

critical habitat, and though Simpson agrees to inventory and monitor large wood impacts, it does not concede that ESA liability could potentially attach for these impacts.

It is not the intention of this review to take on legal arguments. We can, however, speak to the ecological impacts associated with the loss of riparian conifers given the current environmental baseline, i.e., a system depleted of recruitable large wood from either riparian or upland sources.

First, the impacts of current riparian and instream conditions themselves constitute an ongoing "harm" to fish and their habitats. The lack of instream material has led to elimination of elements critical for providing instream cover, channel complexity and pool development. The extent of current habitat modification then, must be recognized as having a continuing impact on the covered species. In fact, NMFS is known to have issued biological opinions governing federal land use actions, actually found current degraded conditions to be responsible for the "take" of covered species.

Second, removal of existing trees within the range of deliverability of any size may deplete future potential sources of large wood. Such actions can effectively impede the rate of recovery of mature riparian stands, an impediment which goes into effect immediately—not some time in the future as is implied in the plan rationale and DEIS. Actions that impede recovery of large wood sources have real ecological impacts that should be recognized and prevented where species recovery also is impeded.

Third, the impacts of low levels of LWD are not as speculative as the HCP indicates. Simpson states that "[h]arvesting practices that result in low levels of LWD may, accordingly, impact the growth, survival, and total production of the Covered Species." We propose that the "will" would be a more appropriate word.

Fourth, while it may be Simpson's position that LWD depletion cannot technically be a "take" that does not justify the lack of analysis regarding this important factor, the lack of analytic disclosure, nor the requirement for recovery under CFPR 2002. NMFS is not the only agency with a mandate for recovery of the riparian zone. Affected parties and the public are entitled to be made aware of the proposal's ecological consequences.

Habitat alteration that depletes LWD supplies can cause significant habitat modification and destruction that can kill or injure covered species. The extent to which existing degradation and its effects will continue to harm these species depends in part on the stochastic effects of future natural events as well as the rate of recovery. Although recovery rates are not always themselves easily predictable, actions that impede such rates are identifiable. The recovery process and how well restoration activities compensate for the degradation, as well as natural processes and their effects, will dictate the timeline of effects on covered species in the plan area. Logically, the faster the recovery the less effect there will be on covered species; the slower the recovery, the greater the effects. No basis is provided for a finding that the riparian logging proposed in the Plan will actually enhance LWD recovery sufficient to meet species habitat needs.

**4. Recruitment Trees and Desired Condition of the Riparian Zone**

The 2002 CFPRs and the SRP recommendations both require retention of significantly more large conifers in the riparian zone than would the Simpson proposal. Simpson requires a minimum of 15 stems > 16 inches dbh per acre of 50 ft inner zone (equal to 871 feet of channel). Both the SRP recommendations and FPRs 2002 provide 26.6 of the largest trees per acre (calculated by adjusting 328 ft of channel retains 10 of the largest trees) or per 871 feet of channel with a 50 ft inner zone.

We note that the Simpson Plan also requires that all trees within the inner zone “likely to recruit to the watercourse” be retained, but it is not clear how this requirement will affect the 15 “stem” minimum for the entire RMZ and/or for just the inner zone. Within 871 feet of channel, the probability of identifying 15 large trees (not just smaller trees near 16-inches dbh) seems high based on meeting the Plan’s proposed criteria for likelihood of recruiting. Thus, the Plan would not require retention of more than 15 conifer “stems” throughout the full RMZ (unless those retained for their likelihood to recruit exceeded 15 stems greater than 16-inch dbh). If the 15 trees retained mostly are in the inner zone (e.g. 50 feet for 0-30% side slope), then how might the outer zone be harvested? Notably, the AHCP doesn’t require that 25% of the overstory canopy be comprised of conifers as in CFPR 2002.

Why is the term “stem” used? This is apparently used to count multiple stems that have sprouted from previously harvested redwood stumps (Section 6.2.1.2.3). Simpson could reach the “15 stem count” very quickly from two or three sprouting stumps, then proceed to harvest the remaining conifers, leaving the alders in place for the “shade” canopy requirement. The size of current redwoods should be considered, with the largest trees not harvested (as in CFPR 2002). The time required to grow redwoods to the size of key LWD pieces is beyond the 50 years of this plan – and the current measures will allow Simpson to harvest the largest trees, leaving a minimal number of trees just barely over 16” dbh that then could be harvested on the next entry. A 16-inch dbh conifer would be 80 years old (approximating 4 to 5 years per inch of growth increment). This management scheme will never allow the riparian zone to function as a lateral riparian community.

Why is there no agency oversight or participation in the selection of conifers likely to recruit? It seems like in the many years that Simpson has taken to develop its draft AHCP they could have mapped their riparian zones along fish-bearing streams and included in the AHCP exactly what they were going to harvest and retain for future LWD recruitment. Agency biologists should play an active role in the selection of trees likely to recruit (Ligon et al. 1999). Which set of criteria is over-riding: Section 6.2.1.2.5 – “Likely” or Section 6.2.1.2.6 - “Unlikely” Factors to Recruit? There are numerous situations where trees would have factors on both lists – such as:

- a tree leaning away from the stream, yet is on a slope;
- a “clonal group” (sprouted stump) that is leaning towards the stream;
- a redwood is leaning towards the stream, but others are between it and the creek.

There are many permutations for making an argument why a particular tree was ultimately “unlikely” to recruit. Also, with no agency oversight there is no opportunity to know if trees likely to recruit were actually harvested. The Agencies should be allowed to perform pre-harvest inspections too if there is a question regarding the selection of likely to recruitment trees (Section 6.3.7).

Safety of timber fallers is important, but as currently stated (Section 6.2.1.2.7 – Tree Falling for Safety Purposes) this does not address how to avoid the loss of recruitable LWD. If anything, this can be a loophole to potentially target the harvesting of larger redwoods remaining within the riparian zone. A better way to state this operational practice might be, “when selecting areas for cable-yarding corridors, the RFP will locate the corridors in a manner such as to eliminate or reduce the need to fall and extract conifers that are likely to provide recruitable LWD.”

Reestablishment of mature conifers as the dominant riparian component is stated as one of the biological objectives of the AHCP. However, the riparian management measures identified in the AHCP will not adequately rehabilitate riparian areas currently devoid of mature redwoods. The objective of the AHCP should be to allow riparian to recover towards late-seral conditions not vaguely described as numerous conifers in the 80 to 120 year-old range. Does Simpson encourage management of the riparian zone as a multi-aged stand with late-successional forest characteristics? Although Simpson accommodates harvest within the floodplain, no vision for riparian zone recovery (e.g., late-successional stand composition) is offered. Key large redwoods should be permanently dedicated to the stream – not potentially harvested at a date after the AHCP expires. The SRP Report (Ligon et al. 1999) concludes that current rules regarding the harvest of riparian stands are insufficient in protecting current sources of recruitable redwood LWD and the growth of future recruitable LWD. If an AHCP applicant desires an incidental take permit, then they should be proposing riparian standards well above the current CFPR’s. The measures proposed in the proposed Plan are no better than current rules, and if aggressively applied, actually provide less protection than the current rules in protecting and restoring depleted sources of conifer LWD in riparian areas.<sup>2</sup>

<sup>2</sup> The HCP and DEIS imply that modeling analysis has been done to elucidate the effectiveness of the riparian prescriptions in providing large wood. However, there is no disclosure of this analysis, though it is referenced in summary fashion at 7-15 and 7-16, and the DEIS relies uncritically on this analysis. Without full disclosure of the data and methodology, there is no way to evaluate the claims that the buffers provide certain percentages of total potential recruitment for site potential tree height (managed and unmanaged). Even taking this analysis at face value, it is unclear why large wood recruitment potential that is 88% of unmanaged for Class I, 73% for Class II-2 and 57% for Class II-1 is adequate to meet the needs of the covered species. There is no recruitment estimated at all for Class IIIs and virtually zero upland sources provided. Apparently, Simpson is relying on its prohibition against cutting of trees “judged likely to recruit” and its assessment that most wood that actually becomes “functional” in Class II streams originates from inner gorges or other areas near the stream. Simpson estimates on this basis that “the majority of the functional LWD will be provided by the Class II RMZs.” 7-17. We further question reliance on Reid and Hilton, “Buffering the Buffer,” (cited at 7-16) for support of the LWD analysis and claims that the proposed measures will meet objectives. How is this research being applied? The premise of this paper is that the physical integrity of stream channels can be protected if the characteristics and rates of tree fall along buffered reaches are similar to those of undisturbed forests. The key finding is that due to fringe area trigger-tree effects, “the core zone over which natural rates of tree fall would need to be sustained is wider than the one-tree height’s width previously assumed,” and that an additional width is necessary to sustain background rates. For the site studied in

