THE PACIFIC LUMBER COMPANY (PALCO)

PRESCRIPTIONS

BASED ON WATERSHED ANALYSIS FOR

LOWER EEL AND EEL DELTA, CALIFORNIA

17 June 2004

Changes to HCP language:

6.3.3.7 Hillslope Management

The hillslope management mass-wasting strategy applies to all portions of PALCO's ownership, including the RMZs. The prescriptions in the RMZs for mass-wasting will not be less restrictive than the riparian prescription developed as part of watershed analysis, as appropriate and applicable to this Plan. The hillslope management prescriptions may be modified as a result of watershed analysis revisitation.

1. PALCO shall use the Lower Eel and Eel Delta (LEED) "Hillslope Management Checklist" for identifying areas at very high risk of mass-wasting to which the appropriate mass-wasting prescription (Table 1) will be applied when building roads and harvesting timber. If a very high prescription is not indicated through this, the registered professional forester (RPF) determines the appropriate prescription to be applied to the area consistent with the California Forest Practice Rules (FPRs).
2. PALCO has developed an office and field based training course for RPFs to educate them on the general geology, geologic processes, specific slope stability issues, and identifying unstable features on PALCO lands. The training includes education on proper use of the LEED Hillslope Management Checklist, and the information contained in CGS notes 45 and 50. PALCO will provide additional training as needed prior to implementation of the LEED prescriptions. Only RPFs that have taken this training can develop THPs using these new prescriptions.
3. Where geologic review is recommended from the checklist below, CGS Note 45 and other information and materials may be used as needed and appropriate.
4. Road stormproofing activities required by the HCP Section 6.3.3.2 (as revised April 13, 2003) are not restricted by these hillslope prescriptions. In addition, where an existing and approved stormproofing plan exists, road stormproofing, road closure, road decommissioning of existing roads and road sites on the mass-wasting areas of concern can be conducted without additional geologic review or Wildlife Agency approval.

Table 1: Summary of Riparian and Hillslope Protection Measures for the Lower Eel – Eel Delta Watershed Analysis Unit (WAU). This table is a summary only; more detailed information is described in the text.

<table>
<tr><th>Watercourse Class</th><th>Sub-Basin Group [a]</th><th>Slope Class [b]</th><th colspan="4">Distance From Streambank or Watercourse Transition Line (In Feet)
And Conservation Measures in Each Streamside Segment</th></tr>
<tr><td rowspan="4">Class I</td><td rowspan="4">All Sub-Basins in the Watershed Analysis Unit (WAU)</td><td rowspan="2">< 50 %</td><td>0-100 Feet</td><td>100-150 Feet</td><td>150-200 Feet</td><td>200-300 Feet</td></tr>
<tr><td>No Harvest
(0-100 feet)</td><td>Retain
≥ 50%
Post-Harvest
Canopy
Closure
(100-150 feet)
[c]</td><td colspan="2">Not Applicable</td></tr>
<tr><td rowspan="2">≥ 50 %</td><td>No Harvest
(0-100 feet)</td><td colspan="2">Geologic Review, and
50% Post-Harvest Canopy Closure
(100-200 feet) [d, e]</td><td>Geologic Review
(200-300 feet) [e]</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="4">Class II</td><td rowspan="4">South Eel
Sub-Basin Group
(Including Stitz Creek)</td><td rowspan="2"><50%</td><td>0-100 Feet</td><td colspan="2">100-200 Feet</td><td>200-300 Feet</td></tr>
<tr><td>No Harvest
(0-100 feet)</td><td colspan="2">Not Applicable</td><td>Not Applicable</td></tr>
<tr><td rowspan="2">≥50%</td><td>No Harvest
(0-100 feet)</td><td colspan="2">Geologic Review and
Special Hillslope Prescription
(100-200 feet) [d, e]</td><td>Geologic Review
(200-300') [e]</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="4">Class II</td><td rowspan="4">North Eel and
Eel River Delta
Sub-Basin Groups
(Excluding Stitz Creek)</td><td rowspan="2">< 50 %
or <40% in Scotia</td><td>0-50 Feet</td><td>50-125 Feet</td><td>125-200 Feet</td><td>200-300 Feet</td></tr>
<tr><td>No Harvest
(0-50 feet)</td><td>≥ 60% Post-Harvest
Canopy Closure
(50-125 feet) [c]</td><td colspan="2">Not Applicable</td></tr>
<tr><td rowspan="2">≥ 50 % or ≥40% in Scotia</td><td>No Harvest
(0-50 feet)</td><td>Geologic Review, and
≥ 60% Post-Harvest
Canopy Closure
(50-125 feet) [c, e]</td><td>Geologic Review, and
Special Hillslope
Prescription
(125-200 feet) [d, e]</td><td>Geologic Review
(200-300 feet) [e]</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">Class III</td><td rowspan="2">All Sub-Basins in the Watershed Analysis Unit (WAU)</td><td rowspan="2">>50%</td><td colspan="4">Streambank or Watercourse Transition Line to Break-In-Slope or Hydrologic Divide</td></tr>
<tr><td colspan="4">Geologic Review [e]</td></tr>
</table>

