation changes proposed by the Board.

**Comment 19. Stressing Storm**

The Departments recommend eliminating this definition because there is no need to adopt a definition unique to the Forest Practice Rules when the concept of specific recurrence interval storm events is understood by those disciplines affected by the proposed regulation changes.

In addition, the Departments oppose Optional Amendment 30 where this definition is used. Also see Comment 129 regarding Optional Amendment 30.

**Additional Definition**

**Comment 20. Thalweg Riffle Crest**

The Departments recommend adding the following new definition for thalweg riffle crest to clarify terms used in the definition of flood prone area in 895.1. This definition is taken from the Montana Department of Environmental Quality (2007) manual *Longitudinal Field Methodology For The Assessment Of TMDL Sediment And Habitat Impairments*.

Thalweg riffle crest means the upstream end of a riffle feature and can be identified as the area where the surface water flow changes from smooth to turbulent. The thalweg is found at the deepest part of the channel. Where the thalweg is measured in a pool, the riffle crest is a high point on a longitudinal profile and the shallowest place at the downstream end of a pool.

**Comment 21. Watercourse Transition Line**

The Departments support the proposed definition for watercourse transition line (WTL), with some minor changes specified below. The Departments recommend adding the word 'a' between 'without' and 'CMZ' on page 9, line 17, and adding a comma after "undercut banks" to correct a typo on page 9, line 20.

Watercourse Transition Line (a) for a watercourse without a CMZ, means the line defined by one or more the following features: 1) a change of vegetation from bare surfaces or annual water tolerant species to perennial water tolerant or upland species at least 25 years in age at breast height, 2) physical indicators of scour such as undercut banks,

moss lines on rocks, the top of exposed roots along the channels, and 3) a change in the size distribution of surface sediments from gravel to fine sand.

The 1999 Scientific Review Panel (SRP) recommended adopting a single WTL definition that encompassed the watercourse active channel and floodplain together (Ligon et al. 1999). The Board adopted a definition for unconfined channels in its 2000 *Threatened or Impaired Watershed Rules (T/I)* rulemaking that resembled the SRP watercourse transition line recommendations, but with separate definitions for confined and unconfined channels. Then, in 2002, the WTL was redefined, and changed the definition for unconfined channels, dispensing with many of the SRP's WTL recommendations, which resulted in separating the floodplain. The Riparian Protection Committee's report (Cafferata et al. 2005) also recommended eliminating separate definitions for confined and unconfined channels because in practice the definitions had led to confusion and proven difficult to use in the field. DFG's Salmonid Stream Habitat Restoration Manual (Flosi et al. 1998) states that an extremely close relationship exists between the riparian zone, the fluvial processes of the channel, and fish habitat.

The proposed amendment eliminates these separate definitions for confined and unconfined channels, and instead appears to define two types of active channels, watercourses without a channel migration zone and those with a channel migration zone. The proposed amendment does not include the floodplain. Also, under the proposed channel migration zone definition, no floodplain is included, only the active channel.

Although multiple scientific disciplines consider the floodplain and active channel together as the channel zone, the Departments recognize that the Board has split these two geomorphic features apart into three amended definitions, channel zone, channel migration zone, and flood prone area. These three definitions, combined with the watercourse and flood prone area protective measures, result in the kinds of habitat protection and restoration that the Departments believe are necessary for protection and recovery of listed salmonids.

The literature confirms that floodplains are important to anadromous salmonids (Also see Comment 50). Since the 2002 WTL revision, DFG has recommended relocation of the WTL landward to the watercourse's 20-year return interval flood event floodplain in THPs and nonindustrial timber management plans (NTMP) in the following watersheds: Wages Creek, Ten Mile River, Big River and Gualala River. In most cases, foresters have not agreed to relocate the WTL in unconfined channels, stating that they were applying only what was minimally required under the FPRs.

In response to suggestions by the California Department of Forestry and Fire Protection (CAL FIRE), DFG turned to mitigating potential adverse effects to riparian associated

species on floodplains instead of trying to relocate the WTL as recommended in the SRP. Examples of mitigations include recommending the extension of the WLPZ to encompass the entire floodplain and recommending specific conifer retention/forest restoration guidelines on floodplains, where they extend landward beyond the WLPZ.

**Comment 22.** The definition indicates the WTL lies between the area where annual and perennial riparian vegetation occurs. The diagram shows salmonberry occurring below the WTL, which implies it is annual, but it is perennial. The Departments recommend the Board modify Figure 3 on page 10 to show salmonberry at or above the WTL.

**Comment 23. Watersheds in the Coho salmon ESU**

The Departments recommend clarifications to this definition to reduce confusion and address additional coastal watersheds containing listed salmonids. The following amendments are recommended:

1. Change the name of the geographic location in the definition to “Watersheds in the Coastal Anadromy Zone”;
2. Revise the text in the definition to add reference to the SCCC steelhead Distinct Population Segment (DPS); and,
3. Revise all text in the rule proposal which references the “coho salmon ESU” with “Watersheds in the Coastal Anadromy Zone”.

~~Watersheds in the coho salmon ESU Coastal Anadromy Zone~~ means any planning watershed(s) in the ~~coho salmon (Oncorhynchus kisutch) Evolutionary Significant Units (ESU), Central California Coast coho salmon Evolutionary Significant Units (ESU), South Central Steelhead Distinct Population Segment (DPS), Central California Coast steelhead DPS, Northern California steelhead DPS, California Coastal Chinook salmon ESU, and Southern Oregon/Northern California Coast coho salmon ESU,~~ as defined in 70 Federal Register 37160, dated June 28, 2005, ~~where populations of any anadromous salmonids (including central California coast coho, southern Oregon/northern California coast coho, northern California steelhead, central California coast steelhead, and central California coast chinook)~~ that are listed as threatened, endangered, or candidate under the State or Federal Endangered Species Acts are currently present or can be restored. Official maps of ~~coho salmon~~ ESUs and DPSs are found . . . .

While the perimeter of the geographic area in the definition includes two coho salmon ESUs, the prescriptive requirements applicable to this geographic area apply to all watersheds with any listed anadromous salmonids, not just to watersheds with listed coho salmon. The geographic location for this definition is intended to include all watersheds where any listed anadromous salmonids, not just coho, are present or restorable. This has produced confusion.

Additionally, the geographic scope in the proposed definition (coho salmon ESU) excludes some coastal watersheds that contain south central California coast (SCCC) steelhead populations that are not within the coho salmon ESU perimeter. As currently proposed, some locations in southern coastal Monterey and San Luis Obispo Counties that contain watersheds with listed SCCC steelhead are subject to the proposed rules for locations "outside the coho ESU", which are the inland T/I rules. These watersheds would most appropriately be subject to the prescriptive standards for the proposed coho ESU geographic area, the primarily coastal area. Prescriptive rules for locations outside the coho ESU were specifically designed for non coastal areas and therefore are not appropriate for SCCC steelhead species.

#### **Comment 24. Watersheds with Listed anadromous salmonids**

The Departments support the proposed change to the definition from "Watersheds with Threatened or Impaired Values" to "Watersheds with Listed Anadromous Salmonids" to better indicate the focus of this rulemaking action on protecting anadromous salmonids throughout their ranges in California.

#### **Comment 25. Winter Period**

The Departments recommend deleting the proposed revision to a new winter period date for the T/I watersheds. The change would impose a wide range of winter period requirements (such as temporary culvert removal) mandated by the FPRs to a wider period (October 15- May 1) than is currently required (November 15 to April 1). The Departments believe this was not the intention of the recommendation to the Board from the Interagency Road Rules Committee. The Road Rules Committee recommendation was to require preparation of a winter operating plan that addresses certain actions for the period of October 15 to May 15 with limitation and guidance stated in 14 CCR § 916.9 [936.9, 956.9], subsections (l) (1) and (2). The Road Rules Committee recommendations were not intended to result in new imposition of activities and additional significant costs to the landowner and operators, but were to reorganize existing requirements in the T/I rules for the wet season period. The recommended changes are shown below.

Winter Period means the period between November 15 to April 1, except 1) as noted under special County Rules at 14 CCR, Article 13 § 925.1, 926.18, 927.1, and 965.5. and 2) from October 15 to May 1 in watersheds with listed anadromous salmonids, pursuant to 14 CCR § 916.0 [936.0, 956.0], subsection (l).

**Comment 26. 14 CCR § 895.1 Expiration Date**

The rules under 14 CCR § 895.1 include language providing for the expiration of the previously adopted changes to this section by a certain date. This rule package proposes to delete the expiration language from this section of the rules. The Departments support this change to delete this expiration date, thereby making the rules permanent regardless of any other changes the Board adopts under this rulemaking action.

**Comments on Changes to 14 CCR § 898. Feasibility Alternatives**

**Comment 27. 14 CCR § 898**

The Departments oppose this change at this time. The Board has proposed to move the language from this section to 14 CCR § 916.12 [936.12, 956.12]; however, this change as proposed is not consistent with subsections (a) through (e) of that section of the rules. The existing rules under 14 CCR § 916.12 [936.12, 956.12] provides specific direction to CAL FIRE to work with the various regional waterboards to evaluate watersheds for the need for watershed specific rules to address the beneficial uses of water. The existing language under these subsections is not related to the preparation or review of any individual THP. The language proposed for deletion under 14 CCR § 898 provides direction to an RPF preparing a THP, and specifically relates to cumulative impacts assessment. This is consistent with the remainder of the language under 14 CCR § 898. It is inappropriate and unnecessary to make this change as proposed.

**Comment 28. 14 CCR § 898 Expiration Date**

The rules under 14 CCR § 898, subsection (a) include language providing for the expiration of the previously adopted changes to this section by a certain date. This rule package proposes to delete the expiration language from this section of the rules. The Departments support this change to delete this expiration date, thereby making the rules permanent regardless of any other changes the Board adopts under this rulemaking action.

**Comments on Changes to 14 CCR §§ 914.8, 934.8 and 954.8. Tractor Road Watercourse Crossing.**

**Comment 29. 14 CCR § 914.8 [934.8, 954.8], subsection (g) Expiration Date**

The rules under 14 CCR § 914.8 [934.8, 954.8], subsection (g) include language providing for the expiration of the previously adopted changes to this section by a certain date. This rule package proposes to delete the expiration language from this section of the rules. The Departments support this change to delete this expiration date, thereby making the rules permanent regardless of any other changes the Board adopts under this rulemaking action.

**Comments on Changes to 14 CCR §§ 916, 936 and 956. Intent of Watercourse and Lake Protection.**

**Comment 30. Intent of Watercourse and Lake Protection**

The Departments support the changes proposed by the Board with a minor revision. This revision is necessary to expand the list of intended outcomes resulting from the Watercourse and Lake Protection measures. This revision is consistent with other requirements in the FPRs.

**Amend 14 CCR § 916. [936, 956] Intent of Watercourse and Lake Protection.**

The purpose of this article is to ensure that timber operations do not potentially cause significant adverse site-specific and cumulative impacts to the beneficial uses of water, native aquatic and riparian-associated species, and the beneficial functions of riparian zones; or result in an unauthorized take of listed aquatic species; are protected from potentially significant adverse site-specific and cumulative impacts associated with timber operations, or threaten to cause violation of any applicable legal requirements. This article also provides protection measures for application in watersheds with listed anadromous salmonids and watersheds listed as water quality limited under Section 303(d) of the Federal Clean Water Act.

**Comment 31. Intent of Watercourse and Lake Protection**

The Departments support the proposed change on page 14, line 16, with the following additional changes. On line 16, the amended language appears to make the intent of watercourse and lake protection unique to plans, but it should apply to all timber operations conducted under plans, exemptions, or emergency notices. The Departments suggest including a reference to these other types of operations and suggest adopting the word “employ” rather than “contain”, since exemptions and emergency notices are ministerial documents with standards established related to what these documents “contain”. The Departments suggest the following changes:

Further, it is the intent of the Board to clarify and assign responsibility for recognition of potential and existing impacts of timber operations on watercourses and lakes, native aquatic and riparian-associated species, and the beneficial functions of riparian zones and to ensure ~~adoption of all plans, exemptions and emergency notices employ certain~~ feasible measures to effectively achieve compliance with this article.

**Comment 32. 14 CCR §§ 916 [936, 956], Subsection (a)**

The Departments support the changes to provision 14 CCR § 916 [936, 956], subsection (a) because it includes feasible actions to restore impaired beneficial uses of water, native aquatic and riparian-associated species, and the beneficial functions of the riparian zones. This direction is consistent with the Joint Policy Statement on Pacific Salmon and Anadromous Trout and with public and private efforts to restore salmonid habitat and recover listed species.

**Comment 33. 14 CCR §§ 916 [936, 956], Subsection (b)**

The Departments support the proposed changes to these subsections, with some modifications and considerations for future rule changes. The Departments recognize the importance of appropriate forest management in moving watersheds toward restoration of water quality and believe that the Forest Practice Rules, when applied consistently with the goals and objectives of the Board and the legislature, are effective in contributing toward such restoration. However, no individual project can achieve this goal. The Departments believe the changes we have proposed below clearly state the Board's intent to include restoration in the FPRs. The intent of the amendment is to specify that restoring habitat shall be a goal but only required to the extent feasible as defined in the FPRs. Timber operations shall actively contribute towards restoration when feasible, but are not expected to achieve complete restoration of habitats or recovery of the species.

**Comment 34. 14 CCR §§ 916 [936, 956], Subsection (b)**

In regard to water quality policy and the waterboards' interpretation of policy, the State Water Quality Control Board's non-point source policy addresses water quality control policy for the Regional Water Quality Control Boards in general. However, requiring timber harvesting operations to comply with waterboard policy implies such policy is statute or regulation, and would result in confusion regarding its application and enforcement. The Departments recommend that the Board do not adopt the changes proposed on page 15, lines 8, 9, and 10 regarding waterboard policy and its interpretation.

**Comment 35. 14 CCR §§ 916 [936, 956], Subsection (b)(1) and (b)(2)**

The Departments support deletion of the language currently existing under 14 CCR § 916 [936, 956], subsection (b)(1) because it is redundant with requirements already

stated under 14 CCR § 916.3 [936.3, 956.3], which applies to all watercourses and lakes throughout the State (ref. p.15, lines 12-15).

The Departments recognize that the existing language under 14 CCR § 916.3 [936.3, 956.3] does not include language similar to the enforceable provisions specified under 14 CCR § 916 [936, 956], subsection (b)(2), nor is it repeated elsewhere in the rules. Therefore, this section should not be deleted from the rules unless the Board proposes to revise 14 CCR § 916.3 [936.3, 956.3] to include similar requirements to provide enforceable protection to fish species throughout the State. The Departments recognize that provisions specified under 14 CCR § 916 [936, 956], subsection (b)(2), are inappropriate in an “intent” section of the rules and recommends that if the Board chooses to revise this language, they move the language into 14 CCR § 916.3 [936.3, 956.3] at some future date with appropriate public notice of proposed changes to this section of the rules.

**Comment 36. 14 CCR §§ 916 [936, 956], Subsection (b)**

Since the Board proposes to retain and renumber subsection (b)(2) at this time, it must not delete the language on page 15, line 11. Without this language, subsection (b)(2) would appear to require the removal of water, trees, and large wood from a watercourse, which is the opposite of the intent of this section. The Departments oppose the deletion of this language.

**Comment 37. 14 CCR §§ 916 [936, 956], Subsection (b)(2)**

The Departments recommend that the term “flood plain” be replaced with the term “flood prone area”. This change is consistent with other sections of the rules, utilizing a term defined by the Board in this rulemaking action.

The following changes are recommended for clarity:

**(b) Maintenance, pProtection, and contribution towards restoration** of the quality and beneficial uses of water during the planning, review, and conduct of timber operations shall comply with all applicable legal requirements including those set forth in any applicable water quality control plan or water quality control policy adopted or approved by the State Water Resources Control Board, as these are typically interpreted and applied by the affected regional water quality control board. At a minimum, the LTO shall not do either of the following during timber

operations:

~~(1) Place, discharge, or dispose of or deposit in such a manner as to permit to pass into the waters of the state, any substances or materials, including, but not limited to, soil, silt, bark, slash, sawdust, or petroleum, in quantities deleterious to fish, wildlife, beneficial functions of riparian zones, or the quality and beneficial uses of water;~~

~~(1)(2) Remove water, trees or large woody debris from a watercourse or lake, the adjacent riparian area, or the adjacent flood prone areas ~~flood plain~~ in quantities deleterious to fish, wildlife, beneficial functions of riparian zones, or the quality and beneficial uses of water.=~~

**Comment 38. 14 CCR § 916 [936, 956], subsection (c)**

The Departments support the changes proposed. The Departments support the consideration of impacts to riparian zones from operations located outside of the WLPZ and equipment limitation zone (ELZ) or equipment exclusion zone (EEZ) as provided on page 15, lines 22 and 23. The Departments support management in riparian zones that protects and restores aquatic and riparian species, riparian functions, and beneficial uses of water because riparian zones are critical to these species, functions and uses. Without intact, functioning riparian zones, hydrological, ecological, and biological processes malfunction, resulting in degraded water quality and habitat, flooding, and loss of aquatic and riparian species. In addition, where management outside the riparian zone can affect riparian zones or beneficial uses of water, the Departments believe such management should also be conducted to ensure protection and restoration of riparian zones and beneficial uses of water.

**Comment 39. 14 CCR § 916 [936, 956], subsection (e) Expiration Date**

The Departments support the changes proposed. The rules under 14 CCR § 916 [936, 956], subsection (e) include language providing for the expiration of the previously adopted changes to this section by a certain date. This rule package proposes to delete the expiration language from this section of the rules. The Departments support this change to delete this expiration date, thereby making the rules permanent regardless of any other changes the Board adopts under this rulemaking action.

**Comments on Changes to 14 CCR §§ 916.2, 936.2 and 956.2. Protection of Beneficial Uses of Water & Riparian Functions.**

**Comment 40. 14 CCR § 916.2 [936.2, 956.2], subsection (a)(3)**

The Departments suggest some non-substantive grammatical correction to add a space in the code section reference on page 16, line 18.

**Comment 41. 14 CCR § 916.2 [936.2, 956.2], subsection (a)**

The Departments support plead language for 14 CCR § 916.2 [936.2, 956.2], subsection (a). In addition, the Departments recommend clarifying the Board's intent to include "restoration" in the FPRs. The intent of the amendment is to specify that restoring habitat shall be a goal, but only required to the extent feasible as defined in the FPRs. Timber operations shall actively contribute towards restoration when feasible, but are not expected to achieve complete restoration of habitats or recovery of the species. The following change is recommended to 14 CCR § 916.2 [936.2, 956.2], subsection (a), page 16, line 22:

The maintenance, protection, and contribution towards restoration of....

**Comment 42. 14 CCR § 916.2 [936.2, 956.2], subsection (c)**

The Departments recommend the following changes for clarity and for consistency with earlier recommendations regarding timber operation contributions toward restoration.

(c) When the protective measures contained in 14 CCR §§ 916.5 [936.5, 956.5], and 916.9 [936.9, 956.9] when the plan is in a planning watershed with listed anadromous salmonids, are not adequate to provide for maintenance, protection or to contribute towards restoration to of beneficial uses of water set forth in 14 CCR § 916.5 [936.5, 956.5] Table 1, feasible additional measures as are necessary and sufficient to achieve these goals shall be developed by the RPF or proposed by the Director under the provisions of 14 CCR § 916.6 [936.6, 956.6], Alternative Watercourse and Lake Protection, and incorporated in the plan when approved by the Director. Additional measures taken to contribute to restoration of beneficial functions of riparian zones are those which are feasible and commensurate to the action in the plan.

The concepts of "necessary and sufficient" on line 12 are addressed under 14 CCR § 916.6 [936.6, 956.6] and are therefore not necessary to repeat here. Lines 15 and 16

express the intent that timber operations shall actively contribute towards restoration when feasible, but are not expected to achieve complete restoration of habitats or recovery of the species. This has been consistently inserted throughout the proposal, including on line 11 of this subsection making lines 15-16 unnecessary. Revising 14 CCR § 916.2 [936.2, 956.2], subsection (c) by adding the language “set forth in 14 CCR § 916.5 [936.5, 956.5] Table 1” after the phrase “beneficial uses” on page 17, line 11 will provide the same parallel intent and specificity as found in subsection (b), which also references 14 CCR § 916.5 Table 1 for characteristics and beneficial uses.

**Comment 43. 14 CCR § 916.2 [936.2, 956.2], subsection (d) Expiration Date**

The rules under 14 CCR § 916.2 [936.2, 956.2], subsection (d) include language providing for the expiration of the previously adopted changes to this section by a certain date. This rule package proposes to delete the expiration language from this section of the rules. The Departments support this change to delete this expiration date, thereby making the rules permanent regardless of any other changes the Board adopts under this rulemaking action.

**Comments on Changes to 14 CCR §§ 916.5, 936.5 and 956.5. Procedures for Determining Watercourse and Lake Protection Zone Widths and Protective Measures.**

**Comment 44. 14 CCR § 916.5 [936.5, 956.5], subsection (e) B, D, and E**

The Departments support the changes proposed in this section that make the existing language consistent with the changes to the definition of “Watersheds with Threatened or Impaired Values” to “Watersheds with Listed Anadromous Salmonids”.

**Comments on Changes to 14 CCR §§ 916.9, 936.9 and 956.9. Protection and restoration of the beneficial functions of the riparian zone in watersheds with listed anadromous salmonids.**

**Comment 45. 14 CCR § 916.9 [936.9, 956.9] Geographic Scope**

The Departments recommend significant changes to the geographic scope to clearly indicate to all affected parties the area of application of the proposed rules, including additional southern coastal watersheds with listed anadromous salmonids. The following changes are recommended to this subsection.

**Geographic scope** - In addition to all other district Forest Practice Rules, the following requirements shall apply in any ~~planning~~ watershed with ~~listed threatened or impaired values~~ anadromous salmonids. ~~When specified in this section, rules pertaining to watersheds in the coho salmon ESU supersede requirements for watersheds with listed anadromous salmonids.~~ Requirements for watershed with listed anadromous salmonids

differ depending on the geographic location of the watershed and geomorphic characteristics of the watercourse. Unique requirements for watersheds with listed anadromous salmonids are set forth for 1) watercourses in the coastal anadromy zone with confined channels, 2) watercourses with flood prone areas or channel migration zones, and 3) watercourses with confined channels located outside the coastal anadromy zone.

Watersheds which do not meet the definition of “watersheds with listed anadromous salmonids” are not subject to this section except as follows: The provisions of 14 CCR §§ 916.9 [936.9, 956.9], subsections (k)-(q), 923.3 [943, 963] and 923.9 [943.9, 963.9] also apply to planning watersheds immediately upstream of, and contiguous to, any watershed with listed anadromous salmonids for purposes of reducing significant adverse impacts from transported fine sediment. Projects in other watersheds further upstream that flow into watersheds with listed anadromous salmonids, not otherwise designated above, may be subject to these provisions based on an assessment consistent with cumulative impacts assessment requirements in 14 CCR §§ 898 and 912.9 [932.9, 952.9] and Technical Rule Addendum No. 2, Cumulative Impacts Assessment. These requirements do not apply to upstream watersheds where permanent dams attenuate the transport of fine sediment to downstream watercourses with listed anadromous salmonids.

One of the Board’s goals is to provide regionally specific rules for watersheds with listed salmonids. Given the time and resources available for review of the rules, the Departments believe the Board has achieved more regional specificity than currently exists under the existing rules, which did not distinguish any geographic subregions.

The amendment distinguishes between watersheds in the coho salmon ESA and watersheds outside the coho salmon ESU, or the Coast and Klamath regions and the Central Valley, respectively. The Departments agree with the Board that it is appropriate to distinguish these two areas because they can be characterized by species of listed salmonids present, geology, forest types, and climate regime. This distinction made it possible to propose different watercourse protection measures

appropriate to each region, based on the region's characteristics. To distinguish additional subregions will require additional staff resources and time. However, given that some landowners have Habitat Conservation Plans (HCPs) and/or Natural Communities Conservation Plans (NCCPs) that are, in essence, regionally specific sets of rules for salmonid habitat and other species protection, the Departments believe further analysis is needed to determine which subregions would most benefit from regionally specific rules compared to development of additional HCPs/NCCPs.

The Departments support applying the fine sediment movement and road regulations sections (k) through (q) of the T/I rules to planning watersheds upstream of those with listed salmonids. The Departments recommend adding “, and contiguous to,” after the word 'upstream' on page 19, line 20 to clarify the upstream location of the immediately upstream watershed. While review and improvement of these sections in the T/I rules remains to be completed, the Departments believe it is important to address how the downstream flow of fine sediment that could adversely affect salmonids. The ISOR (Board of Forestry 2009) for this rule package documents the science for applying the sediment movement and road regulations of the T/I rules to upstream planning watersheds.

**Comment 46. 14 CCR § 916.9 [936.9, 956.9], subsection (a) Goals**

The Departments support addressing impacts to salmonids and salmonid habitat in the Forest Practice Rules, but do not support limiting the goals to just addressing primary limiting factors. The amendment is not clear about what regulatory standard or policy goals will be met. As written and amended, this section fails to meet the requirements of CEQA or the California Endangered Species Act (CESA), nor does it clearly advance the protection, recovery or restoration goals of the Joint Policy. The Departments recommend 1) clarifying the regulatory and policy standards the Board wishes to meet, 2) eliminating references to primary limiting factors from 14 CCR § 916.9 [936.9, 956.9], subsections (a) and (a)(1), and 3) making clear the goal to protect, maintain, and contribute to restoration of listed salmonids and their habitat.

**(a) GOAL Goal** - Every timber operation shall be planned and conducted to protect, maintain, and contribute to restoration of properly functioning salmonid habitat and listed salmonid species. ~~prevent deleterious interferencesignificant adverse impacts to~~ with the watershed conditions that primarily limit the values set forth in 14 CCR 916.2 [936.2, 956.2](a) ~~the primary limiting factors that affect listed anadromous salmonid species in a planning watershed (e.g., sediment load increase where sediment is a primary limiting factor; thermal load increase where water temperature is a primary limiting factor; loss of instream large woody debris or recruitment~~

~~potential where lack of this value is a primary limiting factor; substantial increase in peak flows or large flood frequency where peak flows or large flood frequency are primary limiting factors).~~ To achieve this goal, every timber operation shall be planned and conducted to ~~meet the following objectives where they affect a primary limiting factor:~~

(1) Comply with the terms of a Total Maximum Daily Load (TMDL) ~~that has been adopted to address primary limiting factors that may be affected by timber operations.~~ if a TMDL has been adopted,, or not result in any measurable sediment load increase to a watercourse or lake.

~~(2) Not result in any s~~ Prevent significant sediment load increase to a watercourse system or lake.

~~(2)(3) Not result in any measurable~~ Prevent significant ~~decrease in the~~ instability of a watercourse channel or of a watercourse or lake bank.

~~(3)(4) Not result in any measurable~~ Prevent significant blockage of any aquatic migratory routes for any life stage of anadromous salmonids or listed species.

