

| | Yes after mitigation (a) | No after mitigation (b) | No reasonably potential significant effects <u>impacts</u> (c) |
|--------------------------------------|--------------------------------|-------------------------------|---|
| 1. Watershed | | | |
| 2. Soil Productivity | | | |
| 3. Biological | | | |
| 4. Recreation | | | |
| 5. Visual | | | |
| 6. Traffic | | | |
| 7. <u>Greenhouse Gases (GHG)</u> | | | |
| 8. <u>Other</u> | | | |

a) “Yes after mitigation”; means that potential significant adverse cumulative impacts are left after application of the ~~forest practice rules~~ Forest Practice Rules and mitigations or alternatives proposed by the plan submitter.

b) “No after mitigation” means that any potential for the proposed timber operation to cause or add to significant adverse cumulative impacts by itself or in combination with other projects has been reduced to insignificance or avoided by mitigation measures or alternatives proposed in the ~~THP Plan~~ THP Plan and application of the ~~forest practice rules~~ Forest Practice Rules.

c) “No reasonably potential significant cumulative ~~effects~~ impacts” means that the operations proposed under the ~~THP Plan~~ THP Plan do not have a reasonable potential to join

| | | | |
|---|--------------------------------|-------------------------------|---|
| | Yes after mitigation (a) | No after mitigation (b) | No reasonably potential significant effects <u>impacts</u> (c) |
| with the impacts of any other project to cause, add to, or constitute significant adverse cumulative impacts. | | | |

1 (4) If column (a) is checked in (3) above describe why the expected impacts cannot
2 be feasibly mitigated or avoided and what mitigation measures or alternatives were
3 considered to reach this determination. If column (b) is checked in (3) above describe
4 what mitigation measures have been selected which will substantially reduce or avoid
5 reasonably potential significant cumulative impacts except for those mitigation measures
6 or alternatives mandated by application of the rules of the Board.

7 (5) Provide a brief description of the assessment area used for each resource
8 subject.

9 (6) List and briefly describe the individuals, organizations, and records consulted in
10 the assessment of cumulative impacts for each resource subject. Records of the
11 information used in the assessment shall be provided to the Director upon request.

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**BOARD OF FORESTRY AND FIRE PROTECTION TECHNICAL
RULE ADDENDUM NO. 2
CUMULATIVE IMPACTS ASSESSMENT**

1 **Introduction**

2 The purpose of this addendum is to guide the assessment of cumulative impacts as
3 required in 14 CCR §§ 898.912.9, 932.9, 952.9 and 1034 that may occur as a result of
4 proposed timber operations. This assessment shall include evaluation of both on-site and
5 off-site interactions of proposed project activities with the impacts of past and reasonably
6 foreseeable future projects.

7 In conducting an assessment, the RPF must distinguish between on-site impacts
8 that are mitigated by application of the Forest Practice Rules and the interactions of
9 proposed activities (which may not be significant when considered alone) with impacts
10 of past and reasonably foreseeable future projects.

11 Resource subjects to be considered in the assessment of cumulative impacts are
12 described in the Appendix.

13 The RPF preparing a ~~THP~~ Plan shall conduct an assessment based on information
14 that is reasonably available before submission of the ~~THP~~ Plan. RPFs are expected to
15 submit sufficient information to support their findings if significant issues are raised during
16 the Department's review of the ~~THP~~ Plan.

17 Information used in the assessment of cumulative impacts may be supplemented
18 during the ~~THP~~ Plan review period. Agencies participating in plan review may provide
19 input into the cumulative impacts assessment based upon their area of expertise.
20 Agencies should support their recommendations with documentation.

21 The Department, as lead agency, shall make the final determination regarding
22 assessment sufficiency and the presence or absence of significant cumulative impacts.
23 This determination shall be based on a review of all sources of information provided and
24 developed during review of the ~~Timber Harvesting~~ Plan.
25

1 **Identification of Resource Areas**

2 The RPF shall establish and briefly describe the geographic assessment area within or
3 surrounding the plan for each resource subject to be assessed and shall briefly explain the
4 rationale for establishing the resource area. This shall be a narrative description and shall
5 be shown on a map where a map adds clarity to the assessment.

6
7 **Identification of Information Sources**

8 The RPF shall list and briefly describe the individuals, organizations, and records
9 used as sources of information in the assessment of cumulative impacts, including
10 references for listed records and the names, affiliations, addresses, and phone numbers
11 of specific individuals contacted. Records of information used in the assessment shall be
12 provided to the Director upon request.

13 Common sources of information for cumulative ~~effects~~ impacts assessment are
14 identified below. Sources to be used will depend upon the complexity of individual
15 situations and the amount of information available from other plans. Sources not listed
16 below may have to be consulted based on individual circumstances. Not all sources of
17 information need to be consulted for every ~~THP Plan~~.