Table 1 (Continued): Summary of Riparian and Hillslope Protection Measures for the Lower Eel – Eel Delta Watershed Analysis Unit (WAU).	
Other Hillslope Features	
Feature	**Conservation Measures**
Headwall Swale, Including 25-Foot Buffer Zone	No road construction, reconstruction or timber harvest without geologic review. The minimum retention is the Special Hillslope Prescription. [d, e]
Other Very High Hazard Features	Geologic Review [e]

Footnotes

Note	Subject	Discussion
[a]	Sub-basin groupings.	*South Eel Group*: Monument, Kiler, Dinner, Twin, Stafford, Stitz, Jordan, Greenlow, Pepperwood, Bear, Horse Collar, Chadd, and High Rock sub-basins. This group also includes the portion of the Eel River mainstem sub-basin lying south of the river channel. *North Eel Group*: Scotia, North Central, Sammy & Kari, Darnell, Shively, Bridge, Allen, Weber, Perrott, Strongs, Nanning, Dean, Howe, and Atwell sub-basins. This group also includes the portion of the Eel River mainstem sub-basin lying north of the river channel.
[b]	Slope class and prescription objectives.	Where slope class is < 50% (or < 40% in the Scotia sub-basin), the conservation measures address riparian management issues only. Where prescriptions apply to all slope classes, as in Class II watercourses in the South Eel Sub-Basin Group, and where the slope class is ≥ 50% (or ≥ 40% in the Scotia sub-basin), the conservation measures address a combination of hillslope and riparian management issues.
[c]	Post-harvest canopy closure requirements (applies to RMZ prescriptions only).	For Class I watercourses, see the prescription measures for the Class I outer band in revised section 6.3.4.1.2. For Class II watercourses, see the prescription measures for the Class II outer band in revised section 6.3.4.1.3.
[d]	Special Hillslope Prescription (applies to mass-wasting prescriptions only).	See "Special Hillslope Prescription" under definitions in revised section 6.3.3.7. Standards for application of the special hillslope prescription are found throughout revised section 6.3.3.7.
[e]	Geologic Review.	Standards, terms and conditions for geologic review are found throughout revised section 6.3.3.7.

The Hillslope Management Checklist for the Lower Eel and Eel Delta Watershed Analysis Unit

Modified from the CALIFORNIA LICENSED FORESTERS ASSOCIATION GUIDE TO DETERMINING THE NEED FOR INPUT FROM A LICENSED GEOLOGIST DURING THP PREPARATION

In order to identify areas of very high risk of mass-wasting, the following questions should be addressed by the RPF during Timber Harvesting Plan (THP) preparation.