~~(4)(5) Not result in any measurable~~ Prevent significant adverse effects to streamflow. ~~during critical low water periods except as part of an approved water drafting plan pursuant to 14 CCR § 916.9(r) [936.9(r), 956.9(r)], subsection (r).~~

~~(5)(6)~~ Consistent with the requirements of 14 CCR § 916.9(i), [936.9,956.9], subsections (f), (g), (h) and (v), 14 CCR § 936.9(i), or 14 CCR § 956.9(i), protect, maintain, and restore trees (especially conifers), snags, or downed large woody debris that currently, or may in the

foreseeable future, provide large woody debris recruitment needed for instream habitat structure and fluvial geomorphic functions.

~~(6)(7)~~ Consistent with the requirements of 14 CCR § 916.9(g) ~~936.9, 956.9], subsections (f), (g), (h) and (v), 14 CCR § 936.9 (g), or 14 CCR § 956.9(g),~~ protect, maintain, and restore the quality and quantity of vegetative canopy needed to:

(A) provide shade to the watercourse or lake to maintain daily and seasonal water temperatures within the preferred range for anadromous salmonids or listed species where they are present or could be restored;  
and

~~(B) minimize daily and seasonal temperature fluctuations provide a deciduous vegetation component to the riparian zone for aquatic nutrient inputs (C) maintain daily and seasonal water temperatures within the preferred range for anadromous salmonids or listed species where they are present or could be restored, and (D) provide hiding cover and a food base where needed.~~

~~(7)(8) Result in no substantial significant~~ Prevent significant increases in peak flows or large flood frequency.

A limiting factors approach to protecting habitat values is insufficient. The rules should ensure that watershed conditions are maintained within favorable ranges, not just address the "worst case" condition. While a limiting factors approach may be an appropriate method of prioritizing restoration and recovery actions, it is not an appropriate standard for protecting public trust resources from adverse effects. Which particular factors are "primarily limiting" may be difficult to determine and may vary over time and with location. A plan may have substantial adverse effects on a habitat factor which was not "primarily limiting" prior to the operations of the plan.

Under 14 CCR § 916.9 [936.9, 956.9], subsection (a)(3), the Departments are not aware of accepted methods for measuring watercourse channel or bank stability. It should be a goal of the rules to prevent adverse effects even if they cannot be readily measured.

The Departments recommend that 14 CCR § 916.9 [936.9, 956.9], subsection (a)(4) clearly extend to any impediment or barrier that may inhibit passage of any life stage of anadromous salmonids. While methods exist to quantify the extent to which a feature may act as a passage barrier for salmonids through changes in flow for different life stages of salmonid species, these measurements are unlikely to be applied during plan review or implementation. As currently written, the rule may be limited to upstream migration by spawning adults. Impediments to the movement of other life stages may also have effects. Impediments to bidirectional (upstream and downstream ) juvenile movement during low flows may inhibit their ability to select preferable habitats.

The Departments do not believe 14 CCR § 916.9 [936.9, 956.9], subsection (a)(5) is consistent with proposed amendments in 14 CCR § 916.9 [936.9, 956.9], subsection (r), which eliminate references to a water drafting plan. In addition, the goal of the rule should be to avoid adverse effects resulting from stream flow reductions regardless of whether they are measured or conducted under a water drafting plan. It should be recognized that as currently written, 14 CCR § 916.9 [936.9, 956.9], subsection (r) does not ensure that adverse effects are avoided; it only specifies no significant stream flow reductions during critical low water periods. Registered Professional Forester (RPF) determinations regarding the applicability of the provisions of 14 CCR § 916.9 [936.9, 956.9], subsection (r) are often made without appropriate supporting measurements. The Departments recommend revising this subsection to be consistent with revisions to 14 CCR § 916.9 [936.9, 956.9], subsection (r) and to clearly reflect avoiding adverse effects resulting from stream flow reductions.

**Comment 47. 14 CCR § 916.9 [936.9, 956.9], subsection (b) – Pre-plan adverse cumulative watershed effects**

The Departments support the adoption of the changes proposed, but suggest a single minor grammatical edit to delete “ly” from the word “significantly” on page 21, line 20 as shown:

(b) Pre-plan adverse cumulative watershed effects - Pre-plan adverse cumulative watershed effects on the populations and habitat of anadromous salmonids shall be considered. The plan shall specifically acknowledge or refute that such effects exist. ~~Where appropriate~~When the proposed timber operations, in combination with any identified pre-plan watershed effects, will add to significantly adverse existing

cumulative watershed effects, the plan shall set forth measures to effectively reduce such effects.

The Departments support addressing cumulative watershed effect in the T/I rules. The Departments recognizes that developing rules for this subsection was not included in this rulemaking, and requests that the Board complete this topic in 2010 in a subsequent rulemaking process.

The amendment does not go far enough to provide direction for addressing these effects and reducing their impacts. Addressing cumulative impacts is important to achieving goals established by the Joint Policy, including recovering salmonid populations to meet delisting standards and encouraging watershed-scale programmatic approaches to achieve delisting. For example, regulatory and monitoring approaches need to be developed to design timber operation practices and tree harvest measures that address cumulative watershed effects from roads and road networks, harvest rate, or canopy removal on salmonid habitat and salmonid recovery. The T/I rules are an integral and a critical part of achieving the Joint Policy goals.

**Comment 48. 14 CCR § 916.9 [936.9, 956.9], subsection (c) - Objectives for timber operations or silvicultural prescriptions in WLPZs**

The Departments support the amended language for objectives of the watercourse or lake protection zone, including the concept of three zones with different levels of forest management based on promoting watershed products and riparian functions that maintain salmonid habitat.

Intact riparian vegetation provides numerous benefits to instream fish habitat, including shading, bank stabilization, and inputs of organic matter and woody debris (Naiman et al. 2000; Pusey and Arthington 2003; Broadmeadow and Nisbet 2004). Because of the widespread losses of riparian vegetation and the multiple benefits it provides, riparian restoration has been promoted as a key strategy for restoring the critical processes that create and maintain fish habitat (Kauffman et al. 1997; Beechie and Bolton 1999; Opperman and Merenlender 2004).

The widths of riparian corridors needed to maintain essential functions have been widely debated and researched. Everest and Reeves (2007) summarized the available literature on estimated widths of unmanaged near-stream vegetation in forested watersheds needed to maintain various functions of riparian ecosystems in the Pacific Northwest and southeast Alaska (Table 3.2). Spence et al. (1996) considered that there are three important considerations in establishing riparian buffer zones; 1) the width of the buffer zone, 2) the level of activity allowed within the riparian zone, 3) whether riparian buffers are needed for tributary streams that do not contain salmonids. Specific recommendations for riparian buffers can also only be made with a clear definition of riparian management goals.

Most studies on the functions of riparian ecosystems have addressed single functions at site scales with the intent of determining the width of riparian zone needed to maintain the individual function under study (Everest and Reeves 2007). However, the multiple functions of riparian ecosystems operate in concert, with differing widths of unmanaged near stream vegetation needed to maintain different functions. The T/I rules address impacts to multiple functions of riparian ecosystems, and the Departments believe that the concept of three buffer zones, as proposed, can address impacts ranging from shade and water temperature to LWD recruitment and sediment.

**Comment 49. 14 CCR § 916.9 [936.9, 956.9], subsection (c)(1) - Core Zone**

The Departments support limiting timber operations in the first 0-30 feet of the WLPZ, the core zone. Primarily this zone will provide shade for water temperature control, wood recruitment by bank erosion, nutrient inputs, and promote bank stability. This proposal will result in additional tree retention, reduced ground disturbance adjacent to habitat and restorable habitat of listed fish species, and promote later seral habitat for wildlife. Reduced ground disturbance in the core zone will improve sediment filtration.

The ISOR (Board of Forestry 2009) for this rule package documents the scientific support for establishing the core zone, which will provide watershed products and protection to support anadromous salmonids and their habitat.

Although the WLPZ width is reduced from 150 feet to 100 feet where uneven aged management is proposed (core and inner zones), the Departments believe the Class I and II core zones combined with the no-cut prescription will have the following beneficial effects on salmonid habitat: maintain adequate shading and bankside cover, reduce stream temperature, light levels and primary production, and increase LWD recruitment and input of organic matter to stream. This will benefit salmonids directly by 1) maintaining optimum survival and production of juveniles and adults, 2) maintaining growth efficiency, food production and growth rate, and 3) increasing juvenile production and carrying capacity.

Riparian, or bankside, habitats serve a wide variety of important functions for stream ecosystems and anadromous salmonids, including providing shade and cover, bank stability, input of allochthonous organic matter, invertebrate food, and sediment control (Everest and Reeves 2007; Pusey and Arthington 2003; Naiman et al. 2000; SWC 2008). The condition of aquatic ecosystems at the watershed scale is strongly tied to the condition of riparian vegetation within a watershed (Welsch 1991). The structure and productivity of habitats for fish and other aquatic organisms are controlled to a large extent by adjacent and upstream vegetation.

**Comment 50. 14 CCR § 916.9 [936.9, 956.9], subsection (c)(2) - Inner Zone**

The Departments support limiting timber operations in the inner zone to those actions which improve salmonid habitat. The Departments agree with the objectives of the inner zone including developing a stand of trees for LWD recruitment, providing additional shading and nutrient inputs, and maintaining or improving salmonid habitat on

flood prone areas and channel migration zones. The Departments recommend replacing the word "pool" with "large number" on page 22, line 9 to be more specific and descriptive about achieving LWD recruitment.

The ISOR (Board of Forestry 2009) for this rule package documents the scientific support for establishing the core zone to provide watershed products and protection to support anadromous salmonids and their habitat. Additional researchers have also found that riparian vegetation is critical for the development and maintenance of habitat for fish and other aquatic species by contributing LWD that provides habitat structure for salmonids and a variety of other organisms (Bisson et al. 1987; Sullivan et al. 1987), and contributing leaves and particulate organic matter, the primary energy source for aquatic food-webs in most small and mid-size streams (Minshall et al. 1985; Wipfli and Gregovich 2002).

Although the WLPZ width is reduced from 150 to 100 feet where uneven aged management is proposed (Core and inner zones), the Departments believe the Class I and II inner zone, combined with measures to promote maximum large tree and canopy retention, and protection of prone areas and channel migration zones will have the following beneficial effects on salmonid habitat: reduce stream temperature, light levels and primary production, increase LWD recruitment and input of organic matter to stream, and protect existing side-channels, back-channels, ponds, and sloughs. This will benefit salmonids directly by 1) maintaining growth efficiency, food production and growth rate, 2) increasing juvenile production and carrying capacity, and 3) increasing carrying capacity for juvenile winter survival and enhancing smolt production.

In addition to utilizing main channel habitats such as pools or undercut banks, juvenile salmonids, particularly coho salmon, are also known to inhabit side-channels and off-channel habitats such as ponds, shallow lakes and other areas of standing water (Tshapalinski and Hartman 1983; Swales and Levings 1989; Solazzi et al. 2000; Bramblett et al. 2002; Giannico and Hinch 2003; Pollock et al. 2004; Henning et al. 2006; Roni et al. 2006; Henning et al. 2007; Rosenfeld et al. 2008).

Although winter conditions are not as severe in California as they are in more northern regions of the Pacific Northwest, there is some evidence that in fall juvenile coho in northern coastal streams also migrate into side-channels and off-channel areas to overwinter and avoid high mainstem winter flows (Bell et al. 2001; Ransom 2007; Brakensiek and Hankin 2007; Gale 2008). For example, juvenile coho salmon in Prairie Creek, a third-order tributary to Redwood Creek in northwestern California, showed a fall migration to habitats such as backwaters and alcoves to avoid high winter mainstem flows (Bell et al. 2001). Macedo (1992) investigated the utilization by juvenile salmonids of two side-channels in the upper Trinity River near Lewiston, California. Coho salmon preferred side-channels during all seasons, while steelhead preferred side-channels during winter. Chinook salmon (*Oncorhynchus tshawytscha*) preferred side-channels in all seasons except winter. Brown trout (*Salmo trutta*) preferred side-channels during winter.

In addition to providing a refuge from high flows in the mainstem, off-channel habitats also often provide a less variable temperature regime and a more constant invertebrate food supply. A number of studies have reported juvenile coho salmon remaining in off-channel habitats to overwinter exhibit higher growth rates and survival relative to coho salmon occupying mainstem habitats (Bustard and Narver 1975; Tschapalinski and Hartman 1983; Swales and Levings 1989).

Floodplain wetlands are also known to be utilized for juvenile salmonid rearing in inland river systems, such as the Sacramento River system, in northern California. Sommer et al. (2005) found evidence for rearing of juvenile Chinook salmon in the Yolo Bypass, a 24,000-ha floodplain of the Sacramento River. The results of the study indicate that floodplains appear to be a viable rearing habitat for Chinook salmon, making floodplain restoration an important tool for enhancing salmon production. Studies by Sommer et al. (2001) also showed evidence for enhanced growth and survival of juvenile Chinook salmon on the floodplain.

Lastly, floodplains supply and store LWD [see Figure 2]. In Prairie Creek, Humboldt County, the channel can migrate over individual LWD pieces and back again, given the low decomposition rate of submerged redwood. The floodplain provides hydraulic roughness that buffers potentially radical changes in channel morphology. The available literature regarding LWD recruitment mechanisms and source distances are based mostly on hill slope process studies. Little is known about the long term source distances of LWD recruitment on large flood prone areas except for documented stochastic events where floods have removed and rebuilt floodplains. During these events LWD can be recruited from across floodplain surfaces during flood events and receding flood flows and floodplain erosion via channel migration, bank evulsion and channel avulsion, usually in the presence of LWD such as log jams in the active channel.

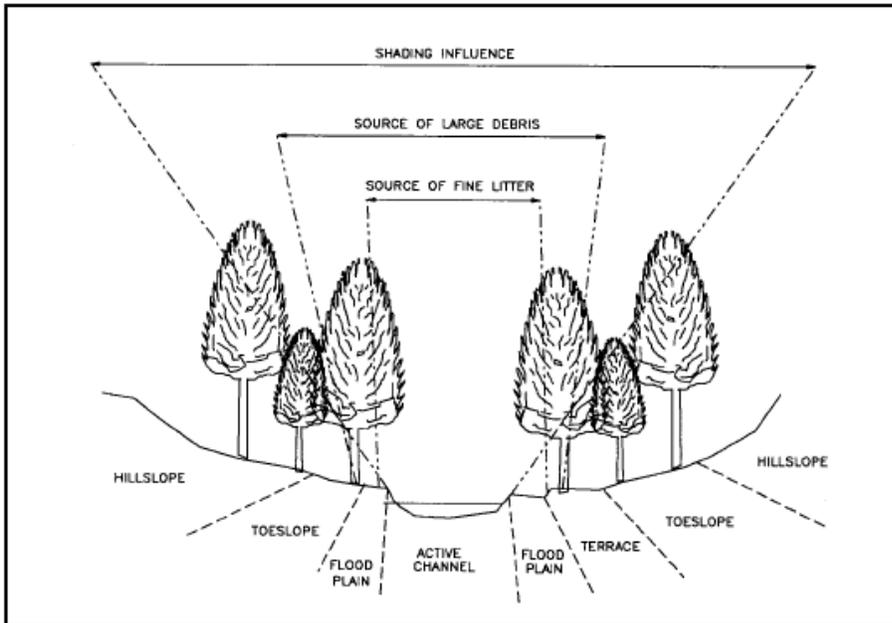


Figure 2.

Diagram (from Lamberti and Gregory 1989) of functional roles of the riparian zones, Figure III-1 (Flosi et al. 1998)

**Comment 51. 14 CCR § 916.9 [936.9, 956.9], subsection (c)(3) - Outer Zone**

The Departments support the amended language describing the objectives for the outer zone. However, these objectives would be compromised by Optional Amendment 9 in 14 CCR § 916.9 [936.9, 956.9], subsection (f)(2)(C). As written, the objectives for the outer zone are consistent with the proposed language in 14 CCR § 916.9 [936.9, 956.9], subsection (f)(2)(C). The Departments recommend eliminating the text “when needed” from page 22, line 18 because this subsection addresses objectives and does not provide guidance on when an outer zone is required or not. The Departments recommend including an objective for addressing potentially significant impacts of adjacent even-aged silvicultural management, which would establish the regulatory purpose for the outer zone buffer.

(3) Outer Zone: The primary objective for this zone is to buffer the Inner and core zones from adverse environmental effects resulting from actions or conditions adjacent to the WLPZ, and to provide the following functions: 1) wind resistance where windthrow is common or likely to occur, 2) additional wood recruitment, 3) microclimate control in the Inner or core zones for purposes other than limiting water temperature change, 4) habitat for terrestrial wildlife species that depend on riparian areas and 5) an additional sediment filter on steeper slopes with high or moderate erosion hazard ratings.

One objective of the outer zone is additional wood recruitment. Source-distance curves provide data to inform management prescriptions regarding buffer widths necessary to yield large wood for recruitment. Best known among these are the generic curves published in the Northwest Forest Plan (Thomas et al. 1993). Often, source distance curves do not specify distance in absolute values; rather they are presented in relative distances, specifically tree height. Application of these curves to management decisions requires explicit definition of site-potential tree height. For LWD recruitment, these generalized curves begin to reach an asymptote at about 0.9 site-potential tree heights. For example, on good sites at 100 years, second-growth redwood easily can be greater than 200 feet tall (Lindquist and Palley 1963). Roy (1966) notes that redwoods taller than 200 feet are common, and trees growing where the soil is deep and moist are taller than 300 feet. In second-growth redwood forests, Reid and Hilton (1998) discovered that rates of tree fall elevated for a distance of at least 200 m from a clear-cut edge. These findings are consistent with the large wood recruitment objective for the outer zone, which would extend from 100-150 feet.

Additional objectives for the outer zone include habitat for terrestrial wildlife species that depend on riparian areas and microclimate control in the Core and inner zones. Russell and Jones (2001) documented edge effects of clear-cut harvest on vegetative structure into adjacent old-growth redwood stands. Significant differences were common, even up to 200 m for sub-canopy height, and 180 m for solar radiation. Other measures of the plant community response were detected well over 100 m from the clear-cut edge. Clear-cut impacts on microclimates of adjacent stands are perhaps the best studied. Chen et al (1999) noted that the depth of edge influence on microclimate can extend four to six tree heights into the forest from a recent clear-cut in Pacific Northwest Douglas-fir forests. Chen et al (1995) has measured microclimate impacts over 400 meters from the clear-cut edge. Edge width for some variables, such as air movement, can extend up to 15 tree heights into the adjacent stand (Rosenberg et al. 1983, as cited in Chen et al 1999). These effects can impact wildlife habitat and species in the riparian area within the WLPZ, compromising the beneficial effects of the management proposed for the Core and inner zones of the WLPZ.

DFG has observed watercourses and their associated WLPZs after adjacent clear-cut harvest in Mendocino County. Occasionally, despite apparent compliance with WLPZ retention rules, landform and stand conditions combine to substantially elevate solar radiation on the water. Two conditions acting together expose the watercourse to sunlight: 1) Buffers composed of single-sized stands with elevated or poor crown depth, and, 2) Stream-side slopes on the south side of the watercourse that are equivalent to the summer solar angle.

While this condition might be predictable pre-harvest, it is not readily apparent because the canopy beyond the WLPZ boundary obscures the consequences of the proposed clear-cut. Requirements for uneven-aged stands adjacent to the WLPZ could ameliorate this condition.

Using either source-distance ratios or absolute values as summarized above, widths of buffers adequate to make upslope clear-cut harvests “invisible” to the watercourse would have to be substantially larger than those in the proposed regulations, inclusive of outer zone retention. While there has been substantial rigorous data collected regarding the effects of clear-cut harvesting on the environmental character of adjacent stands, there has been little quality work to evaluate how well buffers perform adjacent to other silvicultural prescriptions and retention requirements.

**Comment 52. 14 CCR § 916.9 [936.9, 956.9], subsection (c)(4) - Class II large watercourses**

The Departments support the goals for large Class II watercourses including water supply and nutrients, sediment storage, LWD recruitment and supply, and the objectives of the Core and inner zones of subsections (c)(1) and (2).

Although headwater streams, due to their high gradient and unsuitable habitat conditions, often do not support fish populations (Bliesner and Robinson 2007), they nonetheless play a significant role in the ecology of river systems and hence the conservation of endangered salmonids. Naiman and Latterrell (2005) suggested that ‘fishless headwater streams are inseparable from fish-bearing rivers downstream’ and that ‘fishless’ streams are fish habitat in much the same way as is the riparian zone, and should be afforded protection. Headwater streams provide important trophic linkages between headwater forests and downstream fish habitats (Chamberlin et al. 1991). Wipfli (2005) estimated that, based on the frequency of headwater streams in the watersheds studied, and the average amount of food delivered to downstream habitats by these streams, every kilometer of salmonid-bearing stream could receive enough energy from fishless headwaters to support 100-2,000 juvenile salmonids.

Headwaters streams are known to constitute >80% of stream networks and watershed land areas in the United States (Leopold et al. 1964; Naiman et al. 2000; Gomi et al. 2002). There is growing scientific recognition of the importance of headwater streams and their riparian zones as unique habitats as well as sources and controllers of energy, water, sediment, nutrients and organic matter to downstream reaches (Gomi et al. 2002; Wipfli and Gregovich 2002; Meyer et al. 2007). Riparian zones of headwater streams contribute to the ecology of temperate forests (Richardson and Daneby 2007).

Currently, the California FPRs afford most protection to Class I (fish bearing) and Class II (aquatic life other than fish) streams, with Class III streams (not supporting aquatic life) having least protection. However, this is insufficient considering current scientific understanding of the functioning of stream ecosystems, which places considerable emphasis on the important role in river ecosystem functioning played by headwater streams, which are classified as fishless Class II or III watercourses under the California Forest Practice Rules stream classification system.

The ecological functioning of river ecosystems is currently described by the River Continuum concept (Vannote et al. 1980). In this model, there is a gradation of function

along the riverine network, with streams in headwater regions contributing organic matter in the form of wood and leaves, which are processed and consumed by invertebrate organisms in downstream reaches. Large woody debris is an important component from riparian areas in headwater reaches, which provides habitat, food and shelter for invertebrates and fish in downstream reaches. Almost half of the volume of wood found in fish-bearing streams in a pristine coastal Oregon watershed originated from small, steep tributary streams (Reeves et al. 2003).

Headwater streams are known to exert major influences on hydrogeomorphic processes in river systems, including the input of sediment, wood and organic matter (Naiman et al. 2000). Significant advances in our understanding of the dynamics of riparian systems in the last few decades have clarified how these processes affect riparian vegetation and how vegetation may modify stream channels through the delivery and routing of woody debris and sediment (Naiman et al. 2000; Wipfli 2005). Sediment is stored in small streams and is metered out to fish-bearing streams over time. The absence of wood in the channels results in these channels having bedrock exposed for extended periods because sediments move rapidly down the channel rather than being stored. The result is alteration of the sediment delivery regime and a reduction in the complexity of habitat in fish-bearing streams (Everest and Reeves 2007).

From a fisheries perspective, headwaters may be crucial habitats for producing invertebrate food for fish, particularly since there is evidence that salmonid populations along the West Coast are often food limited (Everest and Reeves 2007). Consequently, headwater streams may provide an essential food supply for fish in downstream reaches (Wipfli 1996, 2005). Stream reaches that are themselves inhospitable to salmonids may contribute to the maintenance of downstream salmonid populations (Everest and Reeves 2007). Headwater streams may also provide important habitats for amphibians and other wildlife (Richardson and Danehy 2007).

The *Aquatic Conservation Strategy* (ACS) of the Northwest Forest Plan (PNW Plan) stated that '*headwater riparian areas need to be protected, so that when debris slides and flows occur, they contain coarse woody debris and boulders necessary for creating habitat farther downstream*'. In an assessment of the success of the ACS after 10 years, Reeves (2006) stated that since the ACS was implemented new scientific information has become available which underlines the importance of protecting headwater streams from disturbances. The concept of the riparian reserve was one of the cornerstones of the ACS, and the riparian reserve network included fish-bearing streams as well as small, fishless headwater streams. Before the ACS, these streams were not widely recognized as part of the aquatic ecosystem, but knowledge about and recognition of the ecological importance of headwater streams has increased since then (Reeves 2006).

Cummins and Wilzbach (2006) discussed the inadequacy of the fish-bearing criterion for stream management and forest management practices and suggest that the importance of intermittent, ephemeral, and very small first order channels as suppliers

of invertebrates and detritus to permanently flowing receiving streams that support juvenile salmonids warrant their protection during timber harvest. It was concluded that criteria other than the presence or absence of juvenile salmonids need to be considered in managing forested watersheds.

Recently, studies of coho salmon populations in an Oregon watershed showed that intermittent streams were important habitat for coho salmon smolts (Ebersole et al. 2006; Wigington et al. 2006). Residual pools in intermittent streams provided a means for juvenile coho to survive during dry periods and smolts that overwintered in intermittent streams were larger than those from perennial streams. Movement of juvenile coho into intermittent streams from the mainstem was another way in which the fish exploited the habitat and illustrates the importance of maintaining entire stream networks. The authors concluded that loss of intermittent stream habitat would have a negative effect on coho salmon populations in coastal drainages.

Similarly, in a coastal Oregon watershed, a stream that was nearly dry in midsummer supported high densities of spawning coho salmon in the fall, and juveniles rearing there exhibited relatively high growth rates and emigrated as larger smolts (Ebersole et al. 2006). Improved winter growth and survival of juvenile coho salmon utilizing tributary habitats underscore the importance of maintaining connectivity between seasonal habitats and providing a diversity of sheltering and foraging opportunities, particularly where main-stem habitats have been simplified by human land uses (Ebersole et al., op.cit.).

**Comment 53. 14 CCR § 916.9 [936.9, 956.9], subsection (c)(4)**

The Departments recommend modifying the proposed language regarding the type of data to be used to determine flow in the month of July.

(4) Class II large watercourses (Class II-L): The primary objective is to maintain, protect or restore the values and functions of Class II-L type watercourses described below. Class II-L type watercourses: (i) can supply water and nutrients to a Class I watercourse during the month of July during ~~an~~ a year of average precipitation and runoff as derived from long-term average precipitation-hydrologic year data sets available from CAL FIRE, U.S. Geological Survey, or National Oceanic and Atmospheric Administration (NOAA); (ii) can supply coarse and fine sediment to the Class I channel and during the average hydrologic year; (iii) can supply coarse and fine sediment to the Class I channel, and (iv) may be able to supply wood of a size that would function as large wood for the Class I

watercourse. Recruitment, delivery and retention of large wood in Class II- L type watercourses is also critical, as large wood increases sediment storage and decreases the rate of sediment transport to fish-bearing Class I watercourses. Other objectives stated in 14 CCR § 916.9 [936.9, 956.9] subsections (c ) (1) and (2) above for the Core Zone and Inner Zone are also desired objectives for Class II-L type watercourses.