18 **1. Consultation with Experts and Organizations:**

- | | |
|------------------------------------|-----------------------------------|
| 19 (a) County Planning Department; | (b) Biologists; |
| 20 (c) Geologists; | (d) Soil Scientists; |
| 21 (e) Hydrologists; | (f) Federal Agencies; |
| 22 (g) State Agencies; | (h) Public and private utilities. |

23 **2. Records Examined:**

- | | |
|----------------------------|----------------------------------|
| 24 (a) Soil Maps; | (b) Geology Maps; |
| 25 (c) Aerial Photographs; | (d) Natural Diversity Data Base; |

- (e) ~~THP Plan~~ Records;
- (f) Special Environmental Reports;
- (g) Topographic Maps;
- (h) Basin Plans;
- (i) Fire History Maps;
- (j) Relevant Federal Agency Documents or Plans;
- (k) Relevant Watershed or Wildlife Studies (published or unpublished);
- (l) Available Modeling Approaches

As provided in ~~Section 14 CCR § 898 of the rules~~, the RPF or supervised designee and the plan submitter must consult information sources that are reasonably available.

Past and Future Activities

Past and future projects included in the cumulative impacts assessment shall be described as follows:

A. Identify and briefly describe the location of past and reasonably foreseeable probable future projects as defined in 14 CCR § 895.1 within described resource assessment areas. Include a map or maps and associated legend(s) clearly depicting the following information:

1. Township and Range numbers and Section lines.

2. Boundary of the planning watershed(s) within which the plan area is located along with the CALWATER 2.2 identification number.

3. Location and boundaries of past, present and reasonably foreseeable probable future timber harvesting projects on land owned or controlled by the timberland owner of the proposed timber harvest within the planning watershed(s) depicted in section (2) above. For purposes of this section, past projects shall be limited to those projects submitted within ten years prior to submission of the ~~THP~~Plan.

1 **4.** Silvicultural methods for each of the timber harvesting projects depicted in
 2 section (3) above. Each specific silvicultural method must be clearly delineated on the
 3 map(s), and
 4 associated ~~THP~~ Plan number referenced in the legend or an annotated list. In addition,
 5 shading, hatching, or labeling shall be used which clearly differentiates silvicultural
 6 methods into one of the four categories outlined in Table 1.

7 **5.** A north arrow and scale bar (or scale text).

8 **6.** Source(s) of geographical information.

9 The map scale shall be large enough to clearly represent one planning watershed per
 10 page or of a scale not less than 1:63,360. Planning watersheds with densely situated or
 11 overlapping harvest units, or those which are large or irregular in size, may require
 12 multiple maps to achieve clarity. Map(s) shall be reproducible on black & white copiers,
 13 and submitted on an 8½ x 11 page(s).

14
 15 **Table 1**

| Silvicultural Category | Silvicultural Method |
|--|--|
| Evenaged Management 14 CCR § 913.1 [933.1, 953.1] | Clearcutting, Seed Tree Seed Step, Seed Tree Removal Step, Shelterwood Preparatory Step, Shelterwood Seed Step, Shelterwood Removal Step |
| Unevenaged Management 14 CCR § 913.2 [933.2, 953.2] | Selection, Group Selection, Transition |
| Intermediate | Commercial Thinning, Sanitation-Salvage |

| | |
|---|---|
| Treatments 14 CCR § 913.3 [933.3, 953.3] | |
| Special Prescriptions and Other Management 14 CCR § 913.4 [933.4, 953.4] | Special Treatment Area Prescriptions, Rehabilitation of Understocked Area Prescription, Fuelbreak/Defensible Space, Southern Subdistrict Special Harvesting Method (14 CCR § 913.8), Variable Retention, Conversion |
| Alternative Prescriptions shall be put into the category within which the most nearly appropriate or feasible silvicultural method in the Forest Practice Rules is found pursuant to 14 CCR § 913.6 (b)(3)[933.6(b)(3), 953.6(b)(3)]. | |

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B. Identify and give the location and description of any known, continuing significant environmental problems caused by past projects as defined in 14 CCR § 895.1. The RPF who prepares the plan or supervised designee shall obtain information from plan submitters (timberland or timber owner), and from appropriate agencies, landowners, and individuals about past, and future land management activities and shall consider past experience, if any, in the assessment area related to past impacts and the impacts of the proposed operations, rates of recovery, and land uses. A poll of adjacent land owners is encouraged and may be required by the Director to determine such activities and significant adverse environmental problems on adjacent ownerships.

Appendix Technical Rule Addendum # 2

In evaluating cumulative impacts, the RPF shall consider the factors set forth herein.