1. *Are there unstable areas located within or adjacent to the proposed THP area?*
   - A. *Were active features indicated on the maps available for the watershed? The RPF will review WA maps and appropriate CGS maps, aerial photos, and previous THPs in the area to identify areas of concern. Areas identified as shallow landslides or active deep-seated landslides on these maps will receive the very high prescription.*
   - B. *Were unstable areas observed in the field?*
     - i. *Is an inner gorge or steep streamside area (as defined in this section), present? If the answer is yes, the appropriate prescription is to be applied. If the answer is no, proceed with the evaluation.*
     - ii. *Is an headwall swale (as defined in this section) present? If the answer is yes, the appropriate headwall swale prescription is to be applied. If the answer is no, proceed with the evaluation.*
     - iii. *If the area being reviewed is not underlain by previously mapped deep-seated mass-wasting features then the RPF should look for indicators of unstable areas that may include:*
       - *Hillslopes greater than 60%*
       - *Loose, unconsolidated soils*
       - *U-shaped swales*
       - *Irregular topography*
         - *Scarps*
         - *Benches*
         - *Hummocky ground*
         - *Surface cracks*
       - *Vegetative indicators*
         - *Leaning trees*
         - *Hydrophytes*
         - *Isolated patches of homogeneous vegetation*
       - *Disorganized drainage*
         - *Sag ponds*
         - *Seeps*
         - *Diverted watercourse*
       - *Road cut-bank failure*
       - *Road or landing fill failure*

     If any of the features listed above is observed, consider part C and answer question 2.

iv. *If the area being reviewed is underlain by previously mapped deep-seated mass-wasting features, then the RPF should look for indicators of unstable areas that may include:*

- *Hillslopes greater than 60%*
- *Ground cracks*
- *Sharp, fresh, or unvegetated scarps or grabens*
- *Debris slides or debris flows on the surface of the deep-seated feature*
- *Recent rock fall or rock slides on the surface of the deep-seated feature*
- *Fresh/recent ground, road, or landing displacement*
- *Ponded or disrupted drainage (e.g., displaced stream channels, sag ponds, hydrophytes)*
- *Displaced/stressed/missing forest cover, frequent leaning and/or recurved (bent) trees*
- *Steep toes of deep-seated landslides or earthflows along stream edges or stream escarpments*

If any of the features listed above is observed, consider part C and answer question 2.

C. *If unstable areas were identified in the THP area as listed in iii & iv, proposed timber operations on, adjacent to, upslope, or downslope of these features may have the potential to affect slope stability through:*

- *Displacement of soil*
- *Division or concentration of drainage*
- *Reduction in interception or transpiration, and/or*
- *Reduction in root strength*

Examples of timber operations that may produce these effects are:

- *Timber cutting*
- *Construction and maintenance of:*
  - *Roads*
  - *Stream watercourse crossings*
  - *Skid trails*
  - *Beds for felling of trees (layouts)*
  - *Fire breaks*
- *Mechanical site preparation*
- *Prescribed burning*

2. *Do the proposed timber operations have a reasonable potential to affect slope stability, and a potential for materials from landslides or unstable areas to affect public safety, water quality, fish habitat or other environmental resources? If the answer is yes, the area will receive the very high prescription. If the answer is no, the RPF determines the appropriate prescription to be applied to the area consistent with the California Forest Practice Rules.*

Very high prescription:

1) Steep streamside areas (see definition) including inner gorges on Class I and II watercourses in Bear, Pepperwood, Horse Collar, Chadd, High Rock, Jordan, Kiler, Twin, Dinner, Greenlaw, Stafford, Stitz, and Monument sub-basins and the portion of the Eel River mainstem sub-basin lying south of the river channel –
a) Harvest – No harvest within 100 feet of Class I and Class II watercourses. The distance is measured from the watercourse transition line (HCP definition) or if present, the edge of the channel migration zone (CMZ) or the valley wall edge of "U" shaped channels (see definitions). If harvesting is proposed within the steep streamside area, between 100 to 200 feet (slope distance) from the watercourse, then an on-site geologic assessment shall be conducted by a California licensed geologist working with the RPF. On Class I waters, the minimum retention is 50% overstory canopy cover and 50% understory canopy covering the ground, and the post-harvest conifer canopy closure will not be reduced below an absolute value of 25%. On Class II waters, the minimum retention is the Special Hillslope Prescription Minimum Standard and must maintain or increase the QMD of the stand. The appropriate prescription shall be developed with due consideration of the risk of the resource. If harvesting is proposed within the steep streamside area, between 200 to 300 feet (slope distance) from the watercourse, then an on-site geologic assessment shall be conducted by a California licensed geologist working with the RPF. The appropriate prescription shall be developed with due consideration of the risk of the resource. If harvesting is proposed from 100 to 300 feet, then any required on-site geologic assessment will follow the procedures outlined in the CGS Note 45.

b) Roads - If new road construction or reconstruction is proposed, an on-site geologic assessment is required and will follow the procedures outlined in the CGS Note 45. No new road construction or reconstruction will occur on any Class I inner gorge without review and approval by NOAA Fisheries and DFG.