The Departments recommend using standard baseline 30-year or greater average precipitation data sets typically available as annual and monthly means, compiled by CAL FIRE, U.S. Geological Survey (USGS), or National Oceanic and Atmospheric Administration (NOAA) (amongst others) to minimize the influence of year to year variability. The Board's proposed language for water supply during July of an average hydrologic year would rely on rainfall/runoff relationships derived from a short period of runoff to long-term average precipitation, which may be skewed. For example, if streamflow is measured for a short period during dryer years and then related to long-term average precipitation, the rainfall/runoff relationship will show that average annual runoff is less than it really is for the basin (AMS 2000; Wilson and Moore 1998; Dunne and Leopold 1978; Rantz 1969 and 1972; Cafferata et al. 2004; CDFFP 1990; Waananen and Crippen 1977).

In practice, average annual precipitation for the corresponding basins are estimated using long-term data sets published by CAL FIRE, USGS or NOAA. In 1969, the USGS published a report, *Mean Annual Precipitation in the California Region*. This report was prepared because national precipitation maps did not accurately portray the high spatial variability of precipitation occurring over the variety of terrain found in California. Additionally, the USGS performed a study in 1977, *Magnitude and Frequency of Floods in California*, in which basin-averaged precipitation was determined for approximately 700 drainage basins throughout California where outflow is gauged by the USGS. This 1977 USGS report estimated long-term annual average precipitation for drainage basins based on drainage basin boundaries and isohyetal maps (maps showing areas of equal rainfall).

**Comment 54. 14 CCR § 916.9 [936.9, 956.9], subsection (c)(5) – WLPZs in High or Very High Fire Hazard Severity Zones**

The Departments do not support including a separate fuel management goal for WLPZs and recommend including fuel management in the WLPZ under 14 CCR § 916.9 [936.9, 956.9], subsection (c)(6) with other practices that can be used to maintain, protect, and contribute to restoration of properly functioning salmonid habitat. . The subsection should be deleted and portions of the objective reinserted in 14 CCR § 916.9 [936.9, 956.9], subsections (c) (6) and (v)(5) as discussed below.

DFG is not provided the necessary role to review fire and fuel reduction projects in general and, depending on the circumstances, may not have the opportunity for input to reduce impacts to fish and wildlife dependent on the riparian zone. Given the critical importance of the riparian zone to listed salmonid species, for which DFG has trustee responsibility, DFG must be able to provide oversight of fuel management projects allowed under this subsection to comply with the T/I WLPZ objectives for listed salmonids (14 CCR § 916.9 [936.9, 956.9], subsections (a) and (c)). In addition, unlike for subsection (c)(1) through (4), there are no accompanying subsections in the proposed rule specifying the forest management measures or fuel reduction techniques associated with implementing the fire hazard reduction goal.

This section confuses fuel management upslope of the riparian area versus fuel management within the riparian area. Altering vegetation solely within the riparian area will do little to protect wildlife or salmonid habitat. If fire suppression was still needed in the riparian area, the net loss to habitat could be greater than if no fuel work was done. Conversely, fuel management upslope of riparian areas could fully protect riparian habitat and could greatly mitigate post-fire changes that later impact riparian areas.

If the primary focus of 14 CCR § 916.9 [936.9, 956.9], subsection (c)(5) is to protect riparian habitat and species, fuel conditions for the entire drainage feeding into a riparian area would need to be the focus for fuel modification, rather than the riparian area itself. This amendment makes a general assertion of fire severity across general areas without requiring identification of specific threats or conditions within the WLPZ that should be addressed. Fire behavior within a riparian area can be more diverse and complex because of the varying levels of standing water, the existence of a water table, and the moisture level of riparian vegetation species. On the other hand, riparian areas can function as the transfer or acceleration areas of fires, acting as chimneys or flumes to other parts of the watersheds. Each of these considerations would require evaluation to support appropriate fuel management and meet the goal of protecting, maintaining or restoring properly functioning salmonid habitat.

Additionally, the Departments find this section contains many “prescriptive standards that should be extracted from the objective. The prescriptive standards should be moved into 14 CCR § 916.9 [936.9, 956.9], subsection (v), site specific plan, as there will be many complexities in assessing appropriate hazard reduction projects and making consistent the fuel hazard reduction with the other objectives of the riparian areas. The remaining portions of the subsection should be moved into 14 CCR § 916.9 [936.9, 956.9], subsection (c) (6), as fire hazard reductions is yet another “habitat improvement” stated under this objective. This would result of deletion of the entire subsection (c)(5) of this section of the rules.

**Comment 55. 14 CCR § 916.9 [936.9, 956.9], subsection (c)(6)**

The Departments support the proposed changes with some the changes suggested below. The Departments support actions that result in the protection, maintenance and restoration of properly functioning salmonid habitat, which is consistent with the Joint

Policy adopted in 2009 by the Board and the Fish and Game Commission. The ISOR (Board of Forestry 2009) states that the intent of the amendment is to specify that restoring habitat shall be a goal but only required to the extent feasible as defined in the Forest Practice Rules. This intent is not clearly stated in the amendment language, and the inclusion of items (i) and (ii) are confusing. The Departments recommend the following change to clarify this objective. The proposed changes below include the changes referenced under Comment 54.

(6) A primary objective for all WLPZs is to implement practices to maintain, protect and contribute to restoration of properly functioning salmonid habitat and repair conditions detrimental to the species' or species' habitat, where: (i) it is demonstrated that adequate bank stability, shading, and wood recruitment will be provided, and (ii) practice(s) proposed are known to address a primary limit on salmonid populations in that portion of a watershed. Practices include, but are not limited to, thinning for increased conifer growth, felling or yarding trees for wood placement in the channel, restoration of conifer deficient areas, management to promote a mix of conifers and hardwoods, abandonment and upgrading of non-functioning or high risk roads, watercourse crossings, tractor roads, and landings, and fuel hazard reduction activities that will reduce fire hazards and stand replacing wildfires that will result in significant adverse effects to salmonid species or riparian habitat.

**Comment 56. 14 CCR § 916.9 [936.9, 956.9], subsections (e)(1)(A) – (D) Channel Zone Requirements**

The Departments support clarifying that (A) through (D) apply to a variety of timber operation activities, not just the cutting and removal of trees. However, the Departments request that DFG oversight for improving salmonid habitat in 14 CCR § 916.9 [936.9, 956.9], subsection (e)(1)(A) be provided by written DFG concurrence rather than DFG review and comment. DFG has statutory responsibility for the state's fish and wildlife resources and has responsibility for recovery of state listed endangered or threatened species. When habitat improvements for listed salmonids are being planned and approved, DFG must consider whether such improvement plans are consistent with the California Endangered Species Act, species recovery plans, DFG's salmonid habitat restoration guidelines, and supported by monitoring data. DFG's responsibility must be given a level of deference beyond having DFG's comments considered by CAL FIRE. This responsibility requires that proposed habitat restoration for listed salmonids require written concurrence from DFG.

The Departments recommend a correction on page 25, lines 6 and 7 by changing the 'period' after the word utilities to a 'comma'. Additionally, on lines 2-3 under (1)(B) add "removal and abandonment" of approved crossings as well.

**Comment 57. 14 CCR § 916.9 [936.9, 956.9], subsection (e)(1)(E)**

The Departments support eliminating the text regarding the exception for timber harvesting in Class III channel zone where the exclusion is not for protection of salmonid habitat because the existing language implies that some Class III headwater watercourses are not important contributors to downstream salmonid habitat and that others are. Headwaters streams are known to constitute > 80% of stream networks and watershed land areas in the United States (Leopold et al. 1964; Naiman et al. 2000; Gomi et al. 2002). There is growing scientific recognition of the importance of headwater streams and their riparian zones as unique habitats and as sources (and controllers) of energy, water sediment, nutrients and organic matter to downstream reaches (Gomi et al. 2002; Wipfli and Gregovich 2002; Meyer et al. 2007). Harvest of trees within and adjacent to Class III watercourse channels upstream of listed salmonid habitat can be reasonably expected to reduce channel stability, inhibit natural wood recruitment processes, reduce foliar interception of precipitation, and reduce needle, leaf, and branch input to the channel and EEZ or ELZ.

**Comment 58. 14 CCR § 916.9 [936.9, 956.9], subsection (e)(2)**

The Departments support providing flexibility for the RPF to use a supervised designee to mark trees at the base that have already been marked by the RPF for proposed felling within the channel zone. Because the RPF will have already marked certain trees, there is little likelihood that trees will be incorrectly base marked, the Departments will be able to evaluate the marked trees during the pre-harvest inspection in order to make recommendations for retaining trees that contribute to bank stability, recruitment of woody debris for sediment retention, and nutrient litter.

**Comment 59. 14 CCR § 916.9 [936.9, 956.9], subsection (f) - Class I watercourses**

The Departments support measures that address confined channels and flood prone areas and channel migration zones. The existing rules do not vary based on channel morphology nor do they include flood prone area or channel migration zone protections. This represents a site-specific approach to forest management based on the unique characteristics of channel form and associated salmonid habitat features.

**Comment 60. 14 CCR § 916.9 [936.9, 956.9], subsection (f)(1)**

The Departments support the intent of the proposed language to indicate that this rule section does not apply to Class I watercourses that are solely used for domestic water supply and are not fish bearing. However, the Departments believe the intent of the language would be clearer if it is revised to provide for more accurate and specific identification of "biological characteristics". The Departments recommend the following revision:

For Class I watercourses, ~~based on biological characteristics where fish are always or seasonally present or where fish habitat is restorable, any plan involving timber operations within the WLPZ shall contain the following information:~~

This revision would address the Departments' concerns including:

1. Potential exclusion of fish bearing or restorable fish bearing Class I watercourses that are designated as domestic water supplies (see 14 CCR § 916.5 [936.5, 956.5], Table 1) during THP layout. If such an exclusion occurred, information in the THP that is needed to establish whether the goals and objectives of this section are being met would not be disclosed as required.
2. Foresters generally are not trained as aquatic biologists and are not required to consult with review team agencies regarding biological characteristics of Class I watercourses or the presence of fish during THP layout when initial watercourse delineation occurs. Review team members commonly find misclassified watercourses during PHIs and other field inspections.
3. Current and foreseeable staffing levels are not likely to allow field review of all harvest plans in areas with listed anadromous salmonids where incidental take has not been authorized. This means the Departments cannot be relied upon to discover misclassified watercourses.

**Comment 61. 14 CCR § 916.9 [936.9, 956.9], subsection (f)(1)(A) – (E) – Information Requirements**

The Departments support the proposed information and disclosure requirements in THPs describing timber operations within the WLPZ. Improved analysis and disclosure will better promote meeting the goals and objectives of this section and facilitate efficient and timely THP review.

**Comment 62. 14 CCR § 916.9 [936.9, 956.9], subsection (f)(2), (3), and (5)**

Throughout these subsections, amendments are recommended to be amended to replace the term "coho salmon ESU" with the revised term "Coastal Anadromy Zone" for consistency with the related definitional change proposed by the Departments.

**Summary**

**Support - 14 CCR § 916.9 [936.9, 956.9], subsections (f)(2)(A) – (E) Class I watercourses with confined channels in watersheds in the coho salmon ESU**  
**Oppose – Optional Amendments 4, 5, 6, 7, 9**  
**Neutral – Optional Amendment 8**

**Comment 63. 14 CCR § 916.9 [936.9, 956.9], subsections (f)(2) Table of Prescriptive Standards**

The Departments recommend that the Board consider including the protection measures for this zone in tables similar to the table found in 14 CCR 916.5. Upon their development, the tables could be used in lieu, or in support of, the prescriptive language

proposed to be included in the rules under this rulemaking action. The Departments recommend that such tables would include introductory language such as the following:

“The following table specifies the enforceable standards to be used for protection of class I watercourses the area included in the coastal anadromy geographic area.”

The Departments have included sample templates representing the final tables under Attachment 3.

**Comment 64. 14 CCR § 916.9 [936.9, 956.9], subsections (f)(2)(A)-(E)**

The Departments support the proposed amendment language for Class I watercourses with confined channels in watersheds in the coho salmon ESU 14 CCR § 916.9 [936.9, 956.9], subsections (f)(2)(A)-(E). The Departments support a Special Operating Zone as provided for in 14 CCR § 916.9 [936.9, 956.9], subsection (f)(2)(E) in watersheds in the coho ESU. This generally encompasses the Central, North Coast, and Klamath regions and tributaries that support federally threatened Steelhead, federally and state endangered coho salmon, and federally threatened Chinook salmon.

The proposed changes to the language in subsections (f)(2)(A)-(E) establish the widths for various zones within the WLPZ, ranging from 100-150 feet depending on adjacent silviculture. This applies a revised management approach for Class I WLPZs with confined channels in the coho salmon ESU. The WLPZs will incorporate two or three protection zones depending on adjacent silviculture. Additionally, more harvest will be allowed in areas where such activity is less likely to negatively impact listed anadromous salmonids.

The ISOR (Board of Forestry 2009) for this rule package documents the scientific support for establishing the core zone and inner zone to provide watershed products and protection to support anadromous salmonids and their habitat.

Although the proposal includes a narrower WLPZ width and a lower overstory canopy retention (OCR) requirement than the current T&I Rules, the Departments believe that with the prohibition of timber operations within the core zone and enhanced retention requirements for large trees will provide high levels of the watershed products that support anadromous salmonid habitat, meet the goals and intent of the FPRs, and provide some later seral habitat for wildlife per 897(b)(1)(C). The Departments support the proposed concept of three zones of protection that emphasize protections where they provide the most function.

The importance of providing substantial riparian buffer widths to protect salmonid habitat is well documented in the scientific literature. Riparian habitats serve a wide variety of important functions for stream ecosystems and anadromous salmonids, including providing shade and cover, bank stability, input of allochthonous organic matter, invertebrate food, and sediment control, etc. (Everest and Reeves 2007; Pusey

and Arthington 2003; Naiman et al. 2000; SWC, 2008). The condition of aquatic ecosystems at the watershed scale is tied strongly to the condition of riparian vegetation within a watershed (Welsch, 1991). The structure and productivity of habitats for fish and other aquatic organisms are controlled largely by the adjacent and upstream vegetation (Naiman et al. 2000; SWC 2008).

The suggested WLPZ width of 100 to 150 feet is derived from several sources. Belt et al. (1992) state that a maximum protection approach is to evaluate each riparian function criteria in terms of buffer strip width, and then adopt the greatest width so as to accommodate all criteria. Benda et al. (2003) state that recruitment patterns of wood can be used to design buffer strip dimensions. Many studies support the idea that wood recruitment subsumes other riparian processes (except for sediment from roads) in terms of zone width (Benda 2008a, 2008b), and that most large wood is recruited from within 20 m (66 ft) to 40 m (130 ft) of channel banks depending on how wood is delivered to the stream, such as bank failure or movement downslope (Naiman et al. 2000; Benda et al. 2003; Benda and Associates 2004)].

Spence et al. (1996) state that a protected buffer of approximately one site potential tree (in most PNW forests--30-45 m) provides 90 to 100% of inputs from a fully functioning riparian corridor (and that buffer widths of approximately 0.75 site-potential tree heights are needed to provide full protection of stream shading, litter inputs, and nutrient regulation). Benda's (2008) buffer design strategy for large wood recruitment figure displays the outer mortality zone as extending to 150 ft.

The Aquatic Conservation Strategy of the Northwest Forest Plan recommends establishing riparian reserves consisting of the stream and the area on each side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year flood plain, or to the outer edges of riparian vegetation, or to a slope distance equal to the height of two site-potential trees, or 300 feet slope distance (600 feet total, including both sides of the stream channel), whichever is greatest (Reeves, 2006).

**Comment 65. 14 CCR § 916.9 [936.9, 956.9], subsection (f)(2)(A) –Core Zone**

The Departments support limiting timber operations in the first 0-30 feet of the WLPZ, the core zone. Primarily this zone will provide shade for water temperature control, wood recruitment by bank erosion, nutrient inputs, and promote bank stability. This proposal will result in additional tree retention, reduced ground disturbance adjacent to habitat and restorable habitat of listed fish species, and promote later seral habitat for wildlife. Reduced ground disturbance in the zone will improve sediment filtration.

The ISOR (Board of Forestry 2009) for this rule package documents the scientific support for establishing the core zone to provide watershed products and protection to support anadromous salmonids and their habitat. In addition, the Departments finds that increased levels of instream sedimentation can be very deleterious to coho salmon and other salmonids through the smothering of developing eggs within redds, which

increases egg mortality, and hindering the emergence of alevins, which reduces juvenile recruitment (Bisson and Bilby 1982; Crouse et al. 1981; Hall et al. 2004; McNeil and Ahnell 1964). Bank erosion can be major source of instream sedimentation, which is elevated through the removal of protective bankside vegetation (SWC 2008). In the Harris River in Alaska, reduced egg mortality caused by sedimentation of spawning gravel was a principal cause of egg-to-fry mortality, with up to two to four times more fine sediment in the river during timber harvesting (McNeil and Ahnell 1964). SWC (2008) found that mechanical disturbance from management activities within about 30 feet of the channel will often produce and deliver sediment to stream channels.

The Departments recommend the following revisions to correct the section reference on page 27, line 7 from “subsection (e) (A)-(F)” to “subsection (e)(1)(A)-(F)”.

**Comment 66. 14 CCR § 916.9 [936.9, 956.9], subsection (f)(2)(B) 1 – 5 – Inner Zone**

For the inner zone, the Departments support the 80% overstory canopy requirement, and oppose Optional Amendment 4 that would lower this to 60% and Optional Amendment 5, which would lower this to 60% in the Northern Forest District only. However, the Departments are supportive of recognizing the difference in forest type and geography of the Klamath region encompassed by the Northern Forest District and can support a 70% overstory canopy requirement in the Northern Forest District in Optional Amendment 5. The proposed inner zone (from 30-70 feet from the watercourse) is within the distance that needs to provide a high level of watershed products to support anadromous salmonid habitat and meet the goals and intent of the FPRs. Primarily, this zone will provide LWD recruitment, shade for water temperature control, and wildlife habitat. A no harvest inner zone would contribute to providing 90% of potential LWD recruitment (Benda et al. 2003). Any harvest within this zone would potentially reduce this amount of LWD, and the Departments believe that allowing a 60% canopy requirement, including in the Northern Forest District, would allow harvesting at levels that may decrease the LWD recruitment to a level that would not meet the goals for WLPZ functions and may decrease instream habitat suitability. The ISOR (Board of Forestry 2009) for this rule package suggests that overharvest in the inner zone can have significant implications for LWD recruitment. Most of the literature supports thinning from below, which would be consistent with the 80% overstory canopy requirement of the proposed rule.

Under this proposal, the area of the WLPZ extending 30-75 feet from the WTL will get 5% less overstory canopy retention (reduced from 85% under the existing rule to 80%). The area of the WLPZ extending 75-100 feet from the WTL will get 15% more overstory canopy retention (increased from 65% under the existing rule to 80%). In addition, quadratic mean diameter of conifers > 8” DBH in the preharvest project area must be increased in the postharvest stand. The proposal offers slightly improved sediment filtering in the inner zone. This will be achieved by focusing on harvest practices that use thinning from below. The proposed total WLPZ width is more aligned with the redwood and mixed conifer tree species heights that occur in the Coast and Klamath areas where this rule would apply.

In the inner zone, the Departments support hardwood species retained in the canopy because they provide shade to the watercourse and nutrients to not only fish, but to other aquatic species, and provide habitat for terrestrial species, as well. The Departments recommend eliminating the requirement, or the suggestion, that some hardwood species, such as alder, be retained rather than others because the ecological setting has primary influence over the hardwood species present.

Salmonids clearly benefit by higher levels of LWD loading (SWC 2008, Wood Exchange Function). Pool spacing and sediment storage are coupled with LWD loading. In general, more instream LWD equals more pools and enhanced sediment storage (SWC 2008, Wood Exchange Function). Complete recovery of the wood function might require that the distribution of riparian forests become dominated by more mature stand conditions (SWC 2008, Wood Exchange Function). Timber harvesting that removes all or a significant percentage of large trees within a zone one tree height of the channel will reduce the number of trees that potentially recruit to the channel, but in many California streams the majority (80-90%) of wood recruitment comes from a zone 30 to 100 ft of the channel edge (Benda et al. 2003). The maximum width needed to contribute almost all wood recruitment from tree fall is 1 tree height (McDade 1990).

The 60% overstory canopy proposed by Optional Amendments 4 and 5 would increase the risk of elevating stream temperatures to a level that might significantly impact listed anadromous salmonids. The reduction in tree retention would diminish the rule's effectiveness to meet the objectives of the inner zone, which are to develop a pool of trees for large wood recruitment, to provide additional shading, to develop vertical structural diversity, and to provide a variety of species (including hardwoods) for nutrient input. A decrease in the overstory canopy retention standard would also reduce the inner zone's effectiveness to filter sediment in close proximity to habitat for listed fish and other species.

Stream temperatures are influenced mostly by air temperature and direct solar radiation (Lewis et al. 2000), but also by groundwater inputs, base water flows, and other factors. Forest management activities that reduce riparian canopy can impact stream water temperatures by increasing solar radiation (Belt et al. 1992; Cafferata 1990). Increased water temperatures associated with timber harvesting are primarily associated with increases in direct solar radiation on the water surface (Brown and Krygier 1970).

Shade provided by riparian vegetation is the key factor controlling heat input to relatively small, mountain streams (SWC 2008, Heat Exchange Function). Higher percent canopy cover and tree height equals increased direct shading (SWC 2008, Heat Exchange Function). Canopy cover of greater than 80% generally kept water temperatures in a zone of preference for salmonids (SWC 2008, Heat Exchange Function, Figures from Lewis et al. 2000). Shade levels similar to old-growth were within 60 to 100 feet (Bestcha et al. 1987). Effective shading can be provided by buffer

strips ranging from 33 to 100 feet, depending on stand type, age, and location (SWC 2008, Heat Exchange Function).

Opening the canopy cover over some streams increases productivity, but there are tradeoffs with other functions, such as heat regulation and wood recruitment potential. Opening the canopy too much can shift the algal communities to filamentous, which is less desirable. In addition, opening the canopy too much can increase temperatures to detrimental levels (SWC 2008, Biotic/Nutrients Exchange Function). The best way to avoid a shift to filamentous green algae is to maintain an intact riparian corridor that maintains low to moderate light intensities at the water surface (SWC 2008, Biotic/Nutrients Exchange Function).

Cafferata (1990) found that most direct solar radiation occurs within 80 feet of a stream. Generalized curves representing cumulative effectiveness of stream shading presented by the Forest Ecosystem Management Assessment Team (FEMAT) (Thomas et al. 1993) show 100 percent shading at a distance of 75 percent of tree height (i.e., 75 feet for a forested buffer with average canopy height of 100 feet) and 80 percent shading at about 50 percent of tree height. Figure 2 in the SWC (2008, Heat Exchange Function, citing Lewis et al. 2000) shows that at canopy levels above 70-80% water temperatures are generally at levels DFG considers suitable for steelhead (<19-20 degrees C, see Sullivan et al., 2000).

If 60% vertical canopy were used, harvest within the inner zone could reduce vertical overstory canopy up to 40%, which would equal approximately a 15-20% increase in direct solar radiation as measured by angular canopy. Increases in direct solar radiation of 15-20% could raise water temperatures in interior streams to a level that would significantly impact salmonids.

**Comment 67. 14 CCR § 916.9 [936.9, 956.9], subsection (f)(2)(B)4**

This proposal would increase the retention standard for the largest conifers by two-fold over the existing rule by maintaining the current number of trees retained per unit area in combination with doubling the area in which retention is to occur. Retention of the 13 largest conifers will occur in the area of the WLPZ that extends 0-100 feet from the WTL, which encompasses the Core and inner zones combined instead of 0-50 feet from the WTL in the current rule.

The proposed rule will better promote meeting the objectives of the Core and inner zones specified in 14 CCR § 916.9 [936.9, 956.9], subsections (c)(1) and (2) respectively, especially those regarding LWD recruitment. Retaining more of the largest conifers will provide more later seral habitat for wildlife over time.

One potential problem with the language in this section is that it could be interpreted to mean that the 26 largest conifers located within the area that encompasses the Core and inner zones must be retained (i.e., 13 in each zone), and the Departments do not

believe this was intended. The following language changes on page 28, line 6 could clarify:

“Postharvest stand shall retain the 13 largest conifer trees (live or dead) on each acre of the area that encompasses the Core and Inner Zones.” OR

“Postharvest stand shall retain the 13 largest conifer trees (live or dead) on each acre of the ~~Core and Inner Zones~~ area located between the watercourse or lake transition line and the landward edge of the Inner Zone.”

The Departments oppose Optional Amendment 6 that allows substitution of smaller trees for LWD retention. Although there may be some situations where smaller trees that are closer and leaning toward the channel are more likely to recruit to the stream, this could undermine the other functions provided in the inner zone. Evaluating the impact of smaller tree substitutions would lengthen THP review. The retention of large diameter, and hence older, trees is considered more desirable for protecting salmonid habitat because mature trees will contribute a greater supply of LWD, increased shading and will promote bank stability much more than smaller diameter trees (SWC 2008). Source distance relationships for riparian functions support the concept of near-stream silvicultural prescriptions being driven by factors which emphasize retention and/or recruitment of large trees to facilitate riparian functions (SWC 2008). Lienkaemper and Swanson (1987), as cited in Cummins (1994) suggest that approximately 10 mature conifer trees per 100 meters of stream are needed to achieve debris loading similar to that in a mature forest stream system. SWC (2008) stated that to facilitate long-term recruitment of large wood loading in streams, management should encourage the development and retention of large trees in the near stream riparian zone.

**Comment 68. 14 CCR § 916.9 [936.9, 956.9], subsection (f)(2)(B) 5**

The Departments recommend revisions to this subsection in order to clarify that subsection 5 should more properly apply to subsection 1-3, not 4, and provide more examples for selecting trees for retention.

“Large trees retained to meet 14 CCR § 916.9 [936.9, 956.9], subsections (f)(2)(B)1-~~(4)~~ 3 above that are the most conducive to recruitment to provide for the beneficial functions of riparian zones (~~i.e. e.g.~~ trees with significant that lean towards the channel, have an unimpeded fall path toward the watercourse, are in an advanced state of decay, are located on unstable areas or downslope of such an unstable areas, or have

undermined roots) are to be given priority to be retained as future recruitment trees.”

The Departments believe prioritization for tree retention in the inner zone should be based on size and likelihood of future recruitment as LWD. The Departments recommend applying the standard to (f)(2)(B)1. – 3. and not (B)4 so that it is clear that prioritization for tree retention should result in future potential LWD recruitment from increasing quadratic mean diameter in the postharvest stand, retention of recruitable dead trees, and 80% overstory canopy. The Departments’ recommendation specifically excludes from recruitment consideration the retention of the 13 largest conifers under (f)(2)(B)4 so that the retention of the 13 largest trees is not compromised by whether or not they are potentially recruitable per (f)(2)(B)5.

In addition, the Departments recommend replacing “with significant” with “that” on page 28, line 18 in order to remove vagueness about what is a significant lean or not. This will facilitate more efficient project review.