1 **A. Watershed Resources**

2 Cumulative Watershed Effects (CWEs) occur within and near bodies of water or
3 ~~significant wet areas~~ wet meadows or other wet areas, where individual impacts are
4 combined to produce an effect that is greater than any of the individual impacts acting
5 alone. Factors to consider in the evaluation of cumulative watershed impacts are listed
6 below.

7 **1.** Impacts to watershed resources within the Watershed Assessment Area (WAA)
8 shall be evaluated based on significant on-site and off-site cumulative effects on beneficial
9 uses of water, as defined and listed in applicable Water Quality Control Plans.

10 **2.** Watershed effects produced by timber harvest and other activities may include
11 one or more of the following:

- 12 • Sediment
- 13 • Water temperature
- 14 • Organic debris
- 15 • Chemical contamination
- 16 • Peak flow

17 The following general guidelines shall be ~~used~~ considered when evaluating watershed
18 impacts. The factors described are general and may not be appropriate for all
19 situations. Actual measurements may be required if needed to evaluate significant
20 environmental effects. The plan must comply with the quantitative or narrative water-
21 quality objectives set forth in an applicable Water Quality Control Plan.

22 **a. Sediment Effects.** Sediment-induced CWEs occur when earth
23 materials transported by surface or mass wasting erosion enter a stream or stream
24 system at separate locations and are then combined at a downstream location to produce
25 a change in water quality or channel condition. The eroded materials can originate from

1 the same or different projects. Sediment is composed of both suspended and bedload
2 material. [Suspended sediment is usually the primary source of turbidity in forested](#)
3 [watersheds, although suspended organic material also accounts for a proportion of the](#)
4 [suspended load. Chronic turbidity can be an indicator of a cumulative watershed](#)
5 [sediment effect when sources can be identified and linked to one or more projects. Both](#)
6 turbidity and suspended sediment concentrations are subject to extreme inherent
7 variability from region to region, [storm to storm, and from year to year](#), dependent upon
8 underlying geology and precipitation.

9
10 Potentially adverse sediment changes are most likely to occur in the following locations
11 and situations:

12 - Downstream areas of ~~reduced~~ low stream gradient where
13 sediment from a new source may be deposited in addition to sediment derived from
14 existing or other new sources.

15 - Immediately downstream from where sediment from a new
16 source is combined with sediment from other new or existing sources and the combined
17 amount of sediment exceeds the transport capacity of the stream.

18 - Any location where sediment from new sources in
19 combination with suspended sediment from existing or other new sources significantly
20 increases turbidity, reduces the survival of fish or other aquatic organisms, or otherwise
21 reduces the quality of waters used for domestic, agricultural, or other beneficial uses.

22 - Channels with relatively steep gradients which contain
23 accumulated sediment and debris that can be mobilized by sudden new sediment inputs,
24 such as debris flows, resulting in debris torrents and severe channel scouring.

Potentially significant adverse impacts of cumulative sediment inputs

may include:

- Increased treatment needs or reduced suitability for domestic, municipal, industrial, or agricultural water use.

- Direct mortality of fish and other aquatic species.

- Impaired spawning and rearing habitat for salmonids or otherwise - Reduced viability of aquatic organisms or disruption of aquatic habitats and loss of stream productivity caused by filling of pools and plugging or burying streambed gravel.

- Accelerated channel filling (aggradation) resulting in loss of streamside vegetation and stream migration that can cause accelerated bank erosion.

- Accelerated channel filling (aggradation) resulting in increased frequency and magnitude of overbank flooding.

- Accelerated filling of downstream reservoirs, navigable channels, water diversion and transport facilities, estuaries, and harbors.

- Channel scouring by debris flows and torrents.

- Nuisance to or reduction in water related recreational activities.

Situations where sediment production potential is greatest include:

- Sites with high or extreme erosion hazard ratings.

- Sites which are tractor logged on steep slopes.

- Unstable areas.

b. Water Temperature Effect. Water temperature related CWEs are changes in water chemistry or biological properties caused by the combination of solar warmed water from two or more locations (in contrast to an individual effect that results

1 from impacts along a single stream segment) where natural cover has been removed.

2 Cumulative changes in water temperature are most likely to occur in the following
3 situations:

4 - Where stream bottom materials are dark in color.

5 - Where water is shallow and has little underflow.

6 - Where removal of streamside canopy results in substantial,
7 additional solar exposure or increased contact with warm air at two or more locations
8 along a stream.

9 - Where removal of streamside canopy results in substantial,
10 additional solar exposure or increased contact with warm air at two or more streams that
11 are tributary to a larger stream.

12 - Where water temperature is near a biological threshold for
13 specific species.

14 Significant adverse impacts of cumulative temperature increases
15 include:

16 - Increases in the metabolic rate of aquatic species.