2) Steep streamside areas including inner gorges on Class I and II watercourses in all other sub-basins in the LEED watershed –
a) Harvest – No harvest within 100 feet of a Class I watercourse, and no harvest within 50 feet of a Class II watercourse. If harvesting is proposed between 100 to 200 feet on a Class I or between 50 to 200 feet on a Class II watercourse (slope distance) within the steep streamside area, then an on-site geologic assessment shall be conducted by a California licensed geologist working with the RPF. The appropriate prescription shall be developed with due consideration of the risk of the resource. On Class I watercourses, the final prescription developed must have a minimum retention of 50% overstory canopy cover and 50% understory canopy covering the ground, and the post-harvest conifer canopy closure will not be reduced below an absolute value of 25%. On Class II watercourses, the final prescription must follow the Special Hillslope Prescription Minimum Standard and must maintain or increase the QMD of the stand. From 100 to 150 feet on Class I watercourses with slope greater than 50% and from 50 to 125 feet on all Class II watercourses, if the

RMZ prescription is more conservative than the hillslope prescription, then the RMZ prescription applies.
b) If harvesting is proposed within the steep streamside area adjacent to Class I or II watercourses, between 200 to 300 feet (slope distance) from the watercourse, then an on-site geologic assessment shall be conducted by a California licensed geologist working with the RPF and the appropriate prescription developed with due consideration of the risk to the resource. If harvesting is proposed along a Class I from 100 to 300 feet, or in a Class II from 50 to 300 feet, then any required on-site geologic assessment will follow the procedures outlined in the CGS Note 45.
c) Roads - If new road construction or reconstruction is proposed, on-site geologic assessment is required and will follow the procedures outlined in the CGS Note 45. No new road construction or reconstruction will occur on any Class I inner gorge without review and approval by NOAA Fisheries and CDFG.

3) Class III watercourses
a) Harvest – On slopes greater than or equal to 50%, no timber harvest will be permitted unless on-site geologic assessment is conducted by a California licensed geologist working with the RPF and the appropriate prescription developed with due consideration of the risk to the resource. This geologic review zone shall extend from the bankfull width to the break-in-slope or to the hydrologic divide, whichever is less. If harvesting is proposed on these slopes adjacent to the Class III watercourse, then the required on-site geologic assessment will follow the procedures outlined in CGS Note 45.
b) While conducting the geologic review the geologist shall determine whether the proposed operations will result in a very high hazard. Specifically, the project geologist must determine whether the proposed timber operations have a reasonable potential to affect slope stability, and a potential for materials from landslides or unstable areas to affect public safety, water quality, fish habitat, or other environmental resources. If the proposed operations would result in a very high hazard then the Special Hillslope Minimum Prescription Standard shall be used.
c) Regardless of whether the Special Hillslope Minimum Prescription Standard is used, if the project geologist identifies supplemental recommendations that he/she deems necessary to mitigate the hazard associated with the proposed harvest, these recommendations shall be used.

4) Headwall Swales –
No timber harvest, road construction or reconstruction will be permitted unless on-site geologic assessment is conducted by a California licensed geologist working with the RPF and the appropriate prescription developed with due consideration of risk to the resource. The final prescription developed must include at least the Special Hillslope Prescription Minimum Standard post-harvest. In addition, a 25-foot buffer strip shall be flagged on the ground above the headwall swale. This buffer shall receive the same prescription that the headwall swale receives. Where appropriate, prescription development may include input from a fisheries biologist on potential biological impacts if a landslide were to occur.