Response to Comment G10-51

Slope stability measures

The Plan's Adaptive Management Program provides a mechanism to implement changes to the Operating Conservation Program as necessary, within the limits of the AMRA (see IA paragraph 10.0, AHCP/CCAA Section 6.2.6 and Master Response 15). Regarding adaptive management, see responses to Comments C4-6, C4-29, G3-58, G3-59, G3-67, G3-72 through and including G3-77, G3-86, G5-2, G10-15, G10-49, G10-53, S1-14, and S5-32, among others. The commenter correctly notes that "the goal of these Plan prescriptions is not attainment of some biological objective" (see Master Response 12). Instead, the Operating Conservation Program has been developed to meet the Permit issuance criteria discussed in EIS Section 1.3, AHCP/CCAA Section 1.4.1 and Master Response 8. The establishment of the 70 percent threshold to evaluate the effectiveness of the conservation measure for protection of SSSs has been discussed in Master Response 16. The Plan includes measures to reduce sediment input from roads and other sources (see, e.g., AHCP/CCAA Sections 6.2.3 and 6.2.4). However, selection of specific measures to include in an operating conservation program are within the discretion of the Permit applicant. The Services' role during the development of the operating conservation program is to "be prepared to advise" and to judge its consistency with the ESA approval criteria as a whole once the application is complete (HCP Handbook at 3-6 and 3-7). The Services believe this Plan meets these criteria.

Regarding the landslide regime, AHCP/CCAA Section 4 describes and assesses the current status of the covered species in the Plan Area, including landslides as they relate to landform development

**5. Summary and Recommendations for Riparian Zones**

The CFPR, if implemented faithfully within the regulatory language enacted (especially CFPR 2001), provides a better long-term strategy for protecting and restoring a watershed's riparian zone than the proposed Simpson AHCP. It seems to us that a 50-yr AHCP should not be a reward for being required to follow existing rules. A 50-yr agreement should be awarded when the Plan clearly establishes a heightened dedication to restoration above the present, and likely future, regulatory authority. Many proposed actions in the AHCP are at or below the minimums stipulated in the CFPR. The CFPR and its implementation was found inadequate for protecting anadromous salmonid species (Ligon et al. 1999). Proposed AHCP actions exceeding minimum CFPR requirements still do not meet the stated intentions of the CFPR. Instead, a management plan dedicated to preventing and repairing watershed-wide CWEs and enabling timely habitat recovery for species of concern and the ecosystem deserves the long-term responsibility of an AHCP. Specific recommendations include: (1) locate WLTL boundary at twice maximum bankfull stage on all Class I and II watercourses, (2) adopt the recruitment tree rule in CFPR 2001 but eliminate specific loopholes, (3) engage in agency oversight in selecting recruitment trees as the SRP Report recommends, and (4) inventory sprouting redwoods as "one tree."

G10-50

**C. SLOPE STABILITY MEASURES**

G10-51

**I. Overview**

The plan applies prescriptions to three Mass Wasting Prescription Zones (MWPZs): Steep Streamside Slopes, Headwall Swales and Deep-Seated Landslides. On "Steep Streamside Slopes" (SSS), default prescriptions apply on Class I and II streams. These prescriptions are susceptible to adaptive management of both delineation and prescriptions. On "Headwall Swales" default prescriptions also apply. These areas are SHALSTAB based w/field verification. There is no adaptive management applicable to either the delineation or the prescription. On "Deep-Seated Landslides" default prescriptions. Delineation is map-based and there is no adaptive management.

In addition, "default" slope stability conservation measure will be applied to some shallow rapid landslides i.e. under 6.2.4 to those that are not road-related and that are "field verified to be active or which are likely to be reactivated by harvesting, and that have a reasonable potential to delivery sediment directly to a watercourse, and that are at least 200 square feet in plan view."

the paper, North Fork Caspar Creek, it was proposed that "an uncut fringe-zone of 3 to 4 tree height's width would be necessary if woody debris inputs are to be maintained at rates similar to those for undisturbed forest channels." It does not appear that Simpson is citing this paper for these contentions. The riparian analysis references functionality compared to "managed potential tree height." There is no basis establishing this as an appropriate metric to state riparian large wood objectives.

(AHCP/CCAA Section 4.2.2). AHCP/CCAA Section 5 assesses potential impacts of take on the covered species and their habitats (see, for example, AHCP/CCAA Section 5.3.1), slope stability and other measures are set forth in the Operating Conservation Program (AHCP/CCAA Section 6.2.2). In AHCP/CCAA Section 7, conclusions are drawn regarding Operating Conservation Program measures, including slope stability measures (see AHCP/CCAA Section 7.2.1.2.3). A specific comparison of historic and current landslide regimes is neither required nor necessary to the Services' determination that the Plan meets ESA Section 10 requirements.

## *Steep Streamside Slope Prescriptions*

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As indicated above, baseline conditions have been addressed in Master Response 1. As discussed in Master Response 12, biological goals and objectives in a prescription-based HCP like this Plan are not intended to be achieved. Instead, they guide the development of the specific measures included in the Operating Conservation Program. Therefore, it would be neither necessary nor appropriate for the Plan to clarify how attainment with goals would be measured. Further, the question is not, as the commenter suggests, whether sediment delivery from harvesting activities on SSSs "is large enough to adversely affect stream habitat or to prevent habitat recovery. The question, more accurately stated, is whether the Plan as a whole will meet the ESA Section 10 Permit requirements (see Master Response 8). The Services believe that it does.

Composition of the suite of measures included in an operating conservation program, including whether to limit activities on steep streamside slopes, lies within the discretion of the Permit applicant. The role of the Services during the development of the operating conservation program is to "be prepared to advise" and to judge its

consistency with the ESA approval criteria as a whole once the application is complete (HCP Handbook at 3-6 and 3-7). Here, Green Diamond has elected to include protective zones for SSSs and the Services' role is not to question the basis for its width, but to determine whether, as a whole, the Plan meets ESA Section 10 requirements. Similarly, comments regarding metrics that would be used under the Plan are noted. However, again, the role of the Services is not to require the substitution of specific mechanisms, but to judge the adequacy of the Plan overall and, once approved, enforce it (see generally Master Response 14).

## *Appendices D and F*

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The monitoring program focuses on the effectiveness of the Operating Conservation Program in meeting the Permit approval criteria and requirements for the Plan and ensuring that permitted take does not appreciably reduce the likelihood of survival and recovery of the species in the wild. It does not focus on specific potential causes of take, such as slope failure.

## *Headwall Swales*

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The goal of the Plan is to conserve habitat for and mitigate impacts on six aquatic species. AHCP/CCAA Section 1.1. The selection of specific prescriptions, including any restriction on entrance into headwall swales, is a matter of the Permit applicant's discretion. HCP Handbook at 3-19. The Services' role during the development of a conservation program is to "be prepared to advise" and to judge its consistency with the ESA approval criteria once the application is complete. HCP Handbook at 3-6 and 3-7. The ESA does not require that any particular

measure be adopted or imposed, but only that its criteria for Permit issuance be met. Issuance criteria are discussed in EIS section 1.3, AHCP/CCAA Section 1.4.1 and Master Response 8. The Services believe this Plan meets these criteria. Each of the prescriptions in the Operating Conservation Program, including single-tree selection, contributes to conserving habitat for and minimizing impacts on the covered species.