17 - Direct increases in metabolic rate and/or reduction of
18 dissolved oxygen levels, either of which can cause reduced vigor and death of sensitive
19 fish and other sensitive aquatic organisms.

20 - Increased growth rates of microorganisms that deplete
21 dissolved oxygen levels or increased disease potential for organisms.

22 - Stream biology shifts toward warmer water ecosystems.

23 **c. Organic Debris Effects.** CWEs produced by organic debris can
24 occur when logs, limbs, and other organic material are introduced into a stream or lake at
25 two or more locations. Decomposition of this debris, particularly the smaller sized and

1 less woody material, removes dissolved oxygen from the water and can cause impacts
2 similar to those resulting from increased water temperatures. Introduction of excessive
3 small organic debris can also increase water acidity.

4 Large organic debris is an important stabilizing agent that should be maintained in
5 small to medium size, steep gradient channels, but the sudden introduction of large,
6 unstable volumes of bigger debris (such as logs, chunks, and larger limbs produced
7 during a logging operation) can obstruct and divert streamflow against erodible banks,
8 block fish migration, and may cause debris torrents during periods of high flow.

9 Removing streamside vegetation can reduce the natural, annual inputs of litter to the
10 stream (after decomposition of logging-related litter). This can cause both a drop in food
11 supply, and resultant productivity, and a change in types of food available for organisms
12 that normally dominate the lower food chain of streams with an overhanging or adjacent
13 forest canopy.

14 **d. Chemical Contamination Effects.** Potential sources of chemical
15 CWEs include run-off from roads treated with oil or other dust-retarding materials, direct
16 application or run-off from pesticide treatments, contamination by equipment fuels and
17 oils, and the introduction of nutrients released during slash burning or wildfire from two or
18 more locations.

19 **e. Peak Flow Effects.** CWEs can be caused by management
20 induced peak flow increases in streams during storm events, ~~are difficult to anticipate.~~
21 Peak flow increases may result from management activities that reduce rainfall
22 interception (i.e., evaporation) and vegetative water use (i.e., transpiration), or produce
23 openings where snow can accumulate, ~~(such as clear-cutting in clearcuts and site~~
24 ~~preparation on roads and landings).~~ ~~or that change the timing of flows by producing more~~
25 ~~efficient runoff runoff (such as insloped roads).~~ While increases, if any, however,

1 are likely to be small relative to ~~pre-harvest~~^{natural} peak flows, extensive canopy removal
2 over a short period of time on a watershed scale can increase peak flow effect on
3 streambank erosion, channel incision, and headward channel extension in erodible
4 landscapes. ~~from medium and large storms. Research to date on the effects of~~
5 ~~management activities on channel conditions indicates that channel changes during storm~~
6 ~~events are primarily the result of large sediment inputs.~~ The timing and concentration of
7 flows affecting lower order stream channel morphology can also be affected by the routing
8 of runoff from roads, landings, and skid trails. Peak flow effects diminish with decreasing
9 intensity of canopy removal, increasing time since harvest, and during larger flow
10 recurrence intervals.

11
12 **3. Watercourse Condition.** The watershed impacts of past upstream and
13 on-site projects are often reflected in the condition of stream channels on the project area.
14 Following is a list of channel characteristics and factors that may be used to describe
15 current watershed conditions and to assist in the evaluation of potential project impacts:

16 ◇ Gravel Embedded - Spaces between stream gravel filled with sand
17 or finer sediments. Gravel are often in a tightly packed arrangement.

18 ◇ Pools Filled - Former pools or apparent pool areas filled with
19 sediments leaving few areas of deep or "quiet" water relative to stream flow or size.

20 ◇ Aggrading - Stream channels filled or filling with sediment that raises
21 the channel bottom elevation. Pools will be absent or greatly diminished and gravel may
22 be embedded or covered by finer sediments. Streamside vegetation may be partially or
23 completely buried, and the stream may be meandering or cutting into its banks above the
24 level of the former streambed. Depositional areas in aggrading channels are often
25 increasing in size and number.

1 ◇ Bank Cutting - Can either be minor or severe and is indicated by
2 areas of fresh, unvegetated soil or alluvium exposed along the stream banks, usually
3 above the low-flow channel and often with a vertical or undercut face. Severe bank
4 cutting is often associated with channels that are downcutting, which can lead to over-
5 steepened banks, or aggrading, which can cause the channel to migrate against slopes
6 that were previously above the high flow level of the stream.

7 ◇ Bank Mass Wasting - Channels with landslides directly entering the
8 stream system. Slide movement may be infrequent (single events) or frequent (continuing
9 creep or periodic events).