5) Harvest on other identified very high hazard areas (including slopes greater than 60%)- No timber harvest will be permitted unless on-site geologic assessment is conducted by a California licensed geologist working with the RPF and the appropriate prescription developed with due consideration of risk to the resource. Where appropriate, prescription development may include input from a fisheries biologist on potential biological impacts if a landslide were to occur. The on-site geologic assessment will follow the procedures outlined in the CGS Note 45.

6) Road construction and reconstruction on other identified very high hazard areas - No road construction or reconstruction will be permitted unless on-site geologic assessment is conducted by a California licensed geologist working with the RPF and the appropriate prescription developed with due consideration of risk to the resource. Where appropriate, prescription development may include input from a fisheries biologist on potential biological impacts if a landslide were to occur. The on-site geologic assessment will follow the procedures outlined in the CGS Note 45. Other reference documents may be used as necessary and appropriate.

Definitions for this section:

1) Averaging Percent Slope – Average slopes over a 100 foot by 100 foot square block (i.e., 100 feet along streams by 100 feet inland). If slopes less than those that trigger a mass-wasting prescription exist from 0 to 100 feet, then the presence of steeper slopes beyond 100 feet do not trigger mass-wasting prescriptions specific to near stream areas. Other mass-wasting prescriptions such as slopes greater or equal to 60%, that result from the LEED Hillslope Management Checklist or geologic review, would apply. If slopes from 0 to 100 feet do trigger mass-wasting prescriptions associated with near stream areas, then any assessment of slopes beyond 100 feet will also be averaged using 100 foot by 100 foot blocks.

2) Headwall Swale- A concave slope, with convergent slopes of 50% or greater, that is connected to Class I, II, or III watercourses via a continuous linear depression (a linear depression interrupted by an active to dormant-young landslide deposit is considered continuous for this definition) (Concave, convergent slopes are a teardrop shaped depression in the hillside that lead directly to regulated watercourses).

3. Inner Gorge- A geomorphic feature formed by coalescing scars originating from landsliding and erosional processes caused by active stream erosion. The feature is identified as that area beginning immediately adjacent to the stream channel below the first break-in-slope.

4. QMD - The diameter at breast height of the tree of mean basal area in a population of trees greater than or equal to four inch DBH. A population of trees may consist of an unbiased sample or full census of a stand, or of an inventory stratum. Synonyms include quadratic mean diameter, basal-area-weighted-mean-DBH, DBAR, and DQMD.

5. Project Geologist – the California licensed geologist of record for the Timber Harvest Plan.

6. Special Hillslope Prescription Minimum Standard - A minimum of 150 square feet of average stand basal area would be maintained for any prescription (average stand basal area can be reduced by a maximum of 50%, or maintain a minimum of 150 square feet, whichever results in greater retention). Basal area will be determined on all trees four inches and larger at DBH as measured on a per acre basis through the silviculture selection zone.
   Retain a well distributed multistoried stand composed of a diversity of species similar to that found before the start of operations
   With due consideration to risk of resource, prescription analysis will include the appropriate resource specialist (e.g. fisheries or wildlife biologist). The on-site geologic assessment will follow the procedures outlined in the CGS Note 45. Other reference documents may be used as necessary and appropriate.

7. Steep streamside areas – In all sub-basins of Lower Eel and the Eel Delta except Scotia, areas adjacent to watercourses with a slope equal to or greater than 50%. In the Scotia sub-basin, areas adjacent to watercourses with a slope equal to or greater than 40%. In all cases, the steep streamside area ends with a break-in-slope (a break-in-slope is defined as a slope less than that of the feature (i.e., slopes $\geq$50% or $\geq$40%, as appropriate) for a distance of 100 feet or more).

8. U shaped channels - Except in the Eel River floodplain, watercourse reaches that have a U-shaped valley bottom including the area extending from immediately adjacent river terraces is a no harvest zone and the RMZ shall be measured from the valley-wall-edge. Within the Eel River floodplain, the HCP defined CMZ shall apply.