The commenter also asks about the methodology for developing site-specific alternative prescriptions. Resource professionals will use their best professional judgment to accommodate site-specific conditions. Individual headwall swales will be qualitatively evaluated in the field by a California Registered Geologist for alternative prescriptions. Slope qualities that may be evaluated to assess relative landslide potential may include but will not necessarily be limited to slope position, slope gradients, channel gradient, relative vertical relief, degree of slope convergence, bedrock or soil type, presence and orientation of geologic structures, relative abundance or thickness of colluvium, vegetative indicators, hydrologic characteristics, and the interpreted landslide history at the site and in similar surrounding terrain

## *Deep-seated Landslides*

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As noted above, the selection of specific prescriptions, including whether or how to address landsliding, is a matter of the Permit applicant's discretion (HCP Handbook at 3-19). The Services' role during the development of the conservation program is to "*be prepared to advise*" and to judge its consistency with the ESA approval criteria once the application is complete (HCP Handbook at 3-6 and 3-7). The ESA does not require that any particular measure be adopted or imposed, including those identified in this comment, but only that the ESA Section 10 Permit issuance criteria be met (See Master Response 8). The Services believe this Plan meets these criteria.

### *Shallow Rapid Landslides*

See above discussion regarding the allocation of responsibility between the Permit applicant (Green Diamond) and the Services in developing the Operating Conservation Program.

The apparent basis for these measures is stated by the following assumption:

"The potential effects of forest management on factors that may contribute to slope failure . . . can be partially mitigated through prescriptions that limit changes in root strength and hillslope hydrology that can result from timber harvesting, and by improving construction standards associated with road or skid trails." 6-74.

As the above statement reveals, the goal of these plan prescriptions is not attainment of some biological objective. Rather "partial mitigation" is the objective, and this objective is arbitrarily quantified by the goal of a 70% reduction. This number is nowhere related to any desired biological outcome or to a habitat outcome that bears some relationship to biological needs. In order for a volume related measure to have meaning here, it must be explicitly related to existing and projected levels of cumulative effects and to some biologically relevant outcome.

In the Holocene (last ca. 10,000 years), affected species have adapted to the periodic delivery of large volumes of coarse and fine sediment to stream channels as a consequence of slope failures produced by storms. It should be the goal of this HCP to ensure that the volume of this periodic delivery is not further increased by management. As such, management should avoid road building and harvest activities that demonstrably have contributed to large sediment deliveries during storms. Roads have much greater negative effect on slope stability than harvesting of trees away from roads. Therefore, it is especially critical to prevent road construction on steep streamside slopes and across headwater swales.

Moreover, there is no discussion of the current versus historical landslide regime and how changes in the qualitative characteristics of landslides affect the balance of positive and negative impacts from such slides. Nor is there any analysis relating to management-induced alteration of the frequency of failure – which is the metric most correlated with increases in turbidity and suspended sediment – both episodic and chronic, throughout stream systems experiencing increases in landslide-induced /pulses of sediment.

## 2. *Steep Streamside Slopes Prescriptions*<sup>3</sup>

Default prescriptions are stated in terms of "maximum slope distance" and "minimum slope gradient."<sup>4</sup> The most restrictive management takes place in the riparian portion of the SSS, or

<sup>3</sup> Summary of SSS prescriptions at 6-83. The MSG varies by HPA and may be 60, 65 or 70%. The prescriptions also vary by Stream class as follows:

CLASS I:	Inner: 70 feet or to slope break Outer: Rest of distance out to 150, 200 or 475 by HPA or slope break
CLASS II-2:	Inner: 30 feet or to slope break Outer: 100 or 200 feet by HPA or slope break
CLASS II-1:	Inner: 30 feet or slope break Outer: 70 or 100 feet by HPA or slope break

the RSMZ. These areas are "no harvest" only in Coastal Klamath and Blue Creek HPAs. Others have no harvest inner buffers with 85% canopy retention in outer buffers on Class I and II-2 streams. Class II-1 has 85% inner and 75% outer retention requirements. SMZs outside riparian areas have less restriction.

Simpson's focus on steep streamside areas is based on the following rationale:

"Sediment budget and landslide inventories conducted in northcoast California have documented that streamside landslides constitute the bulk (50%-90%) of landslide-derived sediment delivered to streams [citations omitted]. This is consistent with preliminary landslide data collected on the Plan Area through the studies identified in Section 4.3. Moreover, preliminary landslide data collected on Simpson property reveals the bulk of sediment appears to be derived from landslides originating on the larger watercourses (Class I and Class II-2)." 6-78.

The stated goals of the prescriptions are to "[a]chieve a 70% reduction in management-related sediment delivery from landslides compared to delivery volumes from landslides in appropriate historical clearcut reference areas" An alternative goal is also stated: "A maximum of a 30% relative increase in landslide-related sediment delivery compared to merchantable-sized second growth in uncut SSS zones may be used as another comparative standard to determine the effectiveness of the conservation measures." 6-78.

The stated goals of the SSS measures themselves are problematic. First, there is nothing that indicates the ecological significance of the 70% reduction goal or the 40% increase goal, their relation to the survival of Covered Species or to natural rates and timing of landslides. Both inappropriately rely on a baseline of managed conditions. Second, the Plan does not make clear how attainment with either goal would be measured.

Criteria for whether or not to harvest a steep streamside slope are based on predictions as to how much sediment may enter a water course if harvest takes place. 6.3.2.3. These criteria are clearly presented. However, the relevant underlying issue is whether sediment delivery to channels from steep streamside slopes, caused by harvesting, is large enough to adversely affect stream habitat or to prevent habitat recovery. This fundamental issue is not addressed. There is

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<sup>4</sup> The area to which prescriptions apply was apparently based on the following factors: 1. Field measurements of cumulative sediment delivery from Simpson study of 471 sites; 2. % of cumulative sediment delivery from shallow slides wholly originating in streamside slopes from 471 site study; 3. Slope gradients estimated to capture 80% of volume; 4. Landslide crown distance from Class I and II streams estimated to capture 60% of volume; 5. Field verification of presence/absence of a topographic benches/breaks in slope ("reasonable ability for slope failures to deliver sediment to a watercourse") Benches and slope breaks are to be identified on site basis for whether of sufficient degree (below minimum) and distance to "likely impede" sediment delivery – through THP process. "For a slope break to truncate an SSS zone before its maximum distance, the slope break must be of a sufficient decline in slope gradient (below the minimum slope gradient for the given HPA) and of sufficient distance that it may be reasonably expected to impede sediment delivery to watercourses from shallow landslides originating above the slope break." 6-80; 6. HPA groups (uses 4 groups).

no connect made between sediment delivery from stream side slopes and habitat stability or degradation.

In sum, the ecological basis for SSS protection measures is not revealed and would seem at odds with the implicit goal of erosion prevention. Section 6.2.2.1.3 specifies a maximum width of SSS zones. What is the basis for these maximum widths? If the goal is for the zone to mitigate erosion to streams, then it would seem arbitrary to designate any specific maximum widths for SSS zones. Rather, the specific streamside slope and extent should dictate the local maximum width. From an erosion hazard standpoint, the limit to maximum width should be dictated by the local site.

In addition, the metrics stated in the measures are problematic from the perspective of implementation. 6.2.2.1.6 states various canopy retention requirements. Wouldn't % stem density be easier to measure, substantiate and review in the field, and therefore be less vulnerable to varying interpretations?

**3. *Comments on Slope Stability Studies and Effectiveness Monitoring Protocols (Appendix D); Sediment Delivery Studies and Modeling Efforts (Appendix F)***

Three Slope Stability-related studies are proposed at 6.5 and detailed in Appendix D. These are: (1) the SSS Delineation Study (7 years, with implied changes to prescriptions); (2) the SSS Assessment Study (at least 15 years), and; (3) the Mass Wasting Assessment (20 years with preliminary report in 7 years, final by 20 years; "The purpose is to examine any relationships between mass wasting processes and timber management practices." 6.3.5 and D.3.5) Appendix D details the three studies (D.3.3; D3..4; D.3.5).