10 ◇ Downcutting - Incised stream channels with relatively clean,
11 uncluttered beds cut below the level of former streamside vegetation and with eroded,
12 often undercut or vertical, banks.

13 ◇ Scoured - Stream channels that have been stripped of gravel and
14 finer bed materials by large flow events or debris torrents. Streamside vegetation has
15 often been swept away, and the channel has a raw, eroded appearance.

16 ◇ Organic Debris - Debris in the watercourse can have either a positive
17 or negative impact depending on the amount and stability of the material. Some stable
18 organic debris present in the watercourse helps to form pools and retard sediment
19 transport and downcutting in small to medium sized streams with relatively steep
20 gradients. Large accumulations of organic debris can block fish passage, block or divert
21 streamflow, or could be released as a debris flow.

22 ◇ Stream-Side Vegetation - Stream-side vegetation and near-stream
23 vegetation provide shade or cover to the stream, which may have an impact on water
24 temperature, and provides root systems that stabilize streambanks and floodplains and
25 filter sediment from flood flows.

1 ◇ Recent Floods - A recent high flow event that would be considered
2 unusual in the project area may have an impact on the current watercourse condition.

3 **B. Soil Productivity**

4 Cumulative soil productivity impacts occur when the effects of two or more activities,
5 from the same or different projects, combine to produce a significant decrease in soil
6 biomass production potential. These impacts most often occur on-site within the project
7 boundary, and the relative severity of productivity losses for a given level of impact
8 generally increases as site quality declines. The primary factors influencing soil
9 productivity that can be affected by timber operations include:

- 10 ◇ Organic matter loss. ◇ Soil compaction.
- 11 ◇ Surface soil loss. ◇ Growing space loss.

12 The following general guidelines may be used when evaluating soil productivity
13 impacts.

14 **1. Organic Matter Loss.** Displacement or loss of organic matter can result
15 in a long term loss of soil productivity. Soil surface litter and downed woody debris are the
16 store-house of long term soil fertility, provide for soil moisture conservation, and support
17 soil microorganisms that are critical in the nutrient cycling and uptake process. Much of
18 the chemical and microbial activity of the forest nutrient cycle is concentrated in the
19 narrow zone at the soil and litter interface.

20 Displacement of surface organic matter occurs as a result of skidding, mechanical
21 site preparation, and other land disturbing timber operations. Actual loss of organic matter
22 occurs as a result of burning or erosion. The effects of organic matter loss on soil
23 productivity may be expressed in terms of the percentage displacement or loss as a result
24 of all project activities.

1 **2. Surface Soil Loss.** The soil is the storehouse of current and future site
2 fertility, and the majority of nutrients are held in the upper few inches of the soil profile.
3 Topsoil displacement or loss can have an immediate effect on site productivity, although
4 effects may not be obvious because of reduced brush competition and lack of side-by-
5 side comparisons or until the new stand begins to fully occupy the available growing
6 space.

7 Surface soil is primarily lost by erosion or by displacement into windrows, piles, or
8 fills. Mass wasting is a special case of erosion with obvious extreme effects on site
9 productivity. The impacts of surface soil loss may be evaluated by estimating the
10 proportion of the project area affected and the depth of loss or displacement.

11 **3. Soil Compaction.** Compaction affects site productivity through loss of
12 large soil pores that transmit air and water in the soil and by restricting root penetration.

13 The risk of compaction is associated with:

- 14 - Depth of surface litter. - Soil structure.
- 15 - Soil organic matter content. - Presence and amount of coarse
- 16 fragments in the soil.
- 17 - Soil texture. - Soil moisture status.

18
19 Compaction effects may be evaluated by considering the soil conditions, as listed
20 above, at the time of harvesting activities and the proportion of the project area subjected
21 to compacting forces.

22 **4. Growing Space Loss.** Forest growing space is lost to roads, landings,
23 permanent skid trails, and other permanent or non-restored areas subjected to severe
24 disturbance and compaction.

1 The effects of growing space loss may be evaluated by considering the overall
2 pattern of roads, etc., relative to feasible silvicultural systems and yarding methods.

3 **C. Biological Resources**

4 Biological assessment areas will vary with the species being evaluated and its
5 habitat. Factors to consider in the evaluation of cumulative biological impacts include:

6 **1.** Any known rare, threatened, or endangered species or sensitive species
7 (as described in the Forest Practice Rules) that may be directly or indirectly affected by
8 project activities. Significant cumulative effects on listed species may be expected from
9 the results of activities over time which combine to have a substantial effect on the
10 species or on the habitat of the species.

11 **2.** Any significant, known wildlife or fisheries resource concerns within the
12 immediate project area and the biological assessment area (e.g. loss of oaks creating
13 forage problems for a local deer herd, species requiring special elements, sensitive
14 species, and significant natural areas). Significant cumulative effects may be expected
15 where there is a substantial reduction in required habitat or the project will result in
16 substantial interference with the movement of resident or migratory species.