6.3.4.1.2 Class I RMZs

All fish bearing (or restorable) Class I watercourses will have an RMZ. The RMZ for Class I watercourses is divided into two bands, the inner band and the outer band. The width of the bands is based on slope distance. The inner band is 0 to 100 feet, and the outer band is 100 to 150 feet (Table 1), respectively, from the watercourse transition line, (HCP definition), or the outer edge of the CMZ (see below). Class I RMZ prescriptions may be modified as a result of watershed analysis re-visitation.

Prescriptions for the Entire Class I RMZ

1. The RMZ width shall be measured from the watercourse transition line (HCP definition) or if present, the outer CMZ edge on each side of the watercourse. Additionally, except in the Eel River floodplain, watercourse reaches that have a U-shaped valley bottom are a no-harvest zones, and the RMZ shall be measured from the valley-wall-edge including the area extending from immediately adjacent river terraces.
2. No sanitation salvage, exemption harvest, or emergency timber operations (as defined and allowed in the FPRs) shall occur in the RMZ, except as per prior agreement with the Wildlife Agencies.
3. All portions of downed wood (i.e., LWD), except as defined as slash in the FPRs, will be retained. Slash will be retained at those sites where it will contribute to soil stabilization and sediment filtration. Exceptions may be proposed in a THP and approved by the Wildlife Agencies.
4. Trees felled during current harvesting operations and THP-approved road construction are not considered downed wood for purposes of retention.
5. Felled hazard trees or snags not associated with a THP are considered downed wood and are to be retained in the general vicinity.
6. Trees that fall naturally onto roads, landings, or harvest units within the RMZ are considered downed wood and are to be retained in the general vicinity.
7. All non-hazard snags will be retained, as per the snag policy in the HCP.
8. The RMZ is an EEZ for timber operations, except for existing roads and permitted new road construction and equipment crossings.
9. Full suspension yarding will be used when feasible. Full suspension yarding is not feasible on flat ground, in other sites with limited deflection, where an adjacent landowner will not provide permission to secure a cable, or where a full suspension yarding system would jeopardize the safety of field personnel. For the purposes of this prescription, the expanded definition of feasibility according to the FPRs does not apply as an additional determination beyond that described above. For these conditions, yarding will be conducted in a manner that avoids ground disturbance that might deliver sediment to waters to the maximum extent practicable. Where ground disturbance occurs, PALCO will treat the site as per HCP 6.3.3.8 (revised April 14, 2003).

6.3.4.1.3 Class II RMZs

All Class II waters will have an RMZ as specified in Table 1. The RMZ will be measured from the watercourse transition line or the outer edge of the CMZ (see below). Class II RMZ prescriptions may be modified as a result of watershed analysis revisitation.

For the Class II seeps and springs containing southern torrent salamander habitat, the LEED Class II RMZ prescriptions apply. For other Class II seeps and springs, and for Class II waters situated within the prism of a road or landing, the prescriptions in the January 2004 Adaptive Management modifications to HCP sections 6.3.4.1.3 (d, e, and f) apply.

Prescriptions for the Entire Class II RMZ

1. The RMZ width[1] shall be measured from the watercourse transition line (HCP definition) or if present, the CMZ edge on each side of the watercourses.
2. No sanitation salvage, exemption harvest, or emergency timber operations (as defined and allowed in the FPRs) shall occur in the RMZ, except as per prior agreement with the Wildlife Agencies.
3. All portions of downed wood (i.e., LWD), except as defined as slash in the FPRs, will be retained. Slash will be retained at those sites where it will contribute to soil stabilization and sediment filtration. Exceptions may be proposed in a THP and approved by the Wildlife Agencies.
4. Trees felled during current harvesting operations and THP-approved road construction are not considered downed wood for purposes of retention.
5. Felled hazard trees or snags not associated with a THP are considered downed wood and are to be retained near the location of the removal.
6. Trees that fall naturally onto roads, landings, or harvest units within the RMZ are considered downed wood and are to be retained near the location of the removal.
7. All non-hazard snags will be retained, as per the snag policy in the HCP.
8. The RMZ is an EEZ for timber operations, except for existing roads and permitted new road construction and equipment crossings.
9. Full suspension yarding will be used when feasible. Full suspension yarding is not feasible on flat ground, in other sites with limited deflection, where an adjacent landowner will not provide permission to secure a cable, or where a full suspension yarding system would jeopardize the safety of field personnel. For the purposes of this prescription, the expanded definition of feasibility according to the FPRs does not apply as an additional determination beyond that described above. For these conditions, yarding will be conducted in a manner that avoids ground disturbance that might deliver sediment to waters