Close examination of the proposed studies reveals that all three of these monitoring protocols assess the appropriateness of management guidelines without respect to the effect of steep streamside slope stability on riparian and stream habitat. The monitoring protocols should allow assessment of how slope failures are impacting habitat and if habitat is either being degraded or not improved because of sediment delivery from slope instability. Because any agreement between the Services and Simpson protects Simpson from prosecution under the ESA, the monitoring protocols ought to more directly be monitoring whether practices are improving or at the least not degrading habitat.

The Sediment Delivery Studies and modeling efforts detailed in Appendix F are likewise beside the point. Simpson and the Services both are concerned about sediment delivery to channels because of the effect of this delivery on riparian and stream habitat, and because degraded habitat perpetuates threatened or endangered species. Therefore sediment delivery studies, if they are to address the concerns of the Services, should be tied to habitat studies. A sediment delivery study that does not at the same time address whether sediment that is delivered is affecting habitat is an incomplete study. The studies proposed at Appendix F are incomplete on this count.

The sediment delivery studies outlined in appendix F utilize standard techniques to inventory sediment on hillslopes and quantify sediment delivery to channels. The results of these studies are put into a model and the sensitivity, or reliability, of the results are tested with statistical Monte Carlo-type simulations. However, the studies do not address whether the volumes of sediment measured and predicted will result in improved, static or degraded stream habitat. Obviously this is a more difficult problem than the problem addressed by Simpson studies in Appendix F, but posing any less complicated a problem is not going to address the pertinent issue: how is habitat affected by sediment delivery? The studies proposed in Appendix F should not be used as a smokescreen by the applicant or the Services to avoid addressing the truly critical issues.

#### 4. *Headwall Swale Identification, Default and "Alternative" Prescriptions*<sup>5</sup>

Simpson allows harvesting on headwater swales. 6.2.2.2.2., Headwater swales, by their geomorphology, are the erosional hot spots on the upper slopes. Identifying the headwater swales means one is identifying those headwater areas most likely to fail in the upper portions of basins as a consequence of high intensity rainfall. The appropriate goal for this HCP is to reduce the current landslide rate by some proportion; not entering headwater swales is the best way to avoid landsliding in upper slope sites.<sup>6</sup>

The stated intent of these prescriptions, however, does not appear to be reduction of management-induced sliding. Rather, it is to maintain a viable root network and "some" overstorey canopy within the swale and steep side-slopes. It is stated that single tree selection will limit the loss of root strength and provide canopy for rainfall interception and evapotranspiration. Typically, Simpson states that tree retention "should be greatest along the axis of the headwall swales and decrease up-slope." It is not clear what effect these prescriptions are expected to have on the likelihood of slide occurrence or their impacts.

Site specific alternative prescriptions are allowed, with making the operation more cost effective as a criterion. However, no methodology for developing these alternatives is specified. Therefore, it is impossible to predict the effects of these alternatives on the covered species. Such standardless measures should not be included in this plan as they are not subject to analysis.

<sup>5</sup> Headwalls will be SHALTAB identified, with boundaries adjusted by "appropriately trained field personnel." "Field review of headwall swales will focus on slope characteristics that are considered at present to be most important to landslide processes in such areas . . . the steepness (typically greater than 70%) of the slopes, the relative degree of slope convergence, the appearance of a concave or inverted teardrop or spoon-shaped slope, the presence of a build-up of colluvium, various vegetative indicators, and the apparent landslide history of the site and similar sites in the area." (6-86).

<sup>6</sup> Mary Scurlock Personal Communication with Harvey Kelsey, 12 November 2002.

5. *Deep Seated Landslides*

Prescriptions are proposed to be identified by the RPF or RG during THP layout. The 1<sup>st</sup> Criterion is: A scarp or ground crack that exhibits at least three inches of horizontal displacement or at least six inches of vertical displacement that typically exposes bare mineral soil, but that may be partially revegetated, and where field observations clearly indicate that the movement occurred within approximately the past 50 to 100 years. If the first criterion obtains, the prescription is No Harvest within 25 feet upslope of the identified scarp or ground crack. 6.2.3.1. The 2<sup>nd</sup> Criterion is a convex, lobate landslide toe that exhibits evidence of activity within approximately the past 50-100 years. Here, the prescription is No Harvest on toe or within 25 feet upslope from the inflection point of the convex, lobate landslide toe. If neither criterion obtains, the FPRs will be applied. Simpson may still fall trees for worker safety and have yarding corridors up to 25 feet wide. New roads across active, deep seated slides, toes or scarps, or on steep areas of dormant sites (>50%) are allowed with input from an RG or RPF "with experience in road construction in steep forested terrain."

There is no basis provided for these prescriptions. For example, why does a crack have to have three inches of horizontal displacement or six inches of vertical displacement before the crack is deemed to have been produced by an active landslide? What is the basis for the three inches and six inches? A crack with considerably smaller dimensions (one inch horizontal and one inch vertical) could indicate an active deep seated landslide. Also, why are tilted tree not used as a criteria of activity?

Likewise, there is no basis for the 25 foot minimum distance upslope of which harvesting will not take place if a crack is discovered. For deep seated landslides, the factors of altered surface water pathways and groundwater levels due to harvest are more important than root strength factors, therefore, the 25-foot distance seems arbitrary – a more important issue is whether upslope harvest will increase runoff to the crack.<sup>7</sup>

<sup>7</sup> The stated rationale for the deep seated prescriptions is as follows:

"In general, large scale deep-seated landslides are considered less sensitive to most forest management activities compared to shallow landslides . . . principal effects of forest management . . . from a geotechnical perspective . . . increased soil moisture from reduced rainfall interception and reduced evapotranspiration, undercutting or overloading of the slide roads or skid trails and delivery of concentrated surface runoff from roads or skid trails outside the natural contributing area of the landslide.: 6-88.

"The potential impact of harvest activities on the stability of deep-seated landslides may be partially mitigated by retaining a component of the timber stand on and upslope of active or historically active landslides and constructing or reconstructing roads across such slides under the guidance of an experienced geologist or geotechnical engineer." (There is no basis for this statement).

"management objectives are focused on existing slides . . because it is assumed that the impact of harvest activities is greater on active slides than on dormant slides with respect to sediment production"

"The intent of these prescriptions is to provide tree retention that maintains a viable root network to mitigate possible headward regression of the headscarp and shallow landslides that might occur on the toe and result in

These prescriptions fail to recognize that management can have influences on the triggering of sliding on metastable areas. The prescriptions offer some protection to deep-seated slides that are already actively failing, but not to metastable features that could be activated as a consequence of alteration of slope drainage, soil water, and vegetative conditions. The risk that any individual metastable feature is mobilized as a result of vegetative removal in the contributing catchment area may be small relative to the probability of initiating a shallow landslide after a headwall swale is logged, but the potentially massive volume and prolonged discharge of sediment that can be delivered if a large earthflow, debris slide or block slide is triggered makes the net biological risk on the same or higher order of magnitude. Preventative prescriptions are required to ensure that metastable features are accurately identified prior to logging, and that forest management, including logging, herbicide application, and road construction or road drainage do not increase the risk of landslide initiation. Research in the region has shown that such metastable landforms deform actively and rapidly in response to high-intensity rainfall events (e.g., Swanston et al. 1995 and many others) and that logging of the contributing drainage area can dramatically accelerate deformation of slopes within metastable landforms (Swanston et al. 1988), potentially triggering failures that deliver directly to downslope streams. These observations indicate that logging or road construction that alter soil water patterns on metastable slopes can increase rate of slope deformation, increasing the likelihood of initiating or re-initiating large, progressive slope failures. Adequate protective prescriptions include specific criteria and commitments to accurately identify metastable landforms prior to logging and road construction operations, and to minimize the probability of triggering a failure by avoiding road construction and vegetation removal within the metastable slope feature and its contributing drainage area up-slope. The plan shows no evidence that these measures were considered, and provides no explanation of why they were not identified and adopted.