The Departments oppose Optional Amendment 7 that adds an 80 % angular canopy requirement. The best measure of forest cover necessary for providing shade to streams is angular canopy density (Brazier and Brown 1973). Although some field trials have concluded that 50% vertical canopy equals approximately 80% angular canopy (Nakamura 2000), this general relationship has not been rigorously established. Implementation and standardization of this metric, although more directly applicable to stream temperature, would be problematic and confusing for regulators and foresters. Additionally, there is no information or data relating angular canopy density to tree density. The Departments have no confidence in angular canopy density as a potential surrogate metric for tree density and thus LWD. Due to the lack of testing and information, the Departments do not have confidence in the relationship between 80% angular canopy density and properly functioning salmonid habitat. Should further information be developed, the Departments would be interested in evaluating this method.

The Departments are neutral regarding Optional Amendment 8 that adds a basal area requirement to the inner zone providing that the basal area requirements are not adopted in lieu of adoption of the canopy retention standards. The Departments have not verified whether these basal area standards are adequate, too restrictive, or provide for the riparian functions that support salmonid habitat. The proposed language for 80% canopy in 14 CCR § 916.9 [936.9, 956.9], subsection (f)(2)(B)(3) is adequate and simpler to apply and measure than basal area. Should the Board reject the proposed language in 14 CCR § 916.9 [936.9, 956.9], subsection (f)(2)(B)(3) or Optional Amendment 5, the Departments recommend including components in Optional Amendment 8 for stems per acre, site classification, and modeling in order to complete development of this option for its use as a means to produce adequate canopy and number of large trees for large wood recruitment. The Board needs to evaluate the

basal area requirements in further detail to ensure they are adequate to provide protection to all the riparian functions prior to replacing the canopy retention standards.

**Comment 69. 14 CCR § 916.9 [936.9, 956.9], subsection (f)(2)(C) 1 – 2 Outer Zone**

The Departments support the proposed outer zone. These requirements would provide windthrow protection, add to riparian function and wildlife habitat, and provide opportunities for heavy equipment operations in the WLPZ with guidelines for minimizing impacts.

This proposal requires a 50-foot wide outer zone be added to the 100-foot wide WLPZ when even-aged silviculture methods are utilized contiguous to the landward edge of the inner zone. The WLPZ width in the current rule will be reduced by 50 feet (from 150' to 100') except when even-aged silviculture methods are utilized contiguous to the landward edge of the proposed inner zone. The overstory canopy retention standard is reduced from 65% in the current rule to 50% in the area of the WLPZ located 100-150 feet from the WTL when the outer zone is required under the proposal. This sediment filtering capabilities of the WLPZ may be diminished as a result of the reduction in WLPZ width. This could be detrimental to salmonid habitat in areas where chronic turbidity, substrate embededness, or channel homogeneity from sediment is already a problem.

Although the proposed rule change results in less overstory canopy in the area of the WLPZ located 100-150 feet from the WTL, enhanced protections within the Core and inner zones approximate a balance in overall WLPZ protection for confined channels when compared to existing requirements.

The Departments oppose Optional Amendment 9 because it limits implementation of outer zone protective measures to only those situations where windthrow is a demonstrated occurrence or where tractor logging is proposed on greater than 50% slopes. Several of the outer zone objectives proposed in 14 CCR § 916.9 [936.9, 956.9], subsection (c)(3) are not included in the WLPZ measures for the outer zone, such as wood recruitment, microclimate control, and terrestrial wildlife habitat. Optional amendment 9 would eliminate the utility of the outer zone in meeting the goals and objectives of this section and make it necessary to reconsider the effectiveness of the proposed narrower Core and inner zones, which would be made less effective without the outer zone as proposed. Adoption of Optional Amendment 9 would have the following undesirable consequences:

1. An increase in ground-based yarding operations on slopes up to 49% as close as 101 feet from habitat of listed anadromous salmonids and other species.
2. An increase in sediment discharge to habitat of listed fish and other species resulting from a significantly narrower filter strip, especially when non-paved roads are nearby, which is often the case.
3. Potential delays in project review due to debate over whether "windthrow is a demonstrated occurrence" (for example, how will occurrence of windthrow be

determined in an in-tact stand prior to harvest? What parameters are to be used when making such a prediction? How much do we know about windthrow frequency in all areas affected by the rule?).

An outer zone will 'buffer the buffer' in order to protect the WLPZ from disturbance, not only when steep slopes are next to the area of the WLPZ. For example, studies carried out in Caspar Creek showed that an additional "fringe" buffer is necessary to sustain appropriate tree-fall rates within the core buffer (Reid & Hilton, 1998). The authors suggested that the appropriate width of fringe buffer needed to protect the core zone will need to be determined using an analysis of the long-term effects and significance of accelerated tree-fall rates after logging.

Additionally, on page 29, line 21 14 CCR § 916.9 (f)(2)(C), the Departments recommend that the Board change "timber harvesting" to "timber operations."

**Comment 70. 14 CCR § 916.9 [936.9, 956.9], subsection (f)(2)(D) Best Management Practices**

The Departments support best management practices in the Inner and outer zone. This proposal provides a list of best management practices for consideration by the RPF and the Director of CAL FIRE for implementation when heavy equipment operations are proposed within the Inner and outer zones.

The current T/I rules do not provide specific best management practices for consideration. Although not an enforceable requirement, having a list of best management practices for heavy equipment use in the WLPZ would likely promote meeting the goals and objectives of this section, especially those associated with sediment management. Such a list will provide a basis for discussion regarding additional project mitigations that may be warranted to reduce significant impacts, which could facilitate efficient project review.

Furthermore, the rules proposed reference the term "best management practices". The Departments recommend the Board consider changing the term "Best Management Practices" to "Preferred Management Practices", "Management Considerations" or another name selected by the Board. This change should be made to avoid confusion with the BMP term which is most commonly associated with in federal section 208 water quality laws and in state statute PRC § 4514.3. The proposed requirements in this section are not intended to directly address the federal requirements. The changes would apply on the following pages:

Page 31, Lines 1 and 3, Page 36 line 17 and 19, and Page 46 lines 21 and 23.

**Comment 71. 14 CCR § 916.9 [936.9, 956.9], subsection (f)(2)(E) Additional Special Operating Zone**

The Departments support an additional special operating zone when the outer zone is contiguous to even-aged management, slopes are greater than 50%, and the outer

zone is located on any north aspect. The Departments believe these situations require consideration for the mitigation of impacts to the ability of the canopy to protect and moderate stream temperature. However, the proposed language lacks clarity regarding the description of solar radiation and does not specify the required width of the zone. In addition, the Departments recommend including both understory and mid-canopy conifers and hardwoods in order to best intercept low angle solar radiation. The Departments recommend the following revisions to provide clarity:

“..... RPF shall consider the need for a special operating zone for purposes of shading the watercourse from direct low angle solar radiation from beneath the overstory canopy ~~additional shading from solar radiation from beneath the overstory canopy~~ that is expected to have a potential significant adverse impact on water temperature. When ~~there is a determination for the need of the~~ special operating zone is needed, the special operating zone shall retain understory ~~or~~ and mid-canopy conifers and hardwoods. These trees shall be protected during falling, yarding and site preparation to the extent feasible. Width of the zone shall be 50 feet measured from the landward edge of the Outer Zone.”

If the rule is adopted with the recommended revisions, the requirement to consider including a SOZ could result in additional mitigation that would be consistent with the goals and objectives of this section. Clarifying direct low angle solar radiation coming from beneath the canopy provides more specificity about the concern for solar radiation impacting water temperature and evaluating this particular cumulative impact along a Class I watercourse. Specifying the standard width of the zone provides a consistent and enforceable requirement that can be evaluated for effectiveness, and will avoid delay in review and approval of the plan.

The Departments support providing a SOZ in watersheds with listed salmonids for north facing aspects in order to address cumulative watershed impacts. In Mendocino County's Ten Mile watershed, DFG has documented the occurrence of direct low and high angle radiation beneath the WLPZ overstory canopy generated from adjacent clearcuts on moderate to steep north facing slopes (Floerke 2006a, 2006b; Stacey 2007) and identified potential cumulative adverse impacts to Class I and II watercourses (Pollock and Kennard 1998). Past timber harvesting that removed canopy along segments of watercourses and old transportation corridors, leaving longitudinal openings, combined with canopy removal in new THPs adjacent to these segments are cumulatively exposing more segments of watercourses to direct solar radiation. The Departments believe this could impact stream temperature, resulting in impacts to listed salmonids.

Three DFG pre-harvest inspection (PHI) reports detail large zones of depleted overstory canopy and LWD recruitment, approximately 50 feet-wide on average, in Class I and Class II WLPZs. These zones were created by the presence of old railroads and roads, including their cut- and fill-face slopes in the WLPZs. In addition, intense harvesting occurred around these zones in the past. DFG found these existing impacts allowed direct solar radiation on streams in the Ten Mile watershed particularly on steep north facing aspects (e.g., north, northeast and northwest) facing slopes. Several openings were also identified in prior THP WLPZs located adjacent to new THPs under review. These openings showed that north facing aspects are unique in allowing direct solar radiation on the streams from underneath and between the overstory WLPZ trees. Typically, these WLPZs were located between the stream and recent (<10 years old) clearcut harvests, as close as 100 feet from the stream channel.

New THPs under review located on north aspects and adjacent to the watercourse and between past THPs have these impacted WLPZs. The new THPs proposed clearcutting landward of the new WLPZs on north facing aspects. The new THPs also proposed harvesting in their respective WLPZs. The forest stands in these WLPZs are composed of young trees which are even-aged and even-structured caused by past clearcutting down to the stream bank 60 to 80 years ago. The recovering tree canopy is concentrated in the upper portion of limbs of the timber stand canopy because the lower canopy limbs succumbed to dense tree spacing and too little light penetration. Clearcutting north facing slopes in these dense and monotypic-structured stands enables sun light to radiate streams from beneath the WLPZ overstory since there's little intervening canopy beneath the overstory to screen the stream. DFG estimated the height of the opening between the overstory and the forest floor to be 50 to 60 feet.

DFG found that the combination of intensive harvesting near streams and the existing conditions would likely increase the potential for mid-morning or afternoon sunlight primarily during the summer time to penetrate beneath and through the WLPZ overstory and radiate the stream. Direct solar radiation on streams is a primary driver of stream temperature increases in the summer time (Pollock and Kennard 1998, see pages 13-16).

Although Pollock and Kennard (1998) did not specifically recommend an SOZ to mitigate this impact, their report points out that stream warming occurs primarily from direct solar radiation and other factors, such as the potential for clearcutting to heat the forest floor and shallow groundwater aquifers, which were shown to heat receiving streams. They recommended for Washington forestry practices, a much wider stream buffer than California requires in order to address angular solar radiation.

**Summary**

**Support - 916.9(f)(3)(A) – (F)**

**Oppose – Optional Amendments 4, 5, 6, 7, 9**

**Neutral – Optional Amendment 8**

**Comment 72. 14 CCR § 916.9 [936.9, 956.9], subsection (f)(3)(A) – (D) Channel Migration, Core, Inner A & B Zones**

The Departments support the proposed amendment language for Class I WLPZs with flood prone areas or channel migration zones. The amended language in 14 CCR § 916.9 [936.9, 956.9], subsection (f) defines flood prone areas where the width of the valley floor is often 2-4 times channel zone width or more. The Departments recommend eliminating this definition from this subsection because the term “often” is not a consistent standard and the description is inconsistent with the proposed flood prone area definition.

The Departments recommend the following revisions to the amended language for clarity, and to follow standard accepted hydrology terminology. The word “typically” should be deleted since it could result in difficulty enforcing the provisions of this section. Also, describing a flood prone area as “very wide” lacks clarity. Additionally, change the word “is” to the word “are” on page 36, line 7.

(D) Inner Zone B: The Inner Zone B is typically applicable when there are very wide flood prone areas. The Inner Zone B encompasses the portion of the flood prone area from the landward edge of the Inner Zone A (i.e. 150 feet from the WTL) to the landward edge of the flood prone area. The landward edge of the Inner Zone B (i.e. the landward perimeter of the flood prone area) shall be established in accordance with flood prone area definitions in 14 CCR § 895.1. Timber operations are is . . .

The proposed changes to the language in 14 CCR § 916.9 [936.9, 956.9] subsection (f)(3)(A)-(E) establish the widths for various “zones” within the WLPZ and establishes harvesting prescriptions, operational limitations, and exceptions to the standards in this section.

Although the proposed WLPZ allows more equipment operations, could potentially be narrower, and has a lower canopy retention standard than the current T&I Rules, the Departments believe that the proposed WLPZ will provide high levels of the watershed products that support anadromous salmonid habitat, meet the goals and intent of the FPRs, and provide some later seral habitat for wildlife per 14 CCR § 897(b)(1)(C) and 14 CCR § 916.4 [936.4, 956.4], subsection (b)(g). The Departments support the proposed concept of three zones of protection, including off-channel floodplain and

channel migration zone habitat that emphasize protections where they provide the most function.

The proposed total Class I WLPZ width is 50 feet less than the current T&I Class I standard for adjacent unevenaged silviculture, and 50-75 feet less than the current T&I Class I standard for adjacent evenaged silviculture (WLPZ + SOZ, see 14 CCR § 916.9 [936.9, 956.9], subsection (c)). However, the Departments believe the proposed WLPZ provides equal protection to the current standard when considering the Core, Inner zone A and B, and Outer Zone requirements, and meets the goals and intent of this section.

The ISOR (Board of Forestry 2009) for this rule package documents the science support for establishing the channel migration zone, Core Zone, and Inner Zone B to provide watershed products and protection to support anadromous salmonids and their habitat.

For the Inner Zone A, the Departments support the 80% overstory canopy requirement, and oppose Optional Amendment 4 that would lower this to 60% and Optional Amendment 5, which would lower this to 60% in the Northern Forest District only. Also see Comment 66.

The proposed Channel Migration Zone and Inner Zone B will protect off-channel floodplain habitat critical to salmonid survival and recovery. Off-channel floodplain habitat is identified in DFG's Coho Recovery Plan for protection. This proposal will greatly improve forest management in floodplain areas of Class I watercourses and recognizes this important salmonid habitat feature. Floodplains provide essential habitats for threatened salmonid species. For example, it is well established in the scientific literature that juvenile Coho and Chinook salmon in California and the Pacific Northwest utilize floodplain areas such as off-channel ponds, sloughs and other areas of standing water on the floodplain as important over wintering and rearing habitats (Tshapalinski and Hartman 1983; Swales and Levings 1989; Nickelson and others, 1992; Solazzi et al. 2000; Bramblett et al. 2002; Giannico and Hinch 2003; Pollock et al. 2004; Morley and others. 2005; Sommer et al. 2005; Henning et al. 2006; Roni et al. 2006; Henning et al. 2007; Jeffres et al. 2008; Rosenfeld et al. 2008). It is widely accepted that the loss of such habitats has been an important factor in the decline of anadromous salmonids in California and the Pacific Northwest (Gregory and Bisson 1996; CDFG 2004; Moyle et al. 2008; NOAA 2009a, 2009b).

The Departments oppose Optional Amendment 6 that allows substitution of smaller trees for LWD retention. Also see Comment 67.

The Departments oppose Optional Amendment 7 that adds an 80 % angular canopy requirement.  
Also see Comment 68.

The Departments are neutral regarding Optional Amendment 8 that adds a basal area requirement to the inner zone. Also see Comment 68.

**Comment 73. 14 CCR § 916.9 [936.9, 956.9], subsection (f)(3)(E) Best management practices in the Inner Zone A and B of flood prone areas**

The Departments support best management practices in the inner and outer zone. Also see Comment 70. Additionally, the Board should revise the reference on page 37, line 24; a code section is missing—add “(f)” to citation.

**Comment 74. 14 CCR § 916.9 [936.9, 956.9], subsection (f)(3)(F)1-2 Outer Zone**

The Departments support the proposed Outer Zone. Also see Comment 69.

**Comment 75. 14 CCR § 916.9 [936.9, 956.9], subsection (f)(4)**

The Departments support development of site-specific plans for unconfined watercourses with flood prone areas, where possible, to develop a proper functioning salmonid habitat. However, in 14 CCR § 916.9 [936.9, 956.9], subsection (f)(4)(C)(3), the Departments do not support assessing only limiting factors for salmonids. A desired trajectory should be for each of the objectives outlined for the T/I rules, including sediment, water temperature, flow, large wood recruitment, among others stated in 14 CCR § 916.9 [936.9, 956.9], subsection (a), for development of properly functioning salmonid habitat and restoration of the beneficial uses of the riparian zone. Restricting consideration for site-specific analysis to limiting factors for salmonids should meet CEQA standards for the measures resulting from a site-specific analysis and would not meet the goal of recovering listed salmonids. It is not clear why a separate subsection for site specific analysis is needed in this subsection, rather than addressing all site specific analysis in subsection 14 CCR § 916.9 [936.9, 956.9], subsection (v). The Departments recommend addressing this analysis in one subsection to reduce confusion and duplication. Also see Comments 116 and 120.

Additionally, on page 41, line 3, the section refers to 916.6 instead of 916.9. This correction should be made.

**Summary**

**Support - 14 CCR § 916.9 [936.9, 956.9], subsection (f)(5)(A)-(E) Class I watercourses with confined channels in watersheds outside the Coho salmon ESU**

**Oppose – Optional Amendment 4, 6, 7**

**Neutral – Optional Amendment 8**

**Comment 76. 14 CCR § 916.9 [936.9, 956.9], subsections (f)(5)(A)-(D)**

The Departments support the proposed amendment language for Class I WLPZs with confined channels outside watersheds in the Coho salmon ESU 14 CCR § 916.9 [936.9, 956.9], subsections (f)(5)(A) - (D). The Departments do not find necessary a Special Operating Zone as provided for in 14 CCR § 916.9 [936.9, 956.9], subsection (f)(5)(E) in watersheds outside of the Coho ESU. This generally encompasses the Sacramento

River and tributaries that support federally threatened Central Valley Steelhead and State threatened spring-run Chinook salmon.

The proposed changes to the language in 14 CCR § 916.9 [936.9, 956.9] subsections (f)(5)(A)-(E) establish the widths for various zones within the WLPZ. It also establishes harvesting prescriptions, operational limitations, and exceptions to the standards in this section.

Although the proposed WLPZ allows more equipment operations, is narrower, and has a lower canopy retention standard than the current T&I Rules, the Departments believe that the proposed WLPZ will provide high levels of the watershed products that support anadromous salmonid habitat, meet the goals and intent of the FPRs, and provide some later seral habitat for wildlife per 14 CCR § 897(b)(1)(C) and 14 CCR § 916.4 [936.4, 956.4], subsections (b). The Departments support the proposed concept of three zones of protection that emphasize protections where they provide the most function.

The proposed total Class I WLPZ width is 50 feet less than the current T&I Class I standard for adjacent unevenaged silviculture, and 50-75 feet less than the current T&I Class I standard for adjacent evenaged silviculture (WLPZ + SOZ, see 14 CCR § 916.9 [936.9, 956.9] (c)). However, the Departments believe the proposed WLPZ provides equal protection to the current standard when considering the core, inner and outer zone requirements, and meets the goals and intent of this section. The proposed total WLPZ width is more aligned with the mixed conifer tree species heights that occur in the Sierra Nevada and Cascade areas where this rule would apply.

The ISOR (Board of Forestry 2009) for this rule package documents the science support for establishing the core zone to provide watershed products and protection to support anadromous salmonids and their habitat.

For the inner zone, the Departments support the 70% overstory canopy requirement, and oppose the Optional Amendment 4 that would lower this to 60%. Also see Comment 66.

The Departments oppose Optional Amendment 6 that allows substitution of smaller trees for LWD retention. Also see Comment 67.

The Departments oppose Optional Amendment 7 that adds an 80 % angular canopy requirement. Also see Comment 68.

The Departments are neutral regarding Optional Amendment 8 that adds a basal area requirement to the inner zone. Also see Comment 68

The Departments support the proposed outer zone and best management practices in the Inner and outer zones. The outer zone for watercourses in confined channels in watersheds outside the Coho ESU is 30 feet and its purpose is to meet the outer zone

objectives found in 14 CCR § 916.9 [936.9, 956.9], subsection (c)(3). The purpose of the 25-foot ELZ when evenaged silvicultural management is adjacent to the WLPZ is to buffer the WLPZ and outer zone from impacts and to ensure the outer zone can function to meet its objectives. As with all ELZs, the specific limitations must be specified in the plan. The Departments believe the proposed outer zone widths are appropriate for the conditions found in this geographic area (Sierra Nevada and Central Valley watersheds). Also see Comments 69 and 70.

**Comment 77. 14 CCR § 916.9 [936.9, 956.9], subsection (g) Class II watercourses**

The Departments recommend revising the introductory section on page 49, lines 1-5 to replace the term “coho salmon ESU” with the revised term “Coastal Anadromy Zone” for consistency with the related definitional change proposed by the Departments. The introductory section should also be amended to exclude the Southern Subdistrict (SSD) of the Coast Forest District from the requirements for Class II watercourses stated for all other watersheds with listed anadromous salmonids. The Departments recommend creating new, separate Class II watercourse requirements for the SSD as described in 14 CCR § 916.9 [936.9, 956.9], subsection (g)(4). Other grammatical changes are made for clarity:

The following are the minimum requirements for Class II WLPZ delineation and for timber operations in Class II WLPZs. Differing rules are specified for watersheds in the ~~coho salmon ESU~~ coastal anadromy zone, the Southern Subdistrict of the Coast Forest District, and areas outside the ~~coho salmon ESU~~ coastal anadromy zone. WLPZ widths range from 50 to 100 feet slope distance, depending on side slope steepness in the WLPZ and the watercourse type.

**Comment 78. 14 CCR § 916.9 [936.9, 956.9], subsection (g) Class II watercourses  
Revise the WLPZ graphics**

The Departments recommend that on Page 58, Figure 7, the Board consider several amendments for the graphics in this subsection.

- The title should be amended to replace the term “coho salmon ESU” with the revised term “Coastal Anadromy Zone excluding the Southern Subdistrict (SSD) of the Coast Forest Practice District” for consistency with the related definitional change proposed by the Departments.

**Comment 79. 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1) – Identification of Large Class II watercourses**

This subsection 1) establishes two types of Class II watercourses, “standard” and “large,” and 2) specifies means for distinguishing between the two. The Departments

support distinguishing those Class II watercourses that contribute flow in late summer to fish bearing Class I watercourses and have more capacity to contribute watershed products to Class I watercourses as described in 14 CCR § 916.9 [936.9, 956.9], subsection (c)(4). Some of the approaches do not specify delineation thresholds; rely on field-based methods that are not appropriate or well developed for determining mid-summer flow; will require plan submitters to provide extensive data in order for review team agencies to verify delineations; and, would require field inspections to determine if delineation results are accurate. Some review team agencies are not always able to conduct extensive pre-harvest inspections and have increasingly limited resources to verify delineation results in the field. The proposed amendment places the burden for proof on review team agencies that a standard Class II watercourse should be delineated as "large" and receive enhanced protection measures. The Departments believe some of the approaches will not be reliable in identifying large Class II watercourses, resulting in inadequate protection of the riparian functions and headwater stream products that support anadromous salmonid habitat. Inadequate protection of headwater streams will reduce the effectiveness of the proposed Class I WLPZ measures and undermine the goals and intent of the T/I rules.

Instead, the Departments recommend requiring a preliminary delineation of large Class II watercourses based on second order or larger Class II watercourses using the Strahler stream order method. Such preliminary identification ensures a reliable number of Class II watercourses will be delineated as large and receive enhanced protection measures. The Departments support plan submitters' field-based methods, including continuous monitoring data and direct observation, to justify proposed modifications to the results of the office determination. This allows flexibility for plan submitters to delineate large Class II watercourses and to make adjustments when they believe a watercourse does not meet the definition in 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1). The Departments recommend the following change to 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1) on page 49, lines 11 through 14:

Identification of Class II-L watercourse types shall be based on ~~one or more of the office methods specified under 14 CCR § 916.9 [936.9, 956.9] subsection (g) (1) (A).~~ ~~and~~ ~~†~~ The field methods specified under 14 CCR § 916.9 [936.9, 956.9], subsection (g) (1) (B) may be used to justify proposed modifications to the results of the office determination.

Relying primarily on field identification of perennial flow may cause some large Class II watercourses to be delineated as standard Class II. Defining a large Class II watercourse as having perennial flow is not reliable in dry years and is not always apparent in all settings. For example, on the north coast many large Class II watercourses that flow in the summer don't exhibit surface flow in their lower reach when the lower reach has been filled with sediment. Erosion under past harvesting

practices has filled in channels and the surface flow becomes subsurface in this accumulated sediment. In such a situation, the gravel and sediment moderate water temperature, regardless of the initial temperature upstream. Canopy cover in this reach may not contribute to water temperature, but is still necessary to account for supply of large wood and sediment retention. The Departments believe it is important to keep in mind all of the watershed products from Class II watercourses when considering perennial or intermittent flow. Also, streams on the north coast, including Class II watercourses, exhibit a flashy hydrograph with large fluctuations in flow over relatively short time periods. These streams often exhibit ephemeral surface flow. Streams with a flashy hydrograph can have greater ability to transport LWD to Class I habitat due to increased energy associated with shorter duration higher flows. Although LWD recruitment is not currently included as a consideration for determining whether a Class II watercourse is large, considering the LWD supply and recruitment component will contribute to protection of habitat for listed anadromous fish species.

**Comment 80. 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1)(A)1. Stream order**

The Departments support the use of stream order to identify large Class II watercourses. The Departments recommend requiring delineation of second order and higher streams as large Class II watercourses and suggest the following changes in the proposed language, including one additional stream order method for delineating large Class II watercourses.

**(A) Office-based approaches to identify ~~potential~~ Class II-L watercourses:**

1. ~~Stream order:~~ After classifying the watercourses in an area pursuant to 14 CCR § 916.5 [936.5, 956.5], map all ~~Class II~~ watercourses in the ~~plan area of consideration on area of consideration on current 1:24,000 scale U.S. Geological Survey topographic maps and “order” them~~ and upslope in the watershed, at a level of detail sufficient to determine the stream order of all Class II watercourses in the plan area. Stream order shall be determined following the method of Strahler. Second order ~~and third order~~ and higher Class II watercourses shall be identified ~~as are potentially~~ Class II-L watercourses.

The Departments recommend deleting the text “Class II” from page 49, line 19, because stream order should be determined based on mapping of all watercourses, not just Class II watercourses. Mapping Class II watercourses first before identifying all streams and their order will result in inaccurate identification of Class II watercourses. Mapping and then ordering all watercourses makes the stream order criterion clear, based on

readily determinable facts, and easily implemented by plan preparers and evaluated by plan reviewers.

The amendment language in the plead limits designation of large Class IIs to second or third order class II watercourses when a first order stream may confluence directly with a Class I. While first-order class II watercourses are generally distant from fish-bearing watercourses, those that are spring-fed will minimize the influence of water temperature effects downstream. These criteria will generally lead to sufficiently broad application of the proposed enhanced Class II protection measures.

