

Dennis Yniguez

Registered Consulting Arborist  
Dennis@TreeDecisions.com

TREE DECISIONS



1428 Spruce Street  
Berkeley, CA 94709

510-649-9291 Tel  
510-649-9292 Fax

A Brief Evaluation of the Potential Effects of  
Proposed U. S. Highway 101 Modifications  
On Old-Growth Coast Redwoods  
In Richardson Grove State Park

FOR

Save the Redwoods League  
114 Sansome Street, Suite 1200  
San Francisco, CA 94104-3823

BY

Dennis Yniguez, Consulting Arborist  
TREE DECISIONS, Berkeley, California

June 1, 2009

In early May of this year, I joined several members of Save the Redwoods League on a visit to Richardson Grove State Park, near Garberville, California, to assist in evaluating the potential effects of proposed highway modifications on the health of adjacent old-growth coast redwoods (*Sequoia sempervirens*) and to write a brief summary of my impressions.

I appreciate having been asked to participate in this project, as I have joyous memories of Richardson Grove from my childhood in the 1950s and '60s. Sometimes when our family of six was visiting relatives or friends and the adults were seated around a kitchen table, they would lean toward each other in muffled conversation. One of the parents would suddenly announce, "We're going to the redwoods!" and the children would jump with excitement. We would head home and load up the old Ford station wagon with canvas cots, an olive drab surplus tent, Sears flannel sleeping bags, the smoke-scented gingham tablecloth, and hastily packed cardboard boxes of camping utensils and whatever groceries were on hand. We sleeping kids would be driven in the early hours from Concord northwest to Highway 101 until we were awakened to see, like ancient guardians emerging from the mist, the great redwoods of Richardson Grove. Soon afterward came the sounds of splashing children, hatchets on firewood, hand pumping of lantern pistons, and the scents of cornmeal-covered trout, fried camp toast, and bacon and eggs from a cast-iron skillet. Evenings included card games beneath the hissing lanterns, "s'mores," and campfire stories from rangers in a rustic outdoor amphitheatre that had once included a show-and-tell of a live eel from the river, with no shortage of squeals. All this among the mighty trees, which had a presence and power unlike anything we knew in the suburbs.

It is important to me that our descendants not be cheated of their opportunities to be similarly astonished and comforted by the redwoods, and I approached the prospect of road alterations through the heart of Richardson Grove with serious skepticism.

## Site Evaluation

On May 21, 2009, my wife Anne and I joined Ruskin Hartley, Executive Director, and Christine Ambrose, Land Projects Manager, of Save the Redwoods League at Richardson Grove for a meeting with representatives of the California State Department of Transportation (CalTrans) as well as representatives of several state legislators' offices and nonprofit organizations who are similarly concerned about the well-being of redwoods at the site. We met at noon and gathered under a tree for lunch and an opportunity to question four CalTrans representatives about the potential effects of the project on the health of individual trees and the ambiance of the grove. We were shown large-scale CAD diagrams of each section of the highway in and adjacent to Richardson Grove, with the proposed modifications and existing trees clearly identified.

At a number of locations in the grove, old-growth redwoods stand adjacent to the highway and limit the width of the highway as it courses through the trees. CalTrans engineers had created sophisticated computer simulations of current vehicle traffic patterns and determined that some large trucks may have difficulty passing through the grove without their rear wheels tracking near or beyond the existing shoulders of the highway ("off-tracking").

To remedy this situation, CalTrans proposes to lengthen the turning radii of some of the passageways by extending pre-existing curves so that larger trucks can begin their turns earlier, and pass through tree-confined sections of the highway without drifting over the centerline or veering onto a shoulder.

CalTrans representatives were asked about alternatives to modifying the existing highway through the grove. They explained that, less than ten years ago, two ideas had been thoroughly considered. One proposal, to widen the highway, would have required the removal of many more trees and would have cost at least seven times the projected budget for the project that is currently envisioned. A second proposal was to reroute the highway entirely outside Richardson Grove, but would have cost more than twelve times the current project's budget and would have required that two new bridges be built over the Eel River and that steep slopes be cut into hillsides of uncertain stability.