17 The significance of cumulative impacts on non-listed species viability should be
18 determined relative to the benefits to other non-listed species. For example, the
19 manipulation of habitat results in conditions which discourage the presence of some
20 species while encouraging the presence of others.

21 **3.** The aquatic and near-water habitat conditions on the ~~THP~~ Plan and immediate
22 surrounding area. Habitat conditions of major concern are: Pools and riffles, Large
23 woody material in the stream, Near-water vegetation. Much of the information needed to
24 evaluate these factors is described in the preceding Watershed Resources section. A
25 general discussion of their importance is given below:

1 **a. Pools and Riffles.** Pools and riffles affect overall habitat quality
2 and fish community structure. Streams with little structural complexity offer poor habitat
3 for fish communities as a whole, even though the channel may be stable. Structural
4 complexity is often lower in streams with low gradients, and filling of pools can reduce
5 stream productivity.

6 **b. Large Woody Material.** Large woody debris in the stream plays
7 an important role in creating and maintaining habitat through the formation of pools.
8 These pools comprise important feeding locations that provide maximum exposure to
9 drifting food organisms in relatively quiet water. Removal of woody debris can reduce
10 frequency and quality of pools.

11 **c. Near-Water Vegetation.** Near-water vegetation provides many
12 habitat benefits, including: shade, nutrients, vertical diversity, migration corridors, nesting,
13 roosting, and escape. Recruitment of large woody material is also an important element
14 in maintaining habitat quality.

15 **4.** The biological habitat condition of the ~~THP~~ Plan and immediate surrounding
16 area. Significant factors to consider are:

17 ◇ Snags/den trees

◇ Hardwood cover

18 ◇ Downed, large woody debris

◇ Late seral ~~(mature)~~ forest characteristics.

19 Successional forest stands

20 ◇ Multistory canopy

◇ Late seral successional habitat continuity

21 ◇ Road density

22 The following general guidelines may be used when evaluating biological habitat. The
23 factors described are general and may not be appropriate for all situations. The ~~THP~~ Plan
24 preparer must also be alert to the need to consider factors which are not listed below. Each

1 set of ground conditions are unique and the analysis conducted must reflect those
2 conditions.

3 **a. Snags/Den/Nest Trees:** Snags, den trees, nest trees and their
4 recruitment are required elements in the overall habitat needs of more than 160 wildlife
5 species. Many of these species play a vital role in maintaining the overall health of
6 timberlands. Snags of greatest value are >16" DBH and 20 ft. in height. The degree of
7 snag recruitment over time should be considered. Den trees are partially live trees with
8 elements of decay which provide wildlife habitat. Nest trees have importance to birds
9 classified as a sensitive species.

10 **b. Downed large, woody debris:** Large downed logs (particularly
11 conifers) in the upland and near-water environment in all stages of decomposition
12 provide an important habitat for many wildlife species. Large woody debris of greatest
13 value consists of downed logs >16" diameter at the large end and >20 feet in length.

14 **c. Multistory canopy:** Upland multistoried canopies have a marked
15 influence on the diversity and density of wildlife species utilizing the area. More
16 productive timberland is generally of greater value and timber site capability should be
17 considered as a factor in an assessment. The amount of upland multistoried canopy may
18 be evaluated by estimating the percent of the stand composed of two or more tree layers
19 on an average per acre basis.

20 Near-water multistoried canopies in riparian zones that include conifer and hardwood
21 tree species provide an important element of structural diversity to the habitat
22 requirements of wildlife. Near-water multistoried canopy may be evaluated by estimating
23 the percentage of ground covered by one or more vegetative canopy strata, with more
24 emphasis placed on shrub species along Class III and IV streams (14 CCR §§ 916.5,
25 936.5, or 956.5).

1 **d. Road Density:** Frequently traveled permanent and secondary roads have a
2 significant influence on wildlife use of otherwise suitable habitat. Large declines in deer
3 and bear use of areas adjacent to open roads are frequently noted. Road density
4 influence on large mammal habitat may be evaluated by estimating the miles of open
5 permanent and temporary roads, on a per-section basis, that receive some level of
6 maintenance and are open to the public. This assessment should also account for the
7 effects of vegetation screening and the relative importance of an area to wildlife on a
8 seasonal basis (e.g. winter range).

9 **e. Hardwood Cover:** Hardwoods provide an important element of habitat diversity in
10 the coniferous forest and are utilized as a source of food and/or cover by a large
11 proportion of the state's bird and mammal species. Productivity of deer and other species
12 has been directly related to mast crops. Hardwood cover can be estimated using the
13 basal area per acre provided by hardwoods of all species.