**Comment 81. 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1)(A)2. Blue Line Streams**

While the Departments support using streams mapped as blue lines on USGS topographic maps for identification of Class II watercourses in general, and this method is used in the 2112 rules in 14 CCR § 916.9.2 [936.9.2, 956.9.2], subsection (d)(3) to identify any Class II watercourse without consideration of the presence of mid-summer flow, the Departments do not support using this method to delineate large Class II watercourses, as proposed because a stream ordering method will produce more reliable results for the purpose of identifying large Class II watercourses as defined. This subsection should be deleted and replaced with the language suggested in the comment above in 14 CCR § 916.9 [936.9, 956.9], subsections (g)(1)(A) 1 and 2 for stream order.

**Comment 82. 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1)(A) 3 Drainage Area**

The Departments oppose use of a method to delineate large Class II watercourses based on drainage area because it is a poorly developed approach for application at a statewide scale, will increase the length of time required to justify and review watercourse classification, and will increase the amount of documentation needed for timber harvesting plans. The Departments recommend deleting 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1)(A)(3). The amendment proposes to designate large Class II watercourses based on the relationship between drainage area and stream order while providing no standards for application and allowing broad interpolation based on a limited number of observations.

**Comment 83. 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1)(B) Field-based approaches to identify large Class II watercourses**

The Departments do not support reliance on the proposed field-based methods for delineating large Class II watercourses. Instead, the Departments support plan submitters' using field-based approaches to modify the results of preliminary office-based approaches. This allows flexibility for plan submitters to make specific modifications when they believe a watercourse does not meet the definition in 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1). The Departments recommend the following change to 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1)(B):

(B) Field-based approaches to identify potential Class II L. Determination of Class II L watercourses shall be verified in the field by direct channel observations and local experience may be used to modify the office-based determinations, if supported by substantial evidence certified as accurate by a Registered Professional Forester and explained and justified using one or more of the following approaches.

The Departments support using two proposed field methods, direct observation in approach 1 and continuous streamflow monitoring data in approach 3, with recommended changes, and eliminating approach 2, channel characteristics.

**Comment 84. 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1)(B) 1 and (B) 2 Direct Observation**

The Departments recommend the following revisions to make direct observation consistent with Comment 47, make the date a clear standard, and emphasize direct observation to provide certain and defensible identification. The Departments recommend that the Board accomplish this by amending subsection 1 and replacing subsection 2 as indicated below.

1. ~~Determine by d~~Direct observation and documentation that there is no surface flow contribution to ~~or by local knowledge of common mid-summer flow conditions if office-mapped Class II L watercourses contribute flow a~~ Class I watercourse later than ~~at least through approximately~~ July 15th following a year of ~~with at least~~ average precipitation and runoff as determined from the 30-year average precipitation data available from NOAA, USGS, or CAL FIRE.

2. A detailed analysis demonstrating that the water temperature in the Class I watercourse will not be significantly impacted by harvesting in the tributary watercourse's WLPZ. This can be accomplished using measured/estimated tributary and main stream flow data and water temperature data that are input into Brown's (1980) "mixing ratio" equation. Specifically, the adjusted water temperature in the receiving Class I watercourse is not to exceed either 62.1 degrees F presented as

the Maximum Weekly Average Temperature (MWAT) or 64.4 degrees F presented as the Maximum Weekly Maximum Temperature (MWMT). Very minimal mid to late-summer tributary streamflow may not be ecologically significant, particularly when the water temperature in the main stream is well below known requirements for the listed anadromous salmonids present.

**Comment 85. 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1)(B) 2 Channel Characteristics**

The Departments oppose adoption of the language proposed under 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1)(B) 2. The Departments oppose the proposed use of channel characteristics alone to field verify a large Class II watercourse, or to modify delineation of a large Class II watercourse. The Departments support an approach that relies on the use of geomorphic, hydrologic, and biological indicators of stream flow duration.

The Departments find several flaws in the proposed use of channel characteristics including:

1. The proposed geomorphic indicators (i.e., channel characteristics) of channel width at bankfull stage, channel depth at bankfull stage, channel slope, and mean entrenchment ratio are not indicators of the seasonal persistence of flow;
2. The presence of springs or seeps is only one of perhaps 5 or 6 other possible hydrologic indicators of flow duration, which are not included;
3. The evidence and/or presence of aquatic animal and plant life should be linked to specific perennial, intermittent, or ephemeral taxa and life stage.
4. No criteria are provided for study reach selection. Flow characteristics often vary along the length of a stream, resulting in gradual transitions in flow duration. Recognizing that in many streams flow duration exists on a continuum, choosing the reach on which to conduct an assessment can influence the resulting conclusion about flow duration. An assessment as proposed should be made for a representative reach, rather than at one point of a stream. Based on experience, an adequate representative reach for this type of stream assessment would likely be equivalent to 35 - 40 channel widths of the stream and no less than 100 feet in length for narrow streams.
5. No criteria or considerations are provided regarding the influence of scale on the proposed indicators (i.e., channel characteristics/geomorphology, hydrologic and biological attributes). The most important type of variation between streams is simply the size of the stream. Streams develop different channel dimensions due to differences in flow magnitude, landscape position, land use history, and other factors. When assessing a stream, it is of paramount importance to consider scale when determining the strength of indicators.

There are several indicators of stream flow that collectively can be used to characterize the flow duration of a stream along a particular reach as ephemeral, intermittent or perennial. However, the methodology would need to be tested and formalized for use.

If the BOF is committed to pursuing the field identification of indicators of stream flow duration, as a starting point the Departments suggest the Board consider an approach like that designed by Oregon to help the U.S. Army Corps of Engineers Portland District Regulatory Program and Environmental Protection Agency Region 10, and Oregon Department of State Lands distinguish between ephemeral, intermittent and perennial streams (Topping et al. 2009).

**Comment 86. 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1)(B) 3 Continuous streamflow data**

The Departments support using continuous streamflow data as a field-data approach for justifying modification of a large Class II watercourse delineation, but do not support its extrapolation to other basins as a way to make a field-based determination of large Class II watercourses. The Departments recommend the following change:

3. Use continuous temperature or streamflow monitoring data from the watercourse to determine existence of surface flow contribution to a Class I watercourse later than July 15th following a year of average precipitation and runoff as determined from the 30-year average precipitation data available from NOAA, USGS, or CAL FIRE. ~~headwater watercourses to determine the watershed drainage area necessary to initiate mid-summer streamflow for a given ecoregion and extrapolate this data to other headwater basins in that ecoregion.~~

The Departments believe using continuous streamflow data and extrapolating it to other headwater basins, as proposed in the amendment language in the plead, is not a reliable or practical approach for determining a Class II watercourse with mid-summer flow. Drainage area is only one of many highly variable factors influencing the relationship between drainage basins and seasonal persistence of surface flow. Relationships developed from a limited set of observations are unlikely to be reliable predictors throughout an eco-region.

**Comment 87. 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1)(C) Large Class II determination**

The Departments oppose adoption of the language proposed under 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1)(C). The Departments do not support using the proposed office and field-based methods for determining a large Class II watercourse,

as proposed. Rather, the Departments recommend that the initial determinations be based solely on stream order as described in Comments 73 and 75. Based on the Departments' recommendations above, the Departments do not believe this subsection is necessary. The Departments recommend deletion of 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1)(C) and renumbering of the remaining subsections under this section of the rules as reflected in the comments below.

**Comment 88. 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1)(D) Large Class II documentation**

The Departments support requirements to provide documentation that explains how the RPF determined large Class II watercourses designations. This will aid review team agencies in evaluating the accuracy of application of methods. This will save time for review team agencies and plan submitters, improving efficiency and timeliness for plan review and approval. The subsection index should be changed to 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1)(~~D~~)(C) to reflect other edits to this subsection recommended above.

**Comment 89. 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1)(E) Large Class II enhanced protection measures**

The Departments support the application of enhanced protection measures to the downstream 1,000 feet of a large Class II channel. The Departments oppose Optional Amendment 12 which limits the application of enhanced protection measures to the downstream 650 feet of a large Class II channel. The Departments support a 1,000 foot stream length buffer for Class II streams that confluence with a Class I stream. The 1,000 foot distance for a large Class II watercourse from the junction with a Class I watercourse is a conservative approach supported by the literature. Watersheds with listed salmonids often have water temperature and sediment impairments and large woody debris deficits. The literature points out that shorter length buffers of 650 feet may be adequate to protect water temperature but that research is needed in California to validate this relationship. Other research (Sullivan et al. (1990) suggests buffer lengths of 1,969 feet for larger streams. Others find from studies outside of California that stream connectivity and cooling of water temperatures occurs within 500 to 1000 feet (Benda et al. 2008, Zwieniecki and Newton 1999). Because headwater streams have functions that are integral to the existence of downstream aquatic habitat, and the forest practice rules have not specifically identified these functions and provided measures to protect those functions specifically in the past, a more conservative approach is justified to help recover listed species of anadromous salmonids in California.

While the proposed rule language under 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1)(E) designates the appropriate requirements for the downstream 1,000 feet of a large Class II – L channel, it is not clear what requirements apply to the remaining portion of the Class II – L watercourse to the point where it becomes a Class II – S or a Class III watercourse. The Departments intention is to ensure that the remaining portion of the Class II – L receive the same protection as a Class II – S from the 1,000'

point upstream to the point where the classification changes to a Class III. To ensure that this is clearly stated in the proposed rules, the Departments recommend the Board revise 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1)(E) as follows:

~~(E)(D)~~ All Class II-L watercourses designated above shall incorporate requirements stated in 14 CCR § 916.9 [936.9, 956.9], (g)(2) for a minimum distance of 1,000 feet or total length of Class II-L, whichever is less, measured from the confluence with a Class I watercourse. All portions of a Class II – L watercourse extending upstream beyond 1,000 feet in length shall receive protection in conformance with 14 CCR §§ 916 [936, 956] through 916.7 [936.7, 956.7], in addition to the requirements listed under 14 CCR §§ 916.9 [936.9, 956.9] (g)(2)(A) and (B).

Additionally, the subsection index should be changed to 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1)(~~E~~)(D) to reflect other edits to this subsection recommended above.

**Comment 90. 14 CCR § 916.9 [936.9, 956.9], subsection (g)(1)(F) Map documentation**

The Departments support requirements to provide documentation of standard and large Class II watercourses on a map. This will aid review team agencies and the public in evaluating determinations and assist in identifying priority sites for preharvest inspection if further verification of Class II designations is needed. This will save time for review team agencies and plan submitters, improving efficiency and timeliness for plan review and approval. Additionally, the term “Class II standard on page 51 line 4 should be amended to use the standard nomenclature “Class II-S”.

**Summary**

**Support 14 CCR § 916.9 [936.9, 956.9], subsection (g)(2)(A)-(B)**

**Oppose - Optional Amendments 4, 5, 6, 7, 12, 13**

**Neutral - Optional Amendment 8**

**Comment 91. 14 CCR § 916.9 [936.9, 956.9], subsection (g)(2) Class II WLPZ widths and operational requirements**

The Departments support measures that ensure Class II watercourses will continue to retain sediment, recruit LWD, and provide nutrient inputs that will maintain downstream salmonid habitat. This subsection specifies various protective measures to be applied for Class II watercourses and the WLPZ in watersheds with listed anadromous salmonids. Protection of Class II watercourses for LWD recruitment, sediment retention, and nutrient supply, together with salmonid habitat protection measures for riparian functions of Class I and III watercourses, comprise the suite of forest practices that the Departments anticipates will help recover listed salmonids. Adoption of

Optional Amendments 4, 5, 6, 12, and 13 would eliminate the overall positive contribution of the proposed Class I, II, and III amendments that the Departments find would aid in recovering listed salmonids by protecting and restoring salmonid habitat.

The Departments believe that with the prohibition of timber operations within the core zone and enhanced retention requirements for large trees will provide high levels of the watershed products that support anadromous salmonid habitat, meet the goals and intent of the FPRs, and provide some later seral habitat for wildlife per 897(b)(1)(C). The Departments support the proposed concept of three zones of protection that emphasize protections where they provide the most function.

The Departments recommend the following non substantive corrections:

Amend the language on page 51, line 5 by adding "II" after "Class" in the section title text.

On page 51, line 8 revise as follows to correct a typo:

The width of the Core and Inner Zones vary depending on the ~~flowing~~ following three factors . . .

On page 51 line 10, the term "Class II standard" should be amended to use the the nomenclature "Class II-S".

On page 51 line 11, the term "coho salmon ESU" should be amended with the revised term "Coastal Anadromy Zone" for consistency with the related definitional change proposed by the Departments.

**Comment 92. 14 CCR § 916.9 [936.9, 956.9], subsection (g)(2)(A) Core Zone**

The Departments oppose Optional Amendment 13 because it eliminates core zone protections for Standard Class II watercourses. Core zone protections will provide substantially enhanced resource protection from sediment and temperature effects and maintain functions of LWD and nutrient input. The Board will not be able to achieve the goals and objectives of the T/I rules and for Class I watercourses without core zone protections for Standard Class II watercourses. Also see Comment 19.

The Departments support limiting timber operations in the first 0-30 feet of the WLPZ, the core zone. Primarily this zone will provide shade for water temperature control, wood recruitment by bank erosion, nutrient inputs, and promote bank stability. This proposal will result in additional tree retention, reduced ground disturbance adjacent to habitat and restorable habitat of listed fish species, and promote later seral habitat for wildlife. Reduced ground disturbance in the zone will improve sediment filtration.

The ISOR (Board of Forestry 2009) for this rule package documents the science support for establishing the core zone to provide watershed products and protection to support anadromous salmonids and their habitat. In addition, the Departments find that increased levels of instream sedimentation can be very deleterious to Coho salmon and other salmonids through smothering developing eggs within redds, which increases egg mortality, and hindering the emergence of alevins, which reduces juvenile recruitment (Bisson and Bilby 1982; Crouse et al. 1981; Hall et al. 2004; McNeil and Ahnell 1964). Bank erosion can be a major source of instream sedimentation, which is elevated through the removal of protective bankside vegetation (SWC 2008). In the Harris River in Alaska, reduced egg mortality caused by sedimentation of spawning gravel was a principal cause of egg-to-fry mortality, with up to two to four times more fine sediment in the river during timber harvesting (McNeil and Ahnell 1964). SWC (2008) found that mechanical disturbance from management activities within about 30 feet of the channel will often produce and deliver sediment to stream channels.

**Comment 93. 14 CCR § 916.9 [936.9, 956.9], subsection (g)(2) Table Y**

The Departments recommend that on page 52, line 2 in Table Y, the term “Class II standard” should be amended to use the nomenclature “Class II-S”.

**Comment 94. 14 CCR § 916.9 [936.9, 956.9], subsection (g)(2)(B) Inner Zone**

The Departments support the widths proposed for the inner zone because they will ensure riparian functions will be maintained along all Class II watercourses. Thinning from below in the inner zone will contribute to the canopy retention standards.

**Comment 95. 14 CCR § 916.9 [936.9, 956.9], subsection (g)(2)(B)1. Class II standard watercourses**

The Departments support Standard Class II protection measures per 14 CCR §§ 916 [936, 956] through 916.7 [936.7, 956.7], which in conjunction with the proposed no cut core zone, will provide the LWD and sediment retention functions needed to maintain downstream salmonid habitat. Without the proposed inner zone, the measures found in 14 CCR §§ 916 [936, 956] through 916.7 [936.7, 956.7] would not ensure provision of Class II, or headwater stream, watershed products, and a provision for retention of a specific number of trees per feet of stream or acre would be necessary. The Departments recommend the following additional changes to the text for clarity.

On page 53, line 1, the term “Class II standard” should be amended to use the nomenclature “Class II-S”.

**1. Class II – S standard watercourses:** Any Class II – S ~~standard~~ watercourses shall receive protection in conformance with 14 CCR §§ 916 [936, 956] through 916.7 [936.7, 956.7], in addition to the requirements listed under 14 CCR §§ 916.9 [936.9, 956.9] (g)(2)(A) and (B).

**Comment 96. 14 CCR § 916.9 [936.9, 956.9], subsection (g)(2)(B) 2 Class II large watercourses in the Coho salmon ESU**

The Departments recommend amending the subsection title to replace the term “coho salmon ESU” with the revised term “Coastal Anadromy Zone” for consistency with the related definitional change proposed by the Departments. The title should also be amended to exclude the Southern Subdistrict (SSD) of the Coast Forest District from the requirements for Class II-L watercourses. The Departments recommend creating new, separate Class II watercourse requirements for the SSD as described in 14 CCR § 916.9 [936.9, 956.9], subsection (g)(4).

For the inner zone in the “Coastal Anadromy Zone” excluding the SSD, the Departments support the 80% overstory canopy requirement, and oppose optional amendment 4 that would lower this to 60% and optional amendment 5, which would lower this to 60% in the Northern Forest District only. Also see Comment 46 regarding the same measures and optional amendments for Class I watercourses.

It is essential to maximize canopy retention to provide essential shade to the stream channel, moderating water temperature and primary productivity (Beschta et al. 1987; Hicks et al. 1991). A reduction of post harvest canopy closure from 80% to 60% in the inner zone is contrary to the intent of the rule which is to protect water temperatures by maintaining shade and protect riparian habitat. Coho salmon, being at the southern limit of their range in California, are particularly susceptible to increases in water temperature through reductions in shade (Beschta et al. 1987; Sullivan et al. 2000; Welsh et al. 2001). Welsh and others (2001) found that Coho salmon distribution in the Mattole River was strongly correlated with water temperature, with Coho distribution being limited largely by high water temperatures. Similarly, Madej et al. (2006) found that summer high water temperatures in the middle reaches of Redwood Creek, where extensive forest management and riparian clearance has been carried out, were limiting to Coho salmon distribution.

The Departments oppose Optional Amendment 6 that allows substitution of smaller trees for LWD retention. Also see Comment 67 regarding the same measures and Optional Amendments for Class I watercourses.

The Departments oppose Optional Amendment 7 that adds an 80 % angular canopy requirement. Also see Comment 68 regarding the same measures and Optional Amendments for Class I watercourses.

The Departments are neutral regarding Optional Amendment 8 that adds a basal area requirement to the inner zone providing that the basal area requirements are not adopted in lieu of adoption of the canopy retention standards. The Board needs to evaluate the basal area requirements in further detail to ensure they are adequate to provide protection to all the riparian functions prior to replacing the canopy retention standards. Also see Comment 68 regarding the same measures and Optional Amendments for Class I watercourses.

**Comment 97. 14 CCR § 916.9 [936.9, 956.9], subsection (g)(2)(B) 3 Class II watercourses outside watersheds in the Coho salmon ESU**

The Departments recommend amending the subsection title to replace the term “coho salmon ESU” with the revised term “Coastal Anadromy Zone” for consistency with the related definitional change proposed by the Departments.

For the inner zone, the Departments support the 80% overstory canopy requirement, and oppose Optional Amendment 4 that would lower this to 60% and Optional Amendment 5, which would lower this to 60% in the Northern Forest District only. Also see Comment 76 regarding the same measures and Optional Amendments for Class I watercourses.

The Departments oppose Optional Amendment 6 that allows substitution of smaller trees for LWD retention. Also see Comment 67 regarding the same measures and Optional Amendments for Class I watercourses.

The Departments oppose Optional Amendment 7 that adds an 80 % angular canopy requirement. Also see Comment 68 regarding the same measures and Optional Amendments for Class I watercourses.

The Departments are neutral regarding Optional Amendment 8 that adds a basal area requirement to the inner zone. Also see Comment 68 regarding the same measures and Optional Amendments for Class I watercourses.

**Comment 98. 14 CCR § 916.9 [936.9, 956.9], subsection (g) (3) Class II watercourses in the Southern Subdistrict of the Coast Forest District**

A new subsection is recommended to address requirements for Class II watercourses in the Southern Subdistrict (SSD) of the Coast Forest District. This subdistrict has a unique set of existing forest practice regulations contained in the various county rules, Southern Subdistrict rules, and when applicable, rules for watersheds with coho salmon found in 14 CCR § 916.9.2 [936.9.2, 956.9.2]. These existing regulations have been observed by the Departments to provide similar postharvest conditions as is intended by the application of the proposed Class II watercourse regulations for watersheds with listed anadromous salmonids.

This proposal is contingent on adoption of a Class I WLPZ prescription with a 30' no-harvest core zone and a 70' inner zone with 80% overstory canopy retention; and retention of existing County rules specified under Article 13 of the Forest Practice Rules. The proposed requirements include a title, an introductory statement to clarify where the rules apply, and the prescriptive standards for all Class II watercourses in the SSD, as follows:

**(3) – Class II watercourses in the Southern Subdistrict of the Coast Forest District**

In addition to all other Forest Practice Rules applicable to timber harvesting within the Southern Subdistrict of the Coast Forest District, the following rules apply within a Class II WLPZ. These requirements supersede any other requirements for Class II watercourses contained in 14 CCR § 916.9 (g).

(A). Retain all trees within the Class II WLPZ that meet the following criteria:

1. all trees located within the channel zone;
2. all trees that have boles that overlap the edge of the channel zone; and
3. all trees with live roots permeating the bank or providing channel grade control, with the following exception:

(i) 1/3 of the stems of redwoods with live roots permeating the bank or providing channel grade control may be harvested.

(B) Where sufficient spacing exists prior to harvesting, retained redwood trees greater than or equal to 12 inches dbh shall not be spaced more than 25 feet apart.

(C) A minimum of 80% overstory canopy shall be maintained within the channel zone. If 80% overstory canopy is not present within the channel zone, the existing overstory canopy within the channel shall not be reduced.

(D) No more than 1/3 of the conifers 18" dbh or larger may be harvested.

## Summary

**Support - 14 CCR § 916.9 [936.9, 956.9], subsection (h)(1)-(8), Optional Amendments 17, 19**

**Oppose - Optional Amendments 15, 16, 18,**

### **Comment 99. 14 CCR § 916.9 [936.9, 956.9], subsection (h) Class III Watercourses**

The Departments support the proposed amendments under this subsection. The proposed changes to the language in 14 CCR § 916.9 [936.9, 956.9], subsection (h) establish the widths for ELZs along Class III watercourses. It also establishes harvesting prescriptions, operational limitations, and exceptions to the standards in this section.

The Departments believe the proposed ELZ and prescriptions will provide high levels of the watershed products that support anadromous salmonid habitat, meet the goals and intent of the FPRs, and provide some later seral stage components for wildlife per 14 CCR § 897(b)(1)(C) and 14 CCR § 916.4 [936.4, 956.4], subsection (b). The Departments support providing protection for Class III watercourses in watersheds with listed salmonids.

The ISOR (Board of Forestry 2009) for this rule package documents the science support for establishing an ELZ to provide watershed products and protection to support anadromous salmonids and their habitat.

### **Comment 100. 14 CCR § 916.9 [936.9, 956.9], subsection (h)(1)(A)–(C)**

The Departments support the amendment creating an ELZ on both sides of Class III watercourses based on slope, with some grammatical changes proposed. The protection from disturbances of the riparian environment in headwater streams is considered essential for maintaining functioning salmonid habitats in downstream reaches.

Headwater streams constitute >80% of watercourses of stream networks and watershed land areas in the United States (Leopold et al. 1964; Naiman et al. 2000; Gomi et al. 2002). There is growing scientific recognition of the importance of headwater streams and their riparian zones as unique habitats and as sources (and controllers) of energy, water, sediment, nutrients and organic matter to downstream reaches (Gomi et al. 2002; Wipfli and Gregovich 2002; Richardson and Daneby 2007; Meyer et al. 2007).

Headwater streams are known to exert major influences on hydro-geomorphic processes in river systems, including the input of sediment, wood and organic matter (Naiman et al. 2000). Significant advances in our understanding of the dynamics of riparian systems in the last few decades have clarified how these processes affect riparian vegetation and how vegetation may modify stream channels through the delivery and routing of woody debris and sediment (Naiman et al. 2000; Wipfli 2005). Sediment is stored in small streams and is metered out to fish-bearing streams over time.

**Additional non-substantive Comments**

**Comment 101. 14 CCR § 916.9 [936.9, 956.9], subsection (h), Class III Protections**

On page 59, line 13, this section does not need to indicate these protection measures apply in watersheds with listed anadromous salmonids because all of the protection measures described in 916.9 apply therein.

**(h) Class III watercourses –**

The following are the minimum requirements for timber operations in Class III watercourses in watersheds with listed anadromous salmonids, unless explained and justified in the plan and approved by the Director.

**Comment 102. 14 CCR § 916.9 [936.9, 956.9], subsection (h)(1)(C), Class III Protections**

On page 59, lines 20-22, under (C), the limitation applies to stable tractor roads without visible evidence of sediment deposition to the adjacent channel. This language is not grammatically correct, as the tractor road does not deposit sediment. The Department recommends amending the proposed language as follow:

(C) ground-based operations are limited to existing stable tractor roads that show no visible evidence of sediment deposition being transported into the adjacent watercourse, without visible evidence of sediment deposition to the adjacent channels zone or to the use of feller- bunchers or shovel yarding.

**Comment 103. 14 CCR § 916.9 [936.9, 956.9], subsection (h)(2)**

The Departments support retaining all pre-existing large wood on the ground within the ELZ, and oppose the Optional Amendment 15 that would allow salvage of downed merchantable logs and log pieces that may provide bank stability, sediment storage, and fluvial transport downstream. Removal of watershed products from the ELZ will reduce the amount of watershed products provided by headwater streams and compromise the capacity headwater streams to provide such products. Without functioning headwater streams and their watershed products, the Board will limit its ability to meet the restoration and recovery goals of the Joint Policy and will not achieve the goals of the T/I rules.

Watershed products such as wood and sediment are derived from headwater streams, which comprise 60-80% of the cumulative length of river networks. Under the stream continuum concept, LWD recruited to Class IIIs is transported through the stream

network to higher order watercourses. Sediment is also trapped in Class III channels and metered downstream over long periods (Benda et al. 2005).

Under Optional Amendment 15, retaining only non-merchantable wood would eliminate the supply of large wood which is more effective at stabilizing sediment, and also provides a valuable source of LWD for the stream. The *Aquatic Conservation Strategy* (ACS) of the Northwest Forest Plan (PNW Plan) stated that headwater riparian areas need to be protected, so that when debris slides and flows occur, they contain coarse woody debris and boulders necessary for creating habitat farther downstream (Everest and Reeves 2007).

Reeves (2006) stated that since the ACS was implemented, new scientific information has become available which underlines the importance of protecting headwater streams from disturbances. Cummins and Wilzbach (2006) discussed the inadequacy of the fish-bearing criterion for stream management and forest management practices and suggest that the importance of intermittent, ephemeral, and very small first order channels as suppliers of invertebrates and detritus to permanently flowing, receiving streams that support juvenile salmonids warrant their protection during timber harvest. It was concluded that criteria other than the presence or absence of juvenile salmonids need to be considered in managing forested watersheds.

**Comment 104. 14 CCR § 916.9 [936.9, 956.9], subsection (h)(4)**

The Departments support retention of hardwoods within the entire width of the ELZ and oppose limiting the hardwood retention width to 30 feet only, and support Optional Amendment 17, which retains hardwood in the entire ELZ width regardless of slope. The Departments oppose Optional Amendment 16, which limits hardwood retention to non-merchantable trees. Hardwoods provide rainfall energy dissipation, root strength, and nutrients to watercourses. The 1999 Scientific Review Panel report (Ligon et al. 1999) recommended retaining hardwoods for salmonid habitat protection. Steeper slopes are more prone to sliding and delivering sediment to watercourses. Hardwood tree roots and leaf litter protect such slopes and may prevent slope erosion and failure. Also see Comments 103 and 106.