**6. Shallow rapid prescriptions**

It is stated that the intent of this conservation measure is to "minimize" any backwashing of landslide scarps or erosion of the scarps, scar, or deposit that might result in ongoing sediment delivery. Only slides field verified to be active/likely to reactivate and deliver to a watercourse and at least "200 feet in plan view" get a prescription. The prescription is: No cut in slide boundary, and 70% overstory within 50 feet above and on sides. Site specific review may result in alternative prescriptions, although how these will be determined is not specified. The shallow rapid prescriptions specified at 6-17 explicitly to not apply to road related slides. The applicable guidance there is that on location guidance at 6.2.3.5.7.4

This prescription focuses entirely on mitigating the impacts of slides already occurring. The plan fails to include effective prescriptions for preventing management-induced increases of landslide frequency and altered slide distributions over background. That would require prescriptions that

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sediment delivery to a watercourse. A possible benefit of these conservation measures on some landslides will be some measure of rainfall interception and evapotranspiration to reduce the migration of water from the crown area into the slide mass, although this may not be related to sediment delivery in all cases. The conservation measures for deep-seated landslides area subject to alternative prescriptions, as described in Section 6.3.2." At 6-89. As stated in the text, root strength is not the priority factor related to harvest near deep seated features.

Response to Comment G10-52

70 Percent Effectiveness

As provided in AHCP/CCAA Section 6.3.5.4.3 and Master Response 16, the 70 percent effectiveness pertains to preventing management-related sediment delivery from landslides compared to that from appropriate historical clear-cut reference areas, not road-related sediment.

### *Storm-proofing*

Storm-proofing roads is one measure among many intended to reduce sediment input into Plan Area waterbodies. It is not expected that this activity, alone, will offset all sediment-related impacts. Instead, the benefits of implementing this measure will combine with the implementation of the other measures in the Operating Conservation Program to collectively improve habitat conditions in the Plan Area. See Master Response 3, regarding cumulative effects.

### *New Roads*

The potential for increased sediment input has been identified as a potential impact to the covered species and their habitats (AHCP/CCAA Section 5.3; Appendix E) and the road management measures have been designed to address it. Benefits derived from the road decommissioning and upgrading standards

G10-51

apply to areas at high risk for shallow-rapid landsliding likely to deliver to streams occupied by covered species.

#### **D. ROADS MANAGEMENT MEASURES**

G10-52

The road related measures encompass a comprehensive transportation planning program that includes risk assessment and prioritization of problem roads and crossings, road upgrading, road removal and road maintenance. Seasonal road use restrictions are included. Road decommissioning procedures will generally follow Weaver and Hagans (1994).

New roads locations are restricted as follows:

"Wherever feasible, roads are located on or close to ridge tops or on benches where the road prism can be build with the least soil displacement." New roads will not drain directly to watercourses. Simpson agrees to "[a]void" locating on steep slopes, inner gorges or steep toe slopes, headwall swales or debris side slopes and deep seated landslides . . . otherwise Slope Stability measures will be followed. 6-105.

No new roads are permitted in RMZs except crossings or spurs off existing that extend outside RMZ. Simpson also will "avoid paralleling watercourses" and the "least impact alternatives" will be selected." Other provisions include: width specifications, 12" compacted rock for winter hauling; limitations on grade to 15% "except where appropriate to reach strategic control points and avoid higher risk topography".

The identification of priority road work will be based on criteria including stream and road density, species occurrence and slope. See 6-95. All high and moderate sites are slated to be treated by end of permit period. A financial commitment of \$2.5 million/year is included for the first 15 years, with a total commitment of \$37.5 million. This cost is based on future sediment yield estimates. If these estimates prove incorrect, there is some room to change the expense level and the timeline (6-99).

The panel identified several key concerns with the assumptions and analysis regarding the roads provisions:

1. *There is an unsubstantiated assumption that the reduction of road-related sediment by 70% from current levels is adequate to avoid road-related jeopardy to the covered species.*

As stated above, there is no biological basis for this objective, as 70% is tied neither to the natural regime nor to the habitat needs of the covered species.

2. *A related problem is the extent to which reduction or prevention of road related sediment production though stormproofing actually is capable of offsetting the large amounts of sediment produced from silviculturally related landslides.*

(AHCP/CCAA Sections 6.2.3.3 and 6.2.3.4) and from the acceleration of the Implementation Plan (AHCP/CCAA Section 6.2.3.2.1), associated with new roads constructed in accordance with AHCP/CCAA Section 2.2.3.5 are expected to lessen the sediment input from roads. However, the Services emphasize that the Operating Conservation Program is not judged on a measure-by-measure basis, but rather whether, as a whole, it meets the Permit issuance requirements of ESA Section 10, which have been discussed in Master Response 8. The Service believe that the Plan, including its provisions for new road construction, meet these requirements.

## *Discretion*

See Master Response 14.

## *Culverts and Drainage Structures*

See above discussion regarding the allocation of responsibility between Green Diamond and the Services in developing the Operating Conservation Program.

### *100-year Flood*

This is not, as the commenter suggests, an “irrational assumption.” Instead, the conclusion that a flood that is equal or greater in magnitude than a 100-year recurrence interval event is not reasonably foreseeable during the term of this Plan is based on historical evidence in the Plan Area (AHCP/CCAA Section 6.2.9.4).

## *Logging Pursuant to Changed Circumstances*

Regarding the development of prescriptions included in the Operating Conservation Program, see the discussion above. Regarding changed circumstances, see AHCP/CCAA Sections 6.2.9 and 6.3.9, and IA paragraph 9. Changed circumstances will not trigger large-scale salvage logging. Salvage of trees after any catastrophic natural event must comply with State law plus the additional measures provided within RMZs and SMZs. See AHCP/CCAA Section 6.2.9.

## *Daylighting*

See discussion above regarding the development of prescriptions included in the Operating Conservation Program. The Services believe that the Operating Conservation Program as a whole, including the daylighting provisions, meets ESA Section 10 requirements.

## *Road density*

As provided in AHCP/CCAA Section 6.3.5.4.3 and Master Response 16, the 70 percent effectiveness pertains to preventing management-related sediment delivery from landslides compared to that from appropriate historical clear-cut reference areas, not road-related sediment.

See discussion above regarding the development of prescriptions included in the Operating Conservation Program. In the Plan and IA, Green Diamond has committed to implement an Operating Conservation Program to conserve habitat for and mitigate impacts on the covered species (see AHCP/CCAA Section 1.1). The Services believe that this

Operating Conservation Program as a whole, including the amount of road density it contemplates, meets ESA Section 10 requirements.

## *Water Drafting*

The Services, in the EIS, have studied the environmental effects of the action, including its provisions on water drafting. NMFS does not intend to monitor water drafting in the Plan Area pursuant to the Plan. Enforceability of the Plan is addressed in IA Paragraph 13 and Master Response 14. The commenter points out a typographical error in AHCP/CCAA Section 6.3.3.11. The correct word should be “minimum.”

*“With the proposed drafting standards, the ~~maximum~~ minimum fill up time per truck is 10 minutes.”*

### *\$2.5 Million Commitment*

The Services disagree that there are any “unanswered questions” about the \$2.5 million/year commitment to treat high and medium priority potential sediment sources on roads. The Plan calls for Green Diamond to provide a total of \$37.5 million (to be inflation adjusted in 2002 dollars for each year of the acceleration period) in the Plan Area, which includes the Lower Klamath area, during the first 15 years of the Permits’ 50-year term to treat high and moderate priority road-related sediment sites. An average of \$2.5 million will be provided each year and at least \$7.5 million will be provided during the first three years. AHCP/CCAA Sections 6.2.3.2.1 and 6.2.3.2.3, as further described in AHCP/CCAA Section 6.3.3.2.5, discuss the mechanisms to be used and the prioritization approach that will be employed to allocate funds between THP and non-THP road work. An estimated \$1 million per year will be spent on THP-related sites, and the remainder (\$1.5 million) on non-THP related sites. See EIS Section 2.2.1.3 (Road and Landing Construction, Reconstruction, and Maintenance).