[1] RMZ width based on slope as shown in Table 1

to the maximum extent practicable. Where ground disturbance occurs, PALCO will treat the site as per HCP Section 6.3.3.8 (revised April 14, 2003).

10. Trees not marked for harvest may be felled within the RMZ to provide safety clearance for cable yarding corridors. Such felling will be done only as needed to ensure worker safety. In such cases, to the extent possible given site conditions and the FPRs, trees will be felled toward the waters to provide LWD and will be identified in THPs as an in lieu practice (14 CCR 916.1). Regardless, trees felled within the RMZ for safety purposes will be retained as downed wood.
11. Trees not marked for harvest which are damaged in the cable yarding corridors must be retained in place, either standing or as downed wood.
12. There will be a maximum of one entry every 20 years.
13. If any area within the RMZ is subject to mass wasting prescriptions, then the more restrictive of the RMZ and mass wasting prescriptions applies for that area.
14. Site preparation will be conducted according to HCP Section 6.3.4.2 (revised August 19, 2003).

Prescriptions for Class II Inner Band (0 to 50 feet in the North Eel and Eel Delta sub-basin groups and 0 to 100 feet in the South Eel sub-basin group)

1. Unless otherwise approved by the Wildlife Agencies, timber harvest will not occur within the inner band. This restriction includes sanitation salvage, exemption harvest, or emergency timber operations. For the purpose of adding LWD to the stream, or for the release of riparian stands for LWD to enhance development of trees capable of providing key-piece-sized LWD and future LWD recruitment, felling trees from within the 10 to 50 foot portion of the inner band will be allowed when approved by the Wildlife Agencies on a THP-by-THP basis in accordance with HCP Section 6.3.2.2 Item 7. Trees felled for these purposes are considered downed wood.
2. Road segments within the no-harvest band must be mitigated by extending the no-harvest band on the opposite side of the waters from the existing road an equivalent distance of that portion of the road prism within the no-harvest band. In the case of RMZ road crossings, the first 50 feet of road extending inland from the watercourse transition line is exempt from this mitigation.

Prescriptions for the Class II Outer Band, (in the North Eel and Eel Delta sub-basin groups, 50 to 125 feet)

1. The RMZ shall be clearly identified on the ground by the RPF who prepared the THP, or a supervised designee, with paint, flagging, or other suitable means prior to the preharvest inspection.

The specifics of this monitoring outline may be modified by agreement of PALCO and the Wildlife Agencies in the development of the detailed work plan for this monitoring program.

1. Streamside landslide monitoring

Objective: Monitor landslides in streamside areas to develop a better understanding of where they occur and what factors, such as geology, slope, landform, distance from watercourse, and management history affect their occurrence, size, and sediment delivery to streams.

Methods:

Part One

- The monitoring program will utilize the Forensic Landslide Investigation Standard Operating Procedures (Landslide SOP) developed by PALCO and the Wildlife Agencies.
- This Landslide SOP monitoring shall include both a helicopter survey and subsequent field review after each triggering event. The helicopter surveys shall include all Class I stream corridors on PALCO's ownership. In addition, helicopter surveys shall focus on quickly covering other portions of PALCO's ownership to identify slide sites. In addition, landslides identified during road inventories following triggering events will be incorporated into the monitoring. All fresh slide scarps will be noted and a representative sample, scheduled for on-site visits.
- Ground visits of identified slides will evaluate the following (many of these variables are already included in the Landslide SOP):
    - Depth of failure
    - Size of failure
    - Length of failure from head scarp
    - Estimate of the volume of sediment and LWD delivered to the watercourse
    - Vegetation and Seral stage of area surrounding failure
    - The landform where the failure occurred
    - Management features of area surrounding the failure (e.g., roads, landings, recent harvest, etc.)
    - Information that could help assign failure as management or non-management

Part Two

- The LEED Watershed Analysis identified small landslides as an important sediment source. This part of the monitoring program will be used to supplement information gathered in Part One, specifically to identify slides that are not visible in aerial surveys.
- The monitoring program will involve 10 or more survey reaches totaling 6,500 meters of stream length along Class I and II watercourses in Bear, Jordan, and Stitz Creek sub-basins, or whatever is agreed upon with the Wildlife Agencies.