**Comment 105. 14 CCR § 916.9 [936.9, 956.9], subsection (h)(5)**

The Departments support retention of snags within the ELZ and recommend including additional language in this subsection to clarify that snags felled for safety shall remain in the ELZ as coarse woody debris. This will ensure that snags can contribute to more sediment retention and LWD recruitment rather than be removed.

**Comment 106. 14 CCR § 916.9 [936.9, 956.9], subsection (h)(6)**

The Departments oppose limiting retention of all countable trees needed to achieve resource conservation standards to just within the 30 foot ELZ, and support Optional Amendment 19, which requires standards be applied within the entire ELZ. The Departments oppose Optional Amendment 18, which would not retain all countable trees, allowing for removal of merchantable trees and retention of only nonmerchantable

trees. Optional Amendment 19 provides for substantial recruitment of LWD and small woody material in the ELZ. Also see Comment 103 regarding Optional Amendment 15.

The Departments support measures that promote advanced regeneration of trees that will provide LWD and small woody debris for sediment retention and erosion prevention in Class III streams, and possible movement into larger fish bearing watercourses. Large woody debris is now recognized as an important component of salmonid habitat through providing instream cover, increased habitat complexity, protection from high flows, creating pool habitat, and the provision of food and organic debris. Decreases in fish abundance has been documented following wood removal (Bryant 1983; Dolloff 1986; Elliot 1986; Bilby and Bisson 1998), while increases in fish abundance have been reported following deliberate additions of LWD (Cederholm et al. 1997; Roni and Quinn 2001).

Riparian vegetation is an important source of LWD through tree fall into the channel and bankside margins. In Alaska, most LWD is derived from within 30 m of the stream channel, through stream undercutting, windthrow, mortality, landslides and beaver activity (Murphy and Koski 1989). Reeves et al. (1993) examined the relationships of timber harvest, stream habitat complexity, and diversity of juvenile salmonid assemblages in 14 small to intermediate-sized basins in coastal Oregon between 1985 and 1989. Diversity of assemblages in streams in basins with low harvest levels was greater than in streams with high harvest levels. Streams in basins with low timber harvesting had more complex habitat, as manifest by more large pieces of wood per 100-meters.

The highest densities of juvenile salmonids are often associated with LWD and pool habitat (Murphy et al. 1986) and loss of wood reduces available habitat for juvenile salmonids (Dolloff 1986). A study of streams draining old growth, clear-cut and second-growth forests in southwestern Washington found that the amount of LWD decreased as stream size increased in the three stand types, and was greatest at old-growth sites (Bilby and Ward 1991). In British Columbia, Young et al. (1999) investigated the status of resident cutthroat trout and their habitat twenty-five years after riparian logging. The results suggested that large pieces of wood that are left in and over small streams after logging may help protect resident trout populations following riparian logging.

Large woody debris not only provides cover directly, but also forms 80-90 % of pools in valley bottom streams (Heifetz et al. 1986) and helps maintain water levels during low flow periods (Lisle 1986). In Washington, Grette (1985) studied long-term trends in abundance of large wood in streams and changes in juvenile salmonid rearing habitat. Large wood from old growth was more abundant in unlogged streams than in young, middle-aged, or old second-growth streams. Densities of older-aged juvenile steelhead and cutthroat trout correlated positively with area of pool cover formed by large wood in summer. Densities of Coho salmon fry were not correlated with area of cover at summer low flows, but fry numbers in winter were closely related to the amount of wood (cited by Hall et al. 2004).

**Comment 107. 14 CCR § 916.9 [936.9, 956.9], subsection (h)(7)**

The Departments support retaining trees in the ELZ and channel zone in order to protect and maintain bank and bed stability.

The FEMAT report (Thomas et al. 1993) identified several important ecological processes that also occur in intermittent (Class III streams), including storage and processing of organic materials, the products of which are later transported to downstream areas (Thomas et al. 1993). Steep, intermittent streams store sediment and wood and are sources of these materials for permanently flowing streams (Reeves et al. 1995; Thomas et al. 1993). Timber harvests generally reduce the large wood available to streams that influence the transport and storage of sediment caused by harvest related hillslope failures (Reeves et al. 1995). Removing the connection between intermittent and permanently flowing streams may have detrimental consequences to the physical and biological components of stream ecosystems, particularly in the long-term. The FEMAT report also stated that protection of intermittent streams is important for providing habitat for species unique to small stream riparian areas, and maintaining the landslide-and flood-delivered supplies of large woody material throughout the landscape (Thomas et al. 1993). Therefore, clear cutting or removal of the largest trees overtime, including sprouting trees such as redwood, in reaches of Class III watercourses in watersheds with sediment and riparian-zone impairments will likely lead to further sediment delivery and reduction in delivery of large wood and nutrients to downstream aquatic resources.

On page 60, lines 20-23, under (7), consider the following for improved clarity: "Retain all trees in the ELZ and channel zone that show visible indicators of providing bed or band stability, except sprouting conifers that do not have boles overlapping the channel zone."

(7) Retain all trees in the ELZ and channel zone, ~~excluding sprouting conifers that do not have boles overlapping the channel zone,~~ which show visible indicators of providing bank or bed stability, ~~excluding sprouting conifers that do not have boles overlapping the channel zone.~~ Visible indicators of stability include roots that permeate the bank or provide channel grade control.

**Comment 108. 14 CCR § 916.9 [936.9, 956.9], subsection (k) Year-round road, landing use limitations**

The Departments support addressing the project specific and cumulative impacts of roads and landings in the T/I rules. The Departments recognize that fully addressing all of the concerns about roads, landings and their erosion and sediment impacts on watersheds and salmonids has not been included in this rulemaking, and request that

the Board complete this topic in 2010 in a subsequent rulemaking process. Addressing these topics is important to achieving goals established by the Joint Policy, including recovering salmonid populations to meet delisting standards and encouraging watershed-scale programmatic approaches to achieve delisting. The T/I rules are an integral and critical part of achieving the Joint Policy goals.

The proposed amendments provide positive initial improvements. However, the Departments recommend adding a requirement for hydrologic disconnection for logging roads and landings in subsection 14 CCR § 916.9 [936.9, 956.9], subsection (k)(2), as follows:

(2) Log hauling on logging roads and landings shall be limited to those which are hydrologically disconnected from watercourses to the extent feasible, and exhibit ~~with~~ a stable operating surface in conformance with (1) above.

In addition, the Departments also recommend applying the definition for Hydrologic Disconnection generally under the Forest Practice Rules, including T/I watersheds. This definition is provided under the definition for Watersheds with Coho Salmon in 895.1 and currently only applies to those watersheds. Adding this definition to all FPRs provides the definition for the Departments' proposed use of the term in 14 CCR § 916.9 [936.9, 956.9], subsection (k)(2). Also see Comment 11.

Hydrologic disconnection should be required for all logging roads and landings year-round. Years of field observations of roads associated with timber harvesting plans by DFG Environmental Scientists and CAL FIRE inspectors, documented in preharvest inspection reports, clearly demonstrate that hydrologic disconnection, when used in concert with elimination of diversion potential, does more to prevent or reduce chronic fine road and landing sediment input into anadromous salmonid spawning, rearing, and overwintering habitat from roads and landings than any other Forest Practice Rule associated with road and landing use. The term is currently well understood by Registered Professional Foresters and agency personnel.

**Comment 109. 14 CCR § 916.9 [936.9, 956.9], subsection (l)(1)-(4) Winter period operations**

The Departments support the proposed amendment to incorporate deleted sections of 14 CCR § 916.9 [936.9, 956.9], subsection (k) for purposes of consolidating all operational requirements for winter logging.

The Departments recommend amending the title of the subsection to "Extended Wet Weather Period" to avoid confusion with the establishment of a new "winter period" as defined in 14 CCR 895.1. As was described in the recommended amendment to the definition of winter period, the Board's Road Rules Committee recommendation was not

intended to result in new imposition of activities and additional significant costs to the landowner and operators as a result of creating an expanded winter period definition for T/I watersheds. It was to reorganize and consolidate existing requirements in the T/I rules for the wet weather weather period. To ensure this intended purpose, and avoid confusion of regarding actions needed during the "winter period", the proposed amendment on page 63, line 8 is recommended:

**(I) Extended Wet Weather Period ~~Winter period operations~~ -**

On page 63, lines 19-20, use "and" rather than "or" in two places to make the list more inclusive. Also grammatical corrections are made on line 19 to eliminate extra spaces:

From October 15 to May 1 shall be considered the extended wet weather period and the following shall apply:

(1) No timber operations shall take place unless the approved plan incorporates a complete winter period operating plan pursuant to 14 CCR § 914.7 [934.7, 954.7] subsection (a) that specifically addresses, where applicable, proposed logging road-, landing- or tractor road construction, reconstruction and use during the extended wet weather period. Where logging road watercourse crossing construction or reconstruction is proposed an implementation schedule shall be specified.

(2) Unless the winter period operating plan proposes operations during an extended wet weather period with low antecedent soil wetness, no tractor roads shall be constructed, reconstructed, or used on slopes that are over 40 percent and within 200 feet of a Class I, II, or III watercourse, as measured from the watercourse or lake transition line during the extended wet wether period. and

**Summary**

**Support - Optional amendments 20, 21, 22, 23**

**Comment 110. 14 CCR § 916.9 [936.9, 956.9], subsection (n)(1)-(7) Treatments to stabilize soils**

The Departments support proposed amendments in 14 CCR § 916.9 [936.9, 956.9], subsections (n)(1)-(7) and Optional Amendments 20, 21, 22, and 23. The Optional Amendments retain important soil stabilization treatments proposed for deletion.

The Departments support retention of the language in 14 CCR § 916.9 [936.9, 956.9], subsection (n)(2) to its new location at 14 CCR § 916.9 [936.9, 956.9], subsection (K)(4). The traveled surfaces of logging roads are capable of generating and delivering significant amounts of sediment to watercourses, particularly at crossings. DFG Environmental Scientist staff and CAL FIRE have documented the problems associated with road surface erosion and the need for treatment of the traveled surface in preharvest inspection reports, monitoring reports, and through participation in the Interagency Mitigation Monitoring Program (IMMP). Erosion from road surfaces, particularly fine sediment from seasonal roads, is a significant impact to anadromous salmonid habitat that the Departments address during THP review. DFG routinely applies the existing 14 CCR § 916.9 [936.9, 956.9], subsection (n)(2) during THP review to make recommendations to CAL FIRE to mitigate potentially significant impacts to anadromous salmonid habitat, which have been made enforceable conditions of approved plans.

The Departments recognize that fully addressing all of the concerns about roads, landings and their erosion and sediment impacts on watersheds and salmonids has not been included in this rulemaking, and requests that the Board complete this topic in 2010 in a subsequent rulemaking process.

**Comment 111. 14 CCR § 916.9 [936.9, 956.9], subsection (o)(1)-(3) Erosion Site identification and remedies**

The Departments support the proposed amendment because it replaces the undefined phrase “active erosion site” with the language “where erosion and sediment production are ongoing during any period of the year”, which provides a clear description that will aid identification in the field making THP preparation and review more efficient and accurate.

**Summary**

**Support - 14 CCR § 916.9 [936.9, 956.9], subsection (r) Water Drafting**

**Oppose – Optional amendment 25**

**Comment 112. 14 CCR § 916.9 [936.9, 956.9], subsection (r) Water Drafting**

The Departments support the proposed amended language for water drafting, and oppose Optional Amendment 25, with some additional suggested non-substantial changes.

As stated in the ISOR (Board of Forestry 2009), one of the Board’s goals for the T/I rules is to avoid or reduce duplicative information documentation that adds cost to the THP preparation process. One way to address redundant permitting processes and improve permitting efficiency for landowners and public agencies is to incorporate requirements into the Forest Practice Rules (FPRs) that provide consistency with DFG requirements and Fish and Game Code (FGC) statutes, such as FGC § 1600 et seq.

In 2008, as part of the T/I rule development process, DFG responded to questions from stakeholders and the Board regarding Lake and Streambed Alteration agreements (agreement) (See Attachment 3). Key points related to permitting streamlining include 1) DFG does not yet have standard agreements for different water drafting settings and types of operations, 2) the FPRs cannot substitute for an agreement from DFG and DFG cannot delegate its authority granted by the legislature under FGC § 1600, 3) and DFG is available to explore opportunities to expand the use of the THP beyond notification to agreement processing and approval.

The amended language in 14 CCR § 916.9 [936.9, 956.9], subsection (r) provides for a more streamlined permitting process than the existing rule and Optional Amendment 25. The Departments found deficiencies in the existing language, including 1) the representation of the FGC § 1600 et seq. notification and agreement process is inaccurate, and does not reflect current DFG policy; and 2) the stream conditions in the existing subparagraph (2), under which no drafting can occur without a water drafting plan, rarely exist in actuality, which in most cases means a water drafting plan would be required. However, in the existing language the plan is not related to notification or evaluation for an agreement under FGC § 1600 et seq. The Departments recommend clarifying and simplifying the process in three ways including 1) requiring FGC § 1600 et seq. notification; 2) providing adequate project and impact disclosure information in the THP to fulfill CEQA requirements; and 3) provide standard minimum protective measures in the Forest Practice Rules. The Departments also recommend that plan submitters can make most efficient use of existing streamlining opportunities by utilizing FGC § 1611, which allows the THP to serve as notification.

First, 14 CCR § 916.9 [936.9, 956.9], subsection (r)(1) requires notification to DFG under FGC § 1600 et seq. for lake and streambed alteration for water drafting for timber operations. This is consistent with the DFG's water drafting requirements for timber operations in its Northern and Bay-Delta Region offices, where the T/I rules will apply. DFG found it necessary to establish and implement this policy due to the trend toward drier conditions in watersheds with listed salmonids and other aquatic species, and the increasing competition for water resources on forest lands. This requirement also facilitates disclosure of water drafting proposed in a watershed, which is particularly important for evaluating cumulative impacts in watersheds with multiple timberland or other landowners. It is critical to take whatever steps available at this time to disclose and evaluate cumulative impacts to listed salmonids so that effective recovery steps can be planned and implemented. This requirement will not increase DFG's workload or increase costs to landowners because notification is already required by DFG.

Optional Amendment 25 does not require notification for all water drafting for timber operations. Optional amendment 14 CCR § 916.9 [936.9, 956.9], subsection (r)(1) states that water drafting shall comply with FGC § 1600 et seq. "where applicable", which incorrectly implies that there are locations where water drafting might be conducted to which the statute does not apply. This language is not consistent with FGC § 1600 et seq. The statute is clear that it applies to any river, stream or lake in

California for an activity that will substantially modify a river, stream or lake. If DFG determines that the activity may substantially adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will be prepared. The Agreement includes reasonable conditions necessary to protect those resources and must comply with CEQA. Subsection 14 CCR § 916.9 [936.9, 956.9], subsection (r)(1)(A) of the proposed amended language confirms that timber operations under existing master or long-term Lake and Streambed Alteration agreements (agreement) may provide that agreement with the plan for compliance with the notification requirement. Optional amendment 14 CCR § 916.9 [936.9, 956.9], subsection (r)(2) could be interpreted to mean that if a plan proposes water drafting under an existing agreement, that agreement can be made part of the plan. The optional language does not specify that the plan submitter and the holder of the agreement must be the same. In other words, an existing agreement cannot be transferred to a different plan submitter that proposes to use the same water drafting location. DFG already allows use of existing agreements by the same landowner and requires the agreement be disclosed in the new THP. Language could be added to the amendment which acknowledges existing individual water drafting agreements in the proposed rule along with acknowledgement of existing master and long-term agreements.

Secondly, 14 CCR § 916.9 [936.9, 956.9], subsection (r)(2) provides a comprehensive list of information to be gathered and submitted with the notification. Recall that the THP can act as the notification under FGC § 1611, which was adopted to reduce duplication of information and improve permitting efficiency. Many plan submitters take advantage of this option. This information list will allow review team agencies and the public to evaluate proposed water drafting and determine whether substantial adverse impacts would occur from the water drafting and allow DFG to provide an agreement to address those impacts. In practice, plan submitters often pre-consult with DFG regarding which watercourse crossings or water drafting proposals will have substantial adverse impacts, and then submit fees after that is determined. The proposed language does not change that practice. The language does not require a new notification for water drafting locations that already operate under an agreement. However, DFG requires disclosure of the use of existing permitted sites to be used under a new THP, and also other locations in the same watershed whether or not DFG provided an agreement so that there is adequate information in the THP to evaluate cumulative impacts and fulfill the disclosure requirements of CEQA. Optional Amendment 25 does not contain a complete list of the types of information that DFG needs to evaluate a notification for water drafting, which would delay review of the THP or separate notification while DFG requests the information and waits for the plan submitter to provide it.

Thirdly, 14 CCR § 916.9 [936.9, 956.9], subsection (r)(3) provides a set of requirements for water drafting operations that provide a minimum set of conditions to ensure aquatic resources are protected under the FPRs. If DFG determines that substantial adverse impacts would occur, these requirements would be incorporated into the agreement or modified by the agreement, or additional conditions could be added in the agreement

depending on the site. Then, the agreement would take precedence over the requirements of the rule. Requirements in 14 CCR § 916.9 [936.9, 956.9], subsections (r)(3)(A)(1) – (5) are standard screening criteria for protection of juvenile salmonids, which have been promoted by DFG since 2000 and are currently included in all THPs in T/I watersheds in DFG's Northern Interior Region where water drafting from Class I watercourses occurs. Requirements in 14 CCR § 916.9 [936.9, 956.9], subsections (r)(3)(C) and (D) are additional to the existing rule. The requirement in 14 CCR § 916.9 [936.9, 956.9], subsection (r)(3)(C) for sediment control, for example, where there is insufficient rocking or the pad slopes directly to the watercourse, should be required for water drafting activities to promote compliance with FGC § 5650, which regulates water pollution from prohibited materials including petroleum products, wood byproducts, or any substance or material deleterious to fish, plant life, or wildlife. The requirement in 14 CCR § 916.9 [936.9, 956.9], subsection (r)(3)(D) for use of drip pans to capture and contain vehicle fluids also promote compliance with FGC § 5650. These two sets of requirements, along with the other requirements in 14 CCR § 916.9 [936.9, 956.9], subsection (r)(3), are already general conditions of agreements issued by DFG, which promotes the Board's goal to provide consistency with other agency's requirements.

14 CCR § 916.9 [936.9, 956.9], subsection (r)(3)(F) requires a water drafting log book be maintained by the operator. DFG may recommend to CAL FIRE's Review Team Chair that the log book requirement be waived for particular sites in a THP depending on the sensitivity of the aquatic resources in the watercourse. An agreement is not necessary to obtain waiver of this requirement, only concurrence from DFG during plan review, which is less costly to the landowner. In response to timber industry concerns about the necessity for keeping water drafting logs, DFG agreed that it made sense that logs are not always useful or necessary and that the need should be matched with the sensitivity of the resources and conditions needing monitoring in order to ensure accuracy and avoid unnecessary work for operators. Optional amendment 25 does not include the minimum protection measures that DFG requires in agreements, such as those identified above, and eliminates the requirement for a log book altogether, and therefore does not help the Board meet the goal for consistency with other agency's requirements.

The Departments recommend changing the surface area requirement in 14 CCR § 916.9 [936.9, 956.9], subsection (r)(3)(A)(2) from 3.0 square feet to 2.5 square feet of openings. DFG's screening guidelines (CDFG 2000) specify that the screen surface shall have at least 2.33 square feet of openings and National Marine Fisheries Service (NMFS) screening guidelines (NMFS 2001) requires at least 2.5 square feet based on the upper limit of pumping. NMFS's screen size criteria will offer sufficient protection of juvenile salmonids and the Departments recommend changing the surface area to 2.5 square feet of openings.

The Departments recommend changing 14 CCR § 916.9 [936.9, 956.9], subsection (r)(3)(E) to specify that the 2 cubic feet per second (cfs) bypass flows, surface flow percentage, and pool volume be maintained on Class I watercourses in order to reduce

costs to landowners and maintain flexibility for DFG to review site conditions and impacts to determine the need for an agreement. The amendment language has requirements for bypass flow, surface flow percentage, and pool volume that can be altered in an agreement with DFG. However, there may be situations where water drafting might not have substantial adverse effects to a Class II watercourse and there may be less than 2 cfs flowing in the watercourse. In drier areas of the state, most Class II watercourses have streamflows less than 2 cfs. Road watering is required in the FPRs and the Departments want landowners to distribute water drafting operations throughout the plan area and watershed(s). This would unnecessarily restrict drafting from Class II watercourses. However, the proposed amendment would require an agreement in order to modify bypass flow, surface flow percentage, and pool volume, even though has identified no substantial adverse impacts from the water drafting. DFG does not currently write agreements for all Class II water drafting sites, so this would be an increased cost to landowners.

The Departments recommend the following changes on page 69, lines 10-13 to address this issue:

(E) Bypass flows for Class I watercourses shall be provided in volume sufficient to avoid dewatering the watercourse and maintain aquatic life downstream, and shall conform to the following standard:

1. Bypass flows in the source stream during drafting shall be at least 2 cubic feet per second.
2. Diversion rate shall not exceed 10 percent of the surface flow.
3. Pool volume reduction shall not exceed 10 percent.

The following are two non-substantive changes recommended by the Departments as referenced above:

On page 69, line 16, 916.9(r), Water Drafting, put a comma between “drafted” and “the date.”

On page 71, line 19, 916.9(r), Water Drafting, the word, “performed” should be “perforated.”

**Comment 113. 14 CCR § 916.9 [936.9, 956.9], subsection (s)(5) Exemption Notices**  
The Departments recommend revising 14 CCR § 916.9 [936.9, 956.9], subsection (s)(5) as follows in order to conform the rule with FGC § 1600 et seq.

(5) ~~Temporary crossings of dry Class III watercourses which that do not require "Streambed Alteration Agreement" notification under Fish and Game Code §1600 et seq.~~

This would clarify that FGC § 1600 et seq. requires notification to DFG when substantial alterations to bed, bank and channel are proposed. DFG uses the notification to then evaluate the project's adverse impacts and determine whether or not a Lake and Streambed Alteration Agreement will be necessary. The existing rule language incorrectly describes the requirement under the FGC.

#### Summary

**Recommend change – 14 CCR § 916.9 [936.9, 956.9], subsection (t)(5) Emergency Notices**

**Oppose – Proposed amended language in § 916.9 [936.9, 956.9] (t)(7)(A).**

#### Comment 114. 14 CCR § 916.9 [936.9, 956.9], subsection (t)(5)

The Departments recommend revising 14 CCR § 916.9 [936.9, 956.9], subsection (t)(5) as follows in order to conform the rule to FGC § 1600 et seq.

(5) ~~Temporary crossings of dry Class III watercourses which that do not require "Streambed Alteration Agreement" notification under Fish and Game Code §1600 et seq.~~

This would clarify that FGC § 1600 et seq. requires notification to DFG when alterations to bed, bank and channel are proposed. DFG uses the notification to then evaluate the project's adverse impacts and determine whether or not a Lake and Streambed Alteration Agreement will be necessary. The existing rule language incorrectly describes the requirement under the FGC.

#### Comment 115. 14 CCR § 916.9 [936.9, 956.9], subsection (t)(7)(A)

The Departments recommend additional conditions for logging under emergency notices in watersheds with listed anadromous salmonids. The Departments recommend this language be changed as follows:

Comment [GDM1]: Mark Stopher to provide set of conditions

(7) ~~The harvest of dead or dying conifer trees subject the following conditions:~~

(A) Retention of all trees in the core zone of Class I and Class II-L watercourses. ~~Recruitment of large woody debris for aquatic habitat in Class I and Class II L anadromous fish bearing or restorable~~

~~WLPZs shall be ensured by retaining the ten 13 largest dbh conifers (live or dead) per 330 feet of stream channel length acre for plans in watersheds in the coho salmon ESU and 7 largest dbh conifers (live or dead) per acre in watersheds outside the coho salmon ESU, that are the most conducive to recruitment to provide for the beneficial functions of riparian zones. The retained conifers shall be selected from within the area of operations that lies within 50 feet of the watercourse transition line. Where the area of operations is bounded by an ownership boundary that corresponds with a class I watercourse, and where the WLPZ on both sides of the watercourse currently meets the stocking standards listed under 14 CCR § 912.7 [932.7, 952.7](b)(2), the five (5) largest dbh conifers (live or dead) per 330 feet of stream channel length that are the most conducive to recruitment to provide for the beneficial functions of riparian zones shall be retained within 50 feet of the watercourse transition line within the area of operations.~~

~~The RPF may provide alternatives to substitute smaller diameter trees, trees that are more than 50 feet from the watercourse transition line, or other alternatives on a site specific basis. The RPF must provide with the notice an explanation and justification why the alternative provided is more conducive to current and long term Llarge Wwoody Ddebris recruitment, shading, bank stability, and the beneficial functions of riparian zones.~~

(B) Within any ....

Emergency timber operations (per 14 CCR § 1052) are not subject to a focused interagency environmental review, so their potential impacts to salmonids cannot be fully evaluated to determine if the standard measures for protection are adequate to prevent take of a species. Therefore, the risk of impacts should be commensurately low or non-existent. This subsection is intended to condition operations conducted under an emergency notice from the zones established to protect water-related values; requiring the retention of a certain level of stocking, and a certain number of dead trees for LWD recruitment and wildlife habitat. To address these needs, the Departments recommend retaining all trees in the core zone of the Class I and Class II-L streams to highly

address these functions and to also contribute to reducing risks of sediment production/discharge in locations closest to the stream.

Fires are a natural part of forming and maintaining the aquatic systems that support salmonids. Fire plays a crucial role in the ecological cycling of LWD (Shaffer and Laudenslayer 2006). High severity stand replacing fires increase the short-term inputs of LWD and decrease the long-term inputs of LWD (Thode et al. 2006). Higher frequency stand replacing fires in semi-arid areas can lead to higher proportion of fire-related LWD (Benda and Sias 2003). The Scientific Literature Review (SWC 2008) argues for the importance of natural disturbance as an important mechanism for the development and maintenance of diverse and productive riparian and instream habitats.

The Departments believe the proposed rule language is not the same level of retention as stated in the ISOR (Board of Forestry 2009). High severity fires will not leave a growing stand that will provide for medium- and long-term recruitment. The proposed rule language would likely result in adequate retention for low and medium severity fires that result in partial mortality. However, for high severity fires that result in near total or total mortality, any harvest will reduce the natural short-term increased input of LWD that helps trap and meter the associated episodic increased sediment inputs to the stream system from fire.

Salvage logging in the WLPZ may inhibit important LWD and downed woody debris recruitment processes. Restoring these processes to approximate natural function is widely recognized as critical to protection of native anadromous salmonids. The Board should consider that salvage logging may inhibit the recruitment of standing dead trees and other features of riparian habitat that the WLPZ is intended to protect and that is specified elsewhere in the Forest Practice Rules (eg 14 CCR 897(b)(1)). There should be a clear goal of recruiting smaller trees if flexibility is desired for maintaining shading and bank stability functions. In this case, staff recommends that the distance from the watercourse and number of conifers retained would need to be identical to proposed amendments for Class I and Class II watercourses.