The commenter does not provide, and the Services are not aware of, any ESA-related reason why funding sources need to be specified in the Plan. Green Diamond’s commitment of \$2.5 million per year will be in effect regardless of their ability to secure funding from outside parties. The Service’s assume that any funding Green Diamond uses to comply with this conservation measure will be done so, in compliance with all applicable Federal and State laws and regulations. Green Diamond will report to the Services every two years on compliance with this measure of the Plan, and will provide assurance of funding as described in the IA. Implementation of the Plan is not expected to interfere with existing partnerships, but will perhaps supplement other efforts and allow existing partnerships to continue and proliferate. See also responses to Comments G10-53 and S5-63, among others.

As noted by Dr. Leslie Reid in her analysis of the Palco HCP in 1998, it is important not to overstate the benefits of stormproofing roads are highly speculative and does "not modify the frequency of failure of what appear to be stable road fill." (Reid, 1998 p. 16). " Rather, the benefits of stormproofing are most clear with respect to problem culverts. Id. As demonstrated by the Bear Creek study (PWA 1998a), prevention of all road-related sediment production between 190 and 1997 would have offset less than 25% of the sediment produced from silviculturally related landslides during that period." Roads will continue to fail even after "storm-proofing," and the overall effectiveness of the method will need to be evaluated to determine the extent to which it redresses road-related problems." Id. (finding that while storm-proofing is a "very good idea" it is "not a panacea").

3. ***Given the uncertainties about the potential to mitigate for landscape-level alterations of the sediment and hydrological regimes through road upgrades, it would be prudent for this plan to avoid making the situation worse through new roadbuilding, particularly in steep and riparian locations.***

Although roads are prohibited from draining "directly" into watercourses, as noted above the road location standards still will allow new roadbuilding in riparian areas and on landslide-prone-locations such as headwall swales. As long as roads are located in such positions, the "prohibition" will be a hollow gesture, because frequent delivery of sediment and water from roads to streams is a physical inevitability. This HCP, like those negotiated with most non-divine parties, cannot actually prohibit physics.

Appropriately, there is a prohibition on new roads in designated RSMZs, but exceptions are made for road crossings and "spurs" from existing roads that extend outside the designated riparian zone. Simpson also will "avoid paralleling watercourses" and the "least impact alternatives" "will be selected" at Simpson's discretion. But this prohibition does not extend to the SSS zones. Specifically, with respect to 6.2.2.1.9: Road construction, the premise is that major road construction will - at times - be required on steep stream side slopes. For a plan that is to be approved for the next 50 years, the premise more appropriately should be that major roads will not be constructed on steep streamside slopes. Major roads that cross steep streamside slopes may fail during major floods.

In Subsections 6.2.2.1.9; 6.2.2.2.5 and 6.2.2.3.6, Simpson states that they will not undertake major new road construction in RSMZs, SMZs, headwater sales or areas of shallow rapid landslides without evaluation and approval of "a RG and a RPF with experience in road construction in steep forested terrain". But the relevant resource protection issue is not whether an RG or RPF is involved in road design – the core issue is whether road construction in sensitive areas will generate major sediment input to channels during big storms. It is this second issue that should have the attention of RGs and RPFs, yet is not clear that road construction will be constrained by their advice on this basis. The key question must be: will roads in these areas be likely to generate sediment during storms? If so, it is not appropriate to locate, much less design, such roads.

4. ***Direction pertaining to roads on landslide-prone areas contains open-ended discretionary guidance.***

For example:

- \* "Wherever ***feasible***, roads are located on or close to ridge tops or on benches where the road prism can be build with the least soil displacement."
- \* "***Avoid*** locating on steep slopes, inner gorges or steep toe slopes, headwall swales or debris side slopes and deep seated landslides . . . otherwise Slope Stability measures will be followed. 6-105. [emphasis added]."

5. ***The AHCP lacks firm commitment to an inventory and prioritization of culverts that are currently migration barriers to ESA-listed salmonid species. (Section 6.3.3.6.5 – Drainage Structures and Section 6.3.3.7.2 – Methods).***

Simpson may be planning to treat stream crossings to provide fish passage as they move across their property, but without an inventory it seems there would be good chance that high-priority crossings may continue to block fish migration and/or cause the direct take of listed species for decades to come.

6. ***The Plan makes an irrational assumption that "A flood that is equal or greater in magnitude than a 100-year recurrence interval event is not reasonably foreseeable during the term of this Plan, and thus it would be considered "unforeseen circumstance.""*** 6-182.

The above statement contradicts the fact that a 100-year flood is statistically foreseeable within the term of this permit.

7. ***Ecological Justification for Logging Pursuant to Changed Circumstances Lacking.***

Section 6.3.9, Measures for Changed Circumstances, lists a suite of acts (fire, windthrow, disease, etc) that would constitute "changed circumstances" and allow the harvest of trees, including those likely to recruit from riparian areas. Could this initiate large-scale salvage logging? For the most part, the circumstances listed are natural watershed processes that should be expected to occur, and many would potentially lead to large, episodic LWD recruitment events – why should these processes trigger salvage logging? Because of the large-scale clear-cutting that has already occurred in most plan area watersheds, one would expect the cases of wind-throw of riparian buffer strips to happen more frequently than to riparian trees within uncut stands. It makes no biological sense for the AHCP to allow harvest of all fallen trees after their clear-cut management increased the likelihood (and magnitude) of the wind-throw to occur.

**8. Daylighting is problematic.**

The Plan proposes to “daylight” roads as a means to achieve the rapid drying of roads during wet period. Although the intention is to create road conditions that would allow hauling during the winter with less impact, the impact of this measure will be to significantly increase the total area of forest cover removed in association with the road network. While this is billed as a fairly minor provision, it is possible that thousands of acres will be logged in the name of daylighting in riparian areas and on steep slopes with unintended environmental consequences. Furthermore, the same conditions that create dry, driveable road in wet periods will lead to dryer, dustier road conditions in summer.

**9. Beyond the 70% overall reduction goal, there are no watershed-specific commitments to reduction of road-related impacts.**

For example, the general intent to “decrease the mileage of management roads over time” (6-93) is not translated into a commitment regarding drainage-specific road density except that “net density” will decrease over the life of the plan.

**10. Water Drafting Provisions Infeasible.**

The panel is concerned that the provisions concerning water drafting purport to limit drafting rates without discussing the feasibility of meeting such limits given the limitations of existing equipment. Does Simpson current own or plan to retrofit equipment such that the limits on ambient flow are attainable? Further concerns exist that the level of dewatering allowed will have significant ecological impacts and will constitute direct take of species using pool habitats. The proposal would allow dewatering of disconnected pools by a third, although where there is an ambient flow the draft rate must be limited to 10%. There is no basis for a finding that lowering pools by 1/3 would be a limited impact to one pool. There are further concerns about the habitat depletion at the margins of the pools, depletion of the local hyporheic zone and disruption of vertical flow exchange, as well as depletion farther downstream.

Section 6.3.3.11, Water Drafting, states that the measures allow a maximum fill-time (for a 3,500 gallon truck) of 10 minutes. Shouldn't “maximum” be replaced with “minimum” fill time? NMFS Southwest Region (2001) has a policy that no more than 10% of the ambient surface flow can be diverted. In the restrictions, the following is stated – “drafting will not occur in streams with less than 1 cfs of surface.” Does this mean Simpson can draft water out of fish-bearing streams with surface flows as little as 1 cfs? If so, it will take a lot longer than 10 minutes to fill the truck at 10% of the ambient surface flow!

Does NMFS plan to monitor water drafting? This may be a mitigation measures that reads well on paper, but is not feasible to implement, with little or no way to enforce it. The development of off-channel storage tanks to trickle-fill at a maximum of 10% ambient streamflow) would be a better management measure to prevent water truck operators from over-pumping small fish-

Response to Comment G10-53

Present Conditions

Baseline conditions are discussed in Master Response 1. Cumulative effects are discussed in Master Response 3. See also responses to Comments G10-15, G10-49, and G10-51, among others, regarding adaptive management.

Cumulative Effects Monitoring

Several of the long term monitoring programs (i.e., long-term habitat assessment, large woody debris, outmigrant trapping, summer juvenile salmonid population, road-related and other mass wasting, and SSS delineation and SSS assessment) under the Plan (AHCP/CCAA Section 6.2.5.3) have the potential to identify conditions of concern in the HPAs, including cumulative watershed effects, so that any necessary adjustments in Operating Conservation Program measures can be made.

