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California Department of Forestry and Fire Protection
North Coast Regional Headquarters
Attn: Forest Practice
135 Ridgway Avenue
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To Whom It May Concern:

Please accept the following as review comments on the silvicultural aspects of the NTMP for the Bohemian Grove (#1-06NTMP-011 SON). I am Professor of Silviculture at the University of California – Berkeley where I have an active research program associated with the silviculture and management of coast redwood. I have three degrees in Forestry including Ph.D. in Silviculture and Forest Management. Additionally, I am a Registered Professional Forester in California (#2694), and a Certified Forester through the Society of American Foresters (#165). My research with coast redwood has recently focused, among other issues, on the management and regeneration of multiaged stands. Hence it is very applicable to the Bohemian Grove NTMP and some of this research is cited in the NTMP document.

Over the past year I have been asked to comment on the NTMP by both the attorney representing the party challenging the NTMP and the consulting forester, Nick Kent, who wrote the NTPM. Mr. Kent provided me with a tour of the grove property last summer, so I have seen the stands in question and discussed the proposed management activities with Mr. Kent and a member of the Bohemian Club. Please also note that I am not a member of the Bohemian Club, I have not participated in a Bohemian Grove encampment, nor do I have any vested interest in the outcome of the Cal Fire decision related to this NTMP.

I have reviewed the Bohemian Grove NTMP's sections related to management objectives, forest history, silvicultural systems, and the analysis of growth and harvest levels. My comments only relate to these aspects of the NTMP.

As described in the NTMP, the Bohemian Grove is at present an overstocked second- or third-growth forest. The primary impetus for treatment is to reduce the fire hazards that potentially threaten the encampment area, surrounding properties, and nearby communities. This is a very real threat and is exacerbated by the invasion of the exotic pathogen that causes "sudden oak death". Tanoaks of all sizes and ages are being killed by this pathogen and the dead trees are providing a large input of fuels in the Bohemian Grove and surrounding properties. As a result, the fire hazards in the Bohemian Grove are severe.

The secondary impetus for treatment is the relatively degraded state of the forests on the property. Historical management practices removed forest cover in much of the grove to encourage grazing; these forests have reseeded to a mixture of primarily Douglas-fir and broadleaved trees. More recent harvest treatments apparently did not remove sufficient canopy to stimulate the regeneration of new cohorts of conifers and particularly tended to limit the regeneration of redwood. The result has been a potential age imbalance in the age structure of these stands and overstocking of tanoak, Douglas-fir with a shortage of redwood.

The NTMP attempts to address these issues through activities to create a more fire-resistant forest and one that also resembles the forests present prior to the initial clearcut harvests in the area. These are worthy goals given the

nature of the property and the objectives of the Bohemian Club. This will be accomplished through a combination of thinnings and creation of openings. Openings will be planted with redwood and will serve as the basis for shifting species composition away from Douglas-fir and tanoak towards redwood. The openings are necessary because redwoods require light whether they are seedling- or stump sprout-origin trees. Some of my recent research indicates that light requirements for redwood regeneration are much greater than generally acknowledged in the past. The creation of canopy openings described in the NTMP should successfully address this problem.

Stocking levels, described with basal areas/acre, indicate an approach to keep stand density at a moderate level and promote the development of larger trees. This is desirable because it will promote fast growth of these trees and also develop some of the non-timber values – such as large-limbed trees for wildlife and diversity – that are stated as objectives. However, I expect the growth of stands will tend to push these stocking limits and future basal area levels will be adjusted higher. This outcome is consistent with the adaptive management goals described in the NTMP. I also expect that tanoak will be less of a problem than described in the NTMP due to widespread mortality caused by sudden oak death. However, the conservative strategy of the NTMP is appropriate given the uncertainty associated with the future of this disease in these forests.

Silvicultural activities will attempt to reduce surface and ladder fuels and modify species composition to a more fire-resistant mixture. Treatments to reduce fuels include reductions in stand density, removal of sudden oak death-infected or dead tanoak, pruning to reduce fuel ladders, and treatment of post-harvest slash. The transition to a forest with a greater redwood component will also provide a more fire-resilient forest. Additionally, a system of fuelbreaks has been designed across the property to assist with suppression of fire. This is an unusual undertaking for a relatively small property, and the owners should be commended for these efforts. Although there are short-term increases in fuel loads following harvest treatments, these should be considered a reasonable short-term risk given the long-term benefits from the proposed treatments.

Timber harvests are expected to occur on a 15-20 year cycle within individual stands. This is consistent with expected growth and the necessity to periodically retreat stands. Projected harvest levels are well below anticipated growth for the property. Reserve growing stock therefore increases by 73% over the 60-year planning horizon. This is not a plan for large-scale timber removal. Instead, it is a plan for building growing stock over the long-term and is consistent with the stated objective in the NTMP of restoring a pre-1900 stand structure.

In summary, the Bohemian Grove NTMP will take a complex and somewhat degraded piece of property and attempt to move it toward a more fire-resistant condition that is accumulating timber volume, and that more closely resembles the presettlement stand structure and species composition that existed on this property. The owners also plan to implement a series of fuelbreaks to assist with potential fire suppression efforts. This is an excellent example of forest stewardship and could serve as a model for management of similar forest tracts where the complexity of managing for restoration and reduction of fire hazards are common objectives.

Please contact me if I can elaborate on these points. Thank you.

Sincerely yours,



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