Participants asked pointed questions about the possible effects of highway modification on existing old-growth trees. We were particularly concerned about potential root compaction, root severance, root and trunk decay, hydrologic disruptions (which could lead to moisture stress and dieback of established trees), and the effects of road alterations on the character of the grove.

CalTrans representatives invited us to walk with them to some of the locations beside Highway 101 where the highway would be modified adjacent to old-growth redwoods. Everyone accepted the offer, and we were issued reflective safety vests. We viewed the exact locations of proposed modifications while constantly referring to the detailed site plans and discussing them with the CalTrans representatives.

The walkthrough was enlightening. At present, trucks and recreational vehicles wind through the highway corridors with surprising speed and frequently swing over the centerline. We observed vehicle contact scars on several trees, found broken side-mirror parts strewn throughout the vegetation along the shoulders, and observed one old-growth tree with shards of reflective glass embedded in its bark at mirror height.

## Impressions

1. The CalTrans proposal includes subtle measures for achieving necessary highway modifications with the least effect on established old-growth trees. A wildlife biologist, an arborist, and a cultural monitor are included in the budget for project oversight.

The plan includes special protection for old-growth trees adjacent to the highway. Proposed grade changes will be minimized, and will favor moderately increasing road height rather than severing roots beneath existing grades. Materials have been selected to combine strength and permeability with minimal disruption. "Brow log" sections of cut trees will be used at several locations as an interface between moderate fill soil and established redwoods. Excavation near old-growth trees will be done by hand or with an "air spade," an arboricultural instrument that uses compressed air to remove soil from roots without damaging them. The existing root systems of old-growth trees will be almost entirely undisturbed by strategic additions to shoulder width and by minimal changes to road height.

2. A number of trees, such as bigleaf maple (*Acer macrophyllum*), tanoak (*Lithocarpus densiflorus*), and Douglas-fir (*Pseudotsuga menziesii*), as well as a few small-diameter coast redwoods, will be removed inside and outside the park boundaries. The selection of trees of minimal to moderate size at designated locations appears to have been made with a view to maximizing the protection of existing old-growth redwoods and other established redwoods. The removal of this number and size of trees will have little visual effect, and newly configured slopes will soon revegetate.

3. Culvert improvements will largely consist of “no-dig” operations, so that existing culverts are relined without the need for excavation. One culvert will be replaced by a larger one that requires a trenching operation to span Highway 101 where it will not threaten the health or stability of nearby old-growth redwoods. These proposed improvements do not appear to significantly alter water availability at the site, although a hydrologist would be best qualified to address this issue.

4. The character of Richardson Grove is not threatened by this project. Concerns that the project will somehow “straighten” the meandering of Highway 101 through the grove and destroy its ambiance are unfounded. Rather, some existing curves will be subtly extended and widened for increased safety during the approaches to narrow passages, and the changes will most likely be nearly imperceptible.

## Recommendations

A. This project appears to have been designed with the protection of adjacent old-growth redwoods as a fundamental consideration. However, even the best-laid plans can go astray, and Save the Redwoods League should have a current copy of approved project plans and be informed of proposals for significant plan alterations.

B. My professional opinion is that the highway alterations, as proposed, will have no significant detrimental effect on root health or on the availability of water to the roots of old-growth redwoods adjacent to the highway construction. Nonetheless, a moisture-monitoring system could be put in place to detect any unusual moisture deficits in the foliage of selected old-growth trees that are directly adjacent to several areas of the proposed highway modification. Appropriate irrigation could correct any moisture deficits that might or might not be related to highway construction, and instrumentation could verify the successful uptake of water by protected trees. The publication of such data about the continued well-being of these trees could reassure an understandably skeptical public that this magnificent and revered grove is, in fact, not at risk.

Respectfully submitted,



Dennis Yniguez, TREE DECISIONS  
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