Fish Response Thresholds

bearing streams. Also, in the event of fire these tanks would provide a valuable source of water for fire suppression.

**11. There are many unanswered questions regarding the \$2.5 million spending cap.**

The proposed Road Management Measures specifies that an average of \$2.5 million per year will be provided during the first 15 years of the HCP period to treat high and moderate priority sediment sites throughout the covered ownership. These measures fail, however, to clearly state whether this \$2.5 million is a firm commitment from Simpson itself or whether funds secured by outside parties to conduct sediment treatment activities on Simpson's property will be included in this figure. Additionally, the measures do not specify how much of this amount is above and beyond current road maintenance expenditures, nor does it clearly specify how sediment treatment activities will follow the provided prioritization matrices. Simpson should (in clear language) commit to a firm annual dollar amount, state that this amount does not include outside money, and encourage other groups to use the Simpson money as a match to garner additional funds to treat high-priority sites.

High road densities and associated high sediment yield have long been identified as the single most significant impact to fish populations and associated habitat throughout the Lower Klamath Sub-basin (e.g. see 1991 Long Range Plan for the Klamath River Basin Conservation Area Restoration Program). Simpson and the Yurok Tribe have established a partnership to address watershed restoration needs throughout the Lower Klamath tributaries, with road decommissioning and related sediment treatment projects being the priority focus of this effort. Simpson needs to identify a firm monetary commitment that they will contribute to this effort, above and beyond any additional funds that might be secured by outside entities to conduct such work on their ownership. Watershed restoration funds from outside funding sources, such as those the Klamath Task Force oversees, cannot be utilized for mitigation identified in a timber harvest plan or HCP. In addition, the HCP needs to clearly identify how these funds will be used to treat priority sediment sources based on and in conjunction with the Lower Klamath watershed prioritization and restoration planning efforts currently underway in the sub-basin. Without such information and a clear understanding of how such efforts will be funded, it is impossible to discern if the Road Management Measures will adequately treat sedimentation problems within the Lower Klamath to the point that aquatic habitat degradation trends will be reversed, let alone allow the recovery of impacted habitat.

G10-52 We recommend that the cap should not include spending to maintain appurtenant roads if they are built in high risk areas.

**E. ADAPTIVE MANAGEMENT**

G10-53 On the positive side, the use of amphibians to monitor and adaptively manage, headwater tributaries (Class II and III) is welcome. Water temperature monitoring relative to a true baseline, rather than the present condition, can help improve how harvesting is done adjacent to the floodplain. Both can improve how a given acre can be better harvested to minimize onsite

Population numbers were not used to develop the biological goals and objectives or the conservation measures. The conservation measures related to fish species in the Operating Conservation Program were geared towards fish habitat, and therefore, the monitoring thresholds are habitat-based.

## *Amphibian Response Mechanisms*

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Green Diamond has documented extinction and recolonization of several torrent salamander sites as part of other amphibian studies. See AHCP/CCAA Appendix D.1.6.3. Estimates of extinction rates or specifics of recolonization dynamics are not known. See discussion above regarding the development of the Operating Conservation Program and ESA requirements, as well as Master Response 8. The Services believe that the Plan, including its adaptive management triggers, meet ESA Section 10 requirements.

## *Water Temperature*

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See discussion above regarding the development of the Operating Conservation Program and ESA requirements, as well as Master Response 8. The Services believe that the Plan, including its rapid response and other effectiveness monitoring measures, meet ESA Section 10 requirements. Rate of harvest is discussed in Master Response 11.

*Adaptive Management Reserve Account*

The AMRA, including how it is funded, its opening balance and how it may change, and how it would be used under the Plan to benefit the covered species and their habitats, is discussed in AHCP/CCAA Sections 6.2.6.3 and 6.3.6.2, as well as in Master Response 15. Adaptive management is a tool to address uncertainty in an HCP, and the Services believe that, as structured in the Plan, the adaptive management program is the best mechanism to address any uncertainty in this Plan. The Services have found that the AMRA is adequate for the purposes provided in the Plan

effects. However, there are several serious basic flaws in the proposed adaptive management scheme, many of which already have been touched upon.

**1. No assessment of present conditions relative to a biologically relevant standard**

The only standard evoked is the present condition. The Plan does not address whether cumulative watershed effects are already occurring. Instead, the present condition is considered the baseline condition.

**2. No cumulative effects monitoring**

The AHCP does not propose long-term monitoring that will document the occurrence of cumulative watershed effects. The plan should compare rapid response to long-term response variables. Key questions include: Where are cumulative effects expected? Where is the monitoring occurring to adaptively manage? It is not clear that the two significantly overlap spatially or temporally. An assessment requires response variables (the dependent variables) that (1) are measured where cumulative effects are most likely to be occurring and (2) can rapidly respond within the timeframe of the management practice. For example, the timeframe should be well within the harvest schedule for the North Fork Mad River and the likely location of cumulative effects could be anywhere within the stream network but especially within downstream reaches of larger tributaries and the mainstem where CWEs are most likely to be expressed.

**3. Fish response thresholds missing**

There are no biologically-based thresholds of any kind based on fish monitoring. Although Simpson appears willing to use changes in amphibian numbers as triggers, there is no attempt to do so for fish. Watershed-level productivity can be used, regardless of ocean conditions.

**4. Amphibian response mechanisms are flawed**

The proposed mechanism simply will not provide a responsive trigger for habitat changes significant to torrent salamanders. (See amphibian thresholds at 6-55; Rationale at 6-155). The "yellow light" triggers are: (1) "Any extinction of a sub-population," and; (2) "An apparent decline in the average index of sub-population size in treatment sites compared to control sites." The "red light" indicators are: (1) "A statistically significant increase in the extinction of treatment sub-populations relative to control streams," or; (2) "A significant increase in the net rate of extinctions over the landscapes."

It is a misnomer to refer to the type of monitoring proposed for amphibians as "rapid response monitoring." This will provide long-term population monitoring information, which goes to long term trends, not short-term responses to management. This does not mean that such monitoring is not useful, it is just not appropriate for an adaptive management trigger in a 50-year plan.

There is an apparent contradiction in the rationale behind the use of Torrent Salamanders as “red light” thresholds in that it is explicitly conceded that this species is not well-suited to red light thresholds. Another problem with the amphibian triggers is that it will take the life of this plan to show anything statistically significant on amphibian populations.

Nor is it clear how the “net rate of extinctions over the landscape” will be measured. Although Simpson alludes to amphibians demonstrating a metapopulation dynamic of recolonization following local extinctions, no data to support these contentions are cited or presented. See Section IV. *infra*.

#### 5. *Water Temperature*

Temperature monitoring, as outlined in the Plan, will not be a sensitive adaptive management trigger geared to recovering the riparian zone. See Section III. *infra*.

In sum, the Simpson AHCP provides no rapid response variable, and therefore no timely implementation of an adaptive management protocol capable of assessing and managing downstream cumulative watershed effects. As noted in Section III, suspended sediment and its counterpart turbidity are the quickest response variables available but these are missing from the adaptive management scheme. As also noted above, avoidance of the rate-of-harvest is evident in the adaptive management sections of the AHCP. In Section 6.2.6.2 (p.6-57), the rate-of-harvest is not considered a potential management option for adaptive management. Negotiable management options given relate to RMZ prescription, road management, and mass wasting risk. No one will argue these are minor management concerns, but scientific knowledge indicates and common sense demands that the rate at which a watershed’s surface is disturbed can be as important as how that surface is disturbed. By not considering the rate-of-harvest or monitoring for downstream cumulative effects, the Simpson AHCP maintains CDF’s doctrine that a given set of “best” management practices will prevent harmful CWEs.

#### 6. *AMRA Mechanism Unclear*

In Section 6.3.6.2, the logic of AMRA in providing protection to the habitat of listed species is not clear. The 1,550 fully stocked acres seems quite low when compared to a plan area of 400,000+ acres – less than 0.5% of the plan area? Also, does the AHCP propose that once the “account” is drained that no additional mitigations measures can be applied to any THP’s until the “account” is credited? What exactly is a “credit”?