14 **[Northern and Southern only]:** Post-harvest deciduous oak retention for
15 the maintenance of habitats for mule deer and other hardwood-associated wildlife shall be
16 guided by the Joint Policy on Hardwoods between the California Board of Forestry and
17 California Fish and Game Commission (5/9/94). To sustain wildlife, a diversity of stand
18 structural and seral conditions, and tree size and age classes of deciduous oaks should
19 be retained in proportions that are ecologically sustainable. Regeneration and
20 recruitment of young deciduous oaks should be sufficient over time to replace mortality of
21 older trees. Deciduous oaks should be present in sufficient quality and quantity, and in
22 appropriate locations to provide functional habitat elements for hardwood-associated
23 wildlife.

24 **f. Late Seral (Mature) successional Forest forest Characteristics**
25 **stands:**

1 Determination of the presence or absence of mature and over-mature forest stands
2 and their structural characteristics provides a basis from which to begin an assessment of
3 the influence of management on associated wildlife. These characteristics include large
4 trees as part of a multilayered canopy and the presence of large numbers of snags and
5 downed logs that contribute to an increased level of stand decadence and complexity.

6 Late ~~seral stage~~ successional forest stands ~~amount~~ may be evaluated by estimating the
7 percentage of the land base within the project and the biological assessment area
8 occupied by areas conforming to the ~~following~~ definitions: provided in 14 CCR § 895.1.

9 ~~Forests not previously harvested should be at least 80 acres in size to maintain the~~
10 ~~effects of edge. This acreage is variable based on the degree of similarity in surrounding~~
11 ~~areas. The area should include a multi-layered canopy, two or more tree species with~~
12 ~~several large coniferous trees per acre (smaller subdominant trees may be either conifers~~
13 ~~or hardwoods), large conifer snags, and an abundance of large woody debris.~~

14 Previously harvested forests are in many possible stages of succession and may
15 include remnant patches of late ~~seral stage~~ successional forest which generally conform
16 to the definition of unharvested forests but do not meet the acreage criteria.

17 **g. Late Seral successional ~~Habitat~~ habitat ~~Continuity~~ continuity:**

18 Projects containing areas meeting the definitions for late ~~seral~~ successional stage
19 characteristics must be evaluated for late ~~seral~~ successional habitat continuity and
20 functionality. The fragmentation and resultant isolation of late ~~seral~~ successional habitat
21 types is one of the most significant factors influencing the sustainability of wildlife
22 populations not adapted to edge environments.

23 This fragmentation may be evaluated by estimating the ~~amount of the on-site~~ number of
24 acres within both the project area, and as wells as the biological assessment area
25 occupied by late ~~seral~~ successional forest stands greater than ~~80~~ 20 acres in size

1 (considering the mitigating influence of adjacent and similar habitat, if applicable) and less
2 than one mile apart or connected by a corridor of similar habitat.

3 **h. Special Habitat Elements:** The loss of a key habitat element may have
4 a profound effect on a species even though the habitat is otherwise suitable. Each
5 species may have several key limiting factors to consider. For example, a special need
6 for some large raptors is large decadent trees/snags with broken tops or other features.
7 Deer may have habitat with adequate food and cover to support a healthy population size
8 and composition but dependent on a few critical meadows suitable for fawning success.
9 These and other key elements may need special protection.

10 **D. Recreational Resources ~~RECREATIONAL RESOURCES~~**

11 The recreational assessment area is generally the area that includes the logging area
12 plus 300 feet.

13 To assess recreational cumulative impacts:

14 **1.** Identify the recreational activities involving significant numbers of people
15 in and within 300 ft. of logging area (e.g., fishing, hunting, hiking, picnicking, camping).

16 **2.** Identify any recreational Special Treatment Areas described in the Board rules
17 on the plan area or contiguous to the area.

18 **E. Visual Resources ~~VISUAL RESOURCES~~**

19 The visual assessment area is generally the logging area that is readily visible to
20 significant numbers of people who are no further than three miles from the timber
21 operation. To assess visual cumulative effects:

22 **1.** Identify any Special Treatment Areas designated as such by the Board
23 because of their visual values.

24 **2.** Determine how far the proposed timber operation is from the nearest
25 point that significant numbers of people can view the timber operation. At distances of

1 greater than 3 miles from viewing points activities are not easily discernible and will be
2 less significant.

3 **3.** Identify the manner in which the public identified in 1 and 2 above will
4 view the proposed timber operation (from a vehicle on a public road, from a stationary
5 public viewing point or from a pedestrian pathway).