#### **Summary**

**14 CCR § 916.9 [936.9, 956.9], subsection (v) - Site-specific measures or nonstandard operational provisions**  
**Oppose –Optional amendments 26, 27, 28**

#### **Comment 116. 14 CCR § 916.9 [936.9, 956.9], subsection (v)(1)**

The Departments oppose Optional Amendment 26. The Departments do support development of site-specific plans for unconfined watercourses with flood prone areas, where possible, to develop properly functioning salmonid habitat. River systems show considerable temporal and spatial variability and it is often very difficult, or impracticable, to apply a general system of rules across all areas. Other agencies in the Pacific Northwest have also recommended the development of a site-specific approach to forest management. For example, the *Aquatic Conservation Strategy* of

the Northwest Forest Plan recommends the adoption of a site-specific approach, wherever possible (Reeves 2006).

The Departments support the amendment language in 14 CCR § 916.9 [936.9, 956.9], subsection (v)(1) and also support providing this provision as a Technical Rule Addendum. The Departments support providing a pathway to meet the objectives of the T/I rules through the use of site specific analysis and planning along with specific guidance for analysts, plan submitters and regulating agencies about how, where and when to use the site specific analyses and results. The Departments recommend establishing a pilot approach to implementing the concept of site specific analysis in this subsection. Washington State's Department of Natural Resources and Humboldt Redwood Company in California could provide examples of site specific approaches that could be tested and experience with processes for developing guidance for using the results to protect salmonid habitat from timber harvesting operation impacts.

The language in 14 CCR § 916.9 [936.9, 956.9], subsection (v)(1) is superior and more protective of anadromous salmonids than that in Optional Amendment 26. The language in 14 CCR § 916.9 [936.9, 956.9], subsection (v)(1) requires the effects to the beneficial functions of the riparian zone to be equal to or more favorable than those expected to result from the application of the operational provisions required under the T/I rules. Optional amendment 26 requires a result of "improved beneficial functions of the riparian zone" without the specific requirement that the effects be equal to or more favorable than those expected to result from the application of the operational provisions required under the T/I rules.

The Departments appreciate the concerns expressed that any measures produced via site-specific analysis may be measured against numeric standards in the T/I rules rather than meeting desired goals. However, the Departments believe the results from any site specific measure or nonstandard operation provision should clearly exceed those that would result from the application of the operational provisions required under the T/I rules in order to provide a margin of greater confidence in the results. It would be premature to have complete confidence in the results, given the fact that site specific analysis tools have not been sufficiently tested in the field in California nor do guidelines or regulations yet exist in California for their use by planners and regulators.

Additionally, the Departments recommends making clear that site-specific proposals pertain exclusively to watersheds with listed anadromous salmonids pursuant to 14 CCR § 916.9 [936.9, 956.9] only. To clarify this, add the text "...in place of any of the provisions contained in this section..." after "...nonstandard operational provisions..." on line 22 and add punctuation to reduce run-on sentence length as shown below:

**(1) In consideration of the spatial variability of the forest landscape, the RPF may propose site-specific measures or nonstandard operational provisions in place of any of the provisions contained in this section. Site**

specific plans may be submitted when, in the judgment of the RPF, such measures or provisions offer a more effective or more feasible way of achieving the goals and objectives set forth in 14 CCR § 916.9 [936.9, 956.9], subsections (a) and (c), and would result in effects to the beneficial functions of the riparian zone equal to or more favorable than those expected to result from the application of the operational provisions required under 14 CCR § 916.9 [936.9, 956.9].

**Comment 117. 14 CCR § 916.9 [936.9, 956.9], subsection (v) (3), Site Specific Plan**  
On page 76, line 17, Add "-ly" to "appropriate" to make it an adverb.

**Comment 118. 14 CCR § 916.9 [936, 956], subsection(v)(3)(A) 5 Site Specific Plan**  
Prescriptive standards should be extracted from the fire hazard reduction objectives in 14 CCR § 916.9 [936.9, 956.9], subsection (c) and are moved in the 14 CCR § 916.9 [936.9, 956.9], subsection (v), site specific plan. Placing these in this subsection is appropriate as there are many complexities in assessing appropriate hazard reduction projects and making consistent the fuel hazard reduction with the other objectives of the riparian areas (ref. page 77, line 16).

5. A detailed description of the site-specific measure(s) or nonstandard operational provision(s) proposed. The description should address at a minimum the relationships between the riparian stand characteristics and ecological functions, the relative importance of the beneficial functions of the riparian zone to the watercourse, the cost effectiveness of the measure(s) or provision(s), and the predicted consequences.

i) For site specific plans that address WLPZs having conditions where catastrophic, stand replacing wildfire will result in significant adverse effects to salmonid species, riparian habitat or other wildlife species, the site specific plan shall address measure(s) or provision(s) that create fire resilient forests, promote reduced fire intensities, and retain functional habitat following a wildfire. Site specific plans proposed for fuel hazard reduction shall contain information demonstrating the potential for severe fire behavior and likelihood of stand

replacing fires. Fuel reduction measure(s) or provision(s) shall be designed to reduce fire behavior to levels appropriate for the region and riparian area. Measure(s) or provision(s) include, but are not limited to, activities that result in maximum four-foot flames lengths under average severe fire conditions, eliminate the vertical and horizontal continuity among all vegetative fuels layer (surface fuels, ladder fuels and crown fuels), focus on reducing surface and ladder fuel hazards, and simultaneously meet goals and objectives of 14 CCR § 916.9 [936.9, 956.9] subsections (a) and (c).

**Comment 119. 14 CCR § 916.9 [936.9, 956.9], subsection (v)(4)(F) Site Specific Plan**

The Departments recommend making grammatical change “which” to “that” on Page 78, Line 9.

**Comment 120. 14 CCR § 916.9 [936.9, 956.9], subsection (v)(6)**

The Departments support the amendment language in 14 CCR § 916.9 [936.9, 956.9], subsection (v)(6). The Departments oppose Optional Amendments 27 and 28. The language in 14 CCR § 916.9 [936.9, 956.9], subsection (v)(6) is superior and more protective of anadromous salmonids than that in Optional Amendment 27 because 14 CCR § 916.9 [936.9, 956.9], subsection (v)(6) retains provisions for nonconcurrence from two or more review team agencies, including DFG, that the proposed alternative will not meet the goal of this section, requiring CAL FIRE to not approve the alternative.

Optional amendments 27 and 28 do not provide for written comments by DFG and other review team agencies, which could lead to the Director’s conclusion that the proposed alternative will not meet the goals of this section. This will result in lengthy plan review due to the lack of guidance and inconsistent application of site specific analysis results from plan to plan. Again, given the untested models, analyses, and lack of clear use guidance, written concurrence and oversight by DFG will be necessary to evaluate how the results will meet listed salmonid recovery plan goals and the objectives of the T/I rules. In addition, DFG cannot delegate oversight of take for state listed species such as coho salmon, and plans using a site-specific analysis to determine protective measures will need to be evaluated for take.

Confidence about the results of site specific analyses and models and how those results are translated into measures that protect and restore salmonid habitat will require establishing parameters and guidance for regulators, plan submitters and analysts. The amendment language is a good start for identifying the kinds of information and data to be analyzed. Guidance for turning model results or the results of watershed analyses

into site-specific measures need to be developed by regulating agencies in collaboration with the timber harvesting industry. Optional amendments 26, 27, and 28 do not provide the level of detailed guidance needed to help analysts, plan submitters, or regulators to consistently or successfully use the results of site analysis tools under subsection 14 CCR § 916.9 [936.9, 956.9], subsection (v).

**Comment 121. 14 CCR § 916.9 [936.9, 956.9], subsection (v)(7) Site Specific Plan:**

The Departments recommend the Board correct the typo on page 80, line 7. The section number should be changed from 916.9 to 916.6.

**Comment 122. 14 CCR § 916.9 [936.9, 956.9], subsection (w) - Exemption**

The Departments support the proposed amendment, with some changes proposed due to language that was incorrectly noticed. This amendment exempts a plan from application of the T/I rules when a state or federal incidental take permit/statement, DFG natural communities conservation plan (NCCP), federal Habitat Conservation Plan (HCP) or preparatory agreements with DFG for a natural communities conservation plan are in effect for the plan area. Such plans have incorporated measures to avoid take from timber harvesting operations and promote recovery of listed salmonids.

Additionally, inadvertent existing rule language that was intended to be deleted was not shown in the proposal (ref. Page 80, Lines 15-25 and Page 81, Lines 1-3). This language is reinserted and shown as strikeout format. Furthermore, subsections (3), (4) and (5) should be amended to contain the stipulation that the other permit "addresses anadromous salmonids" like (1) and (2).

~~(v)(w)~~ The provisions of 14 CCR § 916.9 [936.9, 956.9] shall not apply to a plan ~~where there is~~ that is subject to ~~an incidental take permit based upon an approved Habitat Conservation Plan that addresses anadromous salmonid protection:~~

(1) a valid incidental take permit issued by DFG pursuant to Section 2081(b) of the Fish and Game Code that addresses anadromous salmonid protection; or

(2) a federal incidental take statement or incidental take permit that addresses anadromous salmonid protection, for which a consistency determination has been made pursuant to Section 2080.1 of the Fish and Game Code; or

(3) a valid natural community conservation plan that addresses anadromous salmonid protection approved by DFG under section 2835 of the Fish and Game Code; or

(4) a valid Habitat Conservation Plan that addresses anadromous salmonid protection, approved under Section 10 of the federal Endangered Species Act of 1973; or

(5) project revisions, guidelines, or take avoidance measures pursuant to a memorandum of understanding or a planning agreement entered into between the plan submitter and DFG in preparation of obtaining a natural community conservation plan that addresses anadromous salmonid protection.

**Comment 123. 14 CCR § 916.9 [936.9, 956.9], subsection (z) Expiration Date**

The rules under 14 CCR § 916.9 [936.9, 956.9], subsection (z) include language providing for the expiration of the previously adopted changes to this section by a certain date. This rule package proposes to delete the expiration language from this section of the rules. The Departments support this change to delete this expiration date, thereby making the rules permanent regardless of any other changes the Board adopts under this rulemaking action.

**Comments on Changes to 14 CCR §§ 916.11, 936.11 and 956.11. Effectiveness and Implementation Monitoring.**

**Comment 124. 14 CCR § 916.11 [936.11, 956.11], subsection (b) Expiration Date**

The rules under 14 CCR § 916.11 [936.11, 956.11], subsection (b) include language providing for the expiration of the previously adopted changes to this section by a certain date. This rule package proposes to delete the expiration language from this section of the rules. The Departments support this change to delete this expiration date, thereby making the rules permanent regardless of any other changes the Board adopts under this rulemaking action.

**Comments on Changes to 14 CCR §§ 916.12, 936.12 and 956.12. Section 303(d) Listed Watersheds.**

**Comment 125. 14 CCR § 916.12 [936.12, 956.12], subsection (f)**

The Departments oppose this change at this time. Subsection (f) as proposed is not consistent with subsections (a) through (e). The existing rules under 14 CCR § 916.12 [936.12, 956.12] provide specific direction to CAL FIRE to work with the various regional waterboards to evaluate watersheds for the need for watershed specific rules to

address the beneficial uses of water. The existing language under these subsections is not related to the preparation or review of any individual THP. The proposed changes to subsection (f) provide direction to an RPF preparing a THP. It is inappropriate to make this change as proposed.

**Comment 126. 14 CCR § 916.12 [936.12, 956.12], subsection (f) Expiration Date**

The rules previously adopted under 14 CCR § 916.12 [936.12, 956.12], subsection (f) include language providing for the expiration of the previously adopted changes to this section by a certain date. This rule package proposes to delete the expiration language from this section of the rules. The Departments support this change to delete this expiration date, thereby making the rules permanent regardless of any other changes the Board adopts under this rulemaking action.

**Comments on Changes to 14 CCR §§ 923.3, 943.3 and 963.3. Watercourse Crossings.**

**Summary**

**Oppose – Optional Amendments 30, 31**

**Comment 127. 14 CCR § 923.3 [943.3, 963.3]**

The Departments support addressing the project specific and cumulative impacts of watercourse crossings in the T/I rules. The Departments recognize that fully addressing all of the concerns about watercourse crossings and their erosion and sediment impacts on watersheds and salmonids has not been included in this rulemaking, and requests that the Board complete this topic in 2010 in a subsequent rulemaking process. Addressing these topics is important to achieving goals established by the Joint Policy, including recovering salmonid populations to meet delisting standards and encouraging watershed-scale programmatic approaches to achieve delisting. The T/I rules are an integral and critical part of achieving the Joint Policy goals.

The proposed amendments provide positive initial improvements. However, the Departments recommend updating the references to FGC § 1600 on page 83, line 6 as follows:

...Exceptions may be provided through application of Fish and Game Code Sections ~~1601 and 1603~~ 1600 et seq. and shall be included in the THP.

**Comment 128. 14 CCR § 923.3 [943.3, 963.3], subsection (a) – (d)**

The Departments support the plead language for 14 CCR § 923.3 [943.3, 963.3], subsection (a)-(d). The Departments recommend two changes to 14 CCR § 923.3(a) for accuracy and to eliminate unnecessary language. Delete the word “permanent” from 14 CCR § 923.3 [943.3, 963.3], subsection (a) on page 83, line 22. All watercourse

crossing locations, not just permanent watercourse crossing drainage structures, within the WLPZ should be shown on the THP map in order to comply with project disclosure requirements of CEQA, facilitate review of cumulative impacts to the watershed, and minimize delays in THP review due to additional information requests.

Delete the last sentence from 14 CCR § 923.3 [943.3, 963.3], subsection (a), page 83, line 8 that extra culverts may be installed because this language is not necessary for the RPF to fulfill the requirements of (a) and its purpose and intent is not clear.

**Comment 129. 14 CCR § 923.3 [943.3, 963.3], subsection (e)**

The Departments support keeping the existing language and oppose Optional Amendment 30. Allowing exceptions to accommodating the 100-year flood flow, including debris and sediment loads, will weaken protective measures in watersheds with listed salmonids, resulting in damage to salmonid habitat. Compromising this requirement is not consistent with protection and restoration of watersheds with listed anadromous salmonids. Such exceptions could apply to crossings which have remained intact under a 10-year storm event, but which may fail catastrophically under a greater return interval storm. Channel conditions upstream of a crossing can be variable over time due to road construction, timber harvesting, bank failures, or wind throw into the channel. Such variability could cause a crossing to fail under the same return interval storm, even if it had remained intact and undamaged following stressing storms. Stressing storms, a new definition contained in the proposed rule amendments, are defined as storms yielding at least a ten-year flood flow. (Also see Comment 19 regarding definitions).

Optional amendment 30 presumes that the lack of culvert-related problems in one part of the physiographic province is pertinent to the system at large rather than site-specific. In addition, it presumes that culvert related impacts are site-limited (i.e., limited to the area of the culvert that withstood a Q10 event), which is not always the case, and may in fact be the exception. Streams are linear systems that move mass and energy along the channel primarily in upstream and downstream directions and through the flood prone area in all directions. It is critical that these linkages are well understood and analyzed before any instream action is taken. Optional amendment 30 does not provide criteria for evaluating an exception such as determining the longitudinal and vertical stability of the watercourse up- and downstream of the crossing. The term stressing storm is not accepted terminology for the concept of specific recurrence interval events. There does not seem to be a need for new terminology or jargon unique to the Forest Practice Rules when the concept of specific recurrence interval events is understood by essentially every discipline working in the stream corridor (Harrelson et al. 1994, Harvey et al. 1986, Lane 1955, Castro 2003).

**Comment 130. 14 CCR § 923.3 [943.3, 963.3], subsection (g)**

The Departments support the amended language and oppose Optional Amendment 31. The Departments prefer to see bridges installed over Class I watercourses and this is the standard in many watersheds with listed salmonids. A lesser standard is a culvert,

because obtaining the correct minimal grade at installation, and determining the appropriate type and diameter of culvert to use are all subject to errors which can result in barriers to one or more anadromous salmonid life-history stages. If culverts must be used on Class I watercourses instead of bridges, they need to be large enough in diameter and installed at a flat enough grade as to recruit natural streambed material throughout the culvert invert. This material is needed to increase channel roughness and provide resting opportunities for anadromous salmonids during seasonal migrations of juveniles or adults. The formation of natural bedload through a culvert is a strong indicator for water depths and velocities that allow fish passage. The Departments recognize that some stream environments may not generate enough coarse grained sediment to effectively build a bed within a culvert, and typically this situation is acknowledged and mitigated in the Lake and Streambed Alteration Agreement for the culvert installation. This is a better way to address difficult-to-design culverts than lowering the standard for fish passage in the FPRs in watersheds with listed salmonids.

The Departments believe the intent of the language in the first paragraph of 14 CCR § 916.9 [936.9, 956.9], subsection (g) would be clearer if it is revised to provide for more accurate and specific identification of “biological characteristics” on page 84, line 2, similar to the Departments’s recommendation for 14 CCR § 916.9 [936.9, 956.9], subsection (f)(1) in Comment 56. The Departments recommend the following revision:

(g) ...Class I watercourses, which meet the criteria of Class I waters based on biological characteristics where fish are always or seasonally present or where fish habitat is restorable, shall....

**Comment 131. 14 CCR § 923.3 [943.3, 963.3], subsection (h)Expiration Date**

The rules under 14 CCR § 923.3 [943.3, 963.3], subsection (h) include language providing for the expiration of the previously adopted changes to this section by a certain date. This rule package proposes to delete the expiration language from this section of the rules. The Departments support this change to delete this expiration date, thereby making the rules permanent regardless of any other changes the Board adopts under this rulemaking action.

**Comments on Changes to 14 CCR §§ 923.9, 943.9 and 963.9. Roads and Landings in Watersheds with Listed Anadromous Salmonids.**

**Summary**

**Oppose - Optional Amendments 32**

**Support – Optional Amendments 33**

**Comment 132. 14 CCR § 923.9 [943.9, 963.9] Roads and Landings**

The Departments support the changes proposed in the amendment language because they provide clarity to the existing provisions of 14 CCR § 923.9 [943.9, 963.9], including Optional Amendments 33. However, the Departments find the plead language for 14 CCR § 923.9 [943.9, 963.9] does not comprehensively and effectively prescribe

measures requiring road assessments, treatments, and best management practices to the extent needed to minimize and fully mitigate potentially significant impacts to listed anadromous salmonids and salmonid habitat. The Departments emphasize this is a major deficiency in the plead. The Departments recognize that fully addressing all of the concerns about roads, landings and their erosion and sediment impacts on watersheds and salmonids has not been included in this rulemaking, and requests that the Board complete this topic in 2010 in a subsequent rulemaking process. Addressing these topics is important to achieving goals established by the Joint Policy, including recovering salmonid populations to meet delisting standards and encouraging watershed-scale programmatic approaches to achieve delisting. The T/I rules are an integral and critical part of achieving the Joint Policy goals.

The Departments do not support Optional Amendment 32 as it makes more general the requirement for disclosure of road locations and offsetting mitigation measures needed for roads. As roads and crossing have been identified as a critical component to delivery of sediment, these rules are critical to ensuring adequate disclosure and review of potential impacts. The proposed language in the Option in subsection (1) does not provide a clear or enforceable standard for defining "How the operation will fit into the systematic layout pattern".

Additionally, inadvertent existing rule language that was intended to be deleted was not shown in the proposal (ref. Page 86, Lines 18-25 and Page 81, Lines 1-5). This language is reinserted and shown as strikeout format. Furthermore, subsections (3), (4) and (5) should be amended to contain the stipulation that the other permit "addresses anadromous salmonids" like (1) and (2).

~~(f) The provisions of 14 CCR § 916.9 [936.9, 956.9] shall not apply to a plan where there is:~~

~~(f) The provisions of 14 CCR § 923.9 [943.9, 963.9] shall not apply to a plan that is subject to: an incidental take permit based upon an approved Habitat Conservation Plan that addresses anadromous salmonid protection.~~

~~(1) a valid incidental take permit issued by DFG pursuant to Section 2081(b) of the Fish and Game Code that addresses anadromous salmonid protection; or~~

~~(2) a federal incidental take statement or incidental take permit that addresses anadromous salmonid protection, for which a~~

consistency determination has been made pursuant to Section 2080.1 of the Fish and Game Code; or

(3) a valid natural community conservation plan that addresses anadromous salmonid protection approved by DFG under section 2835 of the Fish and Game Code; or

(4) a valid Habitat Conservation Plan that addresses anadromous salmonid protection, approved under Section 10 of the federal Endangered Species Act of 1973; or

(5) project revisions, guidelines, or take avoidance measures pursuant to a memorandum of understanding or a planning agreement entered into between the plan submitter and DFG in preparation of obtaining a natural community conservation plan that addresses anadromous salmonid protection.

**Comment 133. 14 CCR § 923.9 [943.9, 963.9], subsection (g) Expiration Date**

The rules under 14 CCR § 923.9 [943.9, 963.9], subsection (g) include language providing for the expiration of the previously adopted changes to this section by a certain date. This rule package proposes to delete the expiration language from this section of the rules. The Departments support this change to delete this expiration date, thereby making the rules permanent regardless of any other changes the Board adopts under this rulemaking action.

**Comment 134. 14 CCR §§ 916.9.1 [936.9.1], 916.9.2 [936.9.2] and 923.9.1 [943.9.1] Modification of “coho 2112 rules”**

Regulatory consistency is essential between rules adopted by the Board and DFG. Consistency ensures adequate protection for the species, clarity for the regulated public, and elimination of redundant and or conflicting rules. The Board's proposed rules, when adopted consistent with the recommendations in this joint letter, will also be suitable for regulations jointly adopted by DFG and the Board in 2006 for “Protection Measures in Watersheds with Coho Salmon”. Should the Board adopt the recommendations in this joint letter, the following amendments to the “Coho Salmon Incidental Take Assistance” rules in 14 CCR §§ 916.9.1 [936.9.1], 916.9.2 [936.9.2], and 923.9.1 [943.9.1], could be amended as follows:

**Amend § 916.9.1 [936.9.1] Protection Measures in Watersheds with Coho Salmon**

In addition to all other district Forest Practice Rules, the regulations in 14 CCR § 916.9 [936.9] as amended and effective on January 1, 2010 following requirements shall apply in any planning watershed with coho salmon.:

~~(a) GOAL. Every timber operation shall be planned and conducted to prevent deleterious interference with the watershed conditions that primarily limit the values set forth in 14 CCR 916.2 [936.2](a) (e.g., sediment load increase where sediment is a primary limiting factor; thermal load increase where water temperature is a primary limiting factor; loss of instream large woody debris or recruitment potential where lack of this value is a primary limiting factor; substantial increase in peak flows or large flood frequency where peak flows or large flood frequency are primary limiting factors). To achieve this goal, every timber operation shall be planned and conducted to meet the following objectives where they affect a primary limiting factor:~~

~~(1) Comply with the terms of a Total Maximum Daily Load (TMDL) that has been adopted to address factors that may be affected by timber operations if a TMDL has been adopted, or not result in any measurable sediment load increase to a watercourse system or lake.~~

~~(2) Not result in any measurable decrease in the stability of a watercourse channel or of a watercourse or lake bank.~~

~~(3) Not result in any measurable blockage of any aquatic migratory routes for coho salmon or listed species.~~

~~(4) Not result in any measurable stream flow reductions during critical low water periods except as part of an approved water drafting plan pursuant to 14 CCR 916.9.1(r) [936.9.1(r)].~~

~~(5) Consistent with the requirements of 14 CCR § 916.9.1(i) or 14 CCR § 936.9.1(i); protect, maintain, and restore trees (especially conifers), snags, or downed large woody debris that currently, or may in the foreseeable future, provide large woody debris recruitment needed for instream habitat structure and fluvial geomorphic functions.~~

~~(6) Consistent with the requirements of 14 CCR § 916.9.1(g) or 14~~

~~CCR § 936.9.1(g); protect, maintain, and restore the quality and quantity of vegetative canopy needed to: (A) provide shade to the watercourse or lake, (B) minimize daily and seasonal temperature fluctuations, (C) maintain daily and seasonal water temperatures within the preferred range for coho salmon or listed species where they are present or could be restored, and (D) provide hiding cover and a food base where needed.~~

~~(7) Result in no substantial increases in peak flows or large flood frequency.~~

~~(b) Pre-plan adverse cumulative watershed effects on the populations and habitat of coho salmon shall be considered. The plan shall specifically acknowledge or refute that such effects exist. Where appropriate, the plan shall set forth measures to effectively reduce such effects.~~

~~(c) Any timber operation or silvicultural prescription within 150 feet of any Class I watercourse or lake transition line or 100 feet of any Class II watercourse or lake transition line shall have protection, maintenance, or restoration of the beneficial uses of water or the populations and habitat of coho salmon or listed aquatic or riparian associated species as significant objectives.~~

~~Additionally, for evenaged regeneration methods and rehabilitation with the same effects as a clearcut that are adjacent to a WLPZ, a special operating zone shall retain understory and mid-canopy conifers and hardwoods. These trees shall be protected during falling, yarding and site preparation to the extent feasible. If trees that are retained within this zone are knocked down during operations, that portion of the trees that is greater than 6" in diameter shall remain within the zone as Large Woody Debris. The zone shall be 25 feet above Class I WLPZs with slopes 0-30% and 50 feet above Class I WLPZs with slopes > 30%.~~

~~(d)(1) The plan shall fully describe: (A) the type and location of each measure needed to fully offset sediment loading, thermal loading, and potential significant adverse watershed effects from the proposed timber~~

~~operations, and (B) the person(s) responsible for the implementation of each measure, if other than the timber operator.~~

~~(2) In proposing, reviewing, and approving such measures, preference shall be given to the following: (A) measures that are both onsite (i.e., on or near the plan area) and in-kind (i.e., erosion control measures where sediment is the problem), and (B) sites that are located to maximize the benefits to the impacted portion of a watercourse or lake. Out-of-kind measures (i.e., improving shade where sediment is the problem) shall not be approved as meeting the requirements of this subsection.~~

~~(c) Channel zone requirements~~

~~(1) There shall be no timber operations within the channel zone with the following exceptions:~~

~~(A) timber harvesting that is directed to improve coho habitat through the limited use of the selection or commercial thinning silvicultural methods with review and comment by DFG.~~

~~(B) timber harvesting necessary for the construction or reconstruction of approved watercourse crossings.~~

~~(C) timber harvesting necessary for the protection of public health and safety.~~

~~(D) to allow for full-suspension cable yarding when necessary to transport logs through the channel zone.~~

~~(E) Class III watercourses where exclusion of timber operations is not needed for protection of coho salmon.~~

~~(2) In all instances where trees are proposed to be felled within the channel zone, a base mark shall be placed below the cut line of the harvest trees within the zone. Such marking shall be completed by the RPF that prepared the plan prior to the preharvest inspection.~~