G10-53

Response to Comment G10-54

The ESA does not require implementation of the Plan to result in “biological recovery,” but that the impacts of taking an ITP species be minimized and mitigated to the maximum extent practicable, that authorized take not appreciably reduce the likelihood of survival and recovery of the covered species in the wild, and that other Permit issuance criteria (see Master Response 8) be met. The Services believe that this Plan satisfies these requirements.

Response to Comment G10-55

Green Diamond’s analysis considered activities on its own property and on other privately-owned commercial timberland property within the 11 HPAs that, over the term of the Plan and Permits, either are included within the Plan Area or are eligible for inclusion in the Plan Area as provided in IA paragraph 11. AHCP/CCAA Table 1-1 acknowledges that Green Diamond owns 82% of the Coastal Klamath HPA, and the Assessment of Habitat Conditions and Status of covered species in the Coastal Klamath HPA are provided in AHCP/CCAA Section 4.4.2. Further, as noted above, the Operating Conservation Program provides an additional layer of regulation that supplements existing applicable laws (AHCP/CCAA Section 1.4.2). In addition to satisfying requirements imposed under other provisions of the Federal ESA, Green Diamond also must continue to comply with requirements imposed under Federal laws, such as the Klamath River Basin Fishery Resources Restoration Act (16 U.S.C. Section 460ss).

**VI. COMMENTS ON DEIS AND OTHER ANALYSIS RELATING THE PROPOSED PLAN TO THE RECOVERY OF COVERED SPECIES**

**A. Findings relative to impacts on recovery not linked to state or federal recovery planning**

G10-54

It is not clear how the HCP will meet the objectives of an ESA-recovery plan especially since NMFS has yet to develop a federal recovery plan for coho salmon. Also, with the August, 2002 state listing of coho salmon the California Department of Fish and Game is just starting the development of a state recovery plan. Simpson’s HCP should remain flexible to allow the addition of mitigations to remain consistent with the goals and objectives of both the NMFS and CDFG recovery plans (when completed).

**B. In describing the plan area, the HCP downplays the importance of Simpson’s holdings in the Klamath Basin by stating that their properties comprise only 2% of the basin**

G10-55

For restoration purposes, the Klamath Basin Task Force has divided the Klamath watershed into five distinct sub-basins. The Lower Klamath sub-basin comprises the watershed boundary from the confluence of the Trinity River down to the Pacific Ocean. The anadromous salmonid stocks that spawn and rear in Lower Klamath tributaries exhibit life-history patterns more typical of small coastal streams than the stocks of fish that utilize tributaries in the middle and upper Klamath River. Simpson presently owns over 80% of the Lower Klamath sub-basin (excluding Federally owned portions of Blue Creek) and manages this property exclusively for commercial timber production. The Lower Klamath sub-basin also contains a major portion of the remaining coho salmon habitat in the Klamath Basin and thus it is imperative that the HCP be properly prepared so it meets the goals of the Endangered Species Act, as well as aiding in meeting the goals and objectives of the Klamath Basin Restoration Act.

G10-56

**C. Neither the AHCP nor DEIS address herbicides**

The AHCP fails to acknowledge the potential impacts of herbicides on water quality and listed aquatic species. There is substantial literature available to generate a summary of how the application of herbicides may affect aquatic species. From this literature review Simpson would could list the steps they (or their sub-contractors) would follow to minimize the accidental introduction of substances commonly used in commercial timber management; such as Atrazine; Triclopyr; Garlon 3 and 4; 2,4-D; and Glyphosate into Plan Area streams. Section 2, Description of Simpson’s Timber Operations and Forest Management Activities, describes Simpson’s current management activities, yet fails to provide information regarding the application of herbicides other than Simpson is not asking for incidental take for this action. Description of annual, repeated use of herbicides over several thousand acres of forest lands that drain into waterways that support listed species and are utilized by the public is completely omitted. Even if Simpson is not seeking incidental take for herbicides, it seems that the use of herbicides is an integral part of their management and should be fully disclosed to allow reviewers to decide if there might be

Response to Comment G10-56

Herbicide use has been discussed in Master Response 4.

Response to Comment G10-57

The ESA requires that a proposed HCP meet the criteria set forth in ESA Section 10 and accompanying regulations before a Permit may be issued. The ESA does not require that the measures included an HCP's operating conservation program exceed all requirements of other applicable laws or that the plan provide a measure-by-measure comparison of prescriptions to State law provisions. Instead, the ESA requires an operating conservation program to meet the ESA section 10 issuance criteria provided in EIS section 1.3, AHCP/CCAA Section 1.4.1 and discussed in Master Response 8. Here, the Services recognize that the Plan supplements all existing governing laws, including the CFPRs (see AHCP/CCAA Section 1.4 and Master Response 7) and believe that the Plan satisfies ESA Section 10 Permit issuance requirements.

Response to Comment G10-58

Basis for Permit Approval

Permit issuance criteria, including the ITP requirement to minimize and mitigate the effects of take to the maximum extent practicable, are discussed in Master Response 8. As indicated in above responses, the Services believe that these criteria have been satisfied.

*Best Available Scientific Information*

Regulations governing ITP applications that are submitted for NMFS' approval require submittal of an HCP to be based on the

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the potential for take. Because herbicides are often applied by sub-contractors with crews of migrant workers who may or may not understand English and the potential toxicity of the chemicals they are be told to work with - the plan should address the use of sub-contractors and how Simpson plans to train sub-contractors to properly apply the correct mitigations to reduce or eliminate potential take (as well as reduce the workers' exposure to herbicides). It is impossible to wholly assess the potential impacts of Simpson's proposed activities or the effectiveness of proposed mitigation measures without being able to assess all interrelated portions of their timber management activities. As a result, herbicide use should be included and effectively considered within the HCP planning context.

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**D. Comparative Analysis with California Rules Lacking**

It is difficult to determine and assess the mitigations listed for each of Simpson's management activities. In particular, it is difficult to discern how the mitigations differ from existing California State Forest Practice Rules (CFPR's). State regulations governing past timber harvest related activities have clearly been inadequate in terms of protecting anadromous salmonid populations and associated in-stream and riparian habitat. A recent review of the CFPR's by NMFS confirmed that the current rules were insufficient in protecting or promoting the de-listing of listed species. This AHCP needs to clearly identify all mitigation measures and specify if and how they differ from current FPR's. Only when such a comparison is made can one begin to assess if this plan will provide the necessary added protective measures to protect coho populations and lead to a significant long-term improvement in aquatic and riparian habitat conditions.

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**VII. CONCLUSIONS**

There has not been presented a rational analytical basis for a finding that the applicable decision standards have been met. Specifically, best available scientific information has not been brought to bear to demonstrate that the proposed measures actually will mitigate for the harm caused by timber harvest and associated activities to the maximum extent practicable. Notably, rigorous comparative analysis with recent policy recommendations by the Services and independent review bodies, and other HCPs in the region is lacking. Likewise, there is no foundation upon which to support a finding that the proposed measures, even where they purport to exceed the requirements of current rules, will not impair the survival and recovery of the covered species and/or jeopardize their continued existence.

best scientific and commercial data available, 50 C.F.R. section 222.307(b)(5). NMFS believes that Green Diamond's Plan meets this requirement.

NEPA (42 U.S.C.A. Section 4371 et seq.; 40 C.F.R. Parts 1500-15081) requires the Services and other agencies of the Federal government to use information "of high quality." 40 CFR Section 1500.1(b). More specifically, NEPA requires the Services to "insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements.... [to] identify any methodologies used and... make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement." 40 CFR Section 1502.24. However, "ultimately, of course, it is not better documents but better decisions that count. NEPA's purpose is not to generate paperwork - even excellent paperwork - but to foster excellent action. The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment." 40 CFR Section 1500.1(c).

## *Comparative Analysis*

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The relationship between this Plan and other HCPs in the region, specifically the Pacific Lumber Company's HCP, has been discussed in Master Response 6.

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