- Sampled stream reaches will be selected to include a variety of Channel Geomorphic Units, with consideration of access and past landslide history also being used to select sites.
- Where such failures are observed, the field measurements and analysis will include all of the same variables included in Part One of the monitoring program. Within each sampled reach all visible shallow landslides will be mapped and measured during the first year after approval of the LEED Watershed Prescriptions.
- Subsequent surveys will focus on identifying new shallow landslides and/or reactivation of existing shallow landslides. The variables collected will include those listed in Part One.

Timeframe: Landslide SOP monitoring will occur following so called triggering events of greater than 3 inches of rainfall in 24 hours, or a significant earthquake in or near the LEED Watershed (significant to be agreed upon by PALCO, the Wildlife Agencies, and CGS). Field survey of selected river segments will occur 1 year, 3 years, and 5 years after adoption of the LEED Watershed Prescriptions.

Reporting: Provide all collected data and summary tables in a report to the Wildlife Agencies, in both electronic and hardcopy format with the annual report on June 1 of each year.

2. Class II temperature monitoring.

Objective:

- To develop a better understanding of water temperature conditions in Class II streams.

Methods:

- Monitor 10 Class II stream sites in warmer portions of the LEED watershed during each calendar year.
- At 5 sites each year, a continuously recording thermometer will be installed from June 1 to September 30 in Class II stream segments that do not have adjoining areas harvested within the past 15 years for at least 1,000 meters upstream from the monitoring site.
- At 5 sites each year, Class II streams passing through or adjacent to recently harvested areas will be selected. At such sites 1 continuously recording thermometer will be placed 100 meters upstream from the harvested area, and another immediately downstream from the harvested area to test for changes in water temperature. Such monitoring shall again extend from June 1 to September 30.

Timeframe: Monitoring for this component will be conducted annually for three years following approval of the LEED prescriptions.
Reporting: Provide all collected data, summary tables, analysis and QA/QC procedures to the Wildlife agencies with each annual report on June 1.

3. **Hillslope Monitoring** (Landslide SOP Monitoring) outlined here for the LEED Watershed is complemented by Hillslope Monitoring being conducted in Freshwater and by property-wide efforts. These efforts will help inform whether additional Hillslope Monitoring is needed in LEED, and if so, where and how to conduct such monitoring. In addition, monitoring in other watersheds or property-wide monitoring may indicate a need to modify the LEED prescriptions. Any additional monitoring or changes to prescriptions shall be developed by PALCO and the Wildlife Agencies.

4. **Scotia Sub basin Anomaly**

Of the 29 sub basins within the LEED, the Scotia sub basin indicated a significant number of streamside landslide originating on slopes greater than 40%. All other sub basins had a slope trigger of 50%. It has been suggested that this anomaly is the result of poor DEM's or other topographical errors.

With additional efforts within PALCO GIS department, and in conjunction with outside contractors (as necessary), PALCO will determine whether the lower slope trigger within the "Scotia" sub basin is justified or a simply a mapping error.

5. Stand Age Class Distribution

PALCO will monitor stand age classes in the Lower Eel sub-basins containing vegetation disturbance zones (see Map E-3 in the Channel Module) over the next 5 years. PALCO will work with the wildlife agencies to assess the distribution of these age classes, and their potential relationship to mass wasting, using methods to be jointly developed over the next year. This monitoring and assessment effort is not part of the LEED prescriptions but is a long term process that, in conjunction with the monitoring studies on mass wasting listed above, may be used to identify future approaches to reducing mass wasting events in the Lower Eel assessment areas.