~~(f) The minimum WLPZ width for Class I waters shall be 150 feet from the watercourse or lake transition line.~~

~~-(g) Within a WLPZ for Class I waters, at least 85 percent overstory canopy shall be retained within 75 feet of the watercourse or lake transition line, and at least 65 percent overstory canopy within the remainder of the WLPZ. The overstory canopy must be composed of at least 25% overstory conifer canopy post harvest. Harvesting of hardwoods shall only occur for the purpose of enabling conifer regeneration.~~

~~-(h) For Class I waters, any plan involving timber operations within the WLPZ shall contain the following information:~~

~~(1) A clear and enforceable specification of how any disturbance or log or tree cutting and removal within the Class I WLPZ shall be carried out to conform with 14 CCR 916.2 [936.2](a) and 916.9.1 [936.9.1](a).~~

~~(2) A description of all existing permanent crossings of Class I waters by logging roads and clear specification regarding how these crossings are to be modified, used, and treated to minimize risks, giving special attention to allowing fish to pass both upstream and downstream during all life stages.~~

~~(3) Clear and enforceable specifications for construction and operation of any new crossing of Class I waters to prevent direct harm, habitat degradation, water velocity increase, hindrance of fish passage, or other potential impairment of beneficial uses of water.~~

~~-(i) Recruitment of large woody debris for aquatic habitat in Class I coho salmon bearing waters shall be ensured by retaining the ten largest dbh conifers (live or dead) per 330 feet of stream channel length that are the most conducive to recruitment to provide for the beneficial functions of riparian zones. The retained conifers shall be selected from within the THP area that lies within 50 feet of the watercourse transition line. Where the THP boundary is an ownership boundary, a class I watercourse, and the WLPZ on both sides of the watercourse currently meets the stocking standards listed under 14 CCR § 912.7 [932.7,952.7](b)(2); the five (5) largest dbh conifers (live or dead) per 330 feet of stream channel length that are the most conducive to recruitment to provide for the beneficial functions~~

~~of riparian zones within the THP area shall be retained within 50 feet of the watercourse transition line.~~

~~The RPF may propose alternatives to substitute smaller diameter trees, trees that are more than 50 feet from the watercourse transition line, or other alternatives on a site specific basis. The RPF must explain and justify in the THP why the proposed alternative is more conducive to current and long-term Large Woody Debris recruitment, shading, bank stability, and the beneficial functions of riparian zones.~~

~~(j) Where an inner gorge extends beyond a Class I WLPZ and slopes are greater than 55%, a special management zone shall be established where the use of evenaged regeneration methods is prohibited. This zone shall extend upslope to the first major break in slope to less than 55% for a distance of 100 feet or more, or 300 feet as measured from the watercourse or lake transition line, whichever ever is less. All operations on slopes exceeding 65% within an inner gorge of a Class I or II watercourse shall be reviewed by a Professional Geologist prior to plan approval, regardless of whether they are proposed within a WLPZ or outside of a WLPZ.~~

~~(k) From October 15 to May 1, the following shall apply: (1) no timber operations shall take place unless the approved plan incorporates a complete winter period operating plan pursuant to 14 CCR § 914.7(a) [934.7(a)], (2) unless the winter period operating plan proposes operations during an extended period with low antecedent soil wetness, no tractor roads shall be constructed, reconstructed, or used on slopes that are over 40 percent and within 200 feet of a Class I, II, or III watercourse, as measured from the watercourse or lake transition line, and (3) operation of trucks and heavy equipment on roads and landings shall be limited to those with a stable operating surface.~~

~~(l) Construction or reconstruction of logging roads, tractor roads, or landings shall not take place during the winter period unless the approved plan incorporates a complete winter period operating plan pursuant to 14 §~~

~~CCR 914.7(a) [934.7(a), 954.7(a)] that specifically address such road construction. Use of logging roads, tractor roads, or landings shall not take place at any location where saturated soil conditions exist, where a stable logging road or landing operating surface does not exist, or when visibly turbid water from the road, landing, or skid trail surface or inside ditch may reach a watercourse or lake. Grading to obtain a drier running surface more than one time before reincorporation of any resulting berms back into the road surface is prohibited.~~

~~(m) All tractor roads shall have drainage and/or drainage collection and storage facilities installed as soon as practical following yarding and prior to either (1) the start of any rain which causes overland flow across or along the disturbed surface within a WLPZ or within any ELZ or EEZ designated for watercourse or lake protection, or (2) any day with a National Weather Service forecast of a chance of rain of 30 percent or more, a flash flood warning, or a flash flood watch.~~

~~(n) Within the WLPZ, and within any ELZ or EEZ designated for watercourse or lake protection, treatments to stabilize soils, minimize soil erosion, and prevent the discharge of sediment into waters in amounts deleterious to aquatic species or the quality and beneficial uses of water, or that threaten to violate applicable water quality requirements, shall be applied in accordance with the following standards:~~

~~(1) The following requirements shall apply to all such treatments.~~

~~(A) They shall be described in the plan.~~

~~(B) For areas disturbed from May 1 through October 15, treatment shall be completed prior to the start of any rain that causes overland flow across or along the disturbed surface.~~

~~(C) For areas disturbed from October 16 through April 30, treatment shall be completed prior to any day for which a chance of rain of 30 percent or greater is forecast by the National Weather Service or within 40 days, whichever is earlier.~~

~~(2) The traveled surface of logging roads shall be treated to prevent waterborne transport of sediment and concentration of runoff that results from timber operations.~~

~~(3) The treatment for other disturbed areas, including: (A) areas exceeding 100 contiguous square feet where timber operations have exposed bare soil, (B) approaches to tractor road watercourse crossings between the drainage facilities closest to the crossing, (C) road cut banks and fills, and (D) any other area of disturbed soil that threatens to discharge sediment into waters in amounts deleterious to the quality and beneficial uses of water, may include, but need not be limited to, mulching, rip rapping, grass seeding, or chemical soil stabilizers. Where straw, mulch, or slash is used, the minimum coverage shall be 90%, and any treated area that has been subject to reuse or has less than 90% surface cover shall be treated again prior to the end of timber operations. The RPF may propose alternative treatments that will achieve the same level of erosion control and sediment discharge prevention.~~

~~(4) Where the undisturbed natural ground cover cannot effectively protect beneficial uses of water from timber operations, the ground shall be treated by measures including, but not limited to, seeding, mulching, or replanting, in order to retain and improve its natural ability to filter sediment, minimize soil erosion, and stabilize banks of watercourses and lakes.~~

~~(e) As part of the plan, the RPF shall identify active erosion sites in the logging area, assess them to determine which sites pose significant risks to the beneficial uses of water, assess them to determine whether feasible remedies exist, and address in the plan feasible remediation for all sites that pose significant risk to the beneficial uses of water.~~

~~(p) The erosion control maintenance period on permanent and seasonal roads and associated landings that are not abandoned in accordance with 14 CCR § 923.8 [943.8] shall be three years.~~

~~(q) Site preparation activities shall be designed to prevent soil disturbance~~

~~within, and minimize soil movement into, the channels of watercourses. Prior to any broadcast burning, burning prescriptions shall be designed to prevent loss of large woody debris in watercourses, and vegetation and duff within a WLPZ, or within any ELZ or EEZ designated for watercourse or lake protection. No ignition is to occur within any WLPZ, or within any ELZ or EEZ designated for watercourse or lake protection. When burning prescriptions are proposed, the measures or burning restrictions which are intended to accomplish this goal shall be stated in the plan and included in any required burning permit. This information shall be provided in addition to the information required under 14 CCP § 915.4 [935.4].~~

~~(r) Water drafting for timber operations from within a channel zone of a natural watercourse or from a lake shall conform with the following standards:~~

~~(1) The RPF shall incorporate into the THP:~~

~~(A) a description and map of proposed water drafting locations;~~

~~(B) the watercourse or lake classification, and~~

~~(C) the general drafting location use parameters (i.e., yearly timing, estimated total volume needed, estimated total uptake rate and filling time, and associated water drafting activities from other THPs).~~

~~(2) On Class I and Class II streams where the RPF has estimated that:~~

~~(A) bypass flows are less than 2 cubic feet per second, or~~

~~(B) pool volume at the water drafting site would be reduced by 10%, or~~

~~(C) diversion rate exceeds 350 gallons per minute, or~~

~~(D) diversion rate exceeds 10% of the above surface flow; no water drafting shall occur unless the RPF prepares a water drafting plan to be reviewed and, if necessary a stream bed alteration agreement issued, by~~

~~DFG and approved by the Director. The Director may accept the project description and conditions portion of an approved "Streambed Alteration Agreement" issued under the Fish and Game Code (F&GC 1600 et seq.) which is submitted instead of the water drafting plan described in 14 CCR § 916.9.1 [936.9.1] (r)(2)(D)(1-5).~~

~~The water drafting plan shall include, but not be limited to:~~

- ~~1. disclosure of estimated percent streamflow reduction and duration of reduction;~~
- ~~2. discussion of the effects of single pumping operations, or multiple pumping operations at the same location;~~
- ~~3. proposed alternatives and discussion to prevent adverse effects (e.g. reduction in hose diameter, reduction in total intake at one location, described allowances for recharge time, and alternative water drafting locations);~~
- ~~4. conditions for operators to include an operations log kept on the water truck containing the following information: Date, Time, Pump Rate, Filling Time, Screen Cleaned, Screen Conditions, and Bypass flow observations;~~
- ~~5. a statement by the RPF for a pre operations field review with the operator to discuss the conditions in the water drafting plan.~~

~~(3) Intakes shall be screened in Class I and Class II waters. Screens shall be designed to prevent the entrainment or impingement of all life stages of fish or amphibians. Screen specifications shall be included in the plan.~~

~~(4) Approaches to drafting locations within a WLPZ shall be surfaced with rock or other suitable material to avoid generation of sediment.~~

~~(c) No timber operations are allowed in a WLPZ, or within any ELZ or EEZ designated for watercourse or lake protection, under exemption notices except for:~~

- ~~(1) hauling on existing roads;~~

~~(2) road maintenance,~~  
~~(3) operations conducted for public safety,~~  
~~(4) construction or reconstruction of approved watercourse crossings,~~

~~(5) temporary crossings of dry Class III watercourses which do not require a "Streambed Alteration Agreement" under the Fish and Game Code, or~~

~~(6) harvesting recommended in writing by DFG to address specifically identified forest conditions.~~

~~(4) No timber operations are allowed in a WLPZ, or within any ELZ or EEZ designated for watercourse or lake protection, under emergency notices except for:~~

~~(1) hauling on existing roads,~~  
~~(2) road maintenance,~~  
~~(3) operations conducted for public safety,~~  
~~(4) construction or reconstruction of approved watercourse crossings,~~

~~(5) temporary crossings of dry Class III watercourses which do not require a "Streambed Alteration Agreement" under the Fish and Game Code,~~

~~(6) harvesting recommended in writing by DFG to address specifically identified forest conditions,~~

~~(7) the harvest of dead or dying conifer trees subject to the following conditions:~~

~~(A) Recruitment of large woody debris for aquatic habitat in Class I coho salmon-bearing waters shall be ensured by retaining the ten largest dbh conifers (live or dead) per 330-foot of stream channel length that are the most conducive to recruitment to provide for the beneficial functions of riparian zones. The retained conifers shall be selected from within the area of operations that lies within 50 feet of the watercourse transition line.~~

~~Where the area of operations is bounded by an ownership boundary that corresponds with a class I watercourse, and where the WLPZ on both sides of the watercourse currently meets the stocking standards listed under 14 CCR § 912.7 [932.7](b)(2), the five (5) largest dbh conifers (live or dead) per 330 feet of stream channel length that are the most conducive to recruitment to provide for the beneficial functions of riparian zones shall be retained within 50 feet of the watercourse transition line within the area of operations.~~

~~The RPF may provide alternatives to substitute smaller diameter trees, trees that are more than 50 feet from the watercourse transition line, or other alternatives on a site specific basis. The RPF must provide with the notice an explanation and justification why the alternative provided is more conducive to current and long term Large Woody Debris recruitment, shading, bank stability, and the beneficial functions of riparian zones.~~

~~(B) Within any WLPZ, ELZ, or EEZ designated for Class II or III watercourse protection, a minimum of two dead, dying, or diseased conifer trees per acre at least 16 inches diameter breast high and 50 feet tall shall be retained within 50 feet of the watercourse transition line.~~

~~(C) Trees to be harvested or retained shall be marked by, or under the supervision of, an RPF prior to timber operations within the WLPZ or ELZ/EEZ.~~

~~(D) Within the WLPZ or ELZ/EEZ, if the stocking standards of 14 CCR § 912 [932].7 are not met upon completion of timber operations, unless the area meets the definition of substantially damaged timberlands, at least ten trees shall be planted for each tree harvested but need not exceed an average point count of 300 trees per acre.~~

~~(u) No salvage logging is allowed in a WLPZ without an approved HCP, a PTEIR, an SYP, or an approved plan that contains a section that sets forth objectives, goals, and measurable results for streamside salvage operations.~~

~~(4) This section does not apply to emergency operations under 14~~

~~CCR § 1052.~~

~~-(v) Nonstandard practices (i.e., waivers, exceptions, in lieu practices, and alternative practices) shall comply with the goal set forth in subsection (a) above as well as with the other requirements set forth in the rules.~~

~~-(w) The Director may approve alternatives that provide equal or better protection for coho salmon and achieve the goal of this section.~~

~~(1) Any alternative proposed under this subsection for timber operations in a watershed with coho salmon shall only be included in a plan: i) after consultation and written concurrence from DFG prior to plan submittal, and ii) with a clear demonstration of compliance with the issuance criteria described under Fish and Game Code § 2081(b) as determined by DFG.~~

~~(2) The Director shall not accept for inclusion in a plan any alternative practice as described in this section where two or more agencies listed in 4582.6 of the PRC and 14 CCR § 1037.3 have submitted written comments which lead to the Director's conclusion that the proposed alternative will not meet the goal of this section and the agency(ies) participated in the review of the plan, including an on the ground inspection.~~

~~-(x) Other measures that would effectively achieve the goal set forth in 14 CCR § 916.9.1(a) [936.9.1(a)] may be approved with written concurrence from DFG (i) in accordance with 14 CCR 916.6 [936.6], or (ii) pursuant to a coho salmon watershed evaluation for timber operations when the plan incorporates minimization and mitigation measures based on the watershed evaluation, and with written concurrence from DFG. The watershed evaluation must include the components set forth below and shall be included in addition to all other District Forest Practice Rules.~~

~~(1) The following are required components of a watershed evaluation:~~

~~(A) Description of assessment area.~~

~~(B) Status of coho salmon within each planning watershed in~~

~~the assessment area.~~

~~(C) Status of coho salmon habitat conditions and water quality within each planning watershed in the assessment area.~~

~~(D) Identification and prioritization of limiting factors. A reasoned analysis shall assign ratings of high, moderate and low to those factors which may individually or cumulatively limit coho salmon distribution and abundance in the watershed.~~

~~(E) Proposed planning watershed specific management practices to prevent or control discharges and environmental impacts from timber operations that could contribute to the identified high and moderate risk limiting factors, and; corrective actions that would reduce or eliminate the high and moderate risk limiting factors on the landscape and mitigate the impacts of timber operations which cause or contribute to those limiting factors.~~

~~(F) A plan and schedule for implementing proposed management practices.~~

~~(G) A program for monitoring implementation and effectiveness of the management practices.~~

~~(y) The operational provisions of 14 CCR §§ 016.0.1 [036.0.1] and 016.0.2 [036.0.2] shall not apply to a plan under which the incidental take from timber operations of Coho Salmon within the planning watershed is already authorized pursuant to the following:~~

~~(1) a valid incidental take permit issued by DFG pursuant to Section 2081(b) of the Fish and Game Code; or~~

~~(2) a federal incidental take statement or incidental take permit, for which a consistency determination has been made pursuant to Section 2080.1 of the Fish and Game Code; or~~

~~(3) Section 2835 of the Fish and Game Code under a valid natural community conservation plan approved by DFG.~~

~~(z) The operational provisions of 14 CCR §§ 016.0.1 [036.0.1] and 016.0.2~~

~~[936.9.2] shall not apply to a plan that specifies project revisions, guidelines, or take avoidance measures pursuant to a memorandum of understanding or a planning agreement entered into between the plan submitter and DFG, which DFG has determined will avoid take of coho salmon.~~

**Amend 14 CCR § 916.9.2 [936.9.2] Measures to Facilitate Incidental Take Authorization in Watersheds with Coho Salmon**

(a) The measures to facilitate Incidental Take Authorization in watersheds with coho salmon are intended to facilitate the process of obtaining incidental take permits for state-listed coho salmon from DFG for timber operations under the California Endangered Species Act (Fish & G. Code, § 2050 et seq.).

(b) In addition to all other District Forest Practice Rules, in any watershed with coho salmon, subsections (c) through ~~(f)~~ (e) shall apply to all timber operations where DFG determines that take will, or is likely to result from such proposed timber operations, unless incidental take of coho salmon is already authorized as specified under 14 CCR § ~~916.9.1 [936.9.1]~~ (y) or 916.9.1 [936.9.1] (z). 916.9 [939.9], subsection (w) as amended and effective on January 1, 2010.

(c) Class I Watercourse and Lake Protection Measures – Regulations in 14 CCR § 916.9 [936.9] as amended and effective on January 1, 2010. ~~The following shall apply to all Class I watercourses and lakes within watersheds with coho salmon.~~

~~(1) Within a WLPZ for Class I watercourses and lakes, sufficient trees shall be retained to maintain the preharvest level of direct shading to pools. The percentage of shade provided by Group A species shall not be reduced relative to other species.~~

~~(2) Recruitment of large woody debris for aquatic habitat in Class I coho salmon bearing watercourses shall be ensured by retaining the ten~~

~~(10) largest dbh conifers (live or dead) per 330 feet of stream channel length on each side of the watercourse. The retained conifers shall be selected from within the plan area that lies within 100 feet of the watercourse transition line. Where the plan boundary is an ownership boundary, a class I watercourse, and the WLPZ on both sides of the watercourse currently meets the stocking standards listed under 14 CCR § 912.7 [932.7](b)(2); the ten (10) largest dbh conifers (live or dead) per 330 feet of stream channel length within the plan area shall be retained within 100 feet of the watercourse transition line.~~

**(d) Class II Watercourse and Lake Protection Measures –**

~~(1) Any timber operation or silvicultural prescription within 100 feet of any Class II watercourse or lake transition line shall have protection, maintenance, or restoration of the beneficial uses of water or the populations and habitat of coho salmon or listed aquatic or riparian associated species as significant objectives. Regulations in 14 CCR § 916.9 [936.9] as amended and effective on January 1, 2010.~~

**(2)** Where an inner gorge extends beyond a Class II WLPZ and watercourse sideslopes are greater than 55 percent, a special management zone shall be established where the use of evenaged regeneration methods is prohibited. This zone shall extend upslope to the first major break-in-slope to less than 55 percent for a distance of 100 feet or more, or 200 feet as measured from the watercourse or lake transition line, which ever is less. All operations within the special management zone shall be reviewed by a Professional Geologist prior to plan approval and disclosed and incorporated in the plan as appropriate.

~~**(3)** The following shall apply to all Class II watercourses and lakes mapped on current 1:24,000 scale U.S. Geological Survey topographic map within watersheds with coho salmon except as provided under 14 CCR § 916.9.2 [936.9.2] (d)(3)(E):~~

~~**(A) Inner Band:** From 0-50 feet, retain a minimum of 85~~

~~percent post harvest overstory canopy. The overstory canopy must be composed of at least 25 percent overstory conifer canopy post harvest.~~

~~(B) Outer Band with 0-30 percent watercourse sideslope: From 50-75 feet, retain a minimum of 65 percent post harvest overstory canopy. The overstory canopy must be composed of at least 25 percent overstory conifer canopy post harvest.~~

~~(C) Outer Band with 31-50 percent watercourse sideslope: From 50-100 feet, retain a minimum of 65 percent post harvest overstory canopy. The overstory canopy must be composed of at least 25 percent overstory conifer canopy post harvest.~~

~~(D) Outer Band with >50 percent watercourse sideslope: From 50-125 feet, retain a minimum of 65 percent post harvest overstory canopy. WLPZ width may be reduced to 100 feet for helicopter or cable yarding operations. The overstory canopy must be composed of at least 25 percent overstory conifer canopy post harvest.~~

~~(E) 14 CCR § 916.9.2 [936.9.2] (b)(3)(B)(C) and (D) do not apply to plans in the Southern Subdistrict of the Coast Forest District or to NTMPs within watersheds with coho salmon.~~

~~(e) Class III Watercourse Protection Measures The following shall apply to all Class III watercourses within watersheds with coho salmon in or adjacent to harvest units where evenaged management, rehabilitation of under stocked stands, or variable retention prescriptions are proposed.~~

~~(1) establish a minimum 25 foot wide ELZ on each side of the watercourse for slopes less than or equal to 30% and a minimum 50 foot wide ELZ on each side of the watercourse for slopes greater than 30%;~~

~~(2) retain all trees situated within the channel zone and trees that have boles that overlap the edge of the channel zone;~~

~~(3) within the ELZ, at least 50 percent of the understory vegetation shall be left post harvest in an evenly distributed condition;~~

~~(4) within the ELZ, retain all snags, large woody debris, and~~

~~countable trees 10 inches dbh or less, except where necessary to allow for cable yarding corridors, safety, or crossing construction,~~

~~(5) within the ELZ, prohibit initiation of any burning,~~

~~(6) allow cable yarding when necessary to transport logs through a Class III ELZ,~~

~~(7) tractor yarding is prohibited within the ELZ, except for the use of feller bunchers and shovel yarding that minimize soil compaction and disturbance, and~~

~~(8) within the ELZ, retain at least 15 square foot basal area per acre of hardwoods where it exists before harvest, including the largest hardwoods available for this purpose. Retain all hardwoods when less than 15 square foot basal area per acre is present before harvest.~~

~~(f)(e)~~ Where harvesting is proposed on a connected headwall swale:

(1) Only the selection regeneration method allowed under 14 CCR § 913.2 [933.2] (a) (2) (A) or the commercial thinning intermediate treatment allowed under 14 CCR § 913.3 [933.3] (a) may be utilized in that area.

(2) Areas of ground based yarding shall be delineated on the ground as an equipment exclusion zone and marked prior to the preharvest inspection.

(3) All proposed road construction or reconstruction shall be reviewed by a Professional Geologist and disclosed and incorporated in the plan as appropriate prior to plan approval.

### **§ 923.9.1 [943.9.1] Measures for Roads and Landings in Watersheds with Coho Salmon**

In addition to all other district Forest Practice Rules, the regulations in 14 CCR §§ 923.3 [949.3] and 923.9 [943.9] as amended and effective on January 1, 2010 ~~following requirements~~ shall apply in any planning watershed with coho salmon.

~~(a) Where logging road or landing construction or reconstruction is~~

~~proposed, the plan shall state the locations of and specifications for road or landing abandonment or other mitigation measures to minimize the adverse effects of long term site occupancy of the transportation system within the watershed.~~

~~(b) Unless prohibited by existing contracts with the U.S.D.A. Forest Service or other federal agency, new and reconstructed logging roads shall be no wider than a single lane compatible with the largest type of equipment specified for use on the road, with adequate turnouts provided as required for safety. The maximum width of these roads shall be specified in the plan. These roads shall be outclopod where foasible and drained with water breaks or rolling dips (where the road grade is inclined at 7 percent or less), in conformance with other applicable Forest Practice Rules.~~

~~(c) Logging Road Watercourse Crossing Drainage structures on watercourses that support fish shall allow for unrestricted passage of all life stages of fish that may be present, and shall be fully described in the plan in sufficient clarity and detail to allow evaluation by the review team and the public, provide direction to the LTO for implementation, and provide enforceable standards for the inspector.~~

~~(d) Any new permanent culverts installed within class I watercourses shall allow upstream and downstream passage of fish or listed aquatic species during any life stage and for the natural movement of bedload to form a continuous bed through the culvert and shall require an analysis and specifications demonstrating conformance with the intent of this section and subsection.~~

~~(e) The following shall apply on slopes greater than 50%:~~

~~(1) Specific provisions of construction shall be identified and described for all new roads.~~

~~(2) Where cutbank stability is not an issue, roads may be constructed as a full benched cut (no fill). Spoils not utilized in road construction shall be~~

~~disposed of in stable areas with less than 30 percent slope and outside of any WLPZ, EEZ, or ELZ.~~

~~(3) Alternatively, roads may be constructed with balanced cuts and fills if properly engineered, or fills may be removed with the slopes recontoured prior to the winter period.~~

~~(f) In addition to the provisions listed under 14 CCR 923.1(e) [943.1(e)], all permanent or seasonal logging roads with a grade of 15% or greater that extends 500 continuous feet or more shall have specific erosion control measures stated in the plan.~~

~~(g) Where situations exist that elevate risks to the values set forth in 14 CCR 916.2(a), [936.2(a)] (e.g., road networks are remote, the landscape is unstable, water conveyance features historically have a high failure rate, culvert fills are large) drainage structures and erosion control features shall be oversized, low maintenance, or reinforced, or they shall be removed before the completion of the timber operation. The method of analysis and the design for crossing protection shall be included in the plan.~~

~~(h) Tractor Road Crossing facilities on watercourses that support fish shall allow for unrestricted passage of all life stages of fish that may be present, and for unrestricted passage of water. Such crossing facilities shall be fully described in sufficient clarity and detail to allow evaluation by the review team and the public, provide direction to the LTO for implementation, and provide enforceable standards for the inspector.~~

~~(i) The operational provisions of 14 CCR §§ 923.9.1 [943.9.1] and 923.9.2 [943.9.2] shall not apply to a plan under which the incidental take from timber operations of coho salmon is already authorized pursuant to the following:~~

~~(1) a valid incidental take permit issued by DFG pursuant to Section 2081(b) of the Fish and Game Code; or~~

~~(2) a federal incidental take statement or incidental take permit, for~~

~~which a consistency determination has been made pursuant to Section 2080.1 of the Fish and Game Code; or~~

~~(3) Section 2835 of the Fish and Game Code under a valid natural community conservation plan approved by DFG.~~

~~(j) The operational provisions of 14 CCR §§ 923.9.1 [943.9.1] and 923.9.2 [943.9.2] shall not apply to a plan that specifies project revisions, guidelines, or take avoidance measures pursuant to a memorandum of understanding or a planning agreement entered into between the plan submitter and DFG, which DFG has determined will avoid take of Coho Salmon.~~

**Comment 135. Various Sections**

Additional non-substantive citation reference amendments regarding channel zone exceptions are needed on the following pages:

Page 26, Line 25, Page 27, Line 7, Page 29, Line 24, Page 30, Line 14, Page 33, Lines 8 and 17, Page 36, Line 9, Page 39, Lines 3 and 20, Page 43, Line 19, Page 44, Line 1, Page 46, Line 13, Page 51, Line 17, Page 52, Line 23, Page 60, Line 24

All of these rule sections reference 14 CCR § 916.9 [936.9, 956.9], subsections (e)(1)(A)-(F), but they leave out the "(1)." Reinsert the "(1)" in each citation.