6
7 **F. Vehicular Traffic Impacts ~~VEHICULAR TRAFFIC IMPACTS~~:**

8 The traffic assessment area involves the first roads not part of the logging area on which
9 logging traffic must travel. To assess traffic cumulative effects:

10 **1.** Identify whether any publicly owned roads will be used for the transport
11 of wood products.

12 **2.** Identify any public roads that have not been used recently for the
13 transport of wood products and will be used to transport wood products from the
14 proposed timber harvest.

15 **3.** Identify any public roads that have existing traffic or maintenance
16 problems.

17 **4.** Identify how the logging vehicles used in the timber operation will change
18 the amount of traffic on public roads, especially during heavy traffic conditions.

19
20 **G. Greenhouse Gas (GHG) Impacts**

21
22 Cumulative GHG effects occur atmospherically where individual potential impacts are
23 combined to produce an effect that is greater than any of the individual impacts acting
24 alone. Factors to consider in the evaluation of cumulative GHG effects are listed below.

25 1. Identify greenhouse gas emissions either directly or indirectly that may

1 have a significant effect on the environment.

2 2. Identify GHG emissions that conflict with an applicable plan, policy or
3 regulation adopted of the purpose of reducing GHG emissions.

4 3. Quantify the potential impacts, or lack thereof, through synthesis of the
5 following metrics:

- 6 A. Identification of planning horizon for GHG impacts assessment
- 7 B. Inventory, growth and harvest over planning horizon
- 8 C. Harvesting emissions over planning horizon
- 9 D. Long-termed storage from milling and wood product manufacturing
10 over planning horizon
- 11 E. Project sequestration over planning horizon

13 **H. Wildfire Risk and Hazard**

14 Modifications to fuel loading through timber harvest activities may affect wildfire hazard and
15 risk. In turn, this can potentially affect cumulative watershed effects. Alteration of overstory
16 and understory structure and composition, as well as fuel bed depths, are affected to
17 varying degrees depending on silviculture, selected yarding methods, site preparation, or
18 alternative treatments identified within the Plan. Metrics that may be utilized to address fire
19 hazard or risk may include:

- ◇ Crown bulk density
- ◇ Overstory vegetative communities
- ◇ Crown base height/Height to live
- ◇ Understory vegetative communities
- ◇ crown
- ◇ Flame lengths
- ◇ Rate of spread
- ◇ Use of adjacent landscapes
- ◇ Use of project area

- ◇ Fire weather
- ◇ Current fuel loading
- ◇ Ignition and fire history
- ◇ Physical setting (e.g. highways or county roads near project area)

1 **Amend 895.1 – Definitions**

2

3 **Project** means an activity which has the potential to cause a physical change in
 4 the environment, directly or ultimately, and that is: 1) undertaken by a public agency, or
 5 2) undertaken with public agency support, or 3) requires the applicant to obtain a lease,
 6 permit, license or entitlement from one or more public agencies. This includes ~~Timber~~
 7 Harvesting Plans.

8

9 **NOTE:** This regulatory amendment could be considered by the Board to accompany the
 10 updating of Technical Rule Addendum # 2. The current revisions to Technical Rules
 11 Addendum # 2 include replacing “THP” with “Plan”, therefore potentially requiring a
 12 revision to the definition of “project” to clarify that all Plans would be considered projects
 13 throughout the existing FPRs, inclusive of Technical Rule Addendum #2.

14

15

16

17 **Definitions to consider in regards to “significant cumulative impacts” versus**
 18 **“significant cumulative effects”.**

19

20 **California Environmental Quality Act (PRC 21068)**

21 Significant Effect on the environment means a substantial, or potentially substantial,

1 adverse change in the environment.

2

3 **CEQA Guidelines 15355.**

4 “Cumulative impacts” refers to two or more individual effects which, when considered
5 together, are considerable or which compound or increase other environmental impacts.

6 (a) The individual effects may be changes resulting from a single project or a number of
7 separate projects.

8 (b) The cumulative impact from several projects is the change in the environment which
9 results from the incremental impact of the project when added to other closely related
10 past, present, and reasonably foreseeable probable future projects. Cumulative impacts
11 can result from individually minor but collectively significant projects taking place over a
12 period of time.

13

14 **CEQA Guidelines 15358.**

15 “Effects” and “impacts” as used in these Guidelines are synonymous.

16 (a) Effects include:

17 (1) Direct or primary effects which are caused by the project and occur at the same time
18 and place.

19 (2) Indirect or secondary effects which are caused by the project and are later in time or
20 farther removed in distance, but are still reasonably foreseeable. Indirect or secondary
21 effects may include growth-inducing effects and other effects related to induced changes
22 in the pattern of land use, population density, or growth rate, and related effects on air
23 and water and other natural systems, including ecosystems.

24 (b) Effects analyzed under CEQA must be related to